



## Fish Creek Instream Habitat Enhancement Project

Final Report

California Department of Fish and Wildlife (CDFW)  
Fisheries Restoration Grant Program (FRGP), Grant Number – P1710503  
March 2022



Fish Creek Feature #1300

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### **Grant Term**

June 1<sup>st</sup>, 2018 – May 31<sup>st</sup>, 2022

### **Project Overview**

The Fish Creek Instream Habitat Enhancement Project consisted of the installation of 22 large wood, instream features, consisting of 74 pieces of large wood logs with a combination of heavy equipment and final adjusting by California Conservation Corps (CCC) crews using grip-hoists and anchoring features into place.

The first phase of instream work began on September 4<sup>th</sup>, 2018 and ended on October 12<sup>th</sup>, 2018. A second phase of instream work, which consisted of adding large wood to the existing project, began on October 23<sup>rd</sup>, 2019 and concluded on October 24<sup>th</sup>, 2019. Tree planting occurred on January 9, 2019. All deliverables were completed and delivered as proposed following the grant agreement Section 6.03.5 Schedule of Due Dates and Deliverables. No dewatering of the channel or fish relocation was performed.

The goal of the project is to improve the quality and quantity of spawning and rearing habitat for salmonids in Fish Creek by installing large wood features. The expected benefit from the installation of these structures is enhancement in spawning and rearing habitats by providing cover, increasing pool depth, frequency, and complexity and by recruiting woody debris to further increase complexity, sorting and collecting spawning gravels, and by providing velocity refuge during peak winter flows for juvenile salmonids and migrating adult salmonids.

### **Recovery Plan/Assessment Information**

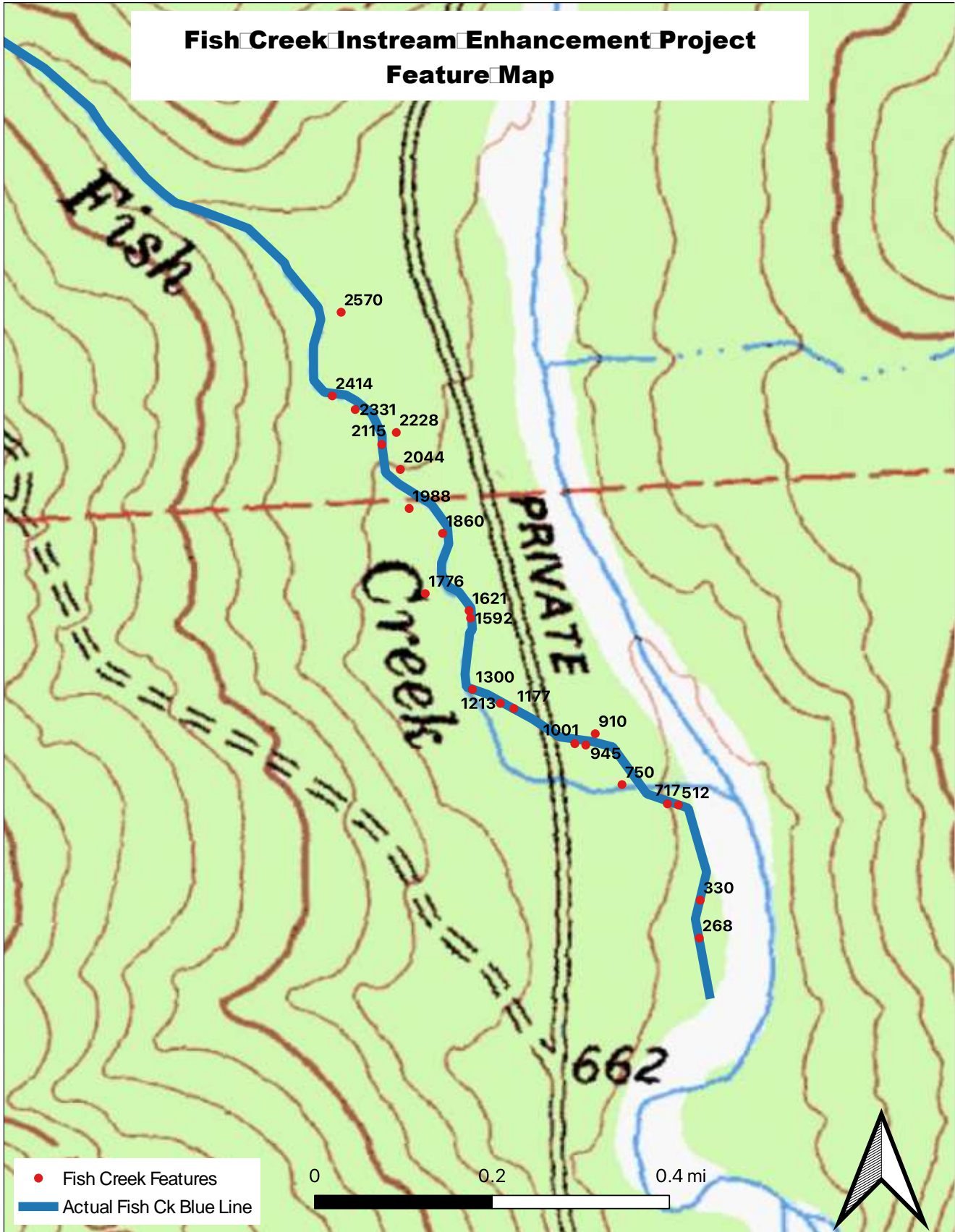
The Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon, and specific recovery task, SFER.2.1.1.2: Place instream structures, guided by assessment results, were used to develop the Project.

