

Bear Creek Instream Habitat Enhancement Project

2020

Introduction:

Trout Unlimited, Inc. (TU) will install 50 large woody debris (LWD) structures, containing 189 key pieces of LWD along 1.9-miles of Bear Creek. Of the proposed 50 features, 19 will be installed utilizing accelerated recruitment (direct falling) and 31 will use heavy equipment installation techniques. Large wood restoration in Bear Creek is a recommended restoration action in the CDFW Stream Inventory Report (1995) and in state and federal salmonid recovery plans (NMFS Coastal Multispecies Plan 2016, NMFS CCC Coho Recovery Plan 2012). The existing quantity of key LWD pieces currently in Bear Creek is 133 pieces/mile with many key pieces located in a few large debris accumulations (LDA's) that are not well distributed throughout the basin. By this project adding 189 pieces of LWD to the proposed reach, the overall density of key pieces in Bear Creek will increase to 233 pieces/mile, or ~14.5 pieces/100 meters, resulting in a "Very Good" target rating according to the NFMS Coastal Multispecies Recovery Plan (11+ key pieces per 100m).

TU 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 is to install 189 key pieces of wood at 50 locations in 1.9-miles of Bear Creek. This project will increase stream habitat complexity, pool frequency, pool depth, high-flow refugia, and over-summer rearing habitat for salmonids in an important tributary in the Usal Creek watershed.

Project Description:

Location:

The Bear Creek Watershed is located west of Leggett, CA in the Usal Creek Watershed. Bear Creek intersects the North Fork (NF) of Usal Creek approximately 3.5-miles upstream of its confluence with the Pacific Ocean. The project reach begins near the confluence with NF Usal Creek and extends upstream approximately 1.9-miles. The project is located in the Hales Grove and Piercy 7.5 Minute U.S. Geological Survey Quadrangle maps. Project coordinates are: 39.8757° north latitude, -123.8377° west longitude at the center of the project work reach on mainstem Bear Creek.

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Project Set Up:

The TU Project Manager will provide all grant and contract oversight and administration tasks including but not limited to obtaining permits, securing contracts (e.g. Premitees, subcontractors, landowner, etc.), scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. All reporting and billing will be pursuant to the grant and regulatory guidelines. Upon final execution of the grant and prior to receiving a Final Notice to Proceed, deliver the landowner access agreement, subcontracts, and assure all permits are finalized. This task will occur throughout the life of the project.

- TU Project Coordinator will assist with processing invoices, financial tracking, and reporting.
- TU Project Coordinators, will assist in processing general grant management and reporting.
- TU's California Director will be the authorized agent to sign the agreement.
- Pacific Watershed Associates (PWA) Associate Scientist and Principal Geologist will lead the construction of features.
- PWA Project Scientists and Staff Scientists will provide project layout and construction oversight.
- The PWA Associate Scientist and Project Scientist will manage project layout, construction oversight, monitoring, and reporting.
- PWA Staff Scientists will conduct surveys, complete layout, provide construction oversight, and complete monitoring work pre-, during-, and post-project and any data entry.
- PWA GIS staff will provide field layout maps, digitize layout and as-built project data, and develop report maps.
- PWA Natural Resource Specialists will identify and provide avoidance measures for wetlands, survey for and develop plans to protect fish and amphibians at the spittler crossing, and monitor water quality during excavation of live streams.
- 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.
- PWA Associate Scientist and PWA Project Scientist with assistance and oversight from the assigned TU Project Manager will conduct annual and final reporting of the project.
- Wylatti Resource Management will be the heavy equipment contractor for the project providing all heavy equipment for the project including Excavator, Dozer, Low Boy, Pilot Car, Sawyer (Tree Faller), Laborer for erosion control and feature anchoring, and truck and trailer.
- Woodbenders Revegetation will conduct revegetation.

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- The Redwood Forest Foundation, Inc. (RFFI) Botanist will lead a botanical resource assessment of the project area.
- The William Rich and Associates (WRA) Principal Investigator and Research Associate will conduct the required archaeological surveys to meet the requirements of CEQA.

