

Introduction: The Hoopa Valley Tribe's Habitat Division will increase and enhance rearing and high flow velocity refugia habitat for coho salmon through implementation of site specific instream restoration on levee confined lower Mill Creek. Due to the mountainous terrain, low-gradient floodplain reaches, favored by coho salmon, are rare in tributaries to the Trinity River, and the Hoopa Valley is one of the largest valleys in the Trinity River watershed. Mill Creek has the highest intrinsic potential per kilometer for coho salmon within the Hoopa Valley but is currently constrained by levees, which impairs the stream's ability to provide over-wintering habitat for coho and reduces the channels ability to store gravel and large wood critical for all life stages of salmonids. The paucity of off-channel habitat within the project area is likely having a significant population level effect within the creek and throughout the Trinity River Watershed, where coho from other natal streams redistribute in search of improved habitat. This project will address the poor existing conditions that severely limit coho recovery within this watershed, providing large quantities of high quality coho off-channel and floodplain habitat, addressing the factor identified as most limiting within this core population.

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

Objectives: The goal of this project is to remove levees and restore channel form and floodplain connectivity. The objectives of this project include:

- Create substantial habitat improvements on the south side of Mill Creek to compliment Phase 1, which focused on bringing flows back to the northern portion of the historic floodplain.
- Increase winter-off channel rearing habitats for coho salmon, as well as benefit other anadromous species (steelhead and Chinook salmon) at all life stages.
- Increase floodplain width commensurate to widths in upstream reaches, to reduce energy in the active channel during high flows and improve riparian habitat, large wood supply and storage, gravel storage (including improved spawning gravels), and wildlife habitat.
- Provide a process-based restoration approach for the mainstem Mill Creek channel that restores channel form, floodplain connectivity, habitat complexity, riparian function, and salmon habitat by encouraging the channel to restore itself over time.
- Provide access to and restore high quality habitat blocked by the 1964 levees and channel incision, allowing coho access to complex backwater, pool, and new floodplain habitat throughout the winter rearing season not currently available.
- Large wood additions will provide improved cover, gravel sorting, and increase channel complexity while riparian enhancements through floodplain lowering

and plantings will improve shading, food supply, and provide future large wood loading.

- Address the major limiting factor for this core population while improving conditions for all anadromous species and life stages by breaching the levee and restoring channel form and connectivity within the historic floodplain.

Project Description:

Location: This project is located on the lower half mile of Mill Creek within the Hoopa Valley Indian Reservation in Humboldt County, CA. The project area begins 0.1 miles upstream of the confluence of Mill Creek and the Trinity River at Trinity River mile 8.6. A bridge on SR 96 crosses Mill Creek just upstream of the confluence of Mill Creek and the Trinity River. The project reach is accessible from SR96 and Mill Creek (Dyke) Road at 41.08944400 north latitude: 123.70333000 west longitude (at downstream end of Mill Creek).

Project Set Up: This project will be overseen by the Hoopa Valley Tribal Fisheries Department, under the supervision of the Habitat Division Lead. The Habitat Division Lead will also oversee all fish protection aspects of the projects (e.g., removal of fish from the construction area prior to commencement if deemed necessary, pre- and post-project biological monitoring) as well as the as-built survey post-project with subcontractor assistance. All construction-related activities will be implemented by the Roads Department Director and Heavy Equipment Subcontractor with oversight by the Fisheries Department. During construction, the Hoopa Valley Fisheries will hire an Engineering Construction Subcontractor, Engineering Design Subcontractor for on-site construction support and inspection. The Fisheries Department will also hire a Biological Subcontractor during large wood placement to ensure all large wood habitat structures are optimally placed for salmonid habitat utilization. Riparian planting and three years of maintenance will be overseen by the Riparian Ecologist. Labor required for riparian planting and ongoing maintenance will be provided by the Heavy Equipment Subcontractor and Tribal Technician IIIs.

Materials: Materials necessary for this project include erosion control silt fencing, fir and oak large wood/logs (n=50) with rootwads, river rock (round large boulder and cobbles), straw, mulch, seed, irrigation supplies, construction signage, and riparian exclusion fencing.

Tasks: Create 3.5 acres of high quality winter coho rearing habitat by constructing 1) floodplain surfaces that restore the riparian corridor along the southern bank of Mill Creek 2) a perennial alcove, 3) a 1,700ft long winter base flow side channel, and 4) fourteen large wood structures. •

Cut through the new floodplain surface to provide off-channel coho rearing habitat. Construct the side channel to be fed by a 100 feet long infiltration gallery at the upstream end to support continual wetting of the alcove at the downstream end of the side channel, and maintain summer groundwater elevations to facilitate natural riparian regeneration. Construct the side channel 1,700 feet long and to be activated by winter flows beginning at 25 cfs. The side channel will contain at least 10 large wood elements (at least 40 individual logs) and at least 6 scour pools associated with those large wood elements.

Construct a backwater alcove at the downstream end of the side channel. The alcove will provide valuable rearing habitat in the summer and winter. The alcove will include 4 large wood elements (10 individual logs). The alcove will persist throughout summer and winter baseflow conditions.

Include large wood habitat structures in floodplain, side channel, and alcove design features, as noted above. Include at least 50 large wood pieces, including rootwoods, for a total of 14 large wood elements. Source all large wood from the Hoopa Valley Indian Reservation, in coordination with Hoopa Forest Industries and the Hoopa Valley Tribal Forestry Department. Wedge large wood habitat elements into existing vegetation, partially incorporated into the bank during excavation, and/or ballasted with other wood/boulders.

Revegetate with upland, riparian, and native grass planting. Plant Douglas Fir, Ponderosa Pine, oaks, and incense cedar over 1.4 acres. Plant riparian woody and herbaceous plant species including black cottonwood, alder, willows, sedges and rushes on 2.0 acres. Spread native grass seed and native grass straw mulch on 7.7 acres across the spoils and subcontractor use areas. Irrigate and maintain the entire site (11.1 acres) for three years after construction. Source plants grown at the adjacent Tsmeta Nursery.

Implement the project by completing the following tasks:

- Task 1. Project Management. Project management and grant administration will be completed under applicable laws and grant requirements by Hoopa Valley Tribal Fisheries and the Roads Department Director. All reporting and billing will be timely and pursuant to agreement and regulatory guidelines. The Habitat Division Lead will track the project budget and develop and submit invoices to the grantor on a regular basis. In addition, required annual report metrics will be generated and submitted to the CDFW Grant Manager.
- Task 2. Environmental Compliance and Permitting. The Hoopa Valley Tribal Fisheries and Roads Department Director will apply for and complete all necessary federal, state, and tribal permits and associated environmental compliance. The Tribe will take all efforts to minimize human and environmental impacts.

- Task 3. Project Implementation. Complete 100% designs to Fisheries Restoration Grants Program specifications (incorporating any additional recommendations from CDFW/NMFS). The construction aspects of the project will be implemented by the Heavy Equipment Subcontractor. This will include pre-project setup, more than 105,000 cubic yards (cy) of excavation and the construction and placement of numerous habitat and engineered features. All construction work will be conducted during the dry season in compliance with applicable FRGP and federal, state, and local standards. Large wood with rootwads will be sourced from Hoopa Valley Indian Reservation via the Heavy Equipment Subcontractor and the Hoopa Valley Tribal Forestry Department activities. Construction will be overseen by the Engineering Design Subcontractor, Engineering Construction Subcontractor, Biological Subcontractor, and the Habitat Division Lead. Work in the wetted channel is not planned and thus the need for fish removal is not expected; however, should it be deemed valuable or necessary, fish removal before construction and installation of fish barriers isolating work areas from the channel will be conducted according to the programmatic Biological Opinion No. 151422SWR2009AR00566 for habitat restoration projects in Northern California (NOAA 2012), or other standards recommended by CDFW, the Hoopa Fisheries Department Habitat Division Lead, Fisheries Biologists, and Field Technicians. Riparian planting and grass seeding will be performed by the Hoopa Valley Fisheries Department under the supervision of the Riparian Ecologist and Habitat Division Lead in compliance with all FRGP grant terms and applicable laws. Tribal Technicians IIs and possibly Tribal CCC volunteers (volunteer not included) that currently provide planting support for the Trinity River Restoration Program revegetation program will be utilized for this effort.
- Task 4. Riparian Maintenance. Riparian maintenance will be performed by the Hoopa Valley Fisheries Department under the supervision of the Riparian Ecologist and Habitat Division Lead in compliance with all FRGP grant terms (e.g., replacement and survival criteria) and applicable laws. Tribal Technicians and possibly Tribal CCC volunteers that currently provide maintenance support for the Trinity River Restoration Program revegetation efforts will be utilized for this effort.
- Task 5. Monitoring. Post-project monitoring by the Hoopa Valley Tribal Fisheries Department will include physical monitoring of the project to ensure that the constructed channel is functioning using as-built criteria, long profile surveys, cross-sectional surveys, photo monitoring, and vegetation survival monitoring.