### **Project Location**

The Project is located on Fish Creek, a tributary to Lawrence Creek, tributary to Yager Creek. The project reach begins near the confluence with Lawrence Creek and extends upstream for 0.54 miles. The middle of the project reach is located at 40.6326550° North latitude and -123.99515100° West longitude as depicted on the Project Location Map.



**Project Location Map**





### **Project Implementation Description**

The Fish Creek Instream Habitat Enhancement Project consisted of the installation of 22 large wood, instream features, consisting of 74 pieces of large wood logs, with a combination of heavy equipment and final adjusting by CCC crews employing grip-hoists and finally anchoring features into place. The large wood features were designed to benefit salmonids by enhancing spawning and rearing habitats by providing cover, increasing pool complexity, increasing pool depth and frequency, sorting and collecting spawning gravels, increasing the quality and quantity of rearing habitat within the project reach, and by providing velocity refuge during peak winter flows for juvenile salmonids and migrating adult salmonids. One hundred redwood seedlings were planted in the winter following implementation in areas disturbed by project implementation.

The proposed project consisted of installing 21 large wood structures built with a total of 56 logs. During construction one structure and 18 additional pieces were incorporated into the final project, resulting in a total of 22 large wood structures comprised of 74 logs. The additions were approved by the grant manager prior to installation.

After the first few large flow events on Fish Creek, the large wood features remain intact and are scouring in many of the places designed to increase pool quality. There is evidence of lateral scour and proto-flood plain development on the banks around some features within incised portions of the reach. Upstream of the bridge many incised sections of the reach are aggrading, reducing the channel depth to width ratio. Several features are racking small woody debris adding to the habitat complexity and velocity refugia of the reach.

### **Environmental Compliance Surveys**

Cultural, botanical, and paleontological assessment surveys which included avoidance measures were conducted prior to implementation. The survey reports were sent to the CDFW grant manager prior to receiving the Notice to Proceed.

### **Fish Relocation and Dewatering Efforts**

No dewatering of the channel or fish relocation was performed.

### **Budget & Cost Share**

The project was awarded \$108,002.00 by FRGP, with a proposed in-kind amount of \$43,159.00, for a total project budget of \$151,161.00. In total the cost to complete the project was \$138,244.23, including \$94,116.33 from FRGP, \$14,427.90 in-kind from the CCC and \$29,700.00 in-kind donation from Humboldt Redwood Company as large wood and redwood seedlings.



**Final Project Budget**

	<b>Amount Approved</b>	<b>FRGP Funds Spent</b>	<b>FRGP Amount Remaining</b>
<b>A. Personnel Services</b>			
<i>Project Manager</i>	\$ 15,600.00	\$15,587.50	\$12.50
<i>Project Associate</i>	\$ 3,600.00	\$3,600.00	\$0.00
<i>Staff Benefits</i>	\$ 4,680.00	\$4,676.25	\$3.75
<b>Total Personnel Services</b>	<b>\$ 23,880.00</b>	<b>\$23,863.75</b>	<b>\$16.25</b>
<b>B. Operating Expenses: Subcontractors</b>			
<i>Fish Habitat Subcontractor</i>	\$ 34,425.00	\$27,119.30	\$7,305.70
<i>Heavy Equipment Sub</i>	\$ 24,480.00	\$24,480.00	\$0.00
<i>Bookkeeper</i>	\$ 1,509.75	\$0.00	\$1,509.75
<b>Total Sub Costs</b>	<b>\$ 60,414.75</b>	<b>\$51,599.30</b>	<b>\$8,815.45</b>
<b>C. Operating Expenses: Other Costs</b>			
Tools and Materials	\$ 10,998.00	\$6,542.66	\$4,455.34
Mileage @ state rate	\$ 562.00	\$562.00	\$0.00
Permit Fees	\$ 3,185.25	\$3,185.25	\$0.00
<b>Total Other Costs</b>	<b>\$ 14,745.25</b>	<b>\$10,289.91</b>	<b>\$4,455.34</b>
<b>Subtotals and Indirect Charges</b>			
MTDC Allowable	\$ 38,625.25	\$83,633.66	\$5,981.34
Not Included in MTDC	\$ 60,414.75	\$2,119.30	\$7,305.70
Administrative Overhead @10%	\$ 8,962.00	\$8,363.37	\$598.63
<b>Grand Total</b>	<b>\$ 108,002.00</b>	<b>\$94,116.33</b>	<b>\$13,885.67</b>

