Introduction:

The Eel River Watershed Improvement Group (ERWIG) will add 28 instream structures containing 131 pieces of large wood (LW), including 19 pieces with rootwads attached, along 0.7-miles (3,696 feet) of Somerville Creek. The structures will benefit Coho and Chinook salmon, as well as steelhead, all of which have been documented in the project reach. The South Fork Eel River Watershed Assessment (CDFW, 2014) puts Somerville Creek in the Western Subbasin (WS) of the SF Eel River watershed. The assessment indicates that the WS has a pool quality, pool depth, and pool shelter suitability ratings of “low” and that Somerville Creek is in the refugia category of "medium potential,". A 2017 stream habitat inventory survey of Somerville Creek performed in 2017 by CDFW recommended an increase in woody cover in the pools and flatwater habitat units. An ERWIG/CCC LW survey found 18 pieces of LW in the project reach, which is well short of the “good” threshold value as defined in the SONCC Coho Recovery Plan (NMFS, 2014).

ERWIG shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Volume I, Section VII https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

The objective of this project is to construct 28 LW features along 0.7-miles of Somerville Creek. These features will contain 131 pieces of LW, including 19 pieces with rootwads attached. The addition of these structures will enhance spawning and rearing habitats for both adult and juvenile salmonids and raise the LW count in the project reach from an average of 26 to 213 pieces of LW per mile.

Project Description:

Location:

This project is located on Somerville Creek, a tributary to Redwood Creek, which is a tributary to the South Fork Eel River on the Briceland 7.5 Minute U.S. Geological Survey Quadrangle map. The downstream extent of the project reach is located 0.25-miles upstream from the confluence with Redwood Creek. The reach extends upstream 0.7-miles. Project coordinates are 40.1029 º north latitude, -123.8914 º west longitude at the center of the project work reach on mainstem Somerville Creek.

Project Set Up:

- Eel River Watershed Improvement Group (ERWIG) Executive Director will assist with contract oversight and reporting.
- ERWIG Project Manager will assist with contract oversight, invoicing, and reporting and manage all aspects of project implementation as well as plant trees.
- Edwards Excavation & Restoration, Licensed timber Operator and Excavator Operator (LTO & EO) will be responsible for falling trees and placing logs and boulders according to design plans when equipment access is available.
- California Conservation Corps (CCC) Under supervision of the Conservationist 1, CCC corpsmembers will anchor the structures according to design and anchoring specifications.
- Paleontologist, TBD, will conduct paleontological research and prepare CEQA report.
- Archaeologist/Botanist TBD will conduct botanical and archaeological research and surveys and prepare CEQA report.
- Registered Professional Forester (RPF) will make sure trees chosen for project use are appropriate.

Materials:

- Anchoring Hardware: 1` rebar, 5/8` wire rope, 5/8` wire rope clamps, and nuts and plates (washers). These items are used to anchor logs to live trees, boulders, bedrock and other logs.
- Tools: Portable band saws, wood drills, chain saws, and timber bits.
- Hilti epoxy glue.
- Misc items: Small items such as chuck keys, allan wrenches, shear pins, hammers, socket wrenches and band saw blades.
- Erosion control materials (straw and native seed).
- 131 logs - Approximately half of the logs will be donated by the landowner and half will be purchased.
- Trees and Native Plants: Will be used to plant areas disturbed by project activities and areas within the project reach that are lacking canopy cover.

Tasks:

Task 1: Project Management and Administration
Grant oversight including invoicing and reporting will be conducted by Permitee Executive Director and Project Manager (Staff). Upon final execution of the Grant and prior to receiving a Notice to Proceed, Permitee shall deliver the following items to the CDFW Grant Manager:

1. Request to spend project funds in order to prepare for implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a

Streambed Alteration Agreement, etc.). Requests shall be made by email or telephone.

2. Access agreement that will be project specific and meet grant agreement requirements.
3. Subcontractor Agreements. A written copy of the subcontractor agreement shall be submitted to the CDFW Grant 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.
4. CEQA survey interim reports for archaeological and botanical surveys. Interim reports shall be delivered prior to receiving the notice to proceed, as part of the Notification of Lake or Streambed Alteration Application (LSAA) package. Final archaeological, botanical**,** and paleontological surveys shall be delivered prior to the end term date.
5. Send Grantor LSAA with a check for the most current permit fee. The Permitee shall notify the CDFW Grant Manager a minimum of 10 business days prior to the beginning of project implementation.

Task 2. CEQA Surveys
Archaeological, botanical, and paleontological subcontractors will conduct research and surveys within the project reach to fulfill CEQA requirements for FRGP. Interim survey reports will be delivered to CDFW Grant Manager prior to receiving a Notice to Proceed.

Task 3. Site Preparation
The ERWIG Project Manager will finalize site specific designs based on channel morphology, equipment access, and large wood availability. They will submit designs for CDFW Project Manager approval. The ERWIG Project Manager will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along the project reach. A wet ford stream crossing will be used to access features 16-28. This crossing will be used two times by an excavator (in and out) and eight times by an ATV for excavator fueling. ERWIG staff will set up fish exclusion fencing at the stream crossing. ERWIG staff will assist CDFW in fish and amphibian removal at the stream crossing. The crossing will be used for the shortest time frame possible, and for no more than two weeks, at which time ERWIG will remove the fencing and rehab the banks. Pre-project photos and metrics will be collected by ERWIG. Tools and materials will be purchased by ERWIG prior to the start of implementation and on an as-needed basis throughout the project. A porta potty will be rented and placed on site.

Task 4. Large Wood Structure Construction
Upon approval from the CDFW Project Manager, construction will begin on 28 LW features under the direction of the ERWIG Project Manager. Some features may involve cutting down or uprooting trees, which will be accomplished by the LTO or the licensed equipment operator, respectively. The RPF will sign off on all

trees chosen for use in the project. The licensed equipment operator will place downed logs into the stream in accordance with design plans. When necessary, CCC Corpsmembers will move logs 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 as anchors by wedging the logs between them where feasible. 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 other logs. Holes will be drilled through the logs and their anchor trees using a wood drill, timber bit, and drill bit extensions when necessary. One-inch rebar will be inserted through the log and secured with nuts and washers. Corpsmembers will be supervised by a trained Conservationist 1 (C1) and the ERWIG Project Manager. Erosion control methods will be employed by the CCC as required at each structure and along equipment corridors to eliminate the possibility of sediment transport to the stream. To address concerns over invasive species this project will follow the ERWIG Aquatic Invasive Species Decontamination Protocol, which is in line with the CDFW Aquatic Invasive Species Decontamination Protocol.

Task 5. Riparian Planting
ERWIG staff will return in the winter following project implementation to plant 80 trees, with a primary focus in areas lacking sufficient canopy cover or riparian vegetation and areas disturbed by project implementation.

Task 6. Post Project Photo & Data Collection
Following implementation ERWIG will take post-project photos and quantitative implementation metrics will be collected which satisfy the Project Annual Progress Reports and Final Report.

Task 7. Reporting
ERWIG Staff will write and deliver annual reports, a draft final report, and a final report.

Deliverables:

Task 1: Project Management and Administration:
1600 Permit, Subcontractor Agreements, Access Agreements, Invoices, Invoice Progress Reports.

Task 2. CEQA Surveys
Interim and Final Survey Reports.

Task 3. Site Preparation
Finalized design plans, flagged equipment access routes, pre-project photos and metrics.

Task 4. Large Wood Structure Construction
28 LW structures made up of 131 logs.

Task 5. Riparian Planting
Eighty trees planted along the project reach.

Task 6. Post Project Photo & Data Collection
Post-project metrics and photos.

Task 7. Reporting
Annual reports, draft final report in electronic format, final report in electronic and hard copy formats.

Timelines:

Task 1 - Project Management and Administration. April 1, 2021 to February 28, 2023.

Task 2 - CEQA Surveys. April 30, 2021 to December 31, 2021.

Task 3. Site Preparation. June 14, 2021 to July 12, 2021.

Task 4. Large Wood Structure Construction. July 12, 2021 to October 31, 2021.

Task 5. Riparian Planting. December 1, 2021 to March 31, 2022.

Task 6. Post Project Photo & Data Collection. October 1, 2021 to February 1, 2023.

Task 7. Reporting. November 1, 20-21 to February 28, 2023.

Additional Requirements:

The Permitee 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.*

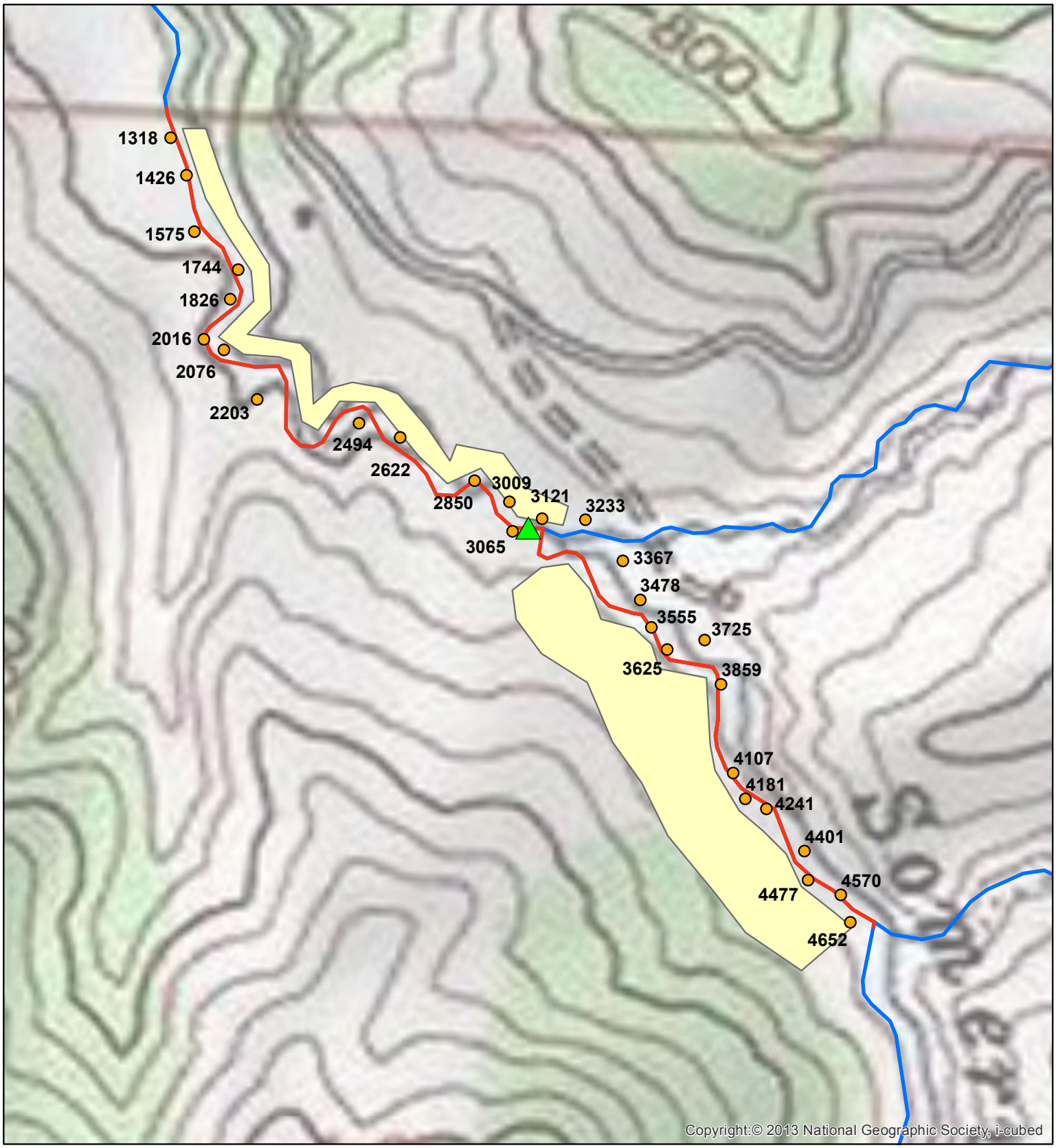
During project activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas.

The Permitee shall notify the CDFW 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 fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Permitee 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 Permitee 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 Permitee to the CDFW Grant Manager on a form provided by CDFW.

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

Project Location Topographic Map
Somerville Creek Instream Restoration Project
Briceland Quad



Somerville Features

Equipment Crossing

Somerville Creek Project Reach

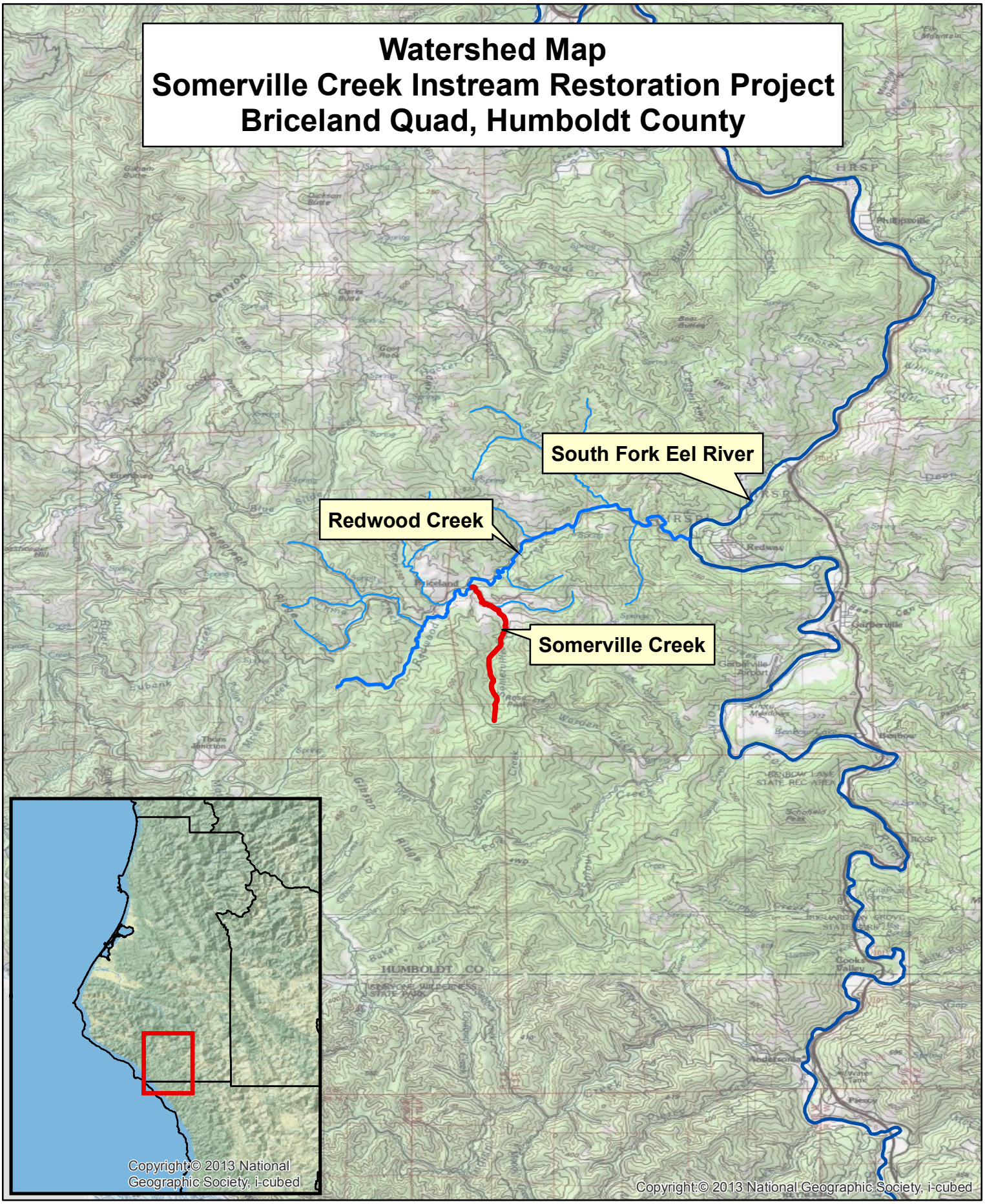
Planting Area

0 0.1 0.2 Miles

Eel River Watershed Improvement Group
March 2020

N

Watershed Map
Somerville Creek Instream Restoration Project
Briceland Quad, Humboldt County



Somerville Creek

Redwood Creek

South Fork Eel River

0 0.75 1.5 3 4.5 6 Miles

Eel River Watershed Improvement Group
March 2020

N

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Briceland (4012318) OR Bear Harbor (3912388) OR Shelter Cove (4012411) OR Honeydew (4012421) OR Ettersburg (4012328) OR Miranda (4012327) OR Garberville (4012317) OR Piercy (3912387))

Possible species within the Briceland and surrounding quads for 1723381 - Somerville Creek Instream Restoration Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Clarkia amoena ssp. whitneyi Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Empidonax traillii brewsteri little willow flycatcher	ABPAE33041	None	Endangered	G5T3T4	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eumetopias jubatus Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Helminthoglypta arrosa monticola mountain shoulderband	IMGASC2035	None	None	G2G3T1	S1	
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC

Selected Elements by Scientific 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
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2

Record Count: 45

Introduction:

The Eel River Watershed Improvement Group (ERWIG) (Permittee) and the California Conservation Corps (CCC) assessed the habitat along the Sproul Creek project reach and found existing large wood (LW) to be well below SONCC target values. The lack of LW is tied to low shelter values, reduced gravel sorting, shallower pools, a plain, single thread channel, and reduced flood plain inundation. The 2016 CDFW stream inventory assessment and the 2014 CDFW South Fork Eel River Watershed Assessment both agree with the findings of the ERWIG/CCC assessment that a lack of LW is resulting in decreased habitat values. During the ERWIG/CCC habitat assessment, locations suitable for habitat enhancement LW structures were identified and LW structures were designed to best optimize habitat at each location.

This project is the construction of 71 LW structures with a total of 414 pieces of LW, including 117 key pieces. The LW structures will be placed along 2.9-miles of Sproul Creek and will exceed SONCC target values of "very good" for number of pieces of LW per mile and number of key pieces per 100 meters. Large wood structures will provide winter refugia, improved flood plain access and shelter for all life stages of coho salmon. Structures will also provide summer habitat for juvenile coho and will improve spawning gravel availability for adult coho.

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(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* Volume I, Section VII. https://www.wildlife.ca.gov/Grants/FRGP/Guidance.

Objective(s):

The objective of this project is to improve the quality and quanitity of habitat available to salmonids in Sproul Creek. A total of 71 large wood (LW) structures containing 414 pieces of LW, including 117 key pieces will be constructed along 2.9-miles of Sproul Creek. This project will increase the frequency of flood-plain and side channel innudation, increase pool and flatwater shelter, increase pool and flatwater depths, provide velocity refugia, sort substrate, and aggrade the channel.

Project Description:

Location:

The project is located on Sproul Creek, tributary to the South Fork Eel River, tributary to the Eel River. The project site is near the town of Garberville, CA and is located in Township 05 South, Range 03 East, Section 4 of the Garberville 7.5 Minute U.S. Geological Survey Quadrangle. The downstream extent of the project reach is 1.2-miles upstream from the confluence of Sproul Creek with the South Fork Eel River. The upstream extent is located at the confluence of Sproul Creek with West Fork Sproul Creek. This occurs 4.1-miles upstream from the

mouth of Sproul Creek. Project coordinates are: 40.05500 N. Latitude, -123.85342 W Longitude.

Project Set Up:

Permittee Staff: Executive Director: Task 1. Contract oversight and reporting will be conducted by Executive Director with assistance from the Permittee Project Manager. Project Manager: Tasks 1, 3, 4, and 6. Will assist with contract oversight, invoicing, and reporting. Will manage all aspects of project implementation.

Subcontractors: Edwards Excavation & Restoration (LTO & EO): Tasks 3 and 4. Will be responsible for falling trees as the source of LW. Will also be responsible for placing LW and boulders according to design plans when equipment access is available.

California Conservation Corps (CCC): Task 4. Under supervision of the Conservationist 1, will anchor the structures according to design and anchoring specifications. CCC corpsmembers will also move LWD into position using a griphoist come along.

Arch/Bot Subcontractor: Task 2. Will conduct research, botanical and archeological surveys, and prepare CEQA reports.

Paleontology Subcontractor: Task 2. Will conduct paleontological research, surveys and prepare CEQA report.-Registered Professional Forestor (RPF): Task 4. Will make sure trees chosen for project use are appropriate.

Woodbenders: Task 5. Will plant disturbed areas with native trees and plants.

Ross Taylor & Associates: Task 3. Will clear crossings of fish and amphibians.