Lower Mill Creek Instream Restoration Project, **2016** Phase 2

Deliverables:

- Task 1: Progress invoices, quarterly/final reports as stipulated in grant agreement, final landowner agreement if necessary.
- Task 2. USACE permit, CWA 401 Clean Water Certification, consultation documents as necessary, and other permits required.
- Task 3. Project invoices, grant reports (semi-annual, annual, and final) inclusive of quantified deliverables, construction contract. 100% stamped design meeting FRGP requirements.
- Task 4. Project invoices and reports.
- Task 5. As-built survey. Final project monitoring report. Project specific reporting metrics.

Timelines:

- Task 1. Project Management (June 1, 2016 to January 31, 2020).
- Task 2. Environmental Compliance and Permitting (June 1, 2016 to October 1, 2018).
- Task 3. Project Implementation (June 30, 2016 to September 1, 2017). Note: all effort will be taken to ensure construction occurs within one single construction season (2016). 100% Design will be finalized by June 15th. 2016.
- Task 4. Riparian Maintenance (June 30, 2016 to October 1, 2019).
- Task 5. Monitoring (June 1, 2016 to December 31, 2019).

Additional Requirements:

Determine the specific overflow channel design thalweg elevations and flood frequency in coordination with NMFS/CDFW engineering staff in the review period before the 90% designs. Provide a review period before finalizing the plans to the 100% level.

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*.

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.

Lower Mill Creek Instream Restoration Project, **2016** Phase 2

The Grantee/landowner will maintain the livestock exclusion fence(s) for a period of 10 years and totally exclude livestock from the riparian zone. Maintenance will include repair of fences to a level that will effectively exclude livestock from the livestock exclusion project area. Maintenance will not include damage that exceeds 50 percent of the fence due to natural disaster.

California Department of Fish and Wildlife

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Hoopa, Weitchpec, Hopkins Butte, Tish tang Point, Salyer, Willow Creek, Lord Ellis Summit, Hupa Mountain, and French Camp Ridge Quads for Lower Mill Creek Instream Restoration Project, Phase 2, T 08N, R 04E, S 10, Hoopa, Humboldt County, United States

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Bald Mountain milk-vetch <i>Astragalus umbraticus</i>	PDFAB0F990			G4	S2	2B.3
2 California globe mallow <i>Iliamna latibracteata</i>	PDMAL0K040			G2G3	S2	1B.2
3 California wolverine <i>Gulo gulo</i>	AMAJF03010		Threatened	G4	S1	
4 Del Norte salamander <i>Plethodon elongatus</i>	AAAAD12050			G4	S3	SC
5 Gasquet rose <i>Rosa gymnocarpa var. serpentina</i>	PDROS1J1V1			G5T3T4	S2	1B.3
6 Heckner's lewisia <i>Lewisia cotyledon var. heckneri</i>	PDPOR04052			G4T3	S3	1B.2
7 Howell's montia <i>Montia howellii</i>	PDPOR05070			G3G4	S3	2B.2
8 Humboldt marten <i>Martes caurina humboldtensis</i>	AMAJF01012			G5T1	S1	SC
9 Klamath/North Coast Fall/Winter Run Chinook Salmon River	CARB2332CA			GNR	SNR	
10 Klamath/North Coast Interior Headwater Fishless Stream	CARB2220CA			GNR	SNR	
11 Klamath/North Coast Rainbow Trout Stream	CARB2312CA			GNR	SNR	
12 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
13 Pacific fuzzwort <i>Ptilidium californicum</i>	NBHEP2U010			G3G4	S3?	4.3
14 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
15 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
16 Siskiyou checkerbloom <i>Sidalcea malviflora ssp. patula</i>	PDMAL110F9			G5T2	S2	1B.2
17 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
18 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
19 Tracy's sanicle <i>Sanicula tracyi</i>	PDAPI1Z0K0			G4	S4	4.2
20 Trinity shoulderband <i>Helminthoglypta talmadgei</i>	IMGASC2630			G2	S2	
21 Upland Douglas Fir Forest	CTT82420CA			G4	S3.1	
22 Wolf's evening-primrose <i>Oenothera wolfii</i>	PDONA0C1K0			G2	S1	1B.1
23 Yuma myotis <i>Myotis yumanensis</i>	AMACC01020			G5	S4	

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24 bensoniella <i>Bensoniella oregona</i>	PDSAX02010		Rare	G3	S2	1B.1
25 bunchberry <i>Cornus canadensis</i>	PDCOR01040			G5	S2	2B.2
26 chinook salmon - upper Klamath and Trinity Rivers ESU. <i>Oncorhynchus tshawytscha</i>	AFCHA02056			G5	S1S2	SC
27 coast cutthroat trout <i>Oncorhynchus clarkii clarkii</i>	AFCHA0208A			G4T4	S3	SC
28 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
29 coast sidalcea <i>Sidalcea oregana ssp. eximia</i>	PDMAL110K9			G5T1	S1	1B.2
30 elongate copper moss <i>Mielichhoferia elongata</i>	NBMUS4Q022			G4	S3	2B.2
31 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SC
32 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
33 giant fawn lily <i>Erythronium oregonum</i>	PMLIL0U0C0			G5	S2	2B.2
34 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
35 hooded lancetooth <i>Ancotrema voyanum</i>	IMGAS36130			G1G2	S1S2	
36 long-legged myotis <i>Myotis volans</i>	AMACC01110			G5	S3	
37 marbled murrelet <i>Brachyramphus marmoratus</i>	ABNNN06010	Threatened	Endangered	G3G4	S1	
38 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
39 northern meadow sedge <i>Carex praticola</i>	PMCYP03B20			G5	S2	2B.2
40 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
41 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
42 pale yellow stonecrop <i>Sedum laxum ssp. flavidum</i>	PDCRA0A0L2			G5T4Q	S4	4.3
43 pink-margined monkeyflower <i>Erythranthe trinitiensis</i>	PDPHR01070			G2	S2	1B.3
44 robust false lupine <i>Thermopsis robusta</i>	PDFAB3Z0D0			G2	S2	1B.2
45 ruffed grouse <i>Bonasa umbellus</i>	ABNLC11010			G5	S3S4	