**Longitudinal Profile**

Longitudinal profiles were surveyed in 2018 (pre-project) 2019 and 2020 to determine short-term geomorphic channel grade change to the creek bed (Attachment 1). Analysis of the profiles indicated a general trend of the deepening of pools associated with installed features and slight aggradation of a section downstream of the project as well as a portion of the upper reach (2228 feet to 2331 feet upstream of the confluence).



**Performance Measures**

<b>P1710503 Fish Creek Instream Habitat Enhancement 2021</b>	
<b>Salmon Habitat Restoration</b>	
Total stream length treated/protected (miles):	0.44
Name of Plan, Watershed Assessment, or Recovery Plan:	NMFS. 2014. Southern Oregon/ Northern California Coastal Coho Salmon Recovery Plan, NMFS, Arcata, CA.
Types of monitoring undertaken during the project period:	none
Descriptors of the location of project monitoring:	NA
Length of aquatic habitat disturbed (feet)	921
Area of in-stream features installed within bankfull channel (feet <sup>2</sup> )	2032
<b>Instream Habitat</b>	
Dollars allocated/spent on instream habitat:	\$93,916
Total length of instream habitat treated (miles)	0.44
<b>Channel Reconfiguration and Connectivity</b>	
Types of change:	NA
Length of stream treated for channel reconfiguration/connectivity:	NA
Length of off-channel stream created (miles):	NA
Number of instream pools created/added:	NA
Area of off-channel or floodplain connected (acres):	NA
<b>Channel Structure Placement</b>	
Channel structure materials:	Individual logs (unanchored), Individual logs (Anchored), Logs fastened together, Rocks/Boulders (anchored)
Length of stream treated for channel structure placement (miles)	0.17
Number of pools expected to be created:	4
Number of structures placed in channel:	22
Area of streambed created (acres)	0
<b>Spawning Gravel Placement</b>	
Yards <sup>2</sup> of gravel added to stream:	0
Miles of stream treated with spawning gravel placement:	0
<b>Aquatic Plant Removal/Control</b>	
Species of aquatic plants removed/controlled (text)	NA
Length of stream treated for plant removal/control (miles)	0
Area of plants removed/controlled (acres)	0
<b>Predator/Competitor Removal</b>	
Species of predators or competitors controlled/removed (text)	NA
Describe methods used to control/remove predators/competitors:	NA
Number of predators/competitors removed:	0
Miles of stream treated:	0
<b>Estuarine/Nearshore</b>	
Dollars allocated/spent on estuarine/nearshore projects:	0
Total acres of estuarine/nearshore area treated:	0
<b>Channel Modification</b>	
<b>Dike or Berm Modification/Removal</b>	
Miles of dikes removed:	0
<b>Removal of Existing Fill Material</b>	
<b>Estuarine Plan Removal/Control</b>	
Species of plants removed:	N/A
Acres of estuarine area treated for invasive species:	0
<b>Exclusion Devices</b>	



<b>Riparian Habitat</b>	
Amount Spent on Riparian Planting	\$200
Riparian Length Treated (Miles)	0.44
Riparian Area Treated (Acres)	0.24
<b>Riparian Planting</b>	
Species Planted	Sequoia sempervirens
Area Planted (Acres)	0.24
Length Treated (Miles)	0.44
<b>Estuarine Habitat</b>	
Species of plants planted (text)	N/A
Acres of estuarine area planted:	0
<b>Impacts</b>	
Permanent (acres/linear feet)	0.06/550
Temporary (acres/linear feet)	0.29/2302

**Performance Measures by Feature**

Feature	Length (ft)	Area (sq. ft)	# of Logs	# Logs with RWs	# RWs	Total LWD
1 (268')	17	51	2	0	0	2
2 (330')	20	80	2	0	0	2
3 (512')	14	35	2	0	0	2
4 (717')	22	55	2	0	0	2
5 (750')	70	105	3	0	0	3
6 (910')	22	88	3	0	0	3
7 (945')	2	30	2	0	0	2
8 (1001')	20	50	3	0	0	3
9 (1177')	11	49.5	1	1	0	2
10 (1213')	9	36	2	0	0	2
11 (1300')	75	120	5	0	0	5
12 (1592')	16	56	3	0	0	3
13 (1621')	55	70	3	0	0	3
14 (1776')	76	64	4	0	0	4
15 (1860')	182	344	8	1	0	9
16 (1988')	8	28	2	0	0	2
17 (2044')	10	40	2	0	0	2
18 (2115')	18	144	5	0	0	5
19 (2228')	21	63	5	0	0	5
20 (2331')	108	140	3	0	0	3
21 (2414')	105	303	4	1	0	5
22 (2570')	40	80	7	0	0	7
<b>Totals</b>	<b>921</b>	<b>2031.5</b>	<b>73</b>	<b>3</b>	<b>0</b>	<b>76</b>