Materials:

- Approximately 150 trees will be planted by Woodbenders Revegetation.
- Approximately 189 pieces of in-kind large woody material (LWM) will be installed.
- Approximately 28 bales of straw mulch and Approximately 6 pounds of native seed will be used.
- PWA will procure anchoring materials such as rebar, nuts, and plates for anchoring log features.

Tasks:

Task 1 - Grant Administration and Project Management:

Trout Unlimited will provide all contracting oversight and administration as pursuant to grant and regulatory guidelines. This includes, but is not limited to, obtaining permits, securing contracts, scheduling, implementation oversight, invoicing, reporting, and agency and landowner communications. Upon Final execution of the Grant and prior to receiving a Final Notice to Proceed, TU personnel will deliver the landowner access agreements, subcontracts, and assure all permits are finalized. Additionally, the TU Project Coordinator will be available to assist with invoicing and financial tracking. This task will occur throughout the life of the project.

Task 2 - Environmental Compliance and CEQA Surveys:

Pacific Watershed and Associates (PWA) will coordinate with TU, CDFW, and RFFI to conduct the appropriate surveys for special status species, cultural resources, botanical resources, and paleontological resources. TU will prepare and submit the CDFW LSAA 1600 application and permit fee for authorization. PWA NR Specialists will identify and flag equipment exclusion zones at any potential wetland location, as necessary. The results of these surveys and any required actions will be included in draft technical memos and delivered to the CDFW project manager prior to start of implementation. Interim reports will be submitted to the CDFW Project Manager with the 1600 LSAA application, and final CEQA reports will be provided to the CDFW as necessary prior to grant expiration.

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Task 3 - Pre-Implementation Project Layout and Surveys:

Following approval by CDFW of site-specific design plans, PWA will flag heavy equipment access routes, construction boundaries, equipment exclusion areas and LWM staging areas. Final layout will be guided by the results of CEQA and biotic surveys as needed. Final project layout will be subject to the approval of the CDFW Grant Manager. PWA will also document the existing conditions at the proposed feature locations and setup 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 FLAR focus.

Task 4 - Project Construction:

Most of the features will be constructed with heavy equipment but in some locations, features may be constructed via directional falling of streamside trees by the Wylatti professional sawyer (tree faller). In general, excavator and bulldozer operators from Wylatti will create access routes to the proposed LWM features and construct said features. The features will be constructed with an excavator with a log tong attachment. To conduct the install, the excavator and bulldozer will create access to the streamside areas 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 weave it through the existing riparian forest with the intention of providing naturalized anchoring for the features. In locations where equipment access is limiting, trees will be incorporated into the creek by direct falling. 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 the spider jams porosity and more closely mimic naturally developed wood features. Once the primary architecture 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 Wylatti with direct oversight from PWA, as necessary. Possible anchor locations have been provided in the feature sketches included with the supplemental information of this proposal. Following final approval of installed features by the CDFW Project Manager, the excavator and dozer will winterize each feature access point by decompacting the disturbed ground surface and mulching all bare areas with native wood slash and/or straw. Native seed will be distributed in the bare areas to provide short to medium term erosion control. Trees (*Sequoia sempervirens*) will also be planted in disturbed areas as required.

Task 5 - Post-Implementation Surveys and Revegetation:

Post-construction monitoring, including photographic monitoring, and documentation of as-built conditions, will be performed by PWA consistent with the CDFW guidelines and as required by the FLAR focus. As-built drawings will include structure placement and alignment, representative cross sections, and

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longitudinal profiles on a subset of the features, and the size, type, and quantity of installed materials. Some sites may require tree planting for erosion control following equipment use. Woodbenders planting staff will complete planting activities in the winter following construction as soon as conditions allow.

Task 6 – Reporting:

TU and PWA will develop project reports (annual and a final project report), based on CDFW requirements, that documents work completed and the total costs to implement the project. Progress reports will be supplied to the Grant Manager for review in approval with reimbursement requests (no more frequently than monthly), Annual Reports will be submitted annually by December 1, 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, (10) GIS generated maps and shapefiles of the project area, and (11) monitoring checklists, databases, spreadsheets and any other data products produced during the grant term.