California Department of Fish and Wildlife

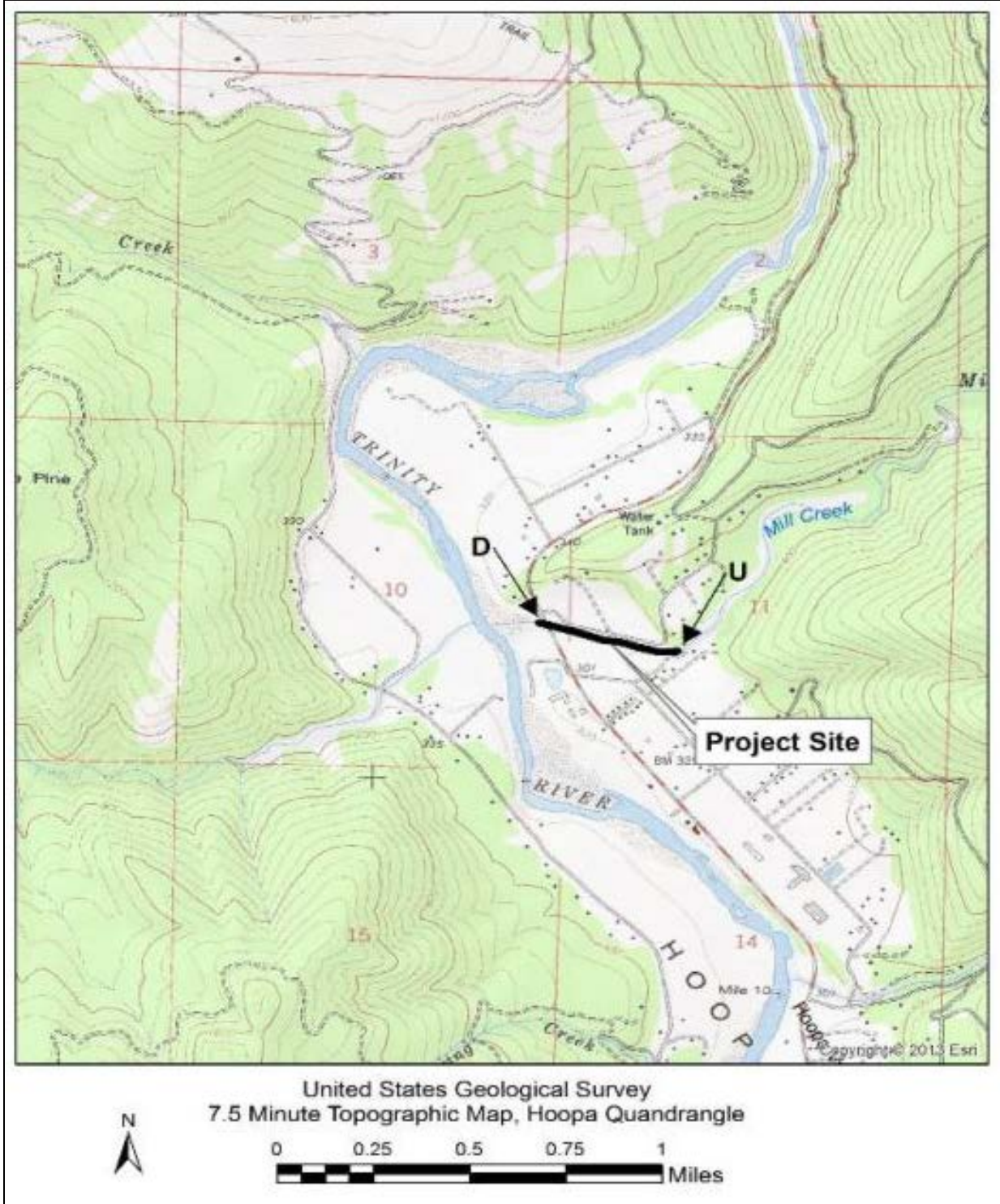
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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
46 silver-haired bat <i>Lasionycteris noctivagans</i>	AMACC02010			G5	S3S4	
47 slender silver moss <i>Anomobryum julaceum</i>	NBMUS80010			G4G5	S2	4.2
48 small groundcone <i>Kopsiopsis hookeri</i>	PDORO01010			G4G5	S1S2	2B.3
49 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
50 summer-run steelhead trout <i>Oncorhynchus mykiss irideus</i>	AFCHA0213B			G5T4Q	S2	SC
51 water bulrush <i>Schoenoplectus subterminalis</i>	PMCYP0Q1G0			G4G5	S3	2B.3
52 wayside aster <i>Eucephalus vialis</i>	PDASTEC0A0			G3	S1	1B.2
53 western pearlshell <i>Margaritifera falcata</i>	IMBIV27020			G4G5	S1S2	
54 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
55 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
56 willow flycatcher <i>Empidonax traillii</i>	ABPAE33040		Endangered	G5	S1S2	

Lower Mill Creek Instream Restoration Project, Phase 2
Project Location Map
T 08N, R 04E, S 10
Hoopa Quad, Humboldt County



Redwood Creek Instream Habitat Improvement Project - Schroeder

2016

Introduction:

The Grantee will complete the Redwood Creek Instream Habitat Improvement Project – Schroeder by installing 6LWD and boulder features along a 1300 foot section of Redwood Creek to provide increased habitat complexity, enhance pools, and increase gravel sorting. This project is necessary because the 2010 CDFW stream habitat inventory report for Redwood Creek found an insufficient amount of woody cover in pools and flatwater habitat units. 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.

Objective(s):

The specific objective of this project is to create a total of 6 instream features within 1300 feet of Redwood Creek, consisting of 37 logs and 60 tons of boulders. Additionally 50 native conifer seedlings 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 locations of the project boundaries are approximately 40.10002000 ° north latitude, 123.90786700 ° west longitude at the downstream end; and 40.00975220 ° north latitude, 123.90939200 ° west longitude at the upstream 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.

Redwood Creek Instream Habitat Improvement Project - Schroeder

2016

Subcontracted California Conservation Corps (CCC) Conservationist I will supervise CCC Laborers in the implementation of the project and during the spike operation. Subcontracted CCC Laborers will provide the hand labor for the instream LWD structures.

A log truck subcontractor will be responsible for transport and delivery of the LWD to the project site. A dump truck subcontractor will be responsible for transport and delivery of the rock/boulders to the project site. An excavator operator will be responsible for unloading and placing LWD and rock/boulders at appropriate features within the project site.

Materials: Materials to complete this project consist of:

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. Conifers: will be used as riparian cover to reduce erosion, increase riparian complexity, and increase future instream wood recruitment.
5. Drill bits & extensions: Drill the holes through the logs and anchor trees for anchoring the structures according to the California Salmonid Stream Habitat Restoration Manual
6. Tool & Materials (chain, bar oil, portaband blades, shear pins, GFIs, misc gear.): (do not survive the project). These miscellaneous materials are required to drill and anchor all materials to appropriate anchor points.
7. Rental/Repair equipment: Working outdoors in a remote environment can be a less than ideal place for power tools and equipment. This allows for quick resolution for equipment that breaks down on the job site to keep the project on time and on budget.
8. Logs & rootwads: This is the LWD that will make up features to improve the instream conditions for anadromous salmonids.
9. Drop forged cable clamps: will be used to secure cable when used for rock to LWD connections.
10. Injectable mortar: Necessary for rock to cable adhesion when anchoring LWD to rock anchor points.
11. 5/8" cable: Necessary for rock to LWD connection in areas where live trees are insufficient in number and/or size to be used as anchor points.
12. Boulders: used for anchoring the LWD in areas with insufficient live tree anchors and to provide scour as well as added cover.

Redwood Creek Instream Habitat Improvement Project - Schroeder

2016

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 subcontractors 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 6 LWD structures will begin with wood and rock placement by excavator. When necessary, CCC corpsmembers will move LWD into position using a grapple 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 (Flossi et al.1998). The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. When live anchor trees 6" in diameter or greater are absent in project area, boulders or a log deadman will be used as an anchor point. California Conservation Corps (CCC) corpsmembers under supervision of the Conservationist 1 will anchor features according to design and

Redwood Creek Instream Habitat Improvement Project - Schroeder

2016

anchoring specifications. Corpsmembers will use one inch threaded rebar to anchor logs to mature riparian trees, rock, 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. When administering rock connections, corpsmembers will drill holes into placed rock or bedrock utilizing a hole hawg drill and rock bit, clean out the holes, fill the hole with mortar, insert the cable into the hole, then clamp the cable to the threaded bar that has been inserted through the log, and lastly fasten the nut with washer to the cable and the log. 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 rootwads and large rock boulders. Habitat quality and quantity will be significantly improved for coho and other salmonids along .25 miles of stream.