Materials:

All materials will be purchased by Permittee. Some logs will be donated by landowner. Anchoring Hardware: 1` Rebar, 5/8` Wire Rope, 5/8` Clamps, Nuts and Plates (Washers), these items are used to anchor logs to live trees, boulders, bedrock and other logs.Tools: Portable band saws, wood drills, chain saws, and timber bits will be used to anchor the structures. Wood drills and timber bits are used to drill holes in live trees and logs for rebar attachment. Portable band saws are used to cut rebar to length. Chain saws are used to cut limbs and dead trees out of the way and to cut logs to length.Portable Generators: Used to power the power tools that are used during the anchoring process.Hilti epoxy glue: Used to glue wire rope `mollys` into boulders.Misc items: Small items such as chuck keys, allan wrenches, socket wrenches, shear pins, hammers and band saw blades, which are used during construction. Misc item also includes erosion control materials, fish exclusion fencing materials

(hardware cloth, t-posts) and field supplies (boots, waders, flagging and other items necessary for project work).Permits: LSAA permit is needed to meet permitting requirements. Permittee Mileage: Reimbursment for miles driven by Permittee staff to and from project site in order to manage project.Conifer Logs: Are the primary elements of the habitat features, needed to make project features. Some of the logs will be donated by the landowner and some will be purchased. Boulders: Will be used in the construction of habitat structures. Boulders are primarily used as ballast and for structure strength. Boulders will also provide some habitat. Boulders will be purchased from the Garberville quarry and will range in size from two to three tons.Griphoist: Used to move logs into final position after placement by excavator or after falling a live tree. Conifer Trees and Native Plants: Will be used to plant areas disturbed by project activities and areas within the project reach that are lacking canopy cover. Rental Costs: Tasks 3 & 4, a forklift will need to be rented for the rebar and nuts delivery, a porta potty will be rented for on-project use by staff and subcontractors. Per diem: Permittee staff will stay overnight near to the project site during construction in order to faclitate construction of habitat features.

Tasks & Deliverables:

Task 1. Project Management and Administration:
Description of Activities:

1. Grant oversight including invoicing and reporting will be conducted by Grantee Executive Director and Project Manager (Staff). Upon final execution of the Grant and prior to receiving a Notice to Proceed, Grantee shall deliver the following items to the CDFW Grant Manager:
2. Request to spend project funds in order to prepare for implementation (e.g., obtain permits, secure subcontracts, purchase supplies, apply for a Streambed Alteration Agreement, etc.). Requests shall be sent by email or telephone.
3. Access agreement that will be project specific and meet grant agreement requirements.
4. Subcontractor Agreements. A written copy of the sub agreement shall be submitted to the CDFW Grant 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.
5. CEQA survey interim reports for archaeological and botanical surveys. Interim reports shall be delivered prior to receiving notice to proceed, as part of the Notification of Lake or Streambed Alteration Application (LSAA) package. Final Archaeological, botanical, and paleontological surveys shall be delivered prior to the End Term date.
6. Send Grantor LSAA with a check for the most current permit fee. The Grantee shall notify the CDFW Grant Manager a minimum of 10 business days prior to the beginning of project implementation.

Deliverables: 1600 Permit, Subcontractor Agreements, Access Agreements, Invoices, Invoice Progress Reports
Start Date: 04/01/2021
End Date: 01/31/2024

Task 2. CEQA Surveys and Research
Description of Activities: A subcontractor will conduct archeological and botanical surveys within the project reach to fulfill CEQA requirements. Interim survey reports will be delivered to CDFW Grant Manager prior to receiving a Notice to Proceed. A subcontractor will conduct paleontological research and surveys and prepare reports. Botanist will note wetland habitat to avoid.

Deliverables: Interim and Final Survey Reports
Start Date: 04/01/2021
End Date: 12/31/2021

Task 3. Site Preparation
Description of Activities: The Permittee Project Manager will finalize site specific designs based on channel morphology, equipment access, and LW availability. They will submit designs for CDFW Project Manager approval. The Project Manager will flag sites for wood selection, staging, and installation, clear brush as needed, and designate staging areas for wood along project reaches. Pre-project photos and metrics will be collected by Permittee. Tools and materials will be purchased by Permittee prior to the start of implementation and on an as needed basis throughout the project.

Permittee staff will set up exclusion fencing at the five stream crossing locations prior to the excavator needing to cross. In conjunction with CDFW, Ross Taylor and Associates will remove fish and amphibians from stream crossing locations and release them at appropriate locations upstream or downstream of crossings. Ross Taylor and Associates will write all reports necessary for the e-fishing activities. Each stream crossing used by equipment will be a wet ford and will only be crossed by one excavator two times and will only do so after CDFW gives permission. If necessary, an all-terrain vehicle (ATV) will be used to bring fuel to the excavator. Fueling will happen outside of the high-water area. Exclusion fencing will be removed immediately after the crossing is no longer needed. No stream de-watering will occur during this project.

Deliverables: Finalized design plans, flagged equipment access routes, pre-project photos and metrics, relocation report.
Start Date: 05/03/2021
End Date: 07/31/2021

Task 4. Large Wood Structure Construction
Description of Activities: With approval from the CDFW grant manager and under the direction of the Permittee Project Manager, site construction on 71 large wood features will begin. Some features may involve cutting down or uprooting trees, this will be accomplished by the LTO (Edwards Excavation & Restoration) and the licensed equipment operator (Edwards Excavation & Restoration), respectively. The Registered Professional Forester (RPF) will approve all trees chosen for use in the project prior to trees being felled. Some logs will be purchased and delivered to the project reach. The licensed equipment operator will place logs and boulders into the stream in accordance with design plans. Boulders purchased for this project will range in size from two to three tons. When necessary, CCC Corpsmembers will move LW into position using a griphoist come-along. The project will utilize living riparian trees as anchors by wedging the logs between them where feasible. 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 other logs. 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 trained Conservationist 1 (C1) and the Permittee Project Manager. 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). Erosion control methods will be employed by the CCC as required at each structure and along equipment corridors to eliminate the possibility of sediment transport to the stream. To address concerns over invasive species this project will follow the Permittee Aquatic Invasive Species Decontamination Protocol, which is in line with the CDFW *Aquatic Invasive Species Decontamination Protocol*. Permittee staff will monitor water quality when necessary.

Deliverables: Seventy-one (71) LW features made up of 414 pieces of LW, including at least 117 key pieces. Water quality monitoring data sheets.
Start Date: 07/12/2021
End Date: 10/31/2021

Task 5. Riparian Planting
Description of Activities: The tree planting subcontractor will return in the winter following project implementation to plant 300 conifer seedlings and 100 native plants, with a primary focus in areas lacking sufficient conifer cover or riparian vegetation.

Deliverables: Three hundred conifer seedlings and 100 native plants planted along the project reach.
Start Date: 12/01/2021
End Date: 03/31/2022

Task 6. Reporting, Post Project Metrics and Photos
Description of Activities: Permittee staff will write annual and yearly reports. ERWIG staff will collect post-project metrics and photos.

Deliverables: Annual reports, draft final report in electronic format, final report in electronic and hard copy formats. Post project metrics and photos.
Start Date: 11/01/2021
End Date: 01/31/2024

Additional Requirements:

The Permitee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the United States Army Corp of Engineers (USACE) Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife (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. 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 CDFW *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.

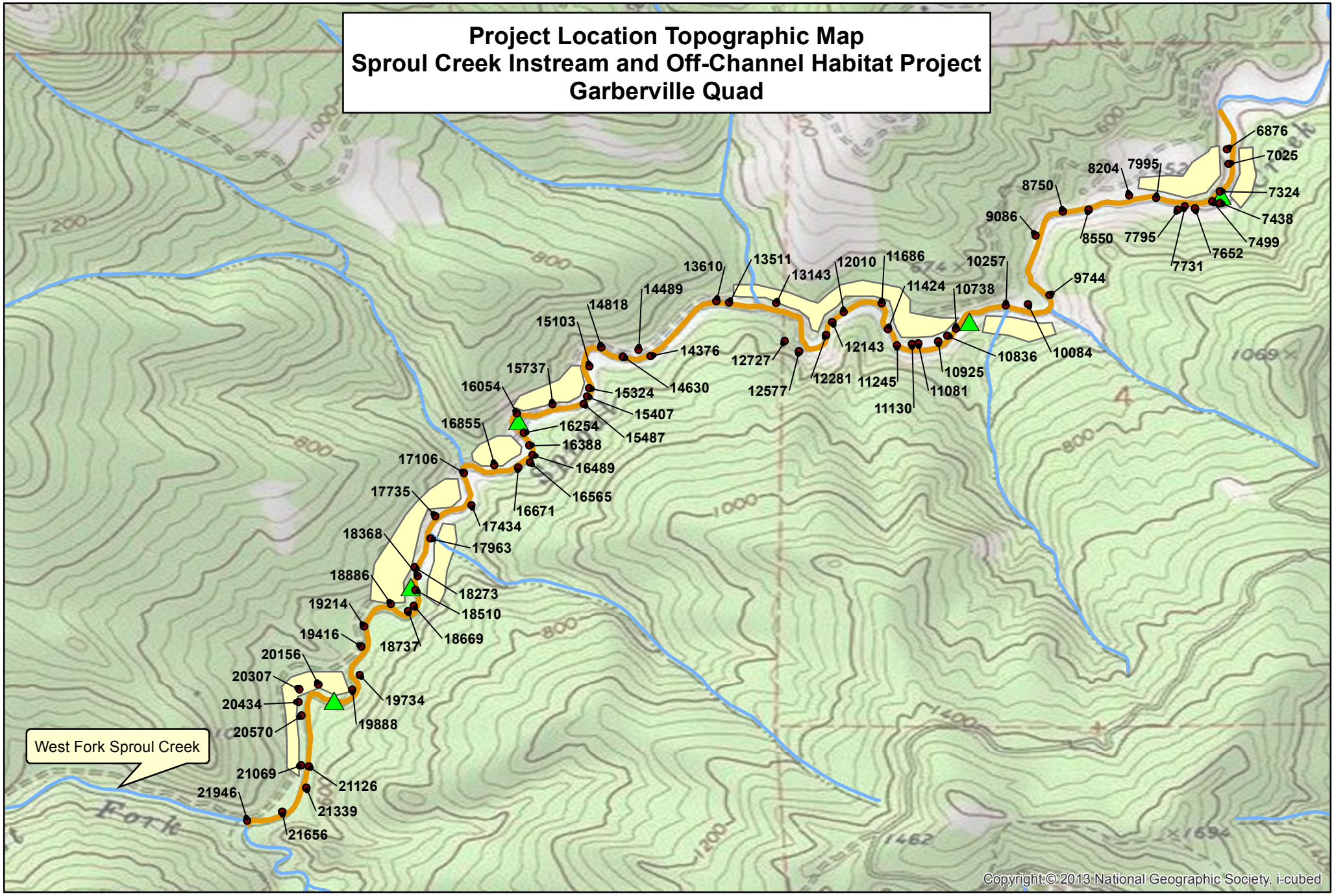
All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual*, Volume I and Volume II.

The Permitee shall notify the CDFW 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 fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Permitee 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 National Marine Fisheries Service (NMFS) Biological Opinion.
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the NMFS, 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 Permitee to the CDFW personnel on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Permitee and the CDFW Personnel.


Project Location Topographic Map
Sproul Creek Instream and Off-Channel Habitat Project
Garberville Quad
West Fork Sproul Creek
6876
7025
8204
7995
8750
7324
9086
7438
8550
7795
7499
7731
7652
9744
13610
13511
13143
12010
11686
10257
14489
14818
11424
10738
15103
12727
12143
10836
10084
14376
12577
12281
11245
10925
15737
14630
11130
11081
16054
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17963
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18273
19214
18510
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18737
18669
20156
20307
19734
20434
19888
20570
21069
21126
21946
21339
21656
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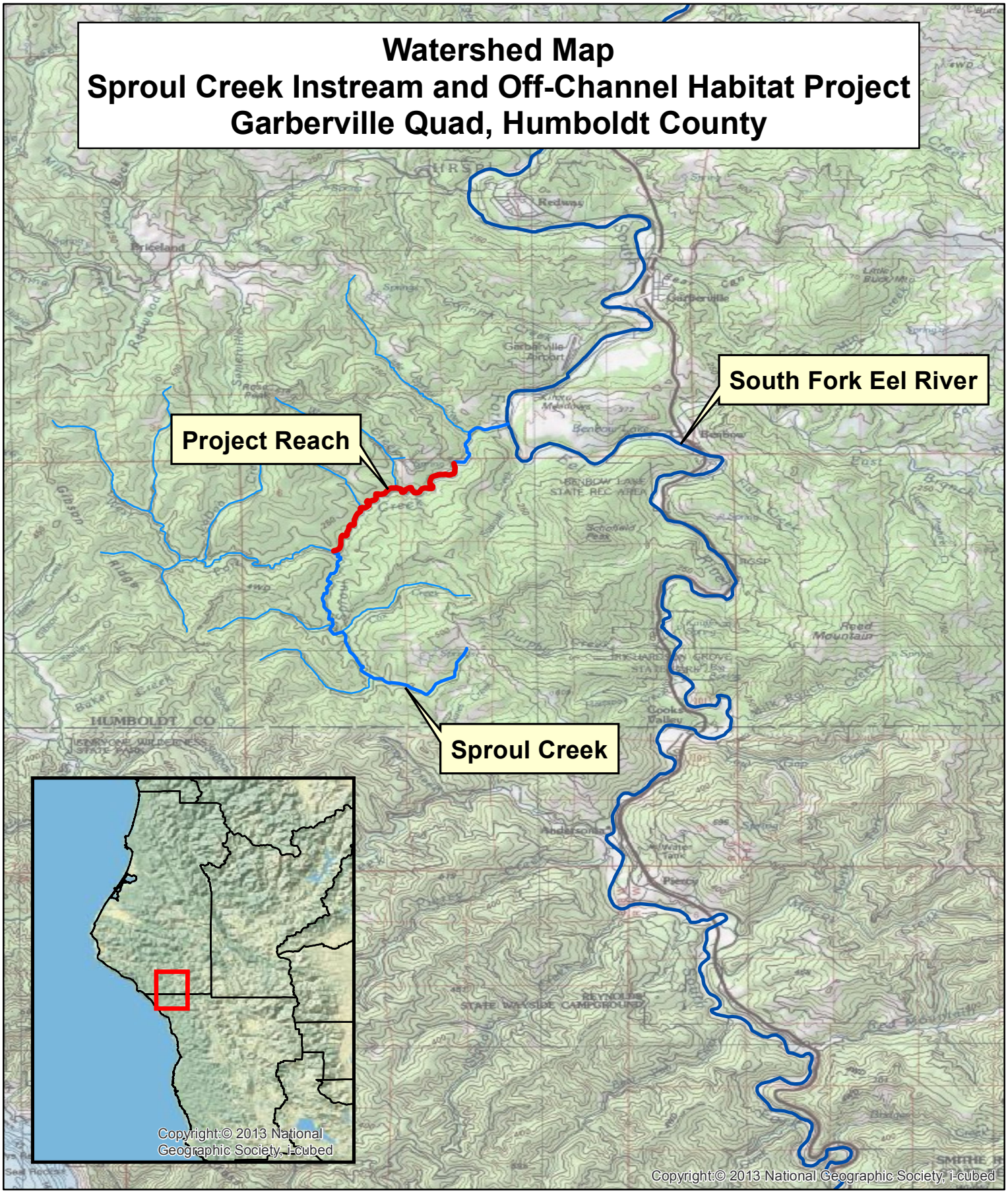
Sproul Creek Project Reach
Equipment Crossings
Feature Locations
Planting Area
0
0.25
0.5
1 Miles
N
W
E
S
Eel River Watershed Improvement Group
March 2020

Watershed Map
Sproul Creek Instream and Off-Channel Habitat Project
Garberville Quad, Humboldt County



Project Reach

Sproul Creek

South Fork Eel River

0 0.5 1 2 3 4 Miles

Eel River Watershed Improvement Group
March 2020

N
W E
S

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Garberville (4012317) OR Piercy (3912387) OR Bear Harbor (3912388) OR Briceland (4012318) OR Ettersburg (4012328) OR Miranda (4012327) OR Fort Seward (4012326) OR Harris (4012316) OR Noble Butte (3912386))

Possible species within the Garberville and surrounding quads for 1723382 - Sproul Creek Salmonid Habitat Restoration Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arabis mcdonaldiana McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Ceanothus foliosus var. vineatus Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Empidonax traillii brewsteri little willow flycatcher	ABPAE33041	None	Endangered	G5T3T4	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eriogonum kelloggii Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eumetopias jubatus Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Gentiana setigera Mendocino gentian	PDGEN060S0	None	None	G2	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Howellia aquatilis water howellia	PDCAM0A010	Threatened	None	G3	S2	2B.2
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Northern Interior Cypress Forest Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Sedum laxum ssp. eastwoodiae Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Silene campanulata ssp. campanulata Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Tracyina rostrata beaked tracyina	PDAST9D010	None	None	G2	S2	1B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 51

Canon Creek Instream Habitat Improvement Project | 2020

Introduction:

The Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA) will implement the Canon Creek Instream Habitat Improvement Project. Canon Creek supports populations of endangered coho salmon. The purpose of the project is to improve habitat in Canon Creek. Salmonid recovery plans recommend increasing stream habitat complexity in these streams by installing large woody debris (LWD). Adding LWD to Canon Creek will enhance pools, increase gravel sorting, and provide increased habitat complexity.

The Permitee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Part VII https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

This project will install 221 key pieces of wood in 2.25-miles of core salmonid recovery stream habitat in Canon Creek. This project will increase stream habitat complexity, pool frequency, pool depth, high-flow refugia, and over-summer rearing habitat for salmonids in the watershed.

Project Description:

Location:

The confluence of Canon Creek with the Mad River is approximately 7 miles upstream of Blue Lake, CA. Much of Canon Creek is on Green Diamond Resource Company lands which encompass the majority of the 16.4 sq. mile watershed of Canon Creek. The project area stream restoration reach is located is located from Station 54+88 ft to Station 174+17 ft upstream from the Canon Creek/Mad River Confluence. Project coordinates are: 40.834436 North, 123.918383 West.

Project Set Up:

There are three fundamental tasks that need to be completed to accomplish this project:(1) Grant Oversight and Project Administration(2) Construction of the Large Woody Material (LWM) Features(3) Reporting.

Pacific Coast Fish, Wildlife and Wetlands Restoration Association will provide all contracting oversight and administration including but not limited to obtaining permits; securing contracts (grantors, subcontractors, and landowner); project scheduling; invoicing; report preparation; as well as facilitating agency and landowner communications.

PCFWWRA Personnel Categories - Project Manager (PM): Task 1-3: The Project Manager oversees all aspects of the project. This includes coordination and problem solving with agencies, landowner and subcontractors. Permits, landowner agreements and grant agreements are the Manager's responsibility to make they sure are in place and that they are followed. The PM regularly reviews the progress of the project and completed work with respect to the approved budget, as well as working regularly with technical consultants to make sure it is being done to the required standards. Evaluating information developed during the project and identifying realistic permitting strategies for implementation will be a task for the Project Manager. The PM will also expend time on tasks for compliance with requirements contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project. The PM is responsible for the review, editing, and submission of all invoices and reporting on projects. The Manager's time is split between the field, meetings and the office.

Administrative Assistant Manager (AAM): Task 1: The AAM drafts subcontracts, invoices, permit applications and reports, and works closely with the Project Manager. The AAM assists in tracking the project's budgets and progress. They communicate with partners, perform outreach as needed, and review/verify subcontractor invoicing. The Assistant position also expends time on tasks required for compliance with contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project. The AAM spends the majority of time in the office but also assists on-site as needed.

Bookkeeper/Office Manager: Task 1: Performs various financial bookkeeping, accounting, and administrative work as needed. These include payroll, accounts receivable and payable, financial statements, and maintaining accounting records for individual contracts. Other tasks are to maintain office functions, provide communications and perform site visits and support as needed. This position also tracks and completes tasks required for compliance contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project.

Plant Ecologist: Tasks 2 & 3: The Plant Ecologist performs botanical work. Tasks include performing a comprehensive floristic survey of the project site, inventorying and mapping any sensitive plants or natural communities found, photographing plants and habitats, preparing reports, and providing other supporting materials as needed for permit acquisition. Additionally, the Plant Ecologist will work with PWA staff to delineate wetlands prior to construction. The Plant Ecologist’s time is split between the field and office.

GIS Specialist: Tasks 2 & 5: The GIS Specialist performs GIS work. Tasks include supporting field collection of botanical data and analyzing geospatial data. The GIS Specialist will prepare vegetation maps, sensitive plants and natural communities maps, wetland maps, and other maps needed for reporting

and permitting. The GIS Specialist spends the majority of time in the office but also assists on-site as needed.

Geologic Subcontractor (Construction layout/stakeout and technical oversight, construction management, monitoring and reporting) Pacific Watershed Associates, INC. (PWA), Personnel will support PCFWWRA with heavy equipment contractor selection, project implementation, construction supervision/management and will perform a pre/post-construction monitoring and as-built surveys for the construction of instream habitat structures. In addition, PWA will provide PCFWWRA with assistance in oversight of contractor activities during construction, evaluation and selection of construction materials, and conduct summary reporting pursuant to FRGP contract deliverables. Task 2. Construction of the Large Woody Material (LWM) FeaturesTask 2 Setup (PWA):Construction of LWM features will be designed and led by a Pacific Watershed Associates, under the responsible charge of Associate Geologist William (Randy) Lew (Professional Geologist) and a PWA Principal Scientist. PWA Technical staff will provide project layout and construction oversight. The PWA Project Manager (Associate Geologist/PG) will manage project layout, construction oversight, monitoring, and reporting. PWA Technical Staff will conduct surveys, layout, construction oversight, pre-, during-, and post-construction monitoring, and any data entry. PWA GIS staff will provide field layout maps, digitize layout and as-built project data, and develop report maps. PWA Biologists will conduct pre- and post-conditions habitat inventories to evaluate project effectiveness as required by the FRGP. The PWA Wetlands Scientist will work with alongside the PCFWWRA Plant Ecologist to identify, map, and flag the boundaries of any wetlands for equipment exclusion that are present within the proposed project site construction zone prior to construction. Additional tasks for the PWA Wetland Scientist include preparing reports, and providing other supporting materials as needed for permit acquisition. The Wetlands Scientist?s time is split between the field and office.PWA Clerical staff will track and monitor hours and create invoices during the project. The PWA Senior Scientist will conduct the paleontology review for CEQA. All PWA work elements will be supervised by a PWA Principal Scientist.