Deliverables:

Task 1 - Grant Administration and Project Management:

Project deliverables will be delivered to the CDFW Project Manager and includes the Final Landowner Access Agreements; Notification and payment of LSAA/1600 Agreement Application; Progress Reports submitted with invoices, annual Reports, and Final Report as well as any other documents pursuant to Grant requirements during the life of the project.

Task 2 - Environmental Compliance and CEQA Surveys:

Interim cultural resource, botanical, biological, and paleontological reports; final cultural resource, botanical, and paleontological reports as required; Preparation and payment of CDFW LSAA/1600 Agreement Application.

Task 3 - Pre-Implementation Project Layout and Surveys:

Flagged staging areas and equipment exclusion zones; Final layout and design of LWM features and access routes; Documentation of pre-construction existing conditions for all LWM features.

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Task 4 - Project Construction:

Installation of 50 LWD jams over a 1.9-mile stream reach, containing approximately 189 key pieces of wood.

Task 5 - Post-Implementation Surveys and Revegetation:

Actual performance measures by site, as-built drawings, before and after photographs, representative post-project longitudinal profiles and cross sections for a subset of the constructed features.

Task 6. Reporting:

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 - Grant Administration and Project Management. March 1, 2021 to February 28, 2023.

Task 2 - Environmental Compliance and CEQA Surveys. April 15, 2021 to August 1, 2022.

Task 3 - Pre-Implementation Project Layout and Surveys. June 15, 2021 to July 1, 2022.

Task 4 - Project Construction. June 15, 2021 to October 31, 2022.

Task 5 - Post-Implementation Surveys and Revegetation. July 30, 2021 to February 15, 2023.

Task 6 – Reporting. June 15, 2021 to February 28, 2023.

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 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.

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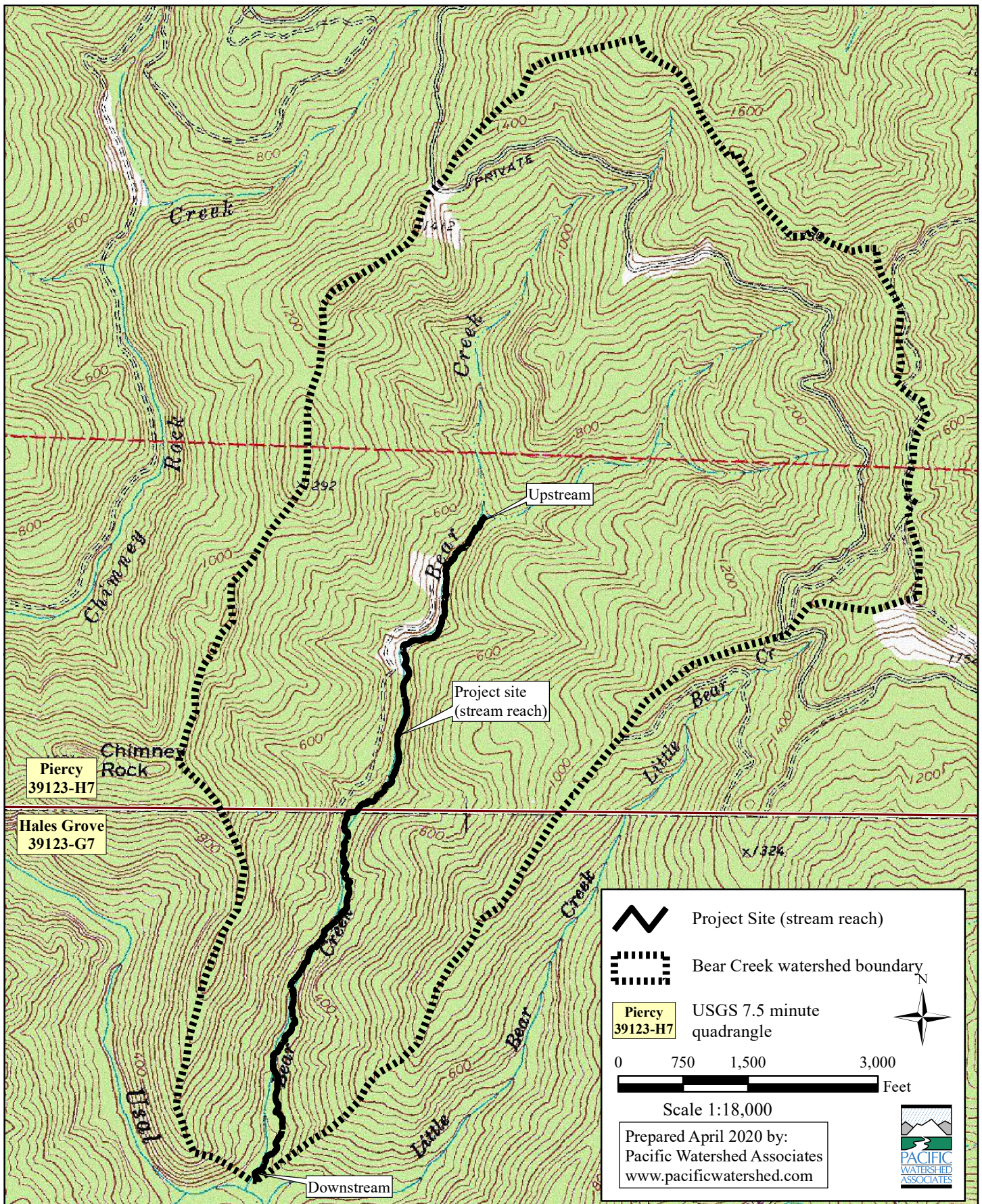
All equipment and gear will be brushed with a stiff brush prior to leaving each stretch of stream to avoid the transport of aquatic invasive species (AIS). When transporting traps out of the area, each numbered trap will be bagged in its own bag to avoid cross contamination during transport in and out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