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 50 conifer seedlings along the .25 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: Six complex LWD structures will be constructed and anchored using a total of 37 logs and rootwads and approximately 60 tons of boulders along 0.25 miles of Redwood Creek. These structures will enhance existing pools, increase gravel sorting, increase habitat complexity, and provide slow water refugia for salmonids. A final written report will be submitted after project completion. 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

Redwood Creek Instream Habitat Improvement Project - Schroeder

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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 (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, and (8) a financial overview of grant dollars spent and/or in kind services used to complete the project.

Timelines:

Task 1- Upon approval through December 31, 2017, oversee and coordinate project.

Task 2- Upon approval through December 31, 2017, oversee and ensure that subcontractors are trained and operate under landowner protocols.

Task 3 & 4- June 15, 2016 through October 31, 2016, June 15, 2017 through October 31, 2017, finalize design, label features, and install LWD features within the approved project reach. Erosion control will be installed as project features are completed.

Task 5- November 1, 2016 through February 28, 2017, November 1, 2017 through December 15, 2017, riparian plantings will occur.

Task 6 & 7- November 15, 2016, December 31, 2017, post-project description, photos and quantitative 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

Redwood Creek Instream Habitat Improvement Project - Schroeder

2016

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.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Briceland Quad and Surrounding Quads for: Redwood Creek Instream Habitat Improvement Project- Schroeder. T04S, R02E, S24, Briceland, Humboldt County.

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American peregrine falcon <i>Falco peregrinus anatum</i>	ABNKD06071	Delisted	unknown code...	G4T4	S3S4	
2 Cooper's hawk <i>Accipiter cooperii</i>	ABNKC12040			G5	S4	
3 Howell's montia <i>Montia howellii</i>	PDPOR05070			G3G4	S3	2B.2
4 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
5 Mendocino Coast paintbrush <i>Castilleja mendocinensis</i>	PDSCR0D3N0			G2	S2	1B.2
6 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
7 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCR0D012			G4G5T4	S3	2B.2
8 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
9 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
10 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
11 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
12 Ten Mile shoulderband <i>Noyo intersessa</i>	IMGASC5070			G2	S2	
13 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		unknown code...	G3G4	S2	SC
14 Upland Douglas Fir Forest	CTT82420CA			G4	S3.1	
15 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
16 coho salmon - southern Oregon / northern California ESU <i>Oncorhynchus kisutch</i>	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
17 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	unknown code...	G5T2T3Q	S2S3	SC
18 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
19 golden eagle <i>Aquila chrysaetos</i>	ABNKC22010			G5	S3	
20 leafy reed grass <i>Calamagrostis foliosa</i>	PMPOA170C0		Rare	G3	S3	4.2
21 leafy-stemmed mitrewort <i>Mitellastrum caulescens</i>	PDSAX0N020			G5	S4	4.2
22 little willow flycatcher <i>Empidonax traillii brewsteri</i>	ABPAE33041		Endangered	G5T3T4	S1S2	

California Department of Fish and Game

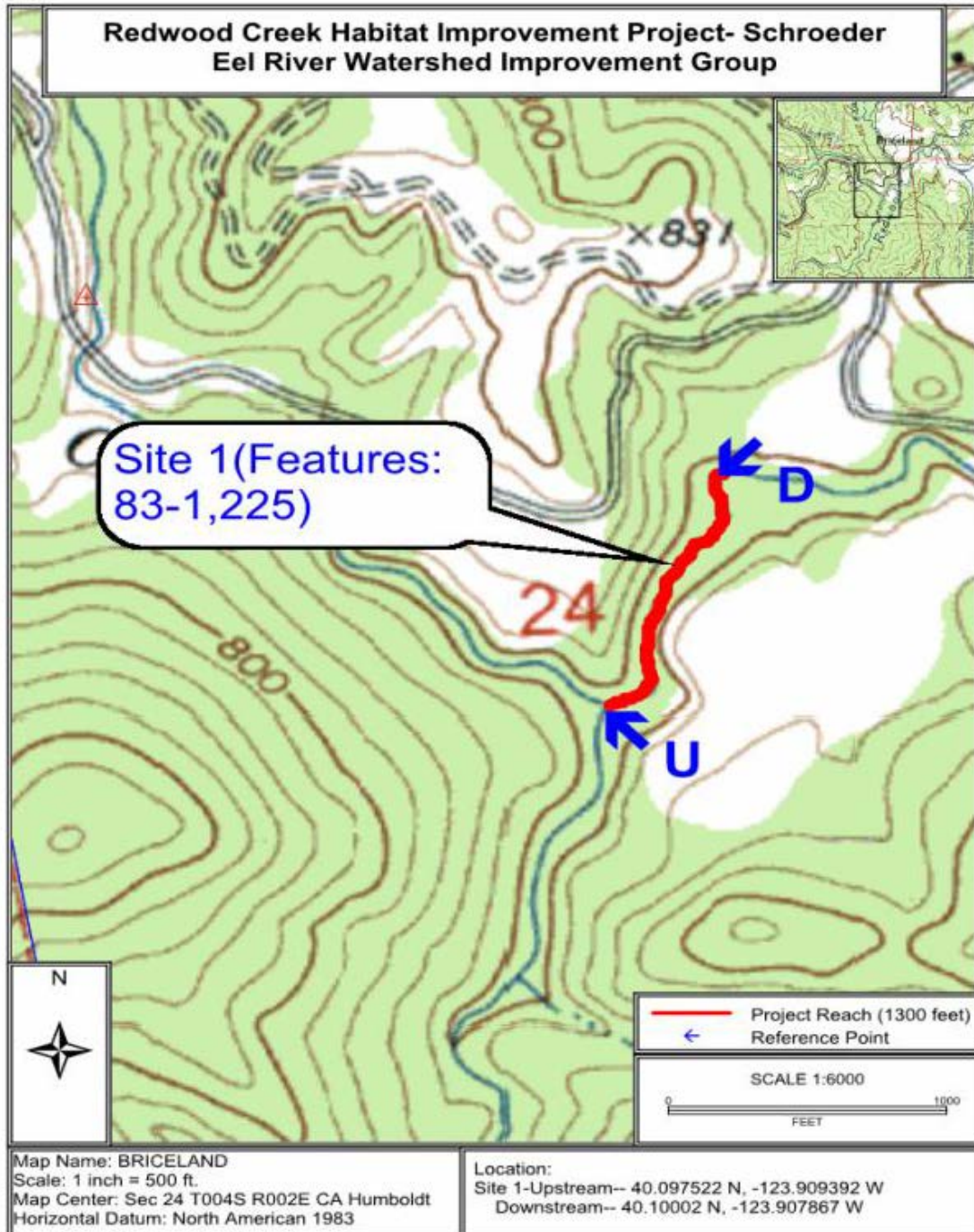
Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Briceland Quad and Surrounding Quads for: Redwood Creek Instream Habitat Improvement Project- Schroeder. T04S, R02E, S24, Briceland, Humboldt County.

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
23 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
24 mountain shoulderband <i>Helminthoglypta arrosa monticola</i>	IMGASC2035			G2G3T1	S1	
25 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
26 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
27 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
28 small groundcone <i>Kopsiopsis hookeri</i>	PDORO01010			G4G5	S1S2	2B.3
29 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
30 summer-run steelhead trout <i>Oncorhynchus mykiss irideus</i>	AFCHA0213B			G5T4Q	S2	SC
31 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
32 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2

Redwood Creek Instream Habitat Improvement Project – Schroeder
Project Location Map
T04S, R02E, S24, Briceland Quad, Humboldt County



East Fork Ryan Creek Sediment Reduction and Habitat Enhancement

2016

Introduction:

The grantee will implement the East Fork Ryan Creek Sediment Reduction and Habitat Enhancement Project. The purpose of the project is to prevent 8,161 cubic yards (yd³) of sediment delivery to streams and to restore salmonid habitat through implementation of 0.9 mile of site specific and prioritized road decommissioning, erosion control and erosion prevention work directly above Class I coho habitat in East Fork Ryan Creek.

This project is necessary because excessive sediment yield was identified as a limiting factor to salmonids in the 1995 CDFW stream inventory report of Ryan Creek. The report included the following recommendation: “active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment delivery to the stream and its tributaries.”