Heavy Equipment & Labor Contractor - The equipment and labor contractor will construct the project. Additionally, the equipment contractor will maintain temporary fish barriers and any flow diversion during construction, as necessary. Personnel categories include: Excavator, Dozer, Loader, Dump Truck, Laborer (Sawyer) and Laborer (General). The Heavy Equipment and Labor Contractor will only be considered for the project if they are a State licensed General Engineering Contractor and/or a Licensed Timber Operator (LTO) with demonstrated successful experience on projects of a similar nature and approved by Green Diamond Resource Company (landowner). The contractor will be determined through a rigorous selection process after the grant contract is signed.

Archeological CEQA Subcontractor (William Rich and Associates, WRA): Task 2. This subcontractor will be responsible for performing sensitive cultural resource surveys prior to construction.

Wildlife Biologist CEQA Subcontractor: Task 2. A qualified biologist will be selected to perform spotted owl, willow flycatcher, and/or any other sensitive bird surveys if necessary prior to construction. Task 3 ReportingAn interim cultural resource survey, botanical resource report and a paleontological report to CDFW prior to implementation. The final reporting of the project will be done by the PWA Professional Geologist with assistance from PWA Technical Staff and oversight from PCFWWRA Project Manager. The final summary report will include project accomplishments such as the final project budget, photographic monitoring, as-built site information, and other project information as required by the grant contract.

Materials:

Trees (planting): Approximately 280 trees will be planted by laborers.Large Woody Material (LWM): GDRC will be providing 107 LWM pieces and the grant will purchase another 144 (avg. length 70' x 1.75' diameter) of Douglas fir and redwood.Straw: Approximately 28 bales of weed-free straw mulch will be provided by the subcontractor.Seed: Approximately 6 pounds of seed. PCFWWRA will procure the seed for spreading by the Equipment and Labor Contractor.Generator/hole hawg/drill bits (Equipment and Labor Contractor): Materials required for structure anchoring (including extension cord and gasoline for a portable generator)Rebar, nuts, plates (Equipment and Labor Contractor): Materials required for anchoring structuresPorta band (Equipment and Labor Contractor): Blades required for structure installationLog tongs (Equipment and Labor Contractor/PWA): PWA or the equipment contractor will provide log tong excavator attachments to facilitate the process of LWM installation.Pressure Washer (Equipment and Labor Contractor): A (hot water) pressure washer is 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 PCFWWRA decontamination protocol. It will be the responsibility of the equipment sub-contractor to decontaminate all heavy equipment prior to entering the project areaPWA Mileage: PWA staff require mileage, to accommodate travel needs to visit the site, conduct project work tasks, and meet with partners.PCFWWRA Mileage: Project Manager requires mileage reimbursement for trips to the project site.PWA Field and Office Supplies: Field materials may include, but are not limited to flagging, tablet rental, metal identification tags, nails, rite-in-the rain paper, gloves, spray paint, cameras, and measuring field tapes. Office supplies used to complete the project include photo duplication for final reports, copying/binding for final reports, large format report maps, laminating and postage.PCFWWRA Supplies: Includes costs associated with field supplies, meeting materials, and supporting supplies such as flagging, measuring tapes,

wooden stakes, rite-in-the-rain paper, notebooks and notepads, writing utensils, charting pads, envelopes, poster board, and fastening supplies.PCFWWRA Permit Fee: Required for securing CDFW Section 1602 Lake or Streambed Alteration Agreement (LSAA) for the project.

Tasks:

Task 1 – Grant Oversight and Project Administration
PCFWWRA 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, PCFWWRA personnel will deliver the landowner access agreements, subcontracts, and assure all permits are finalized. Additionally, PCFWWRA personnel will be available to assist with invoicing and vendor payment. This task will occur throughout the life of the project.

Task 2.1 – Construction of the LWM features
PWA staff will be responsible for facilitating and directing technical project implementation and providing direct construction management and oversight of the equipment contractor. The heavy equipment and labor contractor will complete equipment operation and labor tasks.

Task 2.2: Pre-project layout & surveys
Following approval by CDFW of site-specific designs, PWA will flag heavy equipment access routes and construction boundaries, layout equipment exclusion areas for sensitive biologic assessments and identified wetlands, cultural resources, and LWD staging areas. They will also document the existing conditions at the proposed LWM feature locations and establish photo point monitoring stations at the construction locations for final reporting. Pre-construction monitoring will be performed by PWA in a manner consistent with CDFW guidelines and as required by the FRGP. Once the project disturbance areas have been flagged, scientists from PWA and GDRC, as well as the contract archeologists from WRA will conduct their respective surveys to assure environmental and cultural resource protection.

Task 2.3: Environmental compliance and CEQA surveys
PWA will coordinate with PCFWWRA, CDFW, and GDRC to conduct the appropriate surveys for cultural resources, migratory songbirds, botanical resources, paleontological resources, and special status species, as necessary. PCFWWRA will prepare and submit the CDFW LSAA 1600 notification and fee needed for project authorization. The PCFWWRA Plant Ecologist will conduct a special status plant survey and will work with the PWA Staff Wetlands Scientist to perform a wetland identification survey of the proposed disturbance areas. WRA will conduct archeology surveys. The results of these surveys and any required

mitigation measures will be included in draft technical memos and delivered to the CDFW project manager prior to start of implementation. Final reports will be submitted to the CDFW Project Manager as per requirements of the grant agreement.

Task 2.4: Construction of LWM features

Most of the LWM features will be constructed using heavy equipment but, in some locations, the features will be constructed by direct falling of trees by a professional tree faller. In general, the excavator and bulldozer will be used to create low impact access routes to the proposed LWM features and construct the LWM structures. The features will be constructed with an excavator with a log tong attachment. To install the LWM features, the excavator and bulldozer will create an access route to the streamside area and the excavator will install the logs while the dozer will deliver logs to the construction site from the adjacent road. The excavator will grapple each log with the log tongs and, to the extent feasible, weave them through the existing riparian forest with the intention of wedging the log through the riparian trees such that the existing riparian forest provides natural anchoring for the features. In some locations, where equipment access is limited, trees will be placed into the creek by direct falling by an LTO supervised tree faller. Where prudent, small, and medium sized tree fragments that do not meet the criteria for "key logs" will be incorporated into the spider jams as pre-racked and loose material. These racked and loose logs/branches will reduce each spider jam's porosity and more closely mimic naturally developed wood features. Once the primary architecture (key logs) of the features has been completed, PWA in coordination with the CDFW Project Manager will determine if hard anchor points will be required at each of the constructed features. Hard anchor points will be installed by the Contractor. Possible anchor locations have been provided in the included feature sketches in the supplemental information. After the CDFW Project Manager approves of the final configuration and anchoring of each equipment access route will be winterized by decompacting the disturbed ground surface and mulching all bare areas with wood slash and or weed-free straw. Native seed will be spread in the bare soil areas to provide short to medium term erosion control and native trees (mostly redwoods) will be planted for long term riparian succession and future LWM recruitment to the stream system.

Task 2.5: Post construction documentation

Post-construction documentation, including before and after photographs, and documentation of as-built conditions, will be performed by PWA consistent with the CDFW guidelines and as required by the FRGP. As built drawings will include structure placement and alignment, representative cross sections and longitudinal profiles, and the sizes and quantity of materials added. In addition, once the fish habitat improvement structures have been constructed, a post-implementation habitat inventory will be conducted to quantify the habitat improvements and the remediation of the limiting factors identified in the previous

surveys. All methods will follow the methodologies as discussed in Part II and Part III of the CA Restoration Manual.

Task 3 - Reporting
PCFWWRA and PWA will develop project reports (annual reports and a final project report), based on CDFW grant agreement requirements, which documents work completed and the total costs to implement the project. Reports will be submitted annually by November 15, and a Final Project Report will be prepared and submitted prior to grant close-out (including Final Project Budget and Final Invoice). Annual and final reports will include summaries of the following information as required: (1) general grant information, (2) location of work, (3) project access, (4) participating landowners 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 site information, (7) dates of work and the number of person hours expended, (8) labeled before-and-after photos of constructed sites, (9) GIS generated maps and shapefiles of the project area, and (10) monitoring checklists, databases, spreadsheets and any other data products produced during the grant term.

Deliverables:

Task 1 – 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 (prior to receiving Notice to Proceed); Executed subcontractor agreements (prior to receiving the Notice to Proceed), and Invoices & Progress Reports (submitted at least quarterly).

Task 2 – Installation of 58 LWM jams over a 2.25-mile stream reach, containing approximately 221 pieces of wood. Wood will be woven into the existing riparian corridor. Hardware anchors will be used where required.

Task 2.2 – Initial layout and pre-construction documentation of existing conditions of all LWM features and flagged staging areas and equipment exclusion zones; Final layout and design of LWD features and access routes.

Task 2.3 – Interim cultural resource, botanical, biological (aquatic, avian, etc.) and paleontological reports (completed prior to receiving Notice to Proceed); Final Cultural resource, botanical, and paleontological reports (to be completed prior to project Final Report); Preparation and payment of CDFW LSAA/1600 Agreement application and fee (prior to receiving Notice to Proceed). Initial layout and pre-construction existing conditions of all LWM features and flagged staging areas and equipment exclusion zones; Final layout and conceptual designs of LWD features based on feedback from the CDFW Project Manager, biologists, paleontologists, and archeologists.

Task 2.4 – Installation of 58 LWM jams over a 2.25-mile stream reach, containing approximately 221 pieces of wood. Wood will be woven into the existing riparian

corridor. Hardware anchors will be used where required. Planting of 280 redwood trees in disturbed areas.

Task 2.5 – Actual performance measures by site, as-built drawings, before and after photographs, habitat inventory survey data, representative post-project longitudinal profiles and cross sections of LWM feature sites.

Task 3 – Progress Reports (pdf format); Annual Reports (pdf format); and Final Grant Report (cd and hard copy), including all pre-and post-project data produced as a part of the project; Final Invoice and Final Budget.

Timelines:

Task 1 – 3/1/2021 to 3/31/2024
Task 2 – 6/1/2021 to 10/31/2023
Task 2.2 – 6/15/2021 to 7/1/2022
Task 2.3 – 3/1/2021 to 7/1/2022
Task 2.4 – 6/15/2021 to 10/31/2023
Task 2.5 – 6/15/2023 to 3/24/2024
Task 3 – 6/15/2021 to 3/25/2024

Additional Requirements:

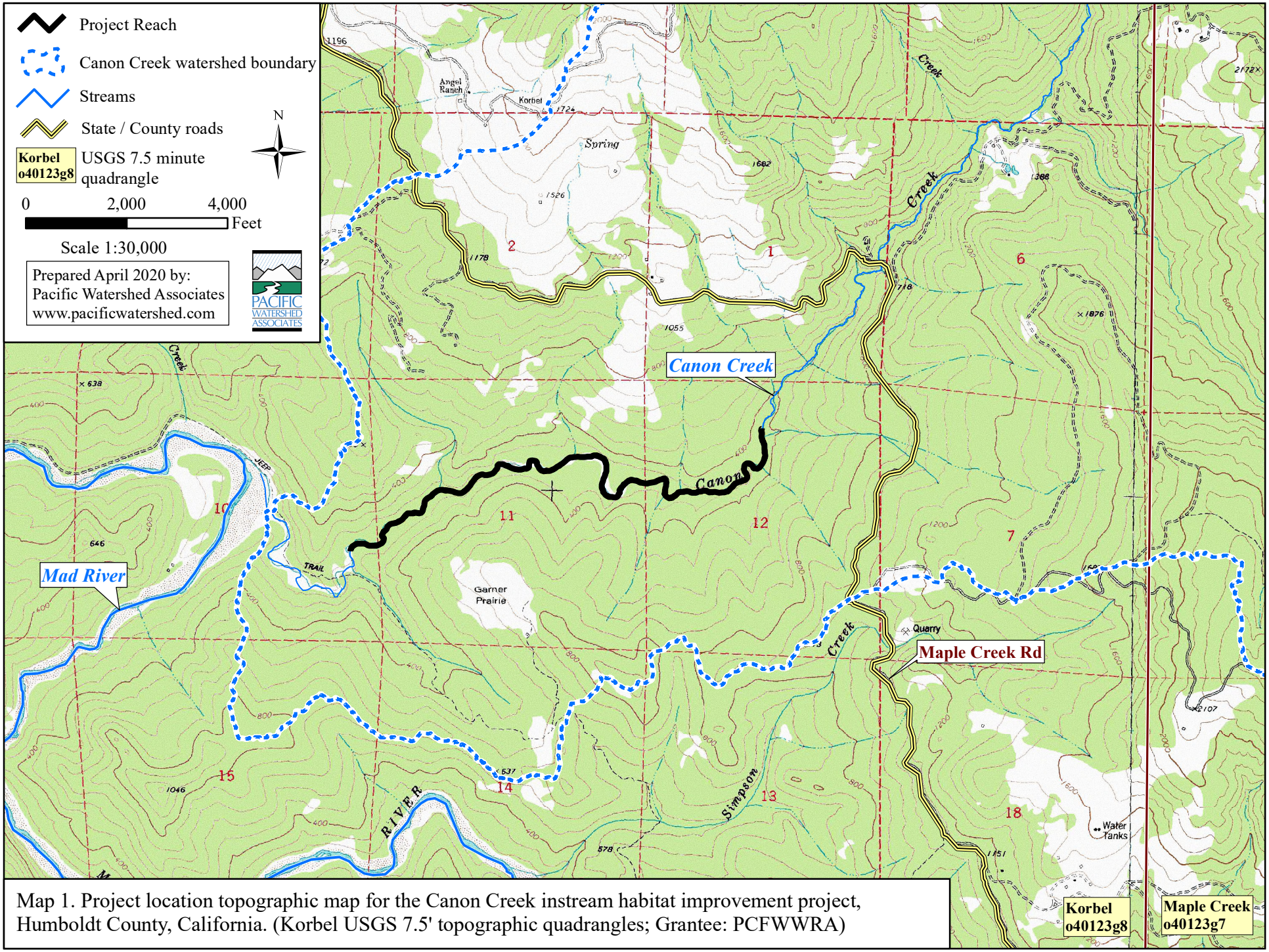
The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the 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 when there is a threat of heavy rains which will cause flooding.

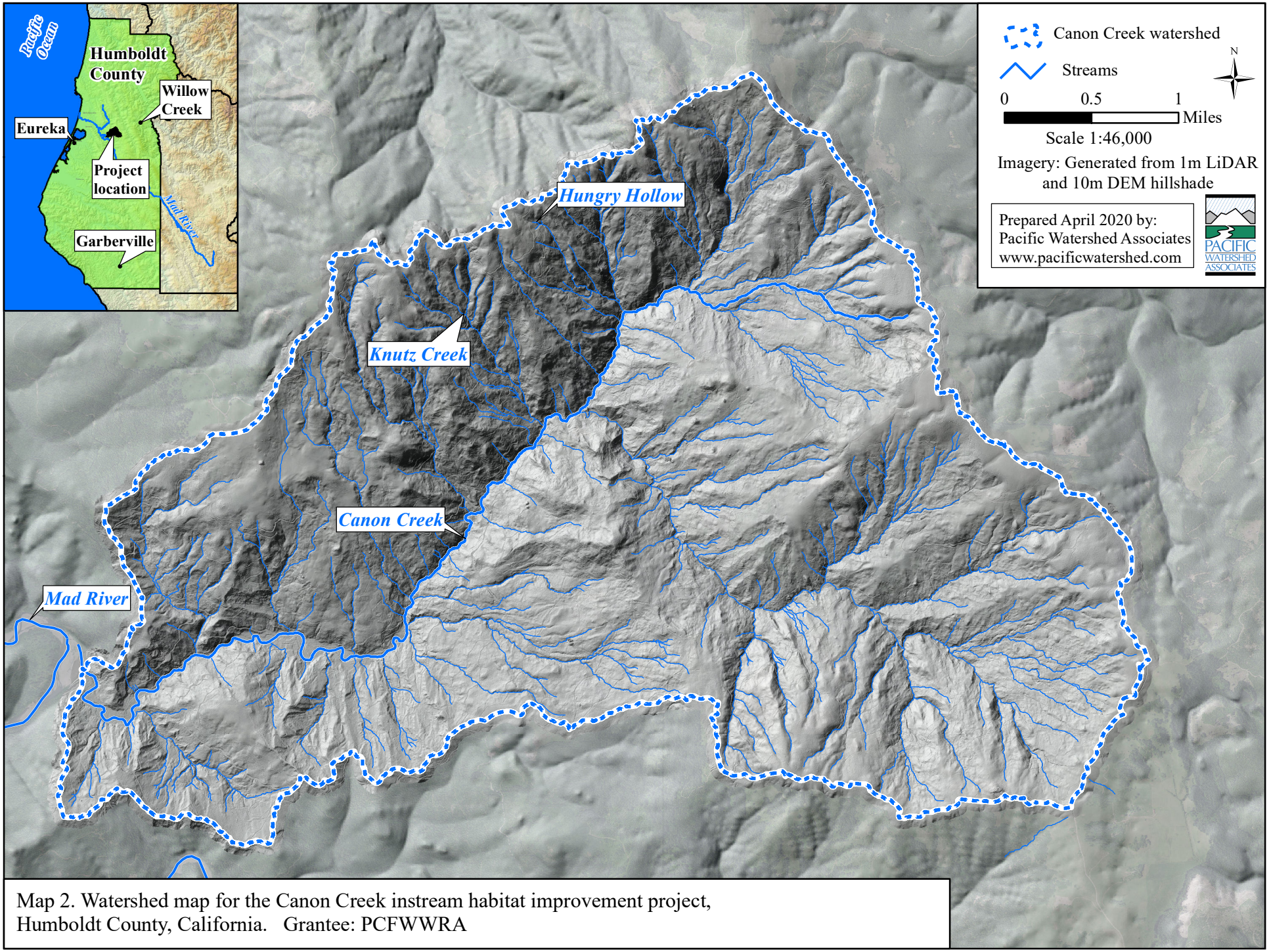
All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *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 Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*



Map 1. Project location topographic map for the Canon Creek instream habitat improvement project, Humboldt County, California. (Korbel USGS 7.5' topographic quadrangles; Grantee: PCFWWRA)



Map 2. Watershed map for the Canon Creek instream habitat improvement project, Humboldt County, California. Grantee: PCFWWRA

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Korbel (4012378) OR Iaqua Buttes (4012368) OR McWhinney Creek (4012461) OR Arcata South (4012471) OR Arcata North (4012481) OR Blue Lake (4012388) OR Lord-Ellis Summit (4012387) OR Maple Creek (4012377) OR Mad River Buttes (4012367))

Possible species within the Korbel and surrounding quads for 1723397 - Canon Creek Instream Habitat Improvement Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S2	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris green sturgeon	AFCAA01030	Threatened	None	G3	S1S2	SSC
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus albipes white-footed vole	AMAFF23010	None	None	G3G4	S2	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus umbraticus Bald Mountain milk-vetch	PDFAB0F990	None	None	G4	S2	2B.2
Atractelmis wawona Wawona riffle beetle	IICOL58010	None	None	G3	S1S2	
Bensoniella oregona bensoniella	PDSAX02010	None	Rare	G3	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Cleptes humboldti Humboldt cuckoo wasp	IIHYM67010	None	None	G1G2	S1S2	
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Cornus canadensis bunchberry	PDCOR01040	None	None	G5	S2	2B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Epilobium oreganum Oregon fireweed	PDONA060P0	None	None	G2	S2	1B.2
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Glyceria grandis American manna grass	PMPOA2Y080	None	None	G5	S3	2B.3
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Lampetra richardsoni western brook lamprey	AFBAA02090	None	None	G4G5	S3S4	SSC
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	Proposed Threatened	Endangered	G5T1	S1	SSC
Microseris borealis northern microseris	PDAST6E030	None	None	G5	S1	2B.1
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Monotropa uniflora ghost-pipe	PDMON03030	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Noccaea fendleri ssp. californica Kneeland Prairie pennycress	PDBRA2P041	Endangered	None	G5?T1	S1	1B.1
Northern Coastal Salt Marsh Northern Coastal Salt Marsh	CTT52110CA	None	None	G3	S3.2	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sanguisorba officinalis great burnet	PDROS1L060	None	None	G5?	S2	2B.2
Sanicula tracyi Tracy's sanicle	PDAPI1Z0K0	None	None	G4	S4	4.2
Sedum laxum ssp. flavidum pale yellow stonecrop	PDCRA0A0L2	None	None	G5T3Q	S3	4.3
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Spergularia canadensis var. occidentalis western sand-spurrey	PDCAR0W032	None	None	G5T4	S1	2B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Thermopsis robusta robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2

Record Count: 87

Off-Channel Salmonid Habitat Design for Freshwater Creek: Phase Two 2020

Introduction:

The Redwood Community Action Agency (Permittee) through this project will develop final engineering plans to build a self-maintaining off-channel rearing habitat for juvenile salmonids along Freshwater Creek. Freshwater Creek has limited high-quality suitable habitat for salmonid juveniles attributable to over a century of anthropogenic activities: such as gravel extraction, forestry, agriculture, hydroelectric projects, and urban sprawl. The design development project is the first step in creating additional optimal habitat for salmonid species. This project addresses the task above by resulting in design plans that, once implemented, will create winter rearing habitat and refugia for salmonid juveniles.