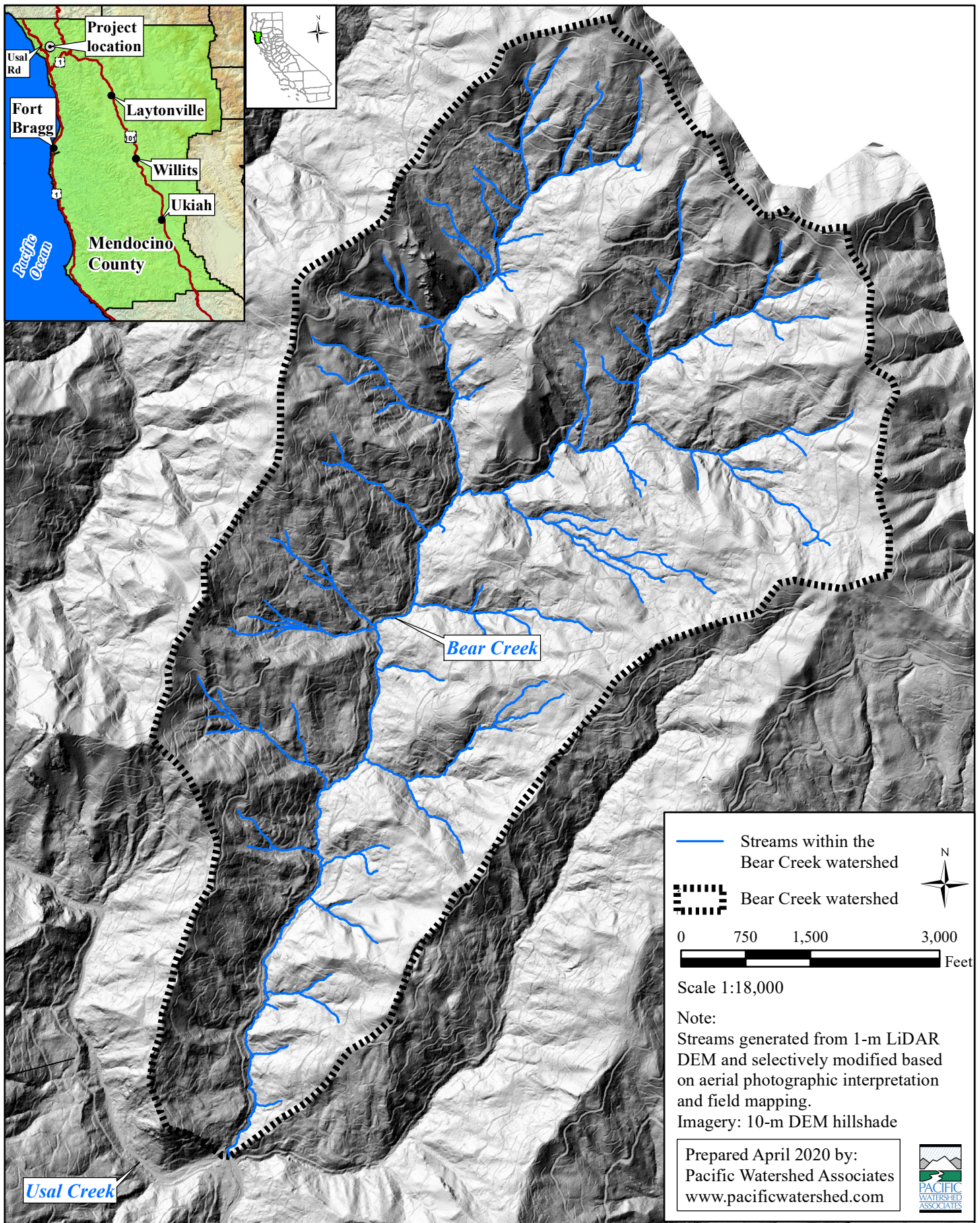
The Permittee shall notify the CDFW Project Manager a minimum of five working days before the project site is de-watered and the stream flow diverted. The notification will provide a reasonable time for CDFW personnel to oversee the implementation of the water diversion plan and the safe removal and 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 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 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 Permittee to the CDFW Grant Manager on a form provided by CDFW.