Objective(s):

The specific objective of this project is to improve and protect water quality and salmonid habitat in the East Fork Ryan Creek watershed. This will be achieved by implementing erosion control and erosion prevention work on high priority sediment sources identified during the field inventory for the Ryan Creek Watershed Assessment and Erosion Prevention Planning Project, Humboldt County, California (Pacific Watershed Associates (PWA), 2013). Specifically, the project will decommission roads to reduce threats of episodic inputs of sediment from larger road failures during large magnitude storms and floods. Prescribed remedial treatments will prevent fill failures, stream crossing washouts and stream diversions. As a result, further degradation of water quality and salmonid habitat in the East Fork Ryan Creek watershed will be reduced.

Project Description:

Location: The Grantee will conduct work in the Ryan Creek Watershed. The project is located at 40.73118490 North latitude, 124.10342480 (middle of project).

Project Set Up: This road-decommissioning project will be administered and managed by staff of the grantee. The Project Manager will oversee all aspects of the project, both in the field and administratively. This will include coordination and problem solving with all agencies, landowners and subcontractors. The manager will organize permits, landowner agreements, grant Agreements, equipment and materials. The manager also looks at the work in the field and works regularly with technical consultants to make sure it is being done to the required standards. Lastly, the manager will review and finalize all invoices and reporting on projects.

East Fork Ryan Creek Sediment Reduction and Habitat Enhancement

2016

The Assistant Manager will draft subcontracts, invoices, permit applications and reports. The assistant will help track the project's budgets and progress, conduct field documentation, communicate with partners, and review/verify sub-invoicing.

The Field Crew will conduct pre and post implementation data collection. They will handle tasks during implementation that are not completed by subcontractors, such as water diversion, the more technical aspects of biological monitoring, and permit compliance. The field crew will also stage materials.

The technical oversight subcontractor will provide technical oversight and supervision of heavy equipment and labor operations, field layout prior to heavy equipment and labor arrival, before-and-after photographic monitoring, before-and-after stream crossing surveys, implementation monitoring, maintaining regular communications between the project proponent, the grantor and all subcontractors, and reporting of accomplishments completed during the implementation project.

The heavy equipment and labor subcontractor will provide all necessary heavy equipment, operators and skilled laborers required to complete the project as designed. This includes, but may not be limited to, excavation of stream crossing fills, excavation of unstable road fills, and road drainage treatments 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, and maintain and monitor heavy equipment.

The tree planter subcontractor will be responsible for collecting, delivering and planting the site the first winter after treatment. A mix of native species, including both deciduous and coniferous trees will be planted.

Materials: Materials for this project include one culvert and flex pipe, mulch and seed, straw bales, riparian nursery trees and plants, silt fence, geofabric, sand bags, rock-gravel, water pump rental, office supplies, field supplies (such as flagging, tape measures, marking pens, and clipboards) and silt fence construction supplies (such as metal t-stakes, rebar, filter fabric, wire rolls, wire cutters, and shovels).

Tasks: Habitat improvements will be accomplished by decommissioning 0.9 mile of road thereby saving 8,161 cubic yards of sediment from delivery to East Fork Ryan Creek.

Task 1: Contract oversight will be conducted by Pacific Coast Fish, Wildlife, and Wetlands Restoration Association and Pacific Watershed Associates. All reporting and billing will be pursuant to contract and regulatory guidelines.

East Fork Ryan Creek Sediment Reduction and Habitat Enhancement

2016

Task 2: Implementation. Decommission 0.9 miles of high priority abandoned logging road in the East Fork Ryan Creek watershed.

- Implement project permitting, pre-construction layout, and pre-project monitoring
- Implement heavy equipment work, provide technical oversight and field reviews, including pre- and post-construction inspections
- Re-open the road for equipment access and decommissioning treatments. This will include installing temporary crossings at streams.
- Treat 19 stream crossings to save approximately 7110 cubic yards of road-related sediment from delivery to local streams.
- Treat 7 potential or existing fillslope landslide features saving approximately 1051 cubic yards of future sediment delivery. Treat by direct excavation, sediment removal, and proper spoils disposal.
- Treat approximately 0.9 miles of road surfaces, cutbanks, and/or ditches currently draining to stream channels either directly, via gullies, or through other treatment features.
- Excavate approximately 20,000 cubic yards of sediment at 26 different work features. Haul spoil materials to stable disposal areas.
- Construct up to 40 cross road drains to ensure gullies, springs, road runoff, and other concentrated flow will no longer collect over long lengths of road causing saturated roads, and fillslopes, gully erosion, and sediment delivery to streams. Construct cross road drains at approximately 75 to 150 feet spacing intervals directing road surface runoff off the road and onto stable hillslope.
- Seeding and mulching of all exposed soils which may deliver sediment to a stream. Mulching and seeding will take place as sites are completed to avoid unforeseen erosion. 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.
- A mix of native species, including both deciduous and coniferous trees will be planted at stream crossings.
- Collect data for future reporting such as a quantified description of the results of the project (including as-built road logs and in-stream enhancement feature designs) and labeled before and after photos of selected restoration activities and techniques. Analyze collected data.

Deliverables: Applicable permits, signed landowner access agreements, road logs for proposed restoration activities, annual reports and a final 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, (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

East Fork Ryan Creek Sediment Reduction and Habitat Enhancement

2016

contributed and/or in kind services used to complete the project, and (10) GIS generated maps and shapefiles of project area.

Timelines:

Project will be completed according to the following timeline:

- Summer 2016 – Fall 2017; Heavy equipment implementation
Implementation of the proposed project is scheduled to begin summer of 2016. All heavy equipment work will be completed during low-flow periods when impacts to water quality can be minimized or avoided. It is estimated that heavy equipment work (once initiated) will require approximately 543 work hours for the excavator, or about 14 work weeks. Heavy equipment work is anticipated to start in July 2016. On-the-ground implementation (road decommissioning) work will begin by opening the road and developing access for dump trucks. Any large woody debris that is suitable for in-stream placement will be staged in accessible locations.
- Fall/winter 2016 and Fall/winter 2017; Post-construction
Post-treatment data collection, road logs and maps showing as built road conditions, and photographic monitoring will be conducted to fulfill reporting requirements.
- Fall 2017 – March 2018, Reporting
Data collection synthesis, data analysis, and report writing. The implementation report will be completed and submitted in March 2018, or based on the deliverable due dates set forth in the grant contract.

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.

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the McWhinney Creek Quad and Surrounding Quads for: East Fork Ryan Creek Sediment Reduction and Habitat Enhancement Project.

T04N, R01E, S18, McWhinney Creek, Humboldt County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 California clapper rail <i>Rallus longirostris obsoletus</i>	ABNME05016	Endangered	Endangered	G5T1	S1	
2 California globe mallow <i>Iliamna latibracteata</i>	PDMAL0K040			G2G3	S2	1B.2
3 Cooper's hawk <i>Accipiter cooperii</i>	ABNKC12040			G5	S4	
4 Del Norte salamander <i>Plethodon elongatus</i>	AAAAD12050			G4	S3	SC
5 Howell's montia <i>Montia howellii</i>	PDPOR05070			G3G4	S3	2B.2
6 Humboldt Bay owl's-clover <i>Castilleja ambigua var. humboldtensis</i>	PDSCR0D402			G4T2	S2	1B.2
7 Humboldt marten <i>Martes caurina humboldtensis</i>	AMAJF01012			G5T1	S1	SC
8 Kneeland Prairie pennycress <i>Noccaea fendleri ssp. californica</i>	PDBRA2P041	Endangered		G5?T1	S1	1B.1
9 Lyngbye's sedge <i>Carex lyngbyei</i>	PMCYP037Y0			G5	S2	2B.2
10 Menzies' wallflower <i>Erysimum menziesii</i>	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
11 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
12 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
13 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCR0D012			G4G5T4	S3	2B.2
14 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
15 Oregon polemonium <i>Polemonium carneum</i>	PDPLM0E050			G3G4	S2	2B.2
16 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
17 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
18 Point Reyes salty bird's-beak <i>Chloropyron maritimum ssp. palustre</i>	PDSCR0J0C3			G4?T2	S2	1B.2
19 Siskiyou checkerbloom <i>Sidalcea malviflora ssp. patula</i>	PDMAL110F9			G5T2	S2	1B.2
20 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
21 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		unknown code...	G3G4	S2	SC
22 Upland Douglas Fir Forest	CTT82420CA			G4	S3.1	
23 Whitney's farewell-to-spring <i>Clarkia amoena ssp. whitneyi</i>	PDONA05025			G5T1	S1	1B.1

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the McWhinney Creek Quad and Surrounding Quads for: East Fork Ryan Creek Sediment Reduction and Habitat Enhancement Project.