The Permittee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration* (https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

The project will result in a final design plan to create off-channel winter rearing habitat and refugia for juvenile salmonids in Freshwater Creek. The site will be assessed and restoration design plans will be developed to construct a self-maintaining off-channel pond.

Project Description:

Location:

The project area is located in the middle reach of Freshwater Creek watershed, east of Humboldt Bay, and four miles east of Eureka, California (See Freshwater Project Watershed Map). 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 town of Freshwater is 0.67-miles southeast of the project area. Project coordinates are: 40.76593 North Latitude, -124.06997 West Longitude.

Project Set Up:

The project development will be completed by a multidisciplinary team consisting of the Permittee, Michael Love & Associates, Inc. (MLA), and Pacific Watershed Associates (PWA). Permittee will be the fiscal agent and the Project Manager will be responsible for grant management, contracting with consultants, landowner coordination and reviewing and submitting invoices, quarterly progress updates, and the final report. Permittee Division Director will facilitate communications between NRS and the fiscal department and assist the project manager as

necessary. Permittee Administrative Coordinator will assist with the preparation of invoicing and processing purchase orders. Permittee Project Ecologist will evaluate the riparian and aquatic ecology of the site for current and potential habitat conditions for the target (coho salmon) and other riparian species. Project Ecologist will prepare the revegetation plan and project monitoring plan with assistance from Permittee Planner. The Project Ecologist will develop a wetland species list and assign locations depending on the site and on the elevations of the proposed off-channel pond. The appropriate seed mixture for the pond and pasture locations will be selected. The Project Ecologist will also prepare the project monitoring plan when the final design report is completed. Project Ecologist will complete the Wetland delineation and provide a report. MLA will lead the topographic survey, water level and water quality monitoring effort, hydrologic and hydraulic analyses, scoping of conceptual options, and development of preliminary (30%) through final (100%) engineering designs and implementation cost estimate for the project. MLA will write the Basis of Design Report and prepare the final plans specifications and estimate. MLA will work collaboratively with the Project Ecologist to support development of a project planting plan, and assist with calculations of metrics needed for evaluating the project impacts and identifying permitting pathways. MLA will also assist with authoring sections of the Project Monitoring Plan.The MLA Principal Engineer will oversee all aspects of the project for MLA and lead in identification of options and design development, participate in stakeholder meetings, assist with installation of gaging equipment, and author sections of the project reports. The MLA Project Engineer will be the MLA lead for survey, will prepare the project basemap, identify and develop project layout, develop earthworks, lead the preparation of plan sheets for each submittal, oversee processing of water level and water quality data and will be the MLA lead for developing the off channel design and oversee the hydraulic modeling of the channel. The MLA Engineering Geomorphologist will provide oversight for the wood force-balance calculations, provide quality control for the hydraulic modeling and assist with development of alternatives, and author sections of the project report. The Associate Engineer will assist with surveying, drafting, developing hydraulic models, processing of collected data, preparation of figures, and hydrologic calculations. The MLA Senior Project Engineer will provide design review in a quality control roll and provide technical assistance during design development. The Permittee Field Crew will remove brush, as necessary, to facilitate access to key project areas. Pacific Watershed Associates (PWA) will lead the engineering geologic investigations with four staff geologists in support of engineering designs for the Off-Channel Salmonid Habitat Design for Freshwater Creek: Phase Two. PWA will attend the kick-off and scoping meetings, and will be available for one additional Technical Advisory Committee (TAC) stakeholder meeting. In addition, PWA will provide review consultation during the development of the preliminary (35%) and intermediate (65%) design levels. Understanding the site’s geomorphic and geological limitations, including soil and groundwater conditions,

will be essential to designing and developing a successful off-channel rearing habitat restoration project. The proposed engineering geologic investigation includes characterizing the geology and geomorphology, shallow stratigraphic and hydrogeologic conditions, and physical soil characteristics. PWA Staff will investigate substrate suitability for a culvert, type and stratification of subsurface materials, and installation of groundwater monitoring wells.

Materials:

MLA will supply five water level loggers (one to record atmospheric pressure) to the project for a 12 month period, and will purchase miscellaneous materials to construct for housing and mounting for the loggers, including PVC pipes and caps, paracord, eye bolts, t-post, zip ties, staff plates, and lumber. MLA will lease a Trimble robotic total station for use during cross section and longitudinal profile surveys and to mark elevations. PWA will rent coring/sampling equipment and purchase sampling materials to complete the engineering geologic investigations. PWA will also purchase report supplies to present final results. Permittee will also purchase office supplies required for general tasks such as invoicing, printing plans and reporting. Permittee, PWA, and MLA will all require transportation to the site for site investigations and therefore will purchase gas for vehicles. The Permittee Field Crew will use a field truck so they can transport the tools required to clear brush from the site; use of the field truck requires a daily use fee.

Tasks & Deliverables:

Task 1: Project Management and Administration:
Description of Activities: The permittee's Susannah Manning will be taking the lead on project management and administration with assistance from the Permittee Planner. This includes doing the invoicing, quarterly reporting, final reporting, contracting, scheduling, and landowner communications. Permittee staff will be in constant communication with subcontractors and stakeholders throughout the duration of the project. MLA and PWA will prepare invoices and provide progress reports, along with updates to the project schedule and coordinate with other project team members.

Deliverables: Monthly invoices, quarterly reports, final reports, and contracting all in electronic PDF format.
Start Date: 04/01/2021
End Date: 04/30/2023

Task 2.1: Stakeholder Coordination and Meetings: Kickoff Meeting:
Description of Activities: The project will have a minimum of three in-person meetings with the stakeholders, and budgeted for additional coordination meetings with stakeholders, including the landowner.

Meeting 1 - On-site kick-off with stakeholders. The meeting will be used to introduce the project, discuss project goals, objectives, and constraints, and discuss in detail the project surveys and site characterization efforts and how findings from these efforts support the preliminary project design. This meeting is envisioned to take a half-day and occur at the project site.

Deliverables: Meeting summaries (PDF format).
Start Date: 04/01/2021
End Date: 05/15/2021

Task 2.2: Stakeholder Coordination and Meetings: 30% Design Review Meeting:
Description of Activities: Meeting 2 - A 30% design review meeting with project stakeholders. The project team will present the considered options and preliminary design, answer questions, and receive comments and guidance from stakeholders. The meeting will include a presentation of findings and potential options for project layout. It is anticipated this will be a two-hour meeting with potential for a site visit if warranted.

Deliverables: Meeting summaries (PDF format).
Start Date: 04/01/2021
End Date: 05/30/2022

Task 2.3: Stakeholder Coordination and Meetings: 65% Design Review Meeting:
Description of Activities: Meeting 3 - A conference call and/or site visit will be held to discuss comments received on the 65% design drawings and Basis of Design Report. The meeting will also be used to discuss regulatory pathways for securing coverage for CEQA and permits, and for pursuing funding for implementation.

Additional Stakeholder Coordination- Additional meetings with the landowner, Permittee, CDFW, and other potential stakeholders will be held as needed during project development. For budgeting purposes, a total of four, two-hour meetings are assumed.

Deliverables: Meeting summaries (PDF format).
Start Date: 06/15/2022
End Date: 08/31/2022

Task 3.1: Site Characterization: Topographic Survey:
Description of Activities: This task focuses on characterizing the existing site from geologic, geomorphic, hydrologic, water quality, vegetative, and fisheries aspects. It involves various field surveys and mapping, soil sampling, hydrologic and water quality monitoring, and fisheries sampling. The Permittee Field Crew

will remove brush, as necessary, to facilitate access to key project areas. The information gained through these Activities will guide development of the project design and be essential for securing CEQA coverage and permits. As much as practical, the data collected for the recently completed "Phase I" Freshwater Creek Off-Channel Habitat project will be used to inform design of this "Phase II" off-channel habitat project.

Topography and Basemap Preparation (MLA): A project basemap will be prepared by MLA in AutoCAD Civil3D. LiDAR coverage and elevation control will be researched and incorporated into the basemap as applicable. The topographic survey of the new side-channel/pond site will capture the confluence with Freshwater Creek, the topography of Freshwater Creek at least 50-feet upstream and downstream of the confluence, and the adjacent floodplain, including significant trees, observable utilities, and infrastructure. Survey of these areas will be conducted with sufficient detail to produce a basemap with one-foot contour intervals.

A longitudinal and cross-sectional survey will be conducted with assistance from the Permittee Project Ecologist and/or Planner. The Permittee Field Crew will clear vegetation from the site to facilitate completion of the surveys and access to all relevant areas of the project site. This survey will extend from the recently completed Lower Pond outfall culvert, extending upstream, and will support the hydraulic analysis. At least 10 cross sections will be surveyed across Freshwater Creek between the Lower Pond outfall culvert and the upstream end of the meander, upstream the project area. These data will assist in determining the frequency and magnitude of overbank flows and the patterns of floodplain flow returning to Freshwater Creek in the vicinity of the proposed off-channel feature. Installed water level (stage) recording equipment (Task 3) will be surveyed to establish the gage datum.

Other layers will be incorporated into the basemap, including parcel lines and aerial photographs. The basemap will be provided as a PDF and used in subsequent site characterization activities, hydraulic analysis, and project design.

Deliverables: Basemap in PDF format.
Start Date: 06/15/2021
End Date: 10/15/2021

Task 3.2 Site Characterization: Hydrology:
Description of Activities: Water Level Monitoring: Understanding water levels and hydraulic gradients for both surface and groundwater are necessary to develop the project, analyze proposed flow patterns, set planting zones, and evaluate potential risk for the crossing design near the mouth of the proposed off-channel feature. Water level loggers will be installed by MLA at approximately four (4) locations throughout the project area. The installation is planned for summer of

2021 and will be operated for a 12-month period. The downstream most location will be in the mainstem of Freshwater Creek at the confluence of the proposed off-channel feature. The upstream most installation will be at the head of the meander that bounds the floodplain where the project area is located. Two of the loggers will be placed in shallow monitoring wells, near the head and middle of the off-channel feature, installed by PWA as part of their soils investigation. MLA will consult with the Permittee Project Ecologist to ensure water level measurements will also be useful for informing elevations of wetland soils/vegetation within the project area. Data will be downloaded every four to six weeks by Permittee with support from MLA and processed by MLA. All water levels will be referenced to the project vertical datum.

This information will be used to assess degree water levels in Freshwater Creek would influence water levels in the proposed feature, determine if a shallow groundwater gradient would create emerging flow from the head of the off-channel feature, provide data for calibration of the hydraulic model, and to evaluate the frequency and duration that the off-channel feature would be connected to Freshwater Creek during low flows given different design options.

Water Quality Field Measurements: Water quality parameters will be measured in the stream channel and wells at each of the water monitoring locations to assist in evaluating seasonal salmonid habitat suitability for the project. Parameters to be measured include water temperature and dissolved oxygen. Water level loggers will record water temperatures continuously and a hand-held meter will be used to measure water temperatures and dissolved oxygen at each monitoring location when downloading data. The measurements will be made at varying depths in the water column to determine the degree of stratification occurring during different hydrologic conditions. A minimum of 10 samples will be taken at each site between early fall and late spring.

Water Level and Water Quality Data Processing and Interpretation:
Water level data will be converted to the project datum and plotted, with a focus on water surface gradients across the meander and through the proposed off-channel feature. Stage-duration curves will be constructed for each season. All water quality spot measurements and data collected with the loggers will be post-processed and compiled by MLA in tables and plots. They will also be correlated with the water level data and patterns will be characterized for use in project development. The methods and results will be provided in the project Basis of Design Report.

Deliverables: Methods and results will be provided in the Basis of Design Report.
Start Date: 06/15/2021
End Date: 07/31/2021

Task 3.3 Site Characterizations: Geologic Investigations:
Description of Activities: PWA will lead the geologic investigation at the site to identify and characterize underlying floodplain/channel sediments in order to determine if the geologic substrate is suitable for culvert placement. PWA will also install a groundwater monitoring well at the proposed project site. PWA will oversee the investigation type and stratification of subsurface materials. Exact core locations will be determined during a field visit with the project engineer so that the data will best support their requirements.

Background Studies: Where available, LiDAR and historic stereo aerial photographs will be analyzed to characterize the local geomorphology and identify land management modifications that have affected site conditions. These may include road, channel and valley bottom modifications, and land disturbance/construction history and methods. In addition, all available design-related studies, documents and plans will be analyzed prior to finalizing the location of actual sites and sampling areas for surface and subsurface investigations.

Site Geologic Characterization: PWA will conduct a geologic site characterization including local and regional geologic and geomorphic setting, faulting, and seismicity, and estimated peak ground accelerations in the project area. This will include a description of associated geologic risks and potential constraints to the project design alternatives.

Subsurface Characterization and Monitoring Well Installation: To support geologic site characterization and groundwater monitoring efforts, a limited number of hand excavated test pits and/or hand-augured borings will be completed to characterize the in-situ subsurface stratigraphy and existing groundwater conditions along or adjacent to potential preferred off-channel design alignments. Where appropriate, groundwater monitoring wells will be installed in boreholes so that near surface hydrogeologic conditions can be observed and monitored throughout at least one winter period. For the purposes of this study, a minimum of four (4) hand-augured and/or test pit borings will be excavated at strategic locations in coordination with the Project Engineer. In addition, a minimum of two (2) shallow (7-13 ft). British Geological Survey (BGS) monitoring wells will be installed where appropriate and as field conditions dictate.

Evaluation of Soil Conditions: PWA will collect soil samples during the subsurface investigation using either a 2- or 3-inch diameter core-barrel sampler (semi-undisturbed), if appropriate, or grab samples (disturbed) to be used for laboratory analysis. A one-inch diameter gouge core will be utilized where saturated, fine- grained soils inhibit retrieval using standard hand-auguring techniques. A field penetrometer will be driven at various locations to qualitatively evaluate penetration resistance and compressive strength of soil types. Field

penetrometer measurements will be used to estimate soil compressive strength as a supplement to hand auger and gouge core sampling for field-based characterization of soils. Laboratory testing of selected samples will be conducted as necessary to identify soil material engineering properties such as grain size distribution, Atterberg Limits, and moisture density tests for compaction.

Engineering Geologic Technical Memorandum: The background studies, site geologic characterization, subsurface investigation, and soil conditions analysis will be summarized in a brief engineering geologic technical memorandum that includes the methods, findings, constraints and recommendations for design and construction of the proposed project. This will be used by the project engineers to develop technical specifications and identify and address potential project constraints for the proposed designs. The draft engineering geologic report will be submitted to the stakeholders (TAC) and finalized upon addressing written comments received by the group.

Investigation findings and recommendations will include, at a minimum:

1. Review of historical aerial photos, LiDAR data, maps, and studies
2. Geologic and geomorphic setting
3. Soil and sediment boring logs
4. Characterization and interpretation of subsurface stratigraphy
5. Stratified textural classifications of soils using the Unified Soil Classification System
6. Location and descriptions of all soils encountered
7. Soil materials properties and laboratory testing results
8. Interpretation of local, shallow groundwater conditions and soil permeability properties
9. Recommendations for on-site soil reuse and grading for channels, ponds, and planting mounds
10. OSHA soil type determination for trenching and shoring Potential project constraints and geologic hazards
11. Constructability review (equipment access guidance, nuisance water, handling of spoils, etc.) and recommendations.

Deliverables: Results will be provided in the Design Report.
Start Date: 06/15/2021
End Date: 02/28/2022

Task 3.4 Site Characterization: Site Ecology and Wetland Delineation:
Description of Activities: RCAA Ecologist will evaluate the riparian and aquatic ecology of the site for current and potential habitat conditions for the target (coho salmon) and other riparian species. RCAA Ecologist will complete the wetland delineation at the project site. A narrative will be prepared to discuss the

availability and benefits of off-channel habitat in Freshwater Creek and the imperative for the project.

Assessment of current conditions will include description of present micro-ecosystems on-site (including migratory and resident species utilizing project site), the effects of land use on aquatic and riparian habitat, and site limitations for target and other aquatic species. Desired habitat conditions relative to the target species and life stages will be discussed with the context of the site. Installation of an in-channel structure and riparian revegetation will be recommended to achieve desired habitat conditions and incorporated into the final design plans.

Deliverables: Wetland Delineation and Site Ecology report will be in PDF format.
Start Date: 05/01/2021
End Date: 04/30/2022

Task 4: Hydrologic & Hydraulic Analysis:
Description of Activities: The data collected in Task 3 will be used to perform hydraulic and hydrologic analysis to evaluate and select design options for the project site and for design development of the project. The analysis and results will be summarized in the draft and final Basis of Design Report (BODR).

Freshwater Creek Hydrology (MLA): MLA will calculate the contributing drainage area for adjacent Freshwater Creek, and estimate return period flows from 1.1-year to at least 10-year using a minimum of two standard methods. Flows in Freshwater Creek will be used to analyze overbank flooding patterns associated with the various return periods. The methods and results will be provided in the project BODR.

Existing and Design Condition Hydraulic Analysis (MLA): Numerical modeling of the existing hydraulic conditions will be conducted by MLA using a combination of HEC-RAS 1D and 2D (1D for in-channel and 2D for overbank flows). The model will be developed using the DEM from the project basemap. The model focus will be on overbank flood flows from Freshwater Creek, and how they are currently routed across the floodplain and return to the mainstem. Numerous return period flows will be analyzed to determine the frequency and extent of the overbank flooding and flow patterns will be useful for understanding the existing topography and for layout of the proposed project.

For the design conditions, a hydraulic analysis will be conducted to estimate:

1. Water velocities and water surface elevations at the mouth of the off-channel feature,
2. The magnitude and depth of overbank flows at the upstream end of the off- channel feature and across the floodplain from upstream to downstream of the project site, and

3. Headwater depths, head loss, and water velocities through, and over the top of, the proposed culvert and the backwater effects into the off-channel feature associated with overbank flows entering from upstream.

A two-dimensional model will be developed for the project by modifying the existing conditions model for the design condition. Figures of model results will be made in GIS showing flow patterns and inundation extents for review by the stakeholders and for inclusion in the project BODR.

Deliverables: Results will be provided in the BODR.
Start Date: 06/15/2021
End Date: 02/28/2022

Task 5: Preliminary (30%) Design Development:
Description of Activities: Initial findings from site characterization and hydraulic analysis will guide development of potential design options. Consideration will be given to various factors, such as quantity and quality of habitat to be created, geomorphic self- sustainability, risk analysis of a new crossing, and overall project cost.

Scoping Project Layout: As part of the initial project scoping process, MLA will prepare schematic plan maps in GIS and/or CAD of different options for review and input from the landowner. These options will be different configurations/layouts of the off-channel feature and will attempt to balance habitat objectives with landowner needs. These will be included as options considered in the project BODR.

Design Development: Based on the outcome of the scoping, the project will be further developed and refined. Off-channel feature dimensions and profile will be developed, and grading of the proposed design will be developed using AutoCAD Civil3D. Preliminary culvert sizing will be determined at this stage. Elevations establishing various planting zones will be incorporated into the grading-based input from the project ecologist. An iterative approach to design of the project will be used, based on results from the hydraulic analysis.

Proposed Conditions Hydraulic Analysis: A proposed-condition hydraulic model will be prepared by MLA in HEC-RAS 1D and 2D. Various scenarios will be analyzed, including low-flow periods and overbank flooding from Freshwater Creek. Results will be used to refine the project grading, evaluate project impacts, and size a culvert crossing near the mouth of the off-channel feature. A preliminary risk assessment for the culvert crossing will be conducted that evaluates the frequency of overtopping the culvert soffit and fill prism on top of the culvert, the velocities associated with overtopping, flow conditions assuming the culvert becomes plugged, and potential scour associated with these events. This evaluation will identify geomorphic/hydraulic hazards associated with the

crossing and inform the amount of fill-armoring needed and potential maintenance requirements.

Preliminary Design Plans: Preliminary design plans will be prepared by MLA in AutoCAD Civil3D and will include:

1. Cover sheet
2. Existing plan overview
3. Project footprint
4. Channel profile
5. Typical channel sections.

Draft BODR: A BODR will be prepared that provides an overview of the project setting and findings from the site characterization activities along with a description of the options considered, and the proposed project selected for development. The BODR will provide a project description, basis of design decision, and summarize the anticipated performance of the project. The report will include as attachments the various data and analysis prepared as part of the different surveys conducted under the Site Characterization task. The BODR will also include the project plan set as an attachment.