Final structure design and placement will be determined by field consultation between the Permittee and the CDFW 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 Bear Creek Instream Habitat Enhancement Project, Mendocino County, California. (Piercy and Hales Grove USGS 7.5' topographic quadrangles; Grantee/Applicant: Trout Unlimited)



Map 2. Watershed map for the Bear Creek Instream Habitat Enhancement Project, Mendocino County, California. Grantee/Applicant: Trout Unlimited



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Piercy (3912387) OR Hales Grove (3912377) OR Mistake Point (3912378) OR Bear Harbor (3912388) OR Briceland (4012318) OR Garberville (4012317) OR Harris (4012316) OR Noble Butte (3912386) OR Leggett (3912376))

Possible species within the Piercy and surrounding quads for 1723371 - Bear Creek Instream Habitat Enhancement Project, Mendocino County

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Accipiter gentilis</i> northern goshawk	ABNKC12060	None	None	G5	S3	SSC
<i>Anodonta californiensis</i> California floater	IMBIV04020	None	None	G3Q	S2?	
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G5	S3	SSC
<i>Arabis mcdonaldiana</i> McDonald's rockcress	PDBRA06150	Endangered	Endangered	G3	S3	1B.1
<i>Arboreus pomo</i> Sonoma tree vole	AMAFF23030	None	None	G3	S3	SSC
<i>Arctostaphylos stanfordiana ssp. raichei</i> Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
<i>Ascaphus truei</i> Pacific tailed frog	AAABA01010	None	None	G4	S3S4	SSC
<i>Astragalus agnicidus</i> Humboldt County milk-vetch	PDFAB0F080	None	Endangered	G2	S2	1B.1
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Calamagrostis foliosa</i> leafy reed grass	PMPOA170C0	None	Rare	G3	S3	4.2
<i>Cardamine angulata</i> seaside bittercress	PDBRA0K010	None	None	G4G5	S3	2B.1
<i>Carex arcta</i> northern clustered sedge	PMCYP030X0	None	None	G5	S1	2B.2
<i>Castilleja litoralis</i> Oregon coast paintbrush	PDSCR0D012	None	None	G3	S3	2B.2
<i>Castilleja mendocinensis</i> Mendocino Coast paintbrush	PDSCR0D3N0	None	None	G2	S2	1B.2
<i>Ceanothus foliosus var. vineatus</i> Vine Hill ceanothus	PDRHA040D6	None	None	G3T1	S1	1B.1
<i>Clarkia amoena ssp. whitneyi</i> Whitney's farewell-to-spring	PDONA05025	None	None	G5T1	S1	1B.1