T04N, R01E, S18, McWhinney Creek, Humboldt County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 Wolf's evening-primrose <i>Oenothera wolfii</i>	PDONA0C1K0			G2	S1	1B.1
25 alpine marsh violet <i>Viola palustris</i>	PDVIO041G0			G5	S1S2	2B.2
26 bald eagle <i>Haliaeetus leucocephalus</i>	ABNKC10010	Delisted	Endangered	G5	S2	
27 bank swallow <i>Riparia riparia</i>	ABPAU08010		Threatened	G5	S2	
28 beach layia <i>Layia carnosa</i>	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
29 black-crowned night heron <i>Nycticorax nycticorax</i>	ABNGA11010			G5	S4	
30 bristle-stalked sedge <i>Carex leptalea</i>	PMCYP037E0			G5	S1	2B.2
31 chinook salmon - California coastal ESU <i>Oncorhynchus tshawytscha</i>	AFCHA0205S	Threatened		G5	S1	
32 coast cutthroat trout <i>Oncorhynchus clarkii clarkii</i>	AFCHA0208A			G4T4	S3	SC
33 coast fawn lily <i>Erythronium revolutum</i>	PMLIL0U0F0			G4	S3	2B.2
34 coast sidalcea <i>Sidalcea oregana ssp. eximia</i>	PDMAL110K9			G5T1	S1	1B.2
35 coastal marsh milk-vetch <i>Astragalus pycnostachyus var. pycnostachyus</i>	PDFAB0F7B2			G2T2	S2	1B.2
36 dark-eyed gilia <i>Gilia millefoliata</i>	PDPLM04130			G2	S2	1B.2
37 double-crested cormorant <i>Phalacrocorax auritus</i>	ABNFD01020			G5	S4	
38 eulachon <i>Thaleichthys pacificus</i>	AFCHB04010	Threatened		G5	S3	
39 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	unknown code...	G5T2T3Q	S2S3	SC
40 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
41 ghost-pipe <i>Monotropa uniflora</i>	PDMON03030			G5	S2	2B.2
42 giant fawn lily <i>Erythronium oregonum</i>	PMLIL0U0C0			G5	S2	2B.2
43 golden eagle <i>Aquila chrysaetos</i>	ABNKC22010			G5	S3	
44 great blue heron <i>Ardea herodias</i>	ABNGA04010			G5	S4	
45 great egret <i>Ardea alba</i>	ABNGA04040			G5	S4	

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the McWhinney Creek Quad and Surrounding Quads for: East Fork Ryan Creek Sediment Reduction and Habitat Enhancement Project.

T04N, R01E, S18, McWhinney Creek, Humboldt County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
46 green sturgeon <i>Acipenser medirostris</i>	AFCAA01030	Threatened		G3	S1S2	SC
47 hoary bat <i>Lasiurus cinereus</i>	AMACC05030			G5	S4	
48 leafy-stemmed mitrewort <i>Mitellastris caulescens</i>	PDSAX0N020			G5	S4	4.2
49 long-eared myotis <i>Myotis evotis</i>	AMACC01070			G5	S3	
50 longfin smelt <i>Spirinchus thaleichthys</i>	AFCHB03010	Candidate	Threatened	G5	S1	SC
51 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
52 marsh pea <i>Lathyrus palustris</i>	PDFAB250P0			G5	S2	2B.2
53 minute pocket moss <i>Fissidens pauperculus</i>	NBMUS2W0U0			G3?	S2	1B.2
54 northern clustered sedge <i>Carex arcta</i>	PMCYP030X0			G5	S2	2B.2
55 northern meadow sedge <i>Carex praticola</i>	PMCYP03B20			G5	S2	2B.2
56 northern red-legged frog <i>Rana aurora</i>	AAABH01021			G4	S2?	SC
57 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	unknown code...	G3T3	S2S3	SC
58 obscure bumble bee <i>Bombus caliginosus</i>	IIHYM24380			G4?	S1S2	
59 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
60 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
61 pink sand-verbena <i>Abronia umbellata var. breviflora</i>	PDNYC010N4			G4G5T2	S1	1B.1
62 running-pine <i>Lycopodium clavatum</i>	PPLYC01080			G5	S3	4.1
63 sandy beach tiger beetle <i>Cicindela hirticollis gravida</i>	IICOL02101			G5T2	S1	
64 seacoast ragwort <i>Packera bolanderi var. bolanderi</i>	PDAST8H0H1			G4T4	S2S3	2B.2
65 seaside bittercress <i>Cardamine angulata</i>	PDBRA0K010			G5	S1	2B.1
66 seaside pea <i>Lathyrus japonicus</i>	PDFAB250C0			G5	S2	2B.1
67 sharp-shinned hawk <i>Accipiter striatus</i>	ABNKC12020			G5	S4	

California Department of Fish and Game

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the McWhinney Creek Quad and Surrounding Quads for: East Fork Ryan Creek Sediment Reduction and Habitat Enhancement Project.

T04N, R01E, S18, McWhinney Creek, Humboldt County

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
68 short-leaved evax <i>Hesperovax sparsiflora var. brevifolia</i>	PDASTE5011			G4T3	S2	1B.2
69 snowy egret <i>Egretta thula</i>	ABNGA06030			G5	S4	
70 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC
71 summer-run steelhead trout <i>Oncorhynchus mykiss irideus</i>	AFCHA0213B			G5T4Q	S2	SC
72 tidewater goby <i>Eucyclogobius newberryi</i>	AFCQN04010	Endangered		G3	S3	SC
73 tricolored blackbird <i>Agelaius tricolor</i>	ABPBXB0020			G2G3	S1S2	SC
74 twisted horsehair lichen <i>Bryoria spiralifera</i>	NLTEST5460			G3	S1S2	1B.1
75 western lily <i>Lilium occidentale</i>	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
76 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
77 western sand-spurrey <i>Spergularia canadensis var. occidentalis</i>	PDCAR0W032			G5T4?	S1	2B.1
78 western snowy plover <i>Charadrius alexandrinus nivosus</i>	ABNNB03031	Threatened		G3T3	S2	SC
79 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
80 white-footed vole <i>Arborimus albipes</i>	AMAFF23010			G3G4	S2S3	SC

Introduction: The Eel River Watershed Improvement Group will treat 6 new infestations of *Arundo donax* and continue to survey and retreat as needed, the infestations treated in 2 previous phases of *Arundo donax* eradication. The purpose of this project is to continue the ongoing effort to eradicate *Arundo donax* in the Eel River system. It is necessary to eliminate this invasive plant to treat and prevent riparian dysfunction including increased water draw from the system, displacement of native vegetation and increased sedimentation. This project is necessary because *Arundo donax* propagates vegetatively and aggressively invades banks along rivers and streams, creating impenetrable thickets that outcompete native plants and disrupt the function of riparian habitats. The wide leaf and rapid growth of *Arundo donax* consume large amounts of water that can reduce already low summer flows.

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 XI (Flosi et al 1998 and 2002).

Objectives: The goal of this project is to provide short-term and long-term benefits to coho salmon by restoring LWD and shade through improvement of existing riparian zones through management of plant competitors. Objectives of this project include:

- Continue to monitor and treat the *Arundo donax*.
- Reclaim areas previously void of native riparian vegetation.
- Continue to eliminate *Arundo donax* root systems causing stream bank erosion replacing them with bank stabilizing native root systems.
- Restore shade provided by riparian tree canopies by replacing *Arundo donax* with native vegetation.