The BODR will be submitted to the Stakeholders for review and comment and will be presented at Meeting No. 3. A minimum of 30 days will be provided for review. Both oral and written comments will be compiled and addressed as part of the 65% design.

Deliverables: 30% Planset (11x17 PDF format) and Draft Basis of Design Report (PDF format).
Start Date: 06/15/2021
End Date: 04/30/2022

Task 6: Intermediate (65%) Design Development:
Description of Activities: Intermediate design development includes developing layout and grading, developing project details and performing additional hydraulic analysis. Comments on the preliminary (30%) design will be addressed and incorporated into the intermediate design development. The project will continue to be refined based on guidance and additional details received by the stakeholders. These details will be added to the plans and may include:

1. Large wood placement location and anchoring details
2. Detailed cross-sections
3. Additional grading details
4. Crossing structure details
5. Construction access and staging locations and BMPs
6. Locations for spoils placement
7. General notes
8. Erosion control and water management typical and notes

9. Developing a revegetation plan.

Prepare Opinion of Probable Construction Cost (OPCC): Areas of impact and quantities will be developed by MLA for the entire project, as presented in the 65% design plans. Based on the developed project, and engineer's opinion of OPCC will be prepared, and will include a 20% contingency given the level of uncertainty associated with project elements yet to be developed, as well as unanticipated conditions during construction and price volatility. Escalation will also be added based on the anticipated year of construction.

Prepare Final BODR: The draft BODR (from Task 5) will be updated based on comments and changes made to the preliminary design submittal.

The 65% design plans along with the OPCC, and BODR will be provided as a submittal to the stakeholders. A 30-day comment period will be provided for submission of written comments. Upon receipt of comments a conference call may be held to discuss comment resolution.

Deliverables: 65% Planset (11x17 PDF format), Final Basis of Design Report (PDF format), Opinion of Probable Construction Cost (PDF format).
Start Date: 05/01/2022
End Date: 07/31/2022

Task 7: Develop Draft-Final (90%) and Final (100%) Engineering Designs:
Description of Activities: Comments received on the 65% design submittal will be addressed by MLA and the engineering designs will be finalized. A draft-final (90%) version of the complete plan set will be prepared for final review.

In preparation of the 90% plan set, a planting plan and planting pallet will be finalized by RCAA. This will involve planting sheets showing location for application of various planting pallets based in part on anticipated seasonal water levels and results of vegetation monitoring at the Phase I sites.

Additions to the plans set are anticipated to include:

1. Site layout geometry tables
2. Grading cross sections
3. Planting overview and details
4. Additional specifications as notes on plans.

It is assumed that comments on the 90% submittal will be minor, and not involve redesign. A 30-day period will be provided for review. As part of the 90% submittal, the OPCC will be updated. This effort may include engaging potential contractors to better assess the most cost-effective means and methods for constructing the project. The OPPC will include a contingency of 15% to account for uncertainty and volatility in the cost of labor and materials. Escalation may

also be included. Once comments are received on the 90% submittal, the plan set will be finalized and signed and sealed by a California registered civil engineer and the OPCC will be finalized as 100% Engineering Designs.

Deliverables: 90% Plan set submittal 11/15/2022 (11x17 PDF format), Final (100%) Plan set Signed and Sealed by CA Registered Civil Engineer 02/28/2023 (11x17 PDF format), Final Opinion of Probable Construction Cost (PDF format).
Start Date: 07/31/2022
End Date: 02/28/2023

Task 8: Project Monitoring Plan:
Description of Activities: To support the pursuit of implementation funds and securing of project permits, a draft project monitoring plan will be prepared. This plan will follow NOAA's and CDFW's monitoring protocols and provide the necessary components required to measure project effectiveness and allow for adaptive management. It is anticipated to include both physical and biological monitoring, including hydrology, water quality, topography, fisheries, and vegetation. A draft of the plan will be circulated among the stakeholders and will be refined and finalized following written feedback. A 30-day comment period will be provided for review of the draft.

Deliverables: Draft Project Monitoring Plan (PDF format) by 01/15/2023, Final Project Monitoring Plan (PDF format) by 03/15/2023.
Start Date: 04/01/2021
End Date: 03/15/2023

Additional Requirements:

The Permitee will not proceed with on the ground implementation until all necessary permits and consultations are secured. Work in flowing streams is restricted per the United States Army Corp of Engineers (USACE) Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the California Department of Fish and Wildlife (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. 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

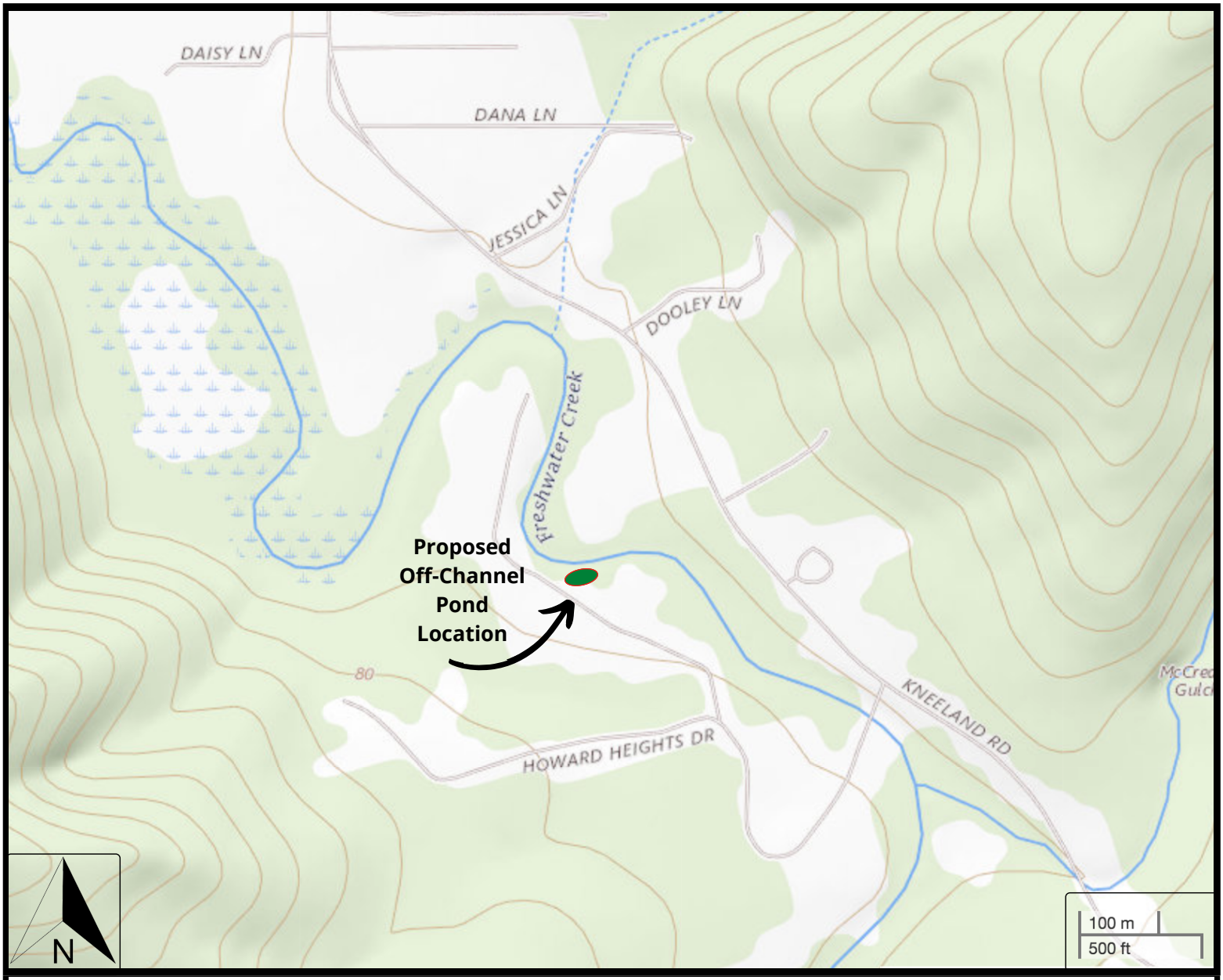
crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the CDFW *Aquatic Invasive Species Decontamination Protocol*.

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.

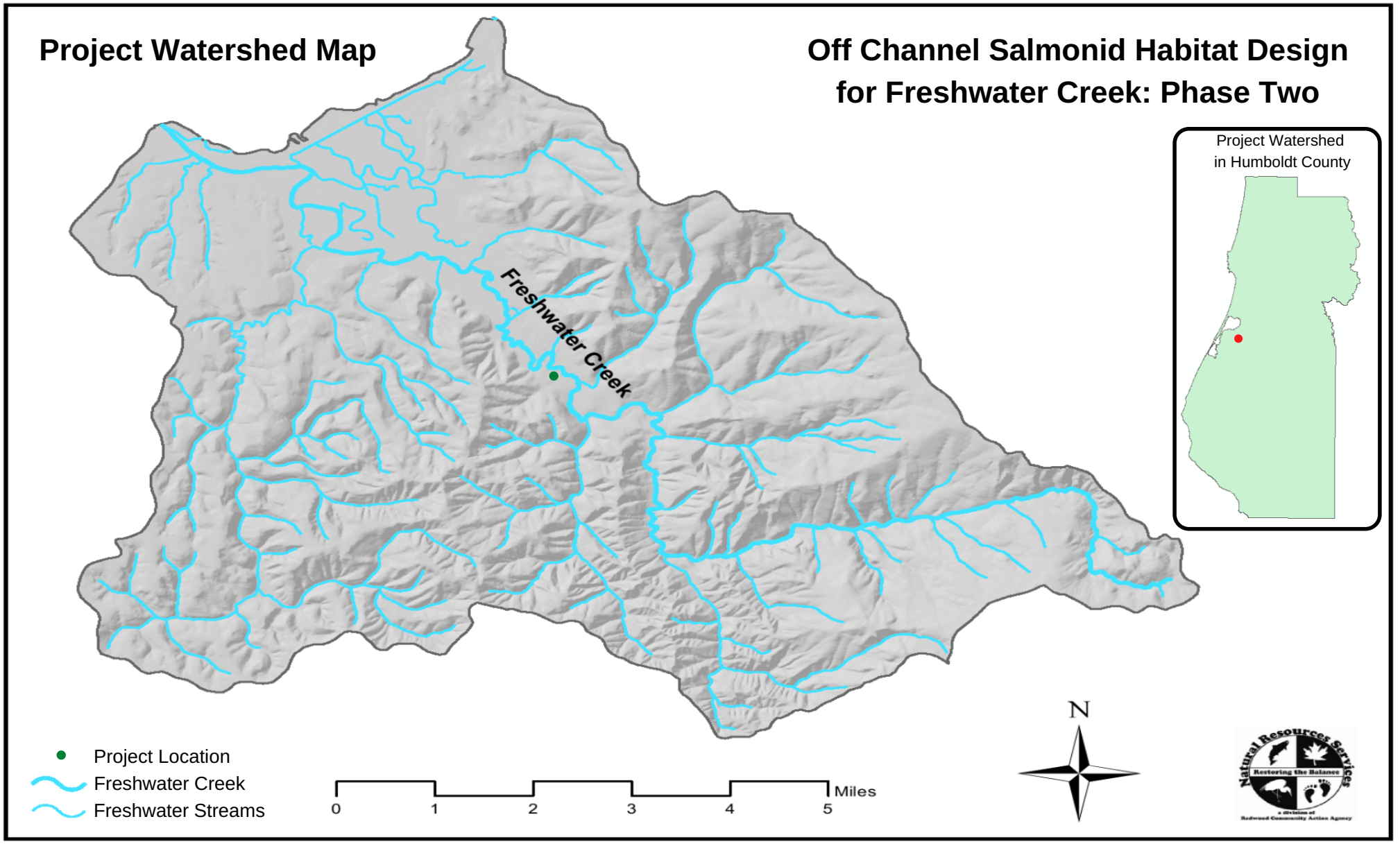
Project Location Topographic Map

Off-Channel Salmonid Habitat Design: Phase Two



Arcata South Quadrangle
United States Geological Survey
7.5 Minute Topographic Map

Watershed (or county) Map



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

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

Possible species within the Arcata South and surrounding quads for 1723401 - Off-Channel Salmonid Habitat Design for Freshwater Creek: Phase Two, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S2	1B.1
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Acipenser medirostris green sturgeon	AFCAA01030	Threatened	None	G3	S1S2	SSC
Anodonta californiensis California floater	IMBIV04020	None	None	G3Q	S2?	
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus albipes white-footed vole	AMAFF23010	None	None	G3G4	S2	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea alba great egret	ABNGA04040	None	None	G5	S4	
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus pycnostachyus var. pycnostachyus coastal marsh milk-vetch	PDFAB0F7B2	None	None	G2T2	S2	1B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Bryoria spiralifera twisted horsehair lichen	NLTEST5460	None	None	G1G2	S1S2	1B.1
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex praticola northern meadow sedge	PMCYP03B20	None	None	G5	S2	2B.2
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Collinsia corymbosa round-headed Chinese-houses	PDSCR0H060	None	None	G1	S1	1B.2
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Egretta thula snowy egret	ABNGA06030	None	None	G5	S4	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Hesperevax sparsiflora var. brevifolia short-leaved evax	PDASTE5011	None	None	G4T3	S3	1B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Lampetra richardsoni western brook lamprey	AFBAA02090	None	None	G4G5	S3S4	SSC
Lasthenia californica ssp. macrantha perennial goldfields	PDAST5L0C5	None	None	G3T2	S2	1B.2
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	Proposed Threatened	Endangered	G5T1	S1	SSC
Mitellastra caulescens leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
Monotropa uniflora ghost-pipe	PDMON03030	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Noccaea fendleri ssp. californica Kneeland Prairie pennycress	PDBRA2P041	Endangered	None	G5?T1	S1	1B.1
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	
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Oncorhynchus mykiss irideus pop. 16 steelhead - northern California DPS	AFCHA0209Q	Threatened	None	G5T2T3Q	S2S3	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G5T1	S1	FP
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2
Silene scouleri ssp. scouleri Scouler's catchfly	PDCAR0U1MC	None	None	G5T4T5	S2S3	2B.2
Spergularia canadensis var. occidentalis western sand-spurrey	PDCAR0W032	None	None	G5T4	S1	2B.1
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Upland Douglas Fir Forest Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2

Record Count: 92

Lower Little River Off-Channel Coho Habitat Improvement Project 2020

Introduction:

The Pacific Coast Fish, Wildlife and Wetlands Restoration Association (PCFWWRA) will implement the Lower Little River Off-Channel Coho Habitat Improvement Project. The Little River supports populations of endangered Coho Salmon. The purpose of the project is to improve habitat in the Lower Little River. Salmonid recovery plans recommend restoring natural tidal channel form and function. Restoring tidal function to Little River will create quality, off-channel rearing habitat for juvenile Coho Salmon.

The Permitee shall not proceed with on the ground implementation until all necessary permits, consultations, and/or Notice to Proceed are secured. All habitat improvement(s) will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Part VII https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objective(s):

The objective of this project is to enhance connectivity to the floodplain by creating off-channel pond(s)/channel(s) which enhance winter high-flow refugia and rearing habitat for coho salmon in the lower Little River estuary.

Project Description:

Location:

The project location is along a portion of the lower 1.6-miles and surrounding floodplain of Little River near McKinleyville, California. The focal area of the project is near where an unnamed tributary enters into Little River from its left bank approximately 0.6-miles upstream from the Highway 101 bridge and 1.3-miles upstream from the Little River/Pacific Ocean confluence. Project coordinates are: 41.012511 North and 124.105103 West.

Project Set Up:

PCFWWRA will provide all contracting oversight and administration including but not limited to obtaining permits; securing contracts (grantors, subcontractors, and landowner); project scheduling; invoicing; report preparation; as well as facilitating agency and landowner communications.

PCFWWRA Personnel Categories - Project Manager (PM): Task 1-5. The Project Manager oversees all aspects of the project. This includes coordination and problem solving with agencies, landowner and subcontractors. Permits, landowner agreements and grant agreements are the Manager's responsibility to make they sure are in place and that they are followed. The PM regularly reviews the progress of the project and completed work with respect to the approved

budget, as well as working regularly with technical consultants to make sure it is being done to the required standards. Evaluating information developed during the project and identifying realistic permitting strategies for implementation will be a task for the Project Manager. The PM will also expend time on tasks for compliance with requirements contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project. The PM is responsible for the review, editing, and submission of all invoices and reporting on projects. The Manager's time is split between the field, meetings and the office.

Plant Ecologist: Tasks 2 & 5. The Plant Ecologist performs botanical work. Tasks include performing a comprehensive floristic survey of the project site, mapping vegetation, inventorying and mapping any sensitive plants or natural communities found, photographing plants and habitats, preparing reports, and providing other supporting materials as needed for permit acquisition. Additionally, the Plant Ecologist will work with PWA staff to delineate wetlands prior to restoration and to monitor wetland response for three years following restoration. The Plant Ecologist's time is split between the field and office.

GIS Specialist: Tasks 2 & 5. The GIS Specialist performs GIS work. Tasks include supporting field collection of botanical data and analyzing geospatial data. The GIS Specialist will prepare vegetation maps, sensitive plants and natural communities maps, wetland maps, and other maps needed for reporting and permitting. The GIS Specialist spends the majority of time in the office but also assists on-site as needed.

Administrative Assistant Manager (AAM): Task 1 & 5. The AAM drafts subcontracts, invoices, permit applications and reports, and works closely with the Project Manager. The AAM assists in tracking the project's budgets and progress. They communicate with partners, perform outreach as needed, and review/verify subcontractor invoicing. The Assistant position also expends time on tasks required for compliance with contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project. The AAM spends the majority of time in the office but also assists on-site as needed.

Bookkeeper/Office Manager: Task 1. Performs various financial bookkeeping, accounting, and administrative work as needed. These include payroll, accounts receivable and payable, financial statements, and maintaining accounting records for individual contracts. Other tasks are to maintainoffice functions, provide communications and perform site visits and support as needed. This position also tracks and completes tasks required for compliance contained in the Agreement's Exhibit 1.b Non-Public Entities General Grant Provisions during the entire project.

Engineering and Geologic Subcontractor (Construction layout/stakeout and technical oversight, construction management, monitoring and reporting) – Pacific Watershed Associates, INC. (PWA), Personnel will support PCFWWRA with heavy equipment contractor selection, project implementation, construction supervision/management and will perform a pre/post-construction monitoring and as-built topographic surveys for the removal of the tide gate & channel reconstruction/restoration activities. In addition, PWA will provide PCFWWRA with assistance in bid document development technical engineering oversight of contractor activities during construction, evaluation and selection of construction materials, and conduct monitoring and summary reporting pursuant to FRGP contract deliverables.

Personnel Categories: Principal Scientist: Tasks 1-5. Provides technical expertise in developing contractor bid documents, implementation activities, draft & final work plan review, editing & professional guidance for project technicians, scientists & engineers.

Senior Engineer: Tasks 1-5. Lead engineer in overall responsible charge of preparation of all construction documents and specifications, construction oversight, site surveys & monitoring/reporting requirements. Ensures compliance with Professional Engineers Act (California Business and Professions Code 7800).

Staff Engineer/Project Manager: Tasks 1-5. Staff engineer in support of preparation of construction documents, construction management, site surveys & monitoring/reporting requirements. In charge of project management as it relates to staffing needs & communication & technical oversight needed to complete each task. Shares Project Manager duties with Staff Geologist.

Staff Geologist/Project Manager: Task 1-5. Licensed geologist in support of preparation of construction documents, construction management, site surveys & monitoring/reporting requirements. In charge of project management as it relates to staffing needs & communication and technical oversight needed to complete each task. Shares Project Manager duties with Staff Engineer. Ensures compliance with Geologist and Geophysicist Act (California Business and Professions Code 7800).

Senior Geologist (Paleontologist): Task 2. Conducts pre-construction paleontological survey for CEQA.

Staff Biologist: Tasks 2, 4 and 5. Conducts botanical inventory to establish floristic baseline for revegetation plan. Sources plant/planting material locally or onsite. Prepare/revise and implement invasive species management plan. Stake out revegetation plan on-ground and oversee planting efforts. Collects and enters

field data into electronic database(s) as necessary. Monitors revegetation efforts annually for up to three years and develops annual status reports.

Staff Fisheries Biologist: Tasks 2, 4 and 5. Conducts pre-construction habitat evaluations, macroinvertebrate identification, eDNA sampling for salmonids and euryhaline species, and water quality sampling. Conducts post-construction monitoring through habitat evaluations and macroinvertebrate identification, eDNA sampling for salmonids and euryhaline species, and water quality sampling. Data collected will be provided in annual status reports and entered into electronic database(s) as necessary. Working in a coordinated effort with Fisheries Biologist Subcontractor for sampling efforts and locations and creating a complete database and comprehensive final evaluation of the biological findings and biological functions of the completed project.GIS/CAD Staff: Tasks 2-5. Provides project support through development of GIS/CAD maps and products, database interfaces, and GPS data organization and analysis. Produces field maps in support of construction, monitoring and required final report maps.Clerical Staff: Task 1. Develops invoice tracking spreadsheet analysis, maintains project cost records, and develops timely invoices pursuit contract obligations.