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Coptis laciniata</i> Oregon goldthread	PDRAN0A020	None	None	G4?	S3?	4.2
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Eriogonum kelloggii</i> Kellogg's buckwheat	PDPGN083A0	None	Endangered	G2	S2	1B.2
<i>Erythronium revolutum</i> coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
<i>Eumetopias jubatus</i> Steller (=northern) sea-lion	AMAJC03010	Delisted	None	G3	S2	
<i>Gentiana setigera</i> Mendocino gentian	PDGEN060S0	None	None	G2	S2	1B.2
<i>Gilia capitata ssp. pacifica</i> Pacific gilia	PDPLM040B6	None	None	G5T3	S2	1B.2
<i>Hesperocyparis pygmaea</i> pygmy cypress	PGCUP04032	None	None	G1	S1	1B.2
<i>Horkelia marinensis</i> Point Reyes horkelia	PDROS0W0B0	None	None	G2	S2	1B.2
<i>Margaritifera falcata</i> western pearlshell	IMBIV27020	None	None	G4G5	S1S2	
<i>Mitellastra caulescens</i> leafy-stemmed mitrewort	PDSAX0N020	None	None	G5	S4	4.2
<i>Montia howellii</i> Howell's montia	PDPOR05070	None	None	G3G4	S2	2B.2
<i>Myotis evotis</i> long-eared myotis	AMACC01070	None	None	G5	S3	
<i>Myotis thysanodes</i> fringed myotis	AMACC01090	None	None	G4	S3	
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
Northern Interior Cypress Forest Northern Interior Cypress Forest	CTT83220CA	None	None	G2	S2.2	
<i>Oncorhynchus kisutch pop. 2</i> coho salmon - southern Oregon / northern California ESU	AFCHA02032	Threatened	Threatened	G4T2Q	S2?	
<i>Oncorhynchus mykiss irideus pop. 36</i> summer-run steelhead trout	AFCHA0213B	None	Candidate Endangered	G5T4Q	S2	SSC
<i>Pandion haliaetus</i> osprey	ABNKC01010	None	None	G5	S4	WL



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
<i>Pekania pennanti</i> fisher - West Coast DPS	AMAJF01021	Endangered	Threatened	G5T2T3Q	S2S3	SSC
<i>Piperia candida</i> white-flowered rein orchid	PMORC1X050	None	None	G3	S3	1B.2
<i>Rana aurora</i> northern red-legged frog	AAABH01021	None	None	G4	S3	SSC
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Endangered	G3	S3	SSC
<i>Rhyacotriton variegatus</i> southern torrent salamander	AAAAJ01020	None	None	G3G4	S2S3	SSC
<i>Sedum laxum ssp. eastwoodiae</i> Red Mountain stonecrop	PDCRA0A0L1	None	None	G5T2	S2	1B.2
<i>Sidalcea malachroides</i> maple-leaved checkerbloom	PDMAL110E0	None	None	G3	S3	4.2
<i>Sidalcea malviflora ssp. patula</i> Siskiyou checkerbloom	PDMAL110F9	None	None	G5T2	S2	1B.2
<i>Silene campanulata ssp. campanulata</i> Red Mountain catchfly	PDCAR0U0A2	None	Endangered	G5T3Q	S3	4.2
<i>Taricha rivularis</i> red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
<i>Thermopsis robusta</i> robust false lupine	PDFAB3Z0D0	None	None	G2	S2	1B.2
<i>Upland Douglas Fir Forest</i> Upland Douglas Fir Forest	CTT82420CA	None	None	G4	S3.1	
<i>Usnea longissima</i> Methuselah's beard lichen	NLLEC5P420	None	None	G4	S4	4.2
<i>Viburnum ellipticum</i> oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3

Record Count: 53