Project Description:

Location: The project is located on the Lower Eel River and South Fork Eel River, tributary to the Pacific Ocean, in the counties of Humboldt and Mendocino. Project sites are located on the Cannibal Island, Ferndale, Fields Landing, Fortuna, Hydesville, Scotia, Redcrest, Weott, Myers Flat, Miranda, Garberville, and Piercy, 7.5 minute U.S. Geological Survey (USGS) maps, Township 03 North, Range 02 West, and Section 16 in Humboldt County to Township 21 North, Range 16 West, Section 26 in Mendocino County. The upstream extent of the project is located at 39.92830000 north latitude, 123.76310000 west longitude, and the downstream extent is at 40.64340000 north latitude and 123.30380000 west longitude.

Project Set Up: Agreement and subcontract oversight will be conducted by the Project Manager. The Project Manager will communicate and coordinate with the landowners to obtain entry permits or access. The Project Manager will also contact the subcontractors to inform them of the funded proposal. Upon receipt of notice to proceed, the Project Manager will obtain all permits including 1600

permit and hire California Conservation Corps Subcontractor (CCC), Licensed Herbicide Applicator Subcontractor (Applicator), and River Guide Subcontractor. The Project Manager will 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 coordinate with the CDFW Grant Manager and CCC to conduct pre-implementation site visit.

The CCC will

- Survey individual *Arundo donax* infestations to obtain current dimensions
- Provide site information to Project Manager and herbicide applicator
- Set up photo points
- Prepare sites for specific treatments as needed
- Flag sites and crew access trails as needed
- Flag sites for willow borrowing as needed.
- Cut and remove biomass as needed, and
- Tarp sites.

The Applicator will:

- Treat designated new sites with foliar herbicide
- Treat designated new sites with cut-stump method
- Retreat designated sites with foliar herbicide
- Retreat designated sites with cut-stump method, and
- Direct and inform CCC and Project Manager in the pretreatment requirement of each treatment method.

The River Guide Subcontractor will take the Project Manager and CCC on survey trips up the Eel and South Fork Eel River to scout for un-mapped *Arundo donax* infestations.

Materials: Materials used as part of this project include light exclusion tarp, sand bags, straw, riparian plants (*Salix sp*, *Sequoia sempervirens*, *Alnus rubra*), and approved herbicide.

Tasks:

Task 1. Agreement and Subcontract Oversight. Agreement and Subcontract oversight will be conducted by the Project Manager. The Project Manager will communicate and coordinate with the landowners to obtain entry permits or access. The Project Manager will also contact the subcontractors to inform them of the funded proposal. Upon receipt of notice to proceed, the Project Manager will obtain 1600 permit and hire CCC, River Guide Subcontractor, and Applicator. The Project Manager will 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. Pre-project assessment. The Project Manager will coordinate with the CCC and CDFW Grant Manager to schedule and conduct pre-project implementation assessments. Photo points will be installed to document project effectiveness.

Task 3. Project implementation. The CCC and Applicator will prepare sites and implement designated treatments to include:

- Foliar application - native riparian vegetation will be cut back by CCC and/or protected with tarps to prevent damage and allow clear access for Applicator; Applicator will apply herbicide according to professional standards and guidelines. Ground cleared around site will be mulched with straw or native mulch gleaned from adjacent area.
- Cut stump treatment - the CCC will prep sites by cutting stalks to the ground, herbicide will be applied directly to stalks by Applicator according to guidelines, cut canes will be removed from site or left on site to dry if feasible.
- Tarping treatment - the CCC will conduct treatment in which all *Arundo donax* biomass will be cut flush to the ground and chipped on site or removed. Heavy light occluding tarps will be applied over the patch. Edges of the tarp will be buried in to the ground and secured with sand bags to hold securely in place and withstand trampling by wildlife. Sites receiving this treatment will be checked frequently to adjust tarp and dig out any resprouts along tarp margins.
- Digging up resprouts - the CCC will dig out small resprouts by digging out the whole plant being extra careful to get all root pieces. Disturbed ground will be mulched with straw or appropriate gleaned mulch.
- Surveying sites for resprouts - sites treated in previous years will be surveyed and treated for resprouts. New sites receiving initial treatment during this project period will be surveyed for resprouts over 3 seasons post treatment.

Surveying for new sites will be conducted by boat with a hired River Guide Subcontractor and along the banks with the CCC under the direction of the Project Manager. The CCC will conduct field surveys through Humboldt Redwoods State Park and along accessible river banks to scout for *Arundo donax* presence. New sites will be mapped with a Global Positioning System waypoint, photo and directions to site. Project Manager will notify CDFW Project Manager of new sites.

The CCC will conduct erosion control activities and planting at treated sites as needed, methods include: mulching, willow fascine installation, willow sprigging.

The CCC will replant sites as needed with willow gleaned from adjacent sites and container plants.

Task 4. Project documentation- 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: The Project Manager will write and deliver progress reports for invoicing, Annual Progress Reports and a final report to CDFW Project Manager.

Deliverables: Upon completion of the project, the Project Manager will deliver a written report which will contain: (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, and landowner name and addresses, (4) a description and analysis of the restoration and planning techniques used, (5) a description of the results of the project including project metrics, (6) dates of work and the number of person hours expended, (7) labeled, before and after photographs (digital) of all restoration activities and techniques, and (8) grant dollars spent and contributed and/or in kind services used to complete the project.

Timelines:

Task 1. Upon Approval through February 2020 oversee and coordinate the project.

Tasks 2 and 3.-June 15, 2016 through February 2020, treat features, survey for resprouts and new sites. Erosion control mulching will be installed as project features are treated. Plantings will occur between December and March of year following treatment.

Task 4. November 15 of 2016, 2017, 2018, 2019, post project description, photos, and quantitative metrics will be delivered in an Annual Report.

Task 5. February 28, 2020 a Final Report will be delivered.

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.

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.

California Department of Fish and Wildlife

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Big Bar, Del Loma, Helena, Hayfork Bally, Hayfork, Halfway Ridge, Hyampom, Hyampom Mt, Ironside Mt, Piercy, Garberville, Harris, Noble Butte, Leggett, Hales Grove, Mistake Point, Bear Harbor, and Briceland Quads for Greater Eel River Arundo Eradication Phase III, "Upstream Extent" T 24N, R 17W, S 17, Piercy, Mendocino County; "Downstream Extent" T 03N, R 08E, S 17, Big Bar, Trinity County, United States

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 American badger <i>Taxidea taxus</i>	AMAJF04010			G5	S3	SC
2 Big Bar hesperian <i>Vespericola pressleyi</i>	IMGASA4170			G1	S1	
3 Briggs' leptonetid spider <i>Calileptoneta briggsi</i>	ILARAU6010			G1	S1	
4 California floater <i>Anodonta californiensis</i>	IMBIV04020			G3Q	S2?	
5 California wolverine <i>Gulo gulo</i>	AMAJF03010		Threatened	G4	S1	
6 Canyon Creek stonecrop <i>Sedum obtusatum ssp. paradisum</i>	PDCRA0A0U3			G4G5T2	S2	1B.3
7 Cooper's hawk <i>Accipiter cooperii</i>	ABNKC12040			G5	S4	
8 Heckner's lewisia <i>Lewisia cotyledon var. heckneri</i>	PDPOR04052			G4T3	S3	1B.2
9 Howell's montia <i>Montia howellii</i>	PDPOR05070			G3G4	S3	2B.2
10 Humboldt marten <i>Martes caurina humboldtensis</i>	AMAJF01012			G5T1	S1	SC
11 Humboldt milk-vetch <i>Astragalus agnicidus</i>	PDFAB0F080		Endangered	G3	S3	1B.1
12 Kellogg's buckwheat <i>Eriogonum kelloggii</i>	PDPGN083A0	Candidate	Endangered	G2	S2	1B.2
13 Mcdonald's rockcress <i>Arabis mcdonaldiana</i>	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
14 Mendocino Coast paintbrush <i>Castilleja mendocinensis</i>	PDSCR0D3N0			G2	S2	1B.2
15 Mendocino gentian <i>Gentiana setigera</i>	PDGEN060S0			G2	S1	1B.2
16 Methuselah's beard lichen <i>Usnea longissima</i>	NLLEC5P420			G4	S4	4.2
17 Niles' harmonia <i>Harmonia doris-nilesiae</i>	PDAST650L0			G2	S2	1B.1
18 Northern Interior Cypress Forest	CTT83220CA			G2	S2.2	
19 Oregon coast paintbrush <i>Castilleja litoralis</i>	PDSCR0D012			G4G5T4	S3	2B.2
20 Oregon fireweed <i>Epilobium oreganum</i>	PDONA060P0			G2	S2	1B.2
21 Oregon goldthread <i>Coptis laciniata</i>	PDRAN0A020			G4	S3	4.2
22 Oregon snowshoe hare <i>Lepus americanus klamathensis</i>	AMAEB03011			G5T3T4Q	S2?	SC