Archeological CEQA Subcontractor (William Rich and Associates): Task 2. This subcontractor will be responsible for performing sensitive cultural resource surveys prior to construction.

Wildlife Biologist CEQA Subcontractor: Task 2. A qualified biologist will be selected to perform spotted owl, willow flycatcher, &/or any other sensitive bird surveys if necessary prior to construction.

Fisheries Biologist Subcontractor (Ross Taylor & Associates, (RTA)): Task 3-5. Principal Investigator & Field Staff are available to assist construction contractors with fisheries & amphibian relocation services associated with fish passage improvement projects or any streamside projects that require relocation of fish prior to construction and/or dewatering of stream segments. Services include: coordination with state & federal fishery agencies, capture & relocation of fish & amphibians, & completion of required state & federal reporting.

Heavy Equipment & Labor Contractor: Task 4. Implementation. The equipment and labor contractor will construct the project. Additionally, the equipment contractor will maintain temporary fish barriers & flow diversion during construction. Personnel categories include: Excavator, Dozer, Loader, Scraper, Dump Truck, Water Truck & Compactor operators, & Laborers. The Heavy Equipment and Labor Contractor will only be considered for the project if they are a State licensed General Engineering Contractor with demonstrated successful experience on projects of a similar nature. The contractor will be chosen through a rigorous selection process after the grant contract is signed.

Materials:

Materials that are required for project management include vehicle mileage, 1602 permit fee, and supplies. PCFWWRA Supplies may include meeting materials, field supplies, and external professional printer services for design plans and project reports. Materials for implementation also include LWD trees, Rock for ballast, threaded rebar including washers and nuts, trees and plants, seed, straw, waddles, fencing materials, culvert and couplings.

PWA will have vehicle mileage, field supplies, survey materials including lath, nails, flagging, paint and total station, water quality meter and hydrologic meter rental. Small office supplies will be used to complete the project including: photographic supplies, field maps, mylar overlays for field maps, photo duplication for final reports, copying/binding for final reports, report maps, phone, fax, email, handouts for the outreach component, postage, mapping and printing of design drawings.

The project also includes equipment rental fees and material costs related to fish relocation (.e.g. electrofishing gear, seine net, 3in. centrifugal pump, hardware cloth, rebar, t-posts.).

Heavy equipment and labor contractors will require construction and erosion control materials to complete the project. These include LWD trees, rock for ballast, threaded rebar including washers and nuts, trees, plants, seed, straw, waddles, fencing materials, culvert and couplings. These materials may be obtained from the Grantee. They will also need fuel and lubricants for vehicles and equipment.

Tasks:

Task 1 – Meeting and Contract Management:
Project management includes grant management, contracting oversight and administration, scheduling, landowner and agency communication, landowner access agreements, subcontracting, ongoing coordination with the various stakeholders and members of the project design team, preparing invoices and progress reports, tracking project costs and accomplishments and assisting with final report preparation. All reporting and billing will be pursuant to grant and regulatory guidelines. Contract/Project management will be conducted by PCFWWRA. All reporting and billing will be timely and pursuant the contract and regulatory guidelines. PCFWWRA 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 Contract Manager in December of every year during the contract term. PWA will manage subcontractor staff needs, construction implementation, monitoring requirements

and will analyze accrued expenses and submit invoices to PCFWWRA for payment in addition to managing staffing needs during construction.

Task 2 – Permit Development:
PCFWWRA will submit the necessary permit applications including but not limited to: CDFW LSAA 1602, ACOE 404 Permit, SWRCB 401 Certification, Coastal Development Permit/Consistency Determination, NOAA BO, SWRCB Construction General Permit, Humboldt County Grading and Streamside Management Permit. CDFW's FRGP may include programmatic coverage for the LSAA and SWRCB 401 Certification under their Regional General Permit. PCFWWRA will conduct vegetation mapping, special status plant and natural communities' surveys, and assessment of wetland vegetation.

PWA, Archeological CEQA Subcontractor and Wildlife Biologist CEQA Subcontractor will conduct the necessary paleontological, archeological, wildlife, and wetland delineation. This data will be provided to PCFWWRA to incorporate into the necessary permit applications and CEQA submittal requirements.

PCFWWRA, PWA, and the Archeologist and Wildlife Biologist subcontractors will perform all pre-project cultural resource, sensitive plant surveys and wetland delineations prior to construction. The Qualified Wildlife Biologist subcontractor will perform all pre-project sensitive bird surveys, if necessary, for spotted owl, willow flycatcher, and any other species required for environmental compliance. The Paleontologist will perform surveys and evaluate the site significant paleontological resources. For all sensitive resources, the following subtasks will be performed within the designated project area: (a) Identify and document significant occurrences of sensitive species/wetlands/artifacts/fossils. (b) Suggest preliminary significance of these resources. (c) Evaluate potential impacts on these resources resulting from implementation of proposed activities. (d) Present recommendations designed to protect resources and/or identify areas of avoidance. (e) Produce documentation of services and Report of Findings that will be utilized to secure environmental documents and permits required to implement the project.

Task 3 – Heavy Equipment and Labor Selection:
PCFWWRA will select qualified contractors based upon their work experience and qualifications. PWA will assist PCFWWRA with the selecting qualified contractor(s). This task includes attending one telephone conference call meeting where contractor specifications and requirements will be addressed. PCFWWRA and PWA will attend one on-site consultation meeting organized to describe the project to prospective contractors and prepare a response to project-related questions. PWA Project Manager and Principal Scientist will work with PCFWWRA in the evaluation of contractor's experience, equipment and personnel, and selection of the contractor. PCFWWRA will contract with a qualified heavy equipment contractor and coordinate construction of the project.

Task 4 – Construction and Construction Oversight:
4.1 Construction Stakeout: PWA will provide construction layout/stakeout for the project. The stakeout will include establishment of elevation control and placement of stakes to denote the location and stationing of the proposed centerline of the stream channel, ponds, and left/right streambank configurations, LWD structure locations, and removal of the tide gate. In addition, spoil regrading areas will be staked and delineated. Finally, once grading operations are completed revegetation locations will delineated for plant placement. 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. PWA Project Manager and Technical Staff will layout the temporary construction access, define the stockpile locations and establish the limits of disturbance for the contractor utilizing flagging, stakes and/or paint.

4.2 Fish and Amphibian Relocation: Ross Taylor and Associates will conduct all pre-project fish and amphibian relocation activities. These include: a pre-construction site walk; pond draw down; fish and amphibian relocation; and reporting. The Principal Investigator will also be available for calls on an as needed basis during construction.

4.3 Construction: Oversight: PWA Project Manager, Principal, and Technical Staff will coordinate to provide daily construction operations management and oversight to ensure timeliness, completion, and conformance with the Plans and land management goals of the landowner, the project, and to resolve contractual issues. PWA Project Manager and Principal will evaluate and select suitable salvaged backfill material for streambank and floodplain construction, and ensure the materials are compacted to design standards. PWA Project Manager will notify PCFWWRA to order and schedule for delivery required rock and materials. PWA Project Manager and Technical Staff will oversee materials stockpiling and evaluate and maintain the effectiveness of erosion control efforts throughout construction. PWA will perform oversight during the implementation phase to oversee grading operations and large wood structure placement in the restored channel/ponds. During the course of construction, PWA will check the constructed grades of the restored channel and be available to clarify the intent of the design plans, when necessary. The project team will schedule and attend one construction kickoff meeting and weekly construction progress meetings. During those meetings, PCFWWRA and PWA will be available to make recommendations for addressing unforeseen conditions that arise and for make field changes, if necessary.

Implementation: All earthwork, erosion, sediment and water pollution controls, stream dewatering, instream structure construction, and revegetation will conform to the 100% Design Submittal Plans and Special Provisions detailed in the Lower Little River Off-Channel Coho Habitat Improvement Design Project. Any deviations from these Plans and Special Provisions MUST obtain prior

written approval from the PWA Project Engineer and PCFWWRA prior to taking place. It is expected that earthen channel reconstruction, tide gate removal, pond construction, site stabilization and revegetation efforts including temporary access for construction will take several months. Heavy equipment (e.g. excavator, bulldozer, dump truck(s)) and labor are required to complete these tasks; other materials include large woody debris, rock, plants, and erosion control supplies. All project contractors and personnel will adhere to CDFW invasive species prevention and equipment decontamination protocols. When applicable, all heavy equipment, survey and field gear will abide by the protocols outlined by CDFW (see Supplementary Documents). Moreover, all mitigation measures described in the CDFW Regional General Permit will be followed and all other required permit provisions will be followed by the Contractor.

Construction Closeout: Punch list walkthrough: When the project is near substantial complete, PWA, PCFWWRA, the Owner, and Contractor will walk the site and identify any items needing modification or completion. Punch list will be generated identifying any unfinished work.

Final walkthrough: Following substantial completion, PWA, PCFWWRA, the Owner, and the Contractor will walk the site for the final inspection. Recommendations for changes will be made to the Contractor or project will be approved.

The proposed project is designed to be self-maintaining. However, if post-project conditions exceed monitoring thresholds and maintenance may be necessary, PCFWWRA and PWA will attend meetings with the appropriate resource agencies, including CDFW, to determine if a maintenance action is warranted. If action is warranted, PWA will provide construction oversight. PCFWWRA will coordinate all permitting and project coordination.

Task 5 – Pre/Post Construction Monitoring and Reporting:
As-Built Surveys: PWA will prepare as-built drawings using the construction drawings with red-line markups of the construction documents of any changes that occurred during construction. Final elevations of the channel, if they differ from the design drawings, will be noted on the as-built drawings. These will be used for final reporting requirements.

Physical monitoring plan: Physical monitoring of the targeted species and targeted time period of project use will be conducted in the Lower Little River Off-Channel Coho Habitat Improvement Design Project area. The monitoring plan will cover pre-construction conditions and the first and second post-construction seasons. The monitoring plan will be composed of the following components:

Physical habitat evaluations: PWA Fisheries Biologist will conduct a pre-construction habitat inventory of the project area and in Little River following the

methodologies as described in Part II and P art III of the CA Restoration Manual. A post-construction replicate habitat inventory survey will be made to comparatively evaluate the change in habitat. Quantifying the change in habitat suitability will provide meaningful information with respect to addressing the identified limiting factors and useable habitat area for coho species at age. These aquatic structural changes will also be correlated with changes relating to biological differences, in particular coho salmon but also other vertebrates and invertebrate species, and changes in water quality to include salinities.

Photographic monitoring: (PWA) Pre- and post-construction photographs will be taken at established photo point monitoring stations to capture site conditions before, during and after implementation. Photographic monitoring will continue to occur for a minimum of 2 years following construction completion. The intent of the photographic monitoring is to visually evaluate project components including excavated features, hydraulic structures, and revegetation efforts.

Hydraulic monitoring: (PWA) A minimum of 2 pre- and post-construction hydraulic cross sections will be surveyed within the project area. One will be located just upstream (~50ft) from the existing tide gate and one (1) other will be located upstream approximately mid-way up the linear ditch channel. Additional cross section(s) may be included in the monitoring effort as deemed necessary by CDFW or the Project Engineer. Hydraulic cross sections will be monitored for average velocity, surface water elevation and water depth through a variety of average daily exceedance flow events (i.e., 25%, 50% and 75%). Because future hydrologic conditions remain unknown, some flexibility in monitoring events need to be maintained. Hydraulic monitoring will continue to occur for a minimum of 2 years following construction completion. The intent of the hydraulic monitoring effort is to confirm design outcomes of active connectivity of excavated off-channel features and to better understand the timing, extent, and performance of project area hydraulics.

Water quality monitoring: (PWA) Pre-, during- and post-construction water quality monitoring will be conducted within the project area. A monitoring site array will be developed that includes mainstem Little River upstream from the influence of the unnamed tributary channel, the unnamed tributary channel just upstream from the existing tide gate and at least 2 additional locations upstream to the County road crossing at Crannell Road. Additional water quality sampling locations will be established, as necessary, after project construction to evaluate water quality constituents at varying depth and distances from the Little River confluence. Water quality monitoring parameters may include but may not necessarily be limited to, dissolved oxygen, temperature, salinity, turbidity, and pH. Water quality monitoring will be conducted during dewatering activities, quarterly and will continue to occur for a minimum of 2 years following construction completion. The intent of the water quality monitoring is to better understand the water chemistry changes as they relate to project implementation

and to preemptively identify any water quality attributes that may be an area of concern with respect to suitability for the target species and other aquatic vertebrates and invertebrates utilizing the diverse habitats within the project reach.

Biological monitoring plan: Biological monitoring of the targeted species and targeted time period of project use will be conducted in the Lower Little River Off-Channel Coho Habitat Improvement Design Project area. The monitoring plan will cover pre-construction conditions and the first and second post-construction seasons. The monitoring plan will be composed of the following components:

Revegetation: (PWA) Vegetation monitoring will be done to measure the success of revegetation efforts, assess natural recruitment, and to alert managers about anything requiring action (e.g. invasive species that need to be removed or a need for remedial revegetation actions). The goal will be to ensure adequate recovery by native riparian and wetland plant species. The main objectives will be to determine whether 80% cover by native plants has been achieved within three years and to evaluate the effectiveness of revegetation efforts. Tasks will include an annual assessment of the % survival and vigor of planted species; plot-based evaluation of plant species composition and abundance; photographs taken at established photopoint locations; and reporting. Vegetation monitoring will be conducted annually in spring and/or summer for a minimum of three years. Monitoring reports will be submitted annually.

Vegetation monitoring will be designed to provide a cost-effective quantitative means of evaluating whether adequate cover by native plant species has been achieved and whether the level of invasive plants warrants treatment. Parameters to be monitored are: 1) % survival by planted propagules; 2) vertical growth of planted shrubs/trees; 3) overall vigor and signs of herbivory; 4) plant species composition and cover; 5) total cover by native plant species; and 6) total cover by invasive plant species over a three year-period. We will use a combination of sampling techniques. Using geospatial information collected at the time of planting, the location of all planted shrubs/trees will be relocated to determine whether the plant survived, to measure growth, and to evaluate vigor and signs of herbivory. To assess plant species composition and cover, plots will be placed along transects within areas impacted by project implementation. Photographs will be taken at established photopoint locations each year.

Wetlands: (PWA and PCFWWRA) Wetland monitoring will be done to evaluate the response of wetlands to project implementation and to quantify any changes in wetland acreage resulting from project implementation. The goal will be to ensure no net loss to wetland resources. The main objectives will be to determine whether there has been a decline in the total acreage of wetlands and to document conversions from one wetland type to another. Tasks will include measurements of groundwater and/or surface water elevation; an evaluation of

hydrophytic vegetation; photographs taken at established photopoint locations; and reporting, for a minimum of three years. Wetland monitoring will be conducted annually in spring and/or summer for a minimum of three years. Monitoring reports will be submitted annually.

Wetland monitoring will be designed to provide a cost-effective quantitative means of evaluating wetlands following protocols in the Corps of Engineers Wetlands Delineation Manual (ACOE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (WMVC Supplement, ACOE 2010). Additionally, wetlands identified within the project area will be characterized using the Cowardin classification system (Cowardin 1979). Parameters to be monitored are: 1) groundwater and/or surface water elevations; 2) wetland conversions; and 3) changes in wetland acreage over a three year-period. Wetland monitoring will involve sampling of water table elevations using monitoring wells or piezometers; and assessment of hydrophytic vegetation using similar techniques as the pre-implementation wetland delineation.

Fish: (Ross Taylor and Associates) Conduct post-construction mark-recapture population estimates temporally within the newly constructed habitats monthly from December to June for at least two years after the off-channel habitat construction is completed. Spatially the sampling locations will be within the constructed off-channel ponds at identified locations with the depth and complex cover areas designed specifically for coho juveniles. The methods and protocols employed will be consistent with other CDFW mark-recapture studies in the watershed (Wallace et al. 2015; Wallace 2017). Through seining and passive trapping capture coho juveniles will be marked with PIT tag and released (American Fisheries Society 2013); the inlet will be temporarily screened off to prevent escape. 24 hours later, the areas will be re-sampled using the same methods and the temporary screen at the inlet removed; water quality parameters (pH, DO, and temperature) will also be collected for the sampling efforts. The processing and handling of all captured fish will follow methods consistent with CDFW methods (Duffy 2006; Wallace et al. 2015). All captured coho will be scanned with a PIT tag reader to determine the re-capture proportion vs. unmarked coho captured, and this data will be analyzed for population estimates throughout sampling time frame (Johnson et al. 2007). These sampling efforts will be conducted in conjunction with the PWA aquatic biological sampling described below and thus the sampling design will be the same for all data collected with respect to fish, water quality and macroinvertebrates within the constructed off-channel habitat. By designing for coordinated post-treatment spatial and temporal sampling efforts the data will provide meaningful, comparative insights with respect to coho population size for the sampling years and changes, occupancy timing during the sampling time frame, and relative growth over time from the re-captured marked coho.

Aquatic vertebrate composition: (PWA Fisheries Biologist). Biological monitoring for the target species and other salmonids will consist of pre-and post-construction fish utilization and macroinvertebrate community composition for validation monitoring (American Fisheries Society 2013). The sampling plan will consist of a) salmonid and other species presence and their relative abundance will be passively sampled utilizing eDNA water filtration procedural methodologies as developed by Blankenship and Schumer (2017), and b) macroinvertebrate sampling will follow the methodologies as detailed in Barbour et al. (1999) for both lentic and lotic systems within freshwater and euryhaline ecotones. The sampling design for aquatic biota will include locations spatially distributed instream both upstream and downstream of the project area and within the existing pond area (pre-construction) followed by post-construction sampling for a minimum of two years, at these instream sites and sites within the constructed off-channel area distant from the mainstem and at a minimum of two at different water stratum in the pond. All post-construction sampling will be conducted in tandem with the mark-recapture population estimates made by Ross Taylor and Associates (above). The temporal sampling time frame will include seasonal changes with respect to flows and temperature, and diel tidal peaks (low and high), to capture the juvenile lifecycle utilization and will include a minimum of spring, summer/fall, and winter sampling efforts. These sampling locations will be selected in conjunction with the water quality sampling sites and sampling will also be made concurrently.

The sampling design for concurrent sampling for coho and fish, lamprey, macroinvertebrates, and water quality, at the same locations will provide data for comparable analysis and valuable information to a) evaluate the relationship between the restoration activities and biotic responses, b) provide comparable population estimates for juvenile coho for validation, and population information for the other species monitored through eDNA, and c) quantify the before and after changes in distribution and relative abundance of salmonids, lamprey, and other fish species to include the aquatic organisms essential as forage and ecological processes. The methods, results, and a discussion of the final outcomes will be provided within the final report for this proposed project.

Monitoring reports: (PWA and PCFWWRA) Annual monitoring reports will be submitted following each consecutive post-construction season. Post-construction conditions will be evaluated and compared to pre-construction existing conditions. Deficiencies identified in the annual reports will include recommendations to mitigate such conditions.

Final project report: (PWA and PCFWWRA) A final project summary report will be completed near the end of the contract term. The following components will be included in the project summary report:

- Actual performance measures per site, as described in the grant agreement.

- As-built drawings that include feature placement, design changes where applicable, alignment, sizes, and quantity of material added.
- Before and after photos of individual feature locations.
- Pre- and post-project longitudinal profiles and cross-sections where channel grade is restored or otherwise modified by the project.
- The results from the aquatic biological monitoring and evaluations of these data to include ecological implications.

SWPPP Reporting: PWA will file a final Notice of Termination (NOT) with the SWRCB upon completion of construction and final stabilization. In addition, daily, weekly, quarterly and rain event SWPPP inspection reports will be completed as required.

Deliverables:

Task 1 – Deliverables: Any and all progress reports, invoices or other documents that are necessary according to CDFW contracting guidelines. Copies of subcontracts Final Landowner Access Agreement CDFW Notification of Lake or Streambed Alteration Application with a check for the cost of the 1600 Progress Report submitted with each invoice Annual Report(s), November 15.

Task 2 – Final project permits including: CDFW LSAA 1602, ACOE 404 Permit, SWRCB 401 Certification, Coastal Development Permit/Consistency Determination, NOAA BO, SWRCB Construction General Permit, Humboldt County Grading and Streamside Management Permit.

Task 3 – On-site consultation meeting(s) with prospective subcontractors. Heavy Equipment Subcontract.

Task 4 – One construction kickoff meeting and weekly construction progress meetings. Construction of the project including: Site grading, removal of the tide gate, installation of LWD structures, final stabilization, and revegetation.

Task 5 – Post-construction as-built drawings. Monitoring reports. Final project summary report. SWPPP monitoring reports and Notice of Termination.

Timelines:

Task 1 – 3/1/2021 to 4/1/2025
Task 2 – 3/31/2021 to 6/1/2023
Task 3 – 3/31/2021 to 8/31/2023
Task 4 – 6/15/2023 to 10/15/2024
Task 5 – 3/31/2023 to 3/31/2025

Additional Requirements:

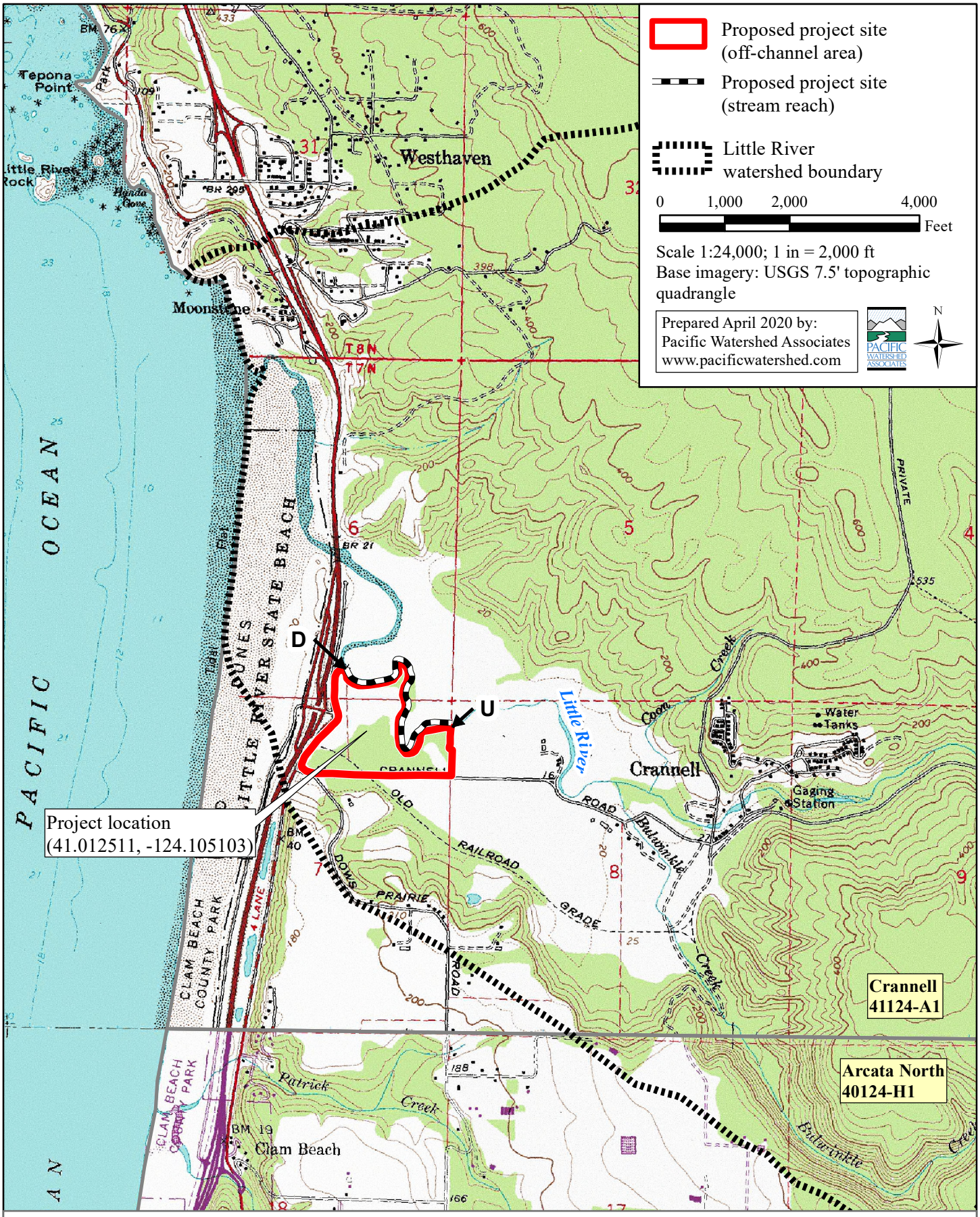
The Grantee will not proceed with on the ground implementation until all necessary permits and consultations are secured and a “notice to proceed” letter has been received from the Grantor Project Manager. Work in flowing streams is restricted per the Army Corp of Engineers Regional General Permit. Actual project start and end dates, within this timeframe, are at the discretion of the 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 when there is a threat of heavy rains which will cause flooding.

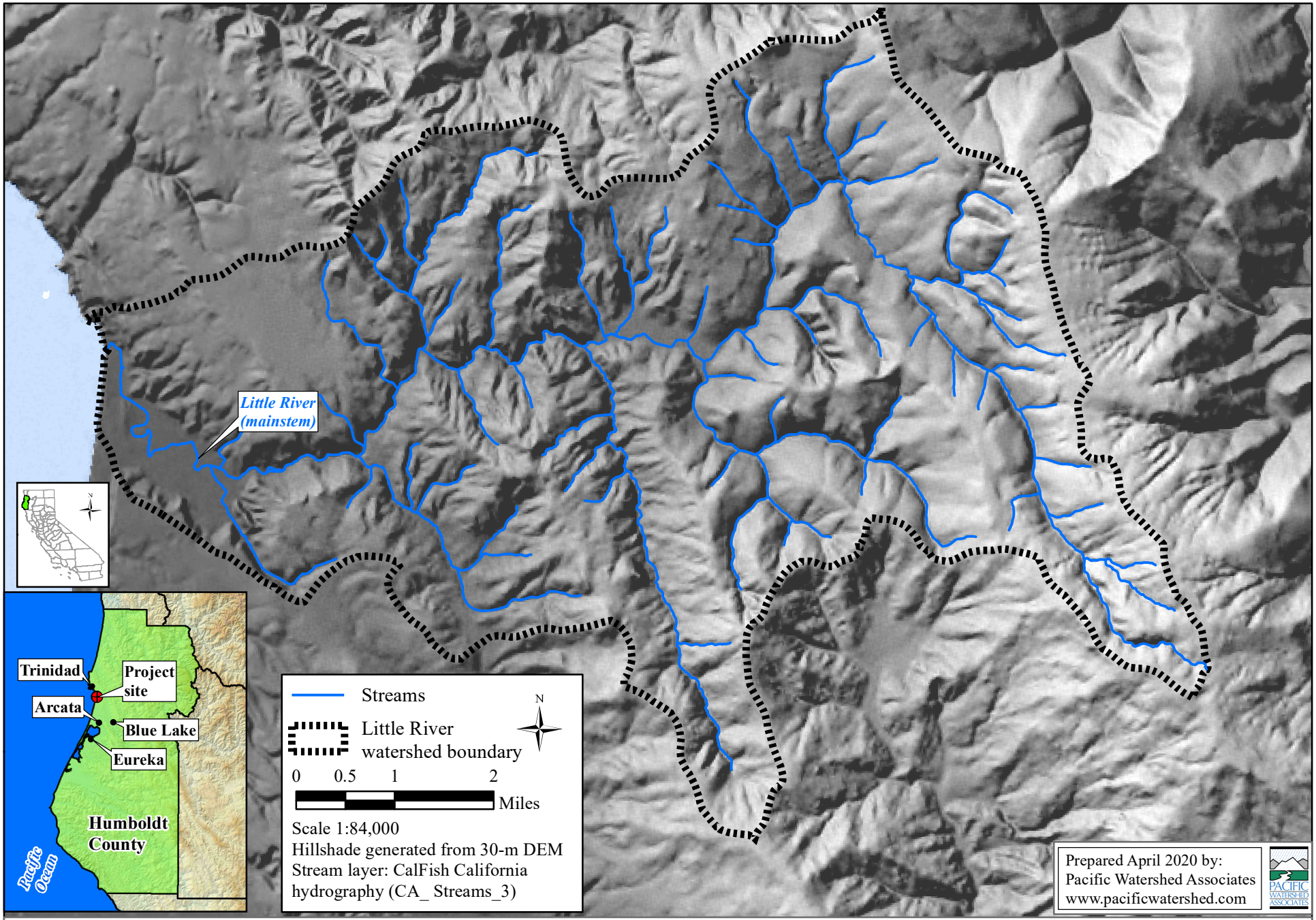
All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). All crew members will decontaminate equipment and shoes for AIS according to the standards detailed in the California Department of Fish & Wildlife *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 Managers. All habitat improvements will follow techniques described in the *California Salmonid Stream Habitat Restoration Manual.*



Map 1. Project Location Topographic Map, Lower Little River Off-Channel Coho Habitat Improvement Design Project, Humboldt County, California (Crannell 7.5' quadrangle; USGS; 2010).
Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association



Map 2. Watershed Map, Lower Little River Off-Channel Coho Habitat Improvement Design Project, Humboldt County, California (Crannell 7.5' quadrangle; USGS; 2010). Grantee: Pacific Coast Fish, Wildlife and Wetlands Restoration Association

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Crannell (4112411) OR Arcata North (4012481) OR Tyee City (4012482) OR Trinidad (4112412) OR Rodgers Peak (4112421) OR Bald Hills (4112328) OR Panther Creek (4112318) OR Blue Lake (4012388))

Possible species within the Crannell and surrounding quads for 1723407 - Lower Little Ricer Off-Channel Coho Habitat Improvement Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia umbellata var. breviflora pink sand-verbena	PDNYC010N4	None	None	G4G5T2	S2	1B.1
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Arborimus albipes white-footed vole	AMAFF23010	None	None	G3G4	S2	SSC
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus umbraticus Bald Mountain milk-vetch	PDFAB0F990	None	None	G4	S2	2B.2
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Bryoria spiralifera twisted horsehair lichen	NLTEST5460	None	None	G1G2	S1S2	1B.1
Cardamine angulata seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Carex lenticularis var. limnophila lagoon sedge	PMCYP037A7	None	None	G5T5	S1	2B.2
Carex leptalea bristle-stalked sedge	PMCYP037E0	None	None	G5	S1	2B.2
Carex lyngbyei Lyngbye's sedge	PMCYP037Y0	None	None	G5	S3	2B.2
Carex saliniformis deceiving sedge	PMCYP03BY0	None	None	G2	S2	1B.2
Carex viridula ssp. viridula green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Castilleja ambigua var. humboldtiensis Humboldt Bay owl's-clover	PDSCR0D402	None	None	G4T2	S2	1B.2
Castilleja litoralis Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
Castilleja mendocinensis Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
Cerorhinca monocerata rhinoceros auklet	ABNNN11010	None	None	G5	S3	WL
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chloropyron maritimum ssp. palustre Point Reyes salty bird's-beak	PDSCR0J0C3	None	None	G4?T2	S2	1B.2
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coptis laciniata Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
Discelium nudum naked flag moss	NBMUS2E010	None	None	G4G5	S1	2B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Empetrum nigrum black crowberry	PDEMP03020	None	None	G5	S1?	2B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Entosphenus tridentatus Pacific lamprey	AFBAA02100	None	None	G4	S4	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron bloomeri var. nudatus Waldo daisy	PDAST3M0M2	None	None	G5T4	S3	2B.3
Erysimum menziesii Menzies' wallflower	PDBRA160R0	Endangered	Endangered	G1	S1	1B.1
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
Eumetopias jubatus Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	
Fissidens pauperculus minute pocket moss	NBMUS2W0U0	None	None	G3?	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Fratercula cirrhata tufted puffin	ABNNN12010	None	None	G5	S1S2	SSC
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Gilia millefoliata dark-eyed gilia	PDPLM04130	None	None	G2	S2	1B.2
Iliamna latibracteata California globe mallow	PDMAL0K040	None	None	G2G3	S2	1B.2
Juncus nevadensis var. inventus Sierra rush	PMJUN011Z5	None	None	G5T3T4	S1	2B.2
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lampetra richardsoni western brook lamprey	AFBAA02090	None	None	G4G5	S3S4	SSC
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lathyrus japonicus seaside pea	PDFAB250C0	None	None	G5	S2	2B.1
Lathyrus palustris marsh pea	PDFAB250P0	None	None	G5	S2	2B.2
Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2	1B.1
Lilium occidentale western lily	PMLIL1A0G0	Endangered	Endangered	G1	S1	1B.1
Lycopodiella inundata inundated bog-clubmoss	PPLYC03060	None	None	G5	S1	2B.2
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Margaritifera falcata western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
Martes caurina humboldtensis Humboldt marten	AMAJF01012	Proposed Threatened	Endangered	G5T1	S1	SSC
Moneses uniflora woodnymph	PDPYR02010	None	None	G5	S2	2B.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
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	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nycticorax nycticorax black-crowned night heron	ABNGA11010	None	None	G5	S4	
Oceanodroma furcata fork-tailed storm-petrel	ABNDC04010	None	None	G5	S1	SSC
Oenothera wolfii Wolf's evening-primrose	PDONA0C1K0	None	None	G2	S1	1B.1
Oncorhynchus clarkii clarkii coast cutthroat trout	AFCHA0208A	None	None	G4T4	S3	SSC
Oncorhynchus kisutch pop. 2 coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Plethodon elongatus Del Norte salamander	AAAAD12050	None	None	G4	S3	WL
Polemonium carneum Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05011	Endangered	Endangered	G5T1	S1	FP
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
Rhyacotriton variegatus southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Romanzoffia tracyi Tracy's romanzoffia	PDHYD0E030	None	None	G4	S2	2B.3
Sidalcea malachroides maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
Sidalcea malviflora ssp. patula Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. eximia coast checkerbloom	PDMAL110K9	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Silene scouleri ssp. scouleri Scouler's catchfly	PDCAR0U1MC	None	None	G5T4T5	S2S3	2B.2
Sitka Spruce Forest Sitka Spruce Forest	CTT82110CA	None	None	G1	S1.1	
Sphagnum Bog Sphagnum Bog	CTT51110CA	None	None	G3	S1.2	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S3	
Trichodon cylindricus cylindrical trichodon	NBMUS7N020	None	None	G4G5	S2	2B.2
Usnea longissima Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
Viola palustris alpine marsh violet	PDVIO041G0	None	None	G5	S1S2	2B.2

Record Count: 90

Bull Creek Hamilton Reach Instream and Floodplain Habitat Restoration Project

2020

Introduction:

California Trout, Inc. (Permittee) will implement Bull Creek Hamilton Reach Instream and Floodplain Habitat Restoration Project. While the watershed currently has diminished but good quality habitat, Bull Creek was rated as containing high potential refugia habitat and there is high potential to provide high quality refugia habitat through implementation of restoration actions. Research indicates that overall fish habitat suitability conditions are improving, and further restoration is needed to accelerate recovery of salmonids. This project will create in-channel and off-channel winter and summer rearing habitat for juvenile salmonids and will enhance floodplain connectivity and riparian vegetation. The project will provide long term benefits to all life stages of salmonids in the Bull Creek watershed, reduce summer water temperature provide conditions for natural physical processes to accelerate habitat recovery including increased floodplain connectivity and lateral channel migration.

The Permittee shall not proceed with on the ground implementation until all necessary permits, consultations, and Notice to Proceed are secured. All habitat improvements will follow techniques in the *California Salmonid Stream Habitat Restoration Manual* (Vol. I, Part VII https://www.wildlife.ca.gov/Grants/FRGP/Guidance).

Objectives:

This project objective is to restore floodplain habitat along the Hamilton Sub-reach of Bull Creek. Design objectives include: (1) remediate legacy effects of sediment aggradation lingering from the catastrophic 1955 and 1964 floods; (2) restore and expand summer in-channel and winter off-channel rearing habitat; (3) increase large wood and wood jams to promote pool habitat creation and sediment sorting; and, (4) promote riparian forest regeneration to alleviate water temperature impairment.

Project Description:

Location:

Bull Creek is tributary to the South Fork Eel River, tributary to the Eel River, located in Humboldt County, California. Project coordinates at the center point or the project reach are 40.3441 north latitude and -124.0244 west longitude. The project is located on the Bull Creek 7.5 Minute U.S. Geological Survey (USGS) Quadrangle map.

Project Set Up:

The Permittee will provide all contracting oversight and administration including, but not limited to, obtaining permits, securing contracts, scheduling, invoicing, reporting, and agency and landowner communications.

Subcontractor California State Park (CSP) staff will oversee the construction management and implementation of the project. CSP will provide (1) assistance and support for development of the construction bid package, solicitation of bid, selection of contractor, and award of contract; (2) collection of source plant materials for seed, cuttings, and container stock, propagation of materials in a nursery until planting; (3) coordination, scheduling, and supervision of all construction activities at the project site, including equipment mobilization, stream dewatering, floodplain grading and hauling of materials to the spoil site, prairie restoration and tree removal and delivery to the project site, installation of engineered log jams in-channel and across the floodplain, final site contouring and installation of erosion control and site stabilization measures; (4) revegetation planning and implementation; and (5) as-built surveys and performance monitoring tasks.

Subcontractor Northern Hydrology and Engineering (NHE) will provide CSP with construction implementation services including (1) assistance and support for development of the construction bid package; (2) pre-construction site layout and staking; (3) construction supervision on building engineered log jams; (4) as-built surveys, and (5) project performance monitoring.

Subcontractor California Conservation Corps (CCC) will assist with collection of native seed and plant materials from the local area. They will also assist with hand planting and irrigation.

Subcontractor CalFire will assist with de-limbing and timber management operations at the Prairie site.

Subcontractor McBain Associates Inc. will provide assistance during vegetation flagging and revegetation efforts.

Subcontractor Construction Contractor will lead the dewatering effort and conduct all heavy equipment implementation work including floodplain grading, hauling of large wood material to the construction site, construction of engineered wood jams (EWJs), excavation of and construction of floodplain channels, off-channel habitat pond complex, alcoves and sediment basin, and erosion control installation.

Materials:

Exclusion Fencing and t-posts will be installed to surround and protect the sensitve vegetation areas on the floodplain. Water Pump and hoses will be installed at the upstream boundary of Hamilton Reach to aid in water diversion and channel dewatering during the in-channel construction work. Boulders will be used in engineered log jams as ballast to anchor large wood in the excavated hole. As much boulder as possible will be salvaged from removal of existing bank

armoring, and re-used for this purpose. Douglas fir logs will be salvagfed from CSP Prairie Restoration in the Cuneo Creek headwaters and used to construct instream habitat structures. Soil and planting containers will be used for plant propagation at CSP native plant nursery.

Tasks:

Task 1. Hamilton Reach Construction CEQA and Permit Compliance:
CSP and Permittee will prepare and submit all necessary permit applications necessary to ensure the project is conducted within local, state, and federal compliance laws and meets all general contracting and insurance standards. CSP will facilitate archaeological and botanical field surveys in collaboration with FRGP partners, will obtain a California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement (LSA or 1600 Agreement), and obtain a County Encroachment Permit from the Public Works Department. CSP will assemble Habitat Mitigation and Monitoring Plans specifying Best Management Practices (BMPs) to be followed by general contractor during the project construction phase.

Finally, CSP will consult with local CDFW staff regarding instream construction and stream dewatering plans, develop guidelines and procedures to protect aquatic habitat and wildlife species. CEQA has already been completed for the Prairie restoration/large wood harvest and CSP will complete a Storm Water Pollution Prevention Plan prior to implementation.

Task 2. Collect and Propagate Plant Materials:
CSP staff with assistance from CCC will be responsible for completion of this task. CSP will identify locations of source plant materials for seed, cuttings, and container stock. Plant materials will be collected from areas in or near the project location and propagated at either Del Norte Coast Redwood State Park native plant nursery or at Humboldt Redwood State Parks' (HRSP) on-site nursery and allowed to grow until they are ready to be planted. Plant collections will follow North Coast Redwood District's (NCRD) Genetic Integrity Guidelines.

To protect migratory nesting birds from impacts, the floodplain vegetation will be removed, using hand tools, outside their nesting period prior to implementation.

Task 3. Hamilton Reach Construction Implementation - Prairie Restoration:
CSP will oversee day to day construction management for quality control and perform compliance monitoring to ensure protection of resources. NHE will provide onsite construction oversight to ensure adherence to contract specifications. CSP will oversee archeological and tribal monitoring throughout construction activities of the project to ensure compliance.

Task 4. Prairie Restoration - Large Wood extraction:
CSP will oversee and conduct most tree harvest/large wood removal operations on the Prairie site. A CalFire crew will assist with harvest operations. Activities include mobilization of all materials and equipment to the Prairie site, including all heavy equipment, water trucks and tanks, portable toilets, generators, maintenance equipment, materials for water management (pumps, hoses, and liners), erosion and sediment control materials, spill containment and fire prevention materials, safety and first-aid supplies. CSP will ensure equipment is clean before entering the work area to prevent the spread of exotic invasive species. Pre-construction project layout will be conducted by CSP. Preconstruction erosion control measures will be installed, as required by permits and BMPs.

Prairie restoration, as a source for instream wood, will begin at the end of Northern Spotted Owl (NSO) breeding season the year prior to floodplain implementation. This source of instream wood is located at the headwaters of Cuneo Creek. Identified trees ranging in size from 24” to 36” diameter at breast height (DBH) will be removed with an excavator with their root wad intact.

Task 5. Floodplain Construction Preparation: Mobilization, Equipment Access, Construction Staking:
CSP and NHE will assist with completion of this task. CSP will provide day-to-day construction oversight and compliance monitoring of construction activities. The construction contractor will begin with vegetation clearing to the extent of grading boundaries and preparation of spoil sites. A large size excavator and bulldozer will likely complete this task. Initial rough excavations will occur in high production where large features exist such as the floodplain connector and the pond complex. NHE will assist CSP to determine the maximum dimensions and prescribed elevations. Dump trucks will end-haul spoil material in succession to the Hamilton Barn spoil sites across the street from the project area, where another bulldozer will spread and compact in lifts according to the site specifications. Initial floodplain grading will allow staging areas to develop for wood storage needed for channel structures. Initial operations will allow for set up and removing bulk floodplain material during the early summer months while stream flows decline, and NSO nesting season ends before instream channel construction begins.