California Department of Fish and Wildlife

Natural Diversity Database

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
23 Pacific gilia <i>Gilia capitata ssp. pacifica</i>	PDPLM040B6			G5T3T4	S2	1B.2
24 Pacific tailed frog <i>Ascaphus truei</i>	AAABA01010			G4	S3S4	SC
25 Point Reyes horkelia <i>Horkelia marinensis</i>	PDROS0W0B0			G2	S2	1B.2
26 Raiche's manzanita <i>Arctostaphylos stanfordiana ssp. raichei</i>	PDERI041G2			G3T1	S1	1B.1
27 Red Mountain catchfly <i>Silene campanulata ssp. campanulata</i>	PDCAR0U0A2		Endangered	G5T3Q	S3	4.2
28 Red Mountain stonecrop <i>Sedum laxum ssp. eastwoodiae</i>	PDCRA0A0L1	Candidate		G5T2	S2	1B.2
29 Sonoma tree vole <i>Arborimus pomo</i>	AMAFF23030			G3	S3	SC
30 South Fork Mtn. lupine <i>Lupinus elmeri</i>	PDFAB2B1G0			G2	S2	1B.2
31 Townsend's big-eared bat <i>Corynorhinus townsendii</i>	AMACC08010		Candidate Threatened	G3G4	S2	SC
32 Tracy's eriastrum <i>Eriastrum tracyi</i>	PDPLM030C0		Rare	G3Q	S3	3.2
33 Trinity River jewelflower <i>Streptanthus ob lanceolatus</i>	PDBRA2G500			G1	S1	1B.2
34 Trinity bristle snail <i>Monadenia infumata setosa</i>	IMGASC7080		Threatened	G2T2	S2	
35 Trinity shoulderband <i>Helminthoglypta talmadgei</i>	IMGASC2630			G2	S2	
36 Upland Douglas Fir Forest	CTT82420CA			G4	S3.1	
37 Vine Hill ceanothus <i>Ceanothus foliosus var. vineatus</i>	PDRHA040D6			G3T1	S1	1B.1
38 Whitney's farewell-to-spring <i>Clarkia amoena ssp. whitneyi</i>	PDONA05025			G5T1	S1	1B.1
39 Yolla Bolly Mtns. bird's-foot trefoil <i>Hosackia yollaboliensis</i>	PDFAB2A1F0			G2	S2	1B.2
40 buttercup-leaf suksdorfia <i>Hemieva ranunculifolia</i>	PDSAX0W010			G5	S2	2B.2
41 buxbaumia moss <i>Buxbaumia viridis</i>	NBMUS1B040			G4G5	S1	2B.2
42 chinook salmon - upper Klamath and Trinity Rivers ESU. <i>Oncorhynchus tshawytscha</i>	AFCHA02056			G5	S1S2	SC
43 coast fawn lily <i>Erythronium revolutum</i>	PMLILOU0F0			G4	S3	2B.2

California Department of Fish and Wildlife

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Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
44 coast sidalcea <i>Sidalcea oregana ssp. eximia</i>	PDMAL110K9			G5T1	S1	1B.2
45 coho salmon - southern Oregon / northern California ESU <i>Oncorhynchus kisutch</i>	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
46 elongate copper moss <i>Mielichhoferia elongata</i>	NBMUS4Q022			G4	S3	2B.2
47 fisher - West Coast DPS <i>Pekania pennanti</i>	AMAJF01021	Proposed Threatened	Candidate Threatened	G5T2T3Q	S2S3	SC
48 flagella-like atractylocarpus <i>Campylopodia stenocarpa</i>	NBMUS84010			G5	S1?	2B.2
49 foothill yellow-legged frog <i>Rana boylei</i>	AAABH01050			G3	S3	SC
50 golden eagle <i>Aquila chrysaetos</i>	ABNKC22010			G5	S3	
51 hooded lancetooth <i>Ancotrema voyanum</i>	IMGAS36130			G1G2	S1S2	
52 leafy reed grass <i>Calamagrostis foliosa</i>	PMPOA170C0		Rare	G3	S3	4.2
53 leafy-stemmed mitrewort <i>Mitellastris caulescens</i>	PDSAX0N020			G5	S4	4.2
54 maple-leaved checkerbloom <i>Sidalcea malachroides</i>	PDMAL110E0			G3	S3	4.2
55 northern goshawk <i>Accipiter gentilis</i>	ABNKC12060			G5	S3	SC
56 northern spotted owl <i>Strix occidentalis caurina</i>	ABNSB12011	Threatened	Candidate Threatened	G3T3	S2S3	SC
57 obscure bumble bee <i>Bombus caliginosus</i>	IHYM24380			G4?	S1S2	
58 osprey <i>Pandion haliaetus</i>	ABNKC01010			G5	S4	
59 oval-leaved viburnum <i>Viburnum ellipticum</i>	PDCPR07080			G4G5	S3?	2B.3
60 pale yellow stonecrop <i>Sedum laxum ssp. flavidum</i>	PDCRA0A0L2			G5T4Q	S4	4.3
61 pallid bat <i>Antrozous pallidus</i>	AMACC10010			G5	S3	SC
62 pink-margined monkeyflower <i>Erythranthe trinitensis</i>	PDPHR01070			G2	S2	1B.3
63 small groundcone <i>Kopsiopsis hookeri</i>	PDORO01010			G4G5	S1S2	2B.3
64 southern torrent salamander <i>Rhyacotriton variegatus</i>	AAAAJ01020			G3G4	S2S3	SC

California Department of Fish and Wildlife

Natural Diversity Database

Selected Elements by Common Name - Portrait

Possible Species within the Big Bar, Del Loma, Helena, Hayfork Bally, Hayfork, Halfway Ridge, Hyampom, Hyampom Mt, Ironside Mt, Piercy, Garberville, Harris, Noble Butte, Leggett, Hales Grove, Mistake Point, Bear Harbor, and Briceland Quads for Greater Eel River Arundo Eradication Phase III, "Upstream Extent" T 24N, R 17W, S 17, Piercy, Mendocino County; "Downstream Extent" T 03N, R 08E, S 17, Big Bar, Trinity County, United States

Common Name/Scientific Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
65 summer-run steelhead trout <i>Oncorhynchus mykiss irideus</i>	AFCHA0213B			G5T4Q	S2	SC
66 western pearlshell <i>Margaritifera falcata</i>	IMBIV27020			G4G5	S1S2	
67 western pond turtle <i>Emys marmorata</i>	ARAAD02030			G3G4	S3	SC
68 white-flowered rein orchid <i>Piperia candida</i>	PMORC1X050			G3	S3	1B.2
69 woolly meadowfoam <i>Limnanthes floccosa ssp. floccosa</i>	PDLIM02043			G4T4	S3	4.2

Greater Eel River Arundo Eradication Phase III

Project Location Map

"Upstream Extent" T 24N, R 17W, S 17/"Downstream Extent" T 03N, R 08E, S 17

Piercy Quad, Mendocino County/Big Bar Quad, Trinity County