Task 6. Floodplain Grading and Hauling; Import Wood Material:
This task will be completed by a qualified construction contractor. Day-to-day construction oversight will be performed by CSP and the Permittee will provide oversight support. At the Prairie restoration site, a heel boom, or similar type machine will load trees into end dump trucks capable of holding two log stems with root wads attached, or six logs per truck for tree materials without root wads. Tree stems and organic slash will be hauled in succession to the staging area on the floodplain to be offloaded and used in log jams, wood clusters, and

revegetation pits. If necessary, the primary construction contractor will subcontract this element to a logging company for efficiency.

Task 7. Dewatering, Fish Rescue, and Instream Construction:
CSP will lead block-net placement, fish relocation, and rescue with assistance from Permittee. The qualified construction contractor will lead dewatering and instream construction. Dewatering will occur only on a temporary basis at active instream work locations. CSP and Permittee will conduct monitoring during dewatering operations and implement BMPs to minimize impacts to Pacific lamprey. Clean streamflow will be dammed with small coffer dam and pumped around the project area. Turbid water generated within the active work area will be dammed before re-entering downstream and pumped to a temporary infiltration pond. Once dewatering and exclusion protection is in place, the construction contractor will begin in channel work to remove rocks from selected boulder structures and identified rock slope protection area to be reused as ballast in the four wood jams.

Task 8. Install Engineered Wood Jams:
The construction contractor will lead construction of the EWJs. NHE will provide oversight during construction of these structures to oversee adherence to design specifications for this task. Day-to-day assistance will be provided from CSP and Permittee. Each of the four wood jams will be constructed in 12 layers. Receiving holes 35 feet wide by 50 feet long will be excavated below scour depth to bedrock. The base layer will consist of an arrangement of vertical pile logs and 3-foot or greater diameter boulders. Voids will be backfilled with native bed material.

Successive layers will involve careful placement and weaving of wood pieces between vertical pile logs and horizontal key pieces, some with and some without root wads. Lower layers below thalweg will be backfilled with 3-foot or greater diameter boulders. Upper layers will be backfilled with native bed material and small woody debris for racking material. Bed material will backfill around the structures except at strategically placed scour hole locations. The EWJs are designed with a high degree of stability and are expected to withstand a 100-year flood following construction.

Task 9. Excavate Floodplain Channels, Swales, and Connector Channels:
The construction contractor will lead excavation and construction of floodplain channels, swales and connector channels outlined in the 100% designs. CSP will provide day-to-day oversight with general oversight support from Permittee. Detailed floodplain work may begin after instream work is finished. Floodplain lowering and connector channel will be excavated to design plan specifications. Clumps of established alder trees lining the main channel will remain in place, but additional high flow connections to the floodplain channel will be excavated between save vegetation areas. Spoil material will be hauled off with dump trucks

to the spoil location across the Mattole Road. Strategically placed wood clusters and revegetation pits/trenches will be installed at identified locations before heavy equipment access is cut off. CSP will conduct equipment operations at the spoils site as excavated material is delivered from the floodplain restoration site.

Task 10. Excavate Off-Channel Pond Complex, Alcoves, and Sediment Basin:
The construction contractor will lead excavation and construction of all off-channel habitat features following 100% designs. CSP will provide day-to-day oversight with general oversight support from Permittee. The pond complex is the final earthmoving task for the floodplain. This area of the project site will initially serve as staging area for wood storage during early phases of construction. The rough-in dimensions will be fine-tuned to the engineering plan depths and cross-sectional profiles. Connecter channels and the sediment basin area will be contoured, and the tributary will be realigned away from the Mattole Road toward a backwater alcove to reconnect the floodplain channel with the main channel. Wood clusters for habitat and cover will be installed in the pond where prescribed as access is eliminated. CSP will conduct equipment operations at the spoils site as excavated material is delivered from the floodplain restoration site.

Task 11. Demobilization, Erosion Control, and Re-watering:
The construction contractor will lead demobilization of the site, install erosion control, and re-watering of the channel. CSP, with assistance from NHE, will supervise final project site stabilization, installation of erosion control, and re-watering of stream channels (as needed), including at the Hamilton Floodplain project site and the spoils site. Re-watering of the main channel will take place immediately after instream work is completed when construction equipment moves onto floodplain to finish grading operations.

Task 12. Revegetation:
CSP will lead the revegetation construction and plant installation with general oversight from Permittee. McBain Associates Inc. will provide assistance during save-vegetation flagging and revegetation efforts. CCC crews will assist with revegetation and planting efforts. CSP will supervise vegetation management and revegetation during and after the construction phase. Revegetation of the project site will be accomplished by three general methods: 1) preserving desirable vegetation during construction as save-vegetation areas, 2) excavating revegetation cluster pits/trenches down to groundwater during construction, inserting willow or cottonwood cutting poles and woody debris to wick moisture toward the surface, and backfilling with organic material and finer grained alluvium, and 3) active replanting of native vegetation stock and casting seed at the appropriate season after construction is completed. Save-Vegetation will be mapped prior to construction, demarcated in the field during project staking, and reviewed with construction managers to ensure the plant protection. The save-tree areas increase the complexity of the floodplain and create lower velocity

zones on the downstream side during high flows. Planting clusters and trenches are designed throughout the graded area. Seven different configurations of planting clusters or trenches are designed. Both clusters and trenches require excavation of floodplain material and placement of woody debris that extends from the base of the hole/trench to the surface. This woody debris acts to wick moisture toward the surface. Gravel and cobble particles larger than 3-inches will be removed from the excavated floodplain material. Finer-grained sand and gravel (less than 2mm) will be stockpiled for re-use to backfill the planting trenches. Sand and gravel are mixed 50/50 with organics (wood chips and leaves to hold moisture) and replaced in the trench with willow or cottonwood cuttings. Revegetation with container stock and seed will follow planting designs where cluster pits were excavated during construction and will occur during late winter/early spring to ensure the best ground moisture conditions for survivorship. Four distinct revegetation zones, or types of planting clusters, will create a mosaic of vegetation patches that are appropriate to the geomorphic surfaces available across the floodplain.

Approximately 24 native plant species are currently in the vegetation design for use in Bull Creek. A seed mix (six species) will be broadcast over the planted and disturbed areas after construction and installation of individual bare root and container stock plants. Willow and cottonwood pole cuttings will have already been installed during construction into pits/trenches that were excavated to groundwater level. Non-permeable weed mats and tree protectors may be installed after revegetation is complete, to protect plant materials. Irrigation will be implemented as needed to aid in plant survival during the first three growing seasons.

Task 13. Conduct As-Built Surveys and Geomorphic Surveys:
NHE, assisted by CSP, will conduct post-construction as-built surveys. Final site photos will be collected during this time. Survey will include the channel thalweg through the entire project reach, at least 10 survey cross sections (partially re-using existing longer term cross sections in the reach) re-or newly monumented for long-term monitoring, and 2-dimensional topographic surveys of re-contoured areas of the floodplain to document volume and area changes resulting from construction. As-built surveys will include surface sediment composition mapping, quantifying the D50 particle sizes of each sediment facies to establish baseline sediment conditions. Post-construction surveys will be conducted during and after the first fall/winter to evaluate instream and floodplain hydraulic conditions and responses to one winter high flow regime. During winter flows (~50-80% 2-year exceedance flows), riffle crest thalweg and pool depths, water depths and velocities associated with constructed habitat features, reference cross sections, and off-channel ponds will be surveyed. Following winter flows, thalweg and cross section surveys will be repeated, and sediment scour and deposition will be re-mapped.

Deliverables:

Task 1: Completed permit package covering all operations.
Task 2: Plantings prepared to re-vegetate construction areas.
Task 3, Task 4, Task 5, and Task 6: State Park report on Prairie Restoration Activities.
Task 7: Biological report detailing dewatering activities.
Task 8: Installed Wood Jam Features.
Task 9: Floodplain designed according to plans.
Task 10: Construction of all off-channel habitat features outlined in the 100% designs.
Task 11: None.
Task 12: Re-vegetation operations will be documented in as-built surveys and re-vegetation monitoring report.
Task 13: As built and performance monitoring conducted pre- and post-construction according to Monitoring Plan.

Timelines:

Task 1: April 15, 2021 through April 30, 2022
Task 2: June 1, 2021 through October 31, 2022
Task 3, Task 4, Task 5, and Task 6: May 1, 2021 through July 31, 2022
Task 7: June 15, 2022 through September 30, 2022
Task 8: August 1, 2022 through October 31, 2022.
Task 9: June 1, 2022 through October 31, 2022.
Task 10: June 1, 2022 through October 31, 2022.
Task 11: April 1, 2021 through April 1, 2022
Task 12: April 1, 2021 through April 1, 2022
Task 13: September 1, 2022 through December 31, 2022

Additional Requirements:

The Permittee 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 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. 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 CDFW *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 Permitee shall notify the CDFW a minimum of five working days before the project site is dewatered 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 fish life from the project area. If the project requires dewatering of the site, and the relocation of salmonids, the Permittee 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*.

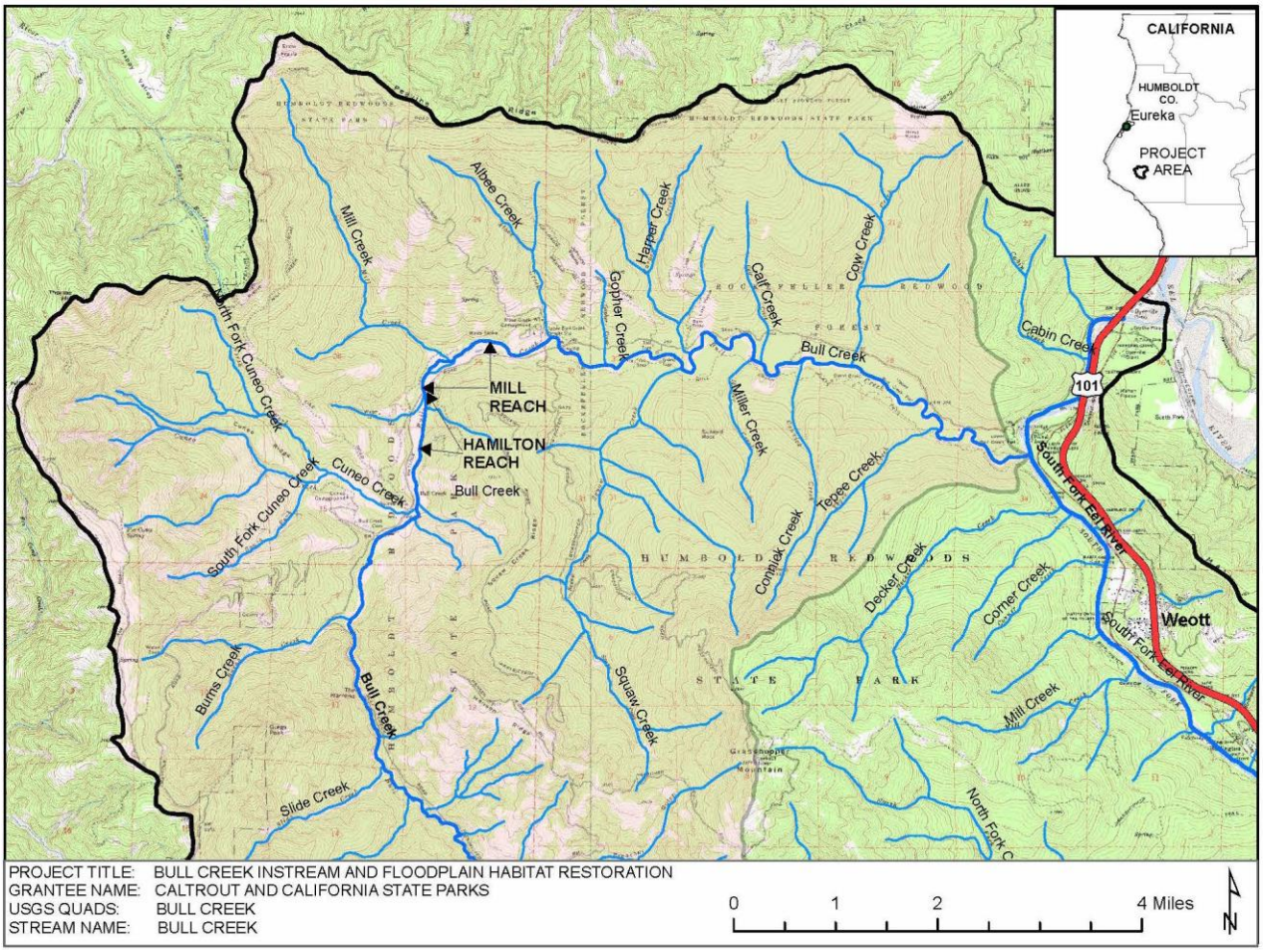
c. The Permittee shall minimize the amount of wetted stream channel dewatered at each individual project site to the fullest extent possible as approved by the CDFW personnel and pursuant to conditions in the United State Army Corp of Engineers (USACE) Regional General Permit and National Marine Fisheries Service (NMFS) Biological Opinion.

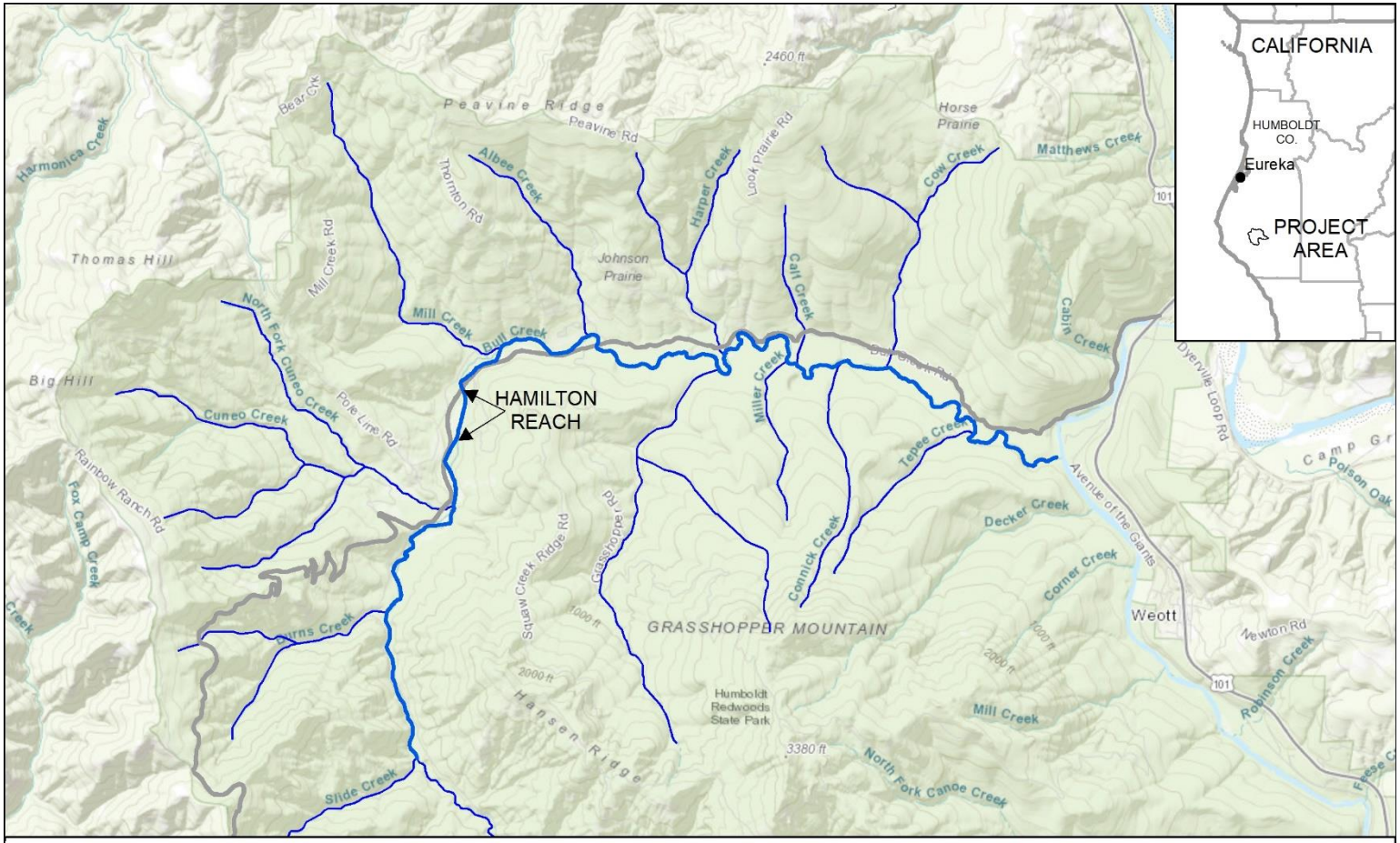
d. All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service, Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act, June 2000.

e. U.S. Fish and Wildlife Service (USFWS) Approved fisheries biologists will provide fish relocation data via the Permittee to the CDFW personnel on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Permitee and the CDFW Personnel.

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
HUMBOLDT CO.
Eureka
PROJECT AREA
MILL REACH
HAMILTON REACH
Bull Creek
Albee Creek
Mill Creek
Harper Creek
Gopher Creek
Carr Creek
Cow Creek
Cabin Creek
Miller Creek
Tepee Creek
Conklek Creek
Decker Creek
Comer Creek
South Fork Eel River
Weott
North Fork Cuneo Creek
South Fork Cuneo Creek
Cuneo Creek
Burns Creek
Slide Creek
Squaw Creek
101
PROJECT TITLE: BULL CREEK INSTREAM AND FLOODPLAIN HABITAT RESTORATION
GRANTEE NAME: CALTROUT AND CALIFORNIA STATE PARKS
USGS QUADS: BULL CREEK
STREAM NAME: BULL CREEK
0 1 2 4 Miles
N



Location of the Bull Creek project and the Hamilton sub-reach, within Humboldt Redwoods State Park, Humboldt County, CA.

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Weott (4012338) OR Ettersburg (4012328) OR Honeydew (4012421) OR Bull Creek (4012431) OR Scotia (4012441) OR Redcrest (4012348) OR Bridgeville (4012347) OR Myers Flat (4012337) OR Miranda (4012327))

Possible species within the Weott and surrounding quads for 1723439 - Bull Creek Hamilton Reach Instream and Floodplain Habitat Restoration Project, Humboldt County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Aplodontia rufa humboldtiana Humboldt mountain beaver	AMAFA01017	None	None	G5TNR	SNR	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arborimus pomo Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
Ascaphus truei Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
Astragalus agnicidus Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
Brachyramphus marmoratus marbled murrelet	ABNNN06010	Threatened	Endangered	G3G4	S1	
Calamagrostis foliosa leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
Carex arcta northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Empidonax traillii brewsteri little willow flycatcher	ABPAE33041	None	Endangered	G5T3T4	S1S2	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erythronium oregonum giant fawn lily	PMLIL0U0C0	None	None	G4G5	S2	2B.2
Erythronium revolutum coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Gilia capitata ssp. pacifica Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
Helminthoglypta arrosa monticola mountain shoulderband	IMGASC2035	None	None	G2G3T1	S1	
Kopsiopsis hookeri small groundcone	PDORO01010	None	None	G4?	S1S2	2B.3
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC
Lycopodium clavatum running-pine	PPLYC01080	None	None	G5	S3	4.1
Martes caurina humboldtensis Humboldt marten	AMAJF01012	Proposed Threatened	Endangered	G5T1	S1	SSC
Meesia triquetra three-ranked hump moss	NBMUS4L020	None	None	G5	S4	4.2
Montia howellii Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
Myotis evotis long-eared myotis	AMACC01070	None	None	G5	S3	
Myotis volans long-legged myotis	AMACC01110	None	None	G5	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
North Central Coast Summer Steelhead Stream North Central Coast Summer Steelhead Stream	CARA2634CA	None	None	GNR	SNR	
Noyo intersessa Ten Mile shoulderband	IMGASC5070	None	None	G2	S2	
Oncorhynchus mykiss irideus pop. 36 summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
Oncorhynchus tshawytscha pop. 17 chinook salmon - California coastal ESU	AFCHA0205S	Threatened	None	G5	S1	
Packera bolanderi var. bolanderi seacoast ragwort	PDAST8H0H1	None	None	G4T4	S2S3	2B.2
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Pekania pennanti fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
Piperia candida white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
Rana aurora northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
Rana boylii foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC

Selected Elements by Scientific 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
Rhyacotriton variegatus	AAAAJ01020	None	None	G3G4	S2S3	SSC
southern torrent salamander						
Riparia riparia	ABPAU08010	None	Threatened	G5	S2	
bank swallow						
Sidalcea malachroides	PDMAL110E0	None	None	G3	S3	4.2
maple-leaved checkerbloom						
Sidalcea malviflora ssp. patula	PDMAL110F9	None	None	G5T2	S2	1B.2
Siskiyou checkerbloom						
Taricha rivularis	AAAAF02020	None	None	G4	S2	SSC
red-bellied newt						
Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
Upland Douglas Fir Forest						
Usnea longissima	NLLEC5P420	None	None	G4	S4	4.2
Methuselah's beard lichen						

Record Count: 47