**Project Photos**

Pre- and Post-Implementation Photo Table

P1710503 - Fish Creek - Photos			
Name	Date	Site	Location
Feature 750 – Pre-photo	2/9/2017	750	Standing on RB, looking upstream.
Feature 750 – Post-photo #1	2/18/2022	750	Standing on RB, looking upstream at the lower structure.
Feature 750 – Post-photo #2	2/18/2022	750	Standing on LB, looking downstream at the upper structure.
Feature 945 – Pre-photo	2/9/2017	945	Standing on RB, looking upstream.
Feature 945 – Post-photo	2/18/2022	945	Standing mid-channel, looking upstream at feature.
Feature 1177 – Pre-photo	2/9/2017	1177	Standing on RB, looking downstream.
Feature 1177 – Post-photo	2/18/2022	1177	Standing mid-channel, looking upstream at feature.
Feature 1213 – Pre-photo	2/9/2017	1213	Standing on RB, looking upstream.
Feature 1213 – Post-photo #1	2/18/2022	1213	Standing on RB, looking at downstream structure.
Feature 1213 – Post-photo #2	12/27/2018	1213	Standing on RB, looking upstream and upstream structure.
Feature 1988 – Post-photo w/ fish	12/27/2018	1988	Standing on LB, looking upstream.
Feature 2228 – Pre-photo	2/13/2017	2228	Standing mid-channel, looking downstream.
Feature 2228 – Post-photo #1	12/27/2018	2228	Standing on LB, looking at downstream structure.
Feature 2228 – Post-photo #2	12/27/2018	2228	Standing on LB, looking at upstream structure.
Planting Post-photo	2/18/2022	N/A	Looking at a planted redwood.



Feature 750 Pre-photo





Feature 750 – Post-photo #1



Feature 750 – Post-photo #2



Feature 945 – Pre-photo



Feature 945 – Post-photo



Feature 1177 – Pre-photo



Feature 1177 – Post-photo



Feature 1300 – Pre-photo



Feature 1300 – Post-photo #1



Feature 1300 – Post-photo #2



Feature 1988 – Post-photo with fish



Feature 2228 – Pre-photo



Feature 2228 – Post-photo #1



Feature 2228 – Post-photo #2



Planting Post-photo



**Final As-Built Design**

See "As Built" Designs (Attachment 2).

**Exhibit A. Programmatic Permit Measures**

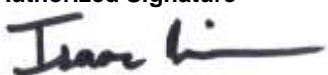
<b>Waterbody</b>	<b>Fish Creek</b>	<b>Fish Creek</b>	<b>Fish Creek</b>	<b>Fish Creek</b>
<b>Stream Type</b>	Perennial	Perennial	Perennial	Perennial
<b>Wild and Scenic</b>	No	No	No	No
<b>First Downstream Trib</b>	Lawrence Creek	Lawrence Creek	Lawrence Creek	Lawrence Creek
<b>Affected Resource</b>	Streambed	Streambed	Riparian	Riparian
<b>Duration of Direct Impact</b>	Permanent	Temporary	Permanent	Temporary
<b>F/E</b>	F - Logs	E	F - Logs	E - Riparian Disturbance
<b>Fill Direct Impacts</b>	550 feet long, 0.04 acres	220 feet, 0.05 acres	550 feet long, 0.02 acres	2302 feet long, 0.24 acres
<b>Indirect Impacts</b>	None	None	None	None
<b>Restoration Method</b>	Enhancement	Rehabilitation	Enhancement	Rehabilitation
<b>Acres Restored</b>	0.9 acres	0.05 acres	0.02	0.24 acres
<b>Linear Feet Restored</b>	2302 feet	220 feet	550	2302 feet
<b>CRAM</b>	No	No	No	No

**Exhibit B. Certification of Non-Federal Contributions**

**CERTIFICATION OF NON-FEDERAL CONTRIBUTIONS**

*IN-KIND or THIRD PARTY*

**Fisheries Restoration Grant Program, Grantee Cost Share Match Certification**

<b>Grant Number</b>	<b>Grantee Name</b>	<b>Project Title</b>		
P1710503	Eel River Watershed Improvement Group	Fish Creek Instream Habitat Enhancement		
<b>Total Project Cost</b>	<b>FRGP Funded</b>	<b>All Cost Share from other sources</b>		
\$138,244.23	\$94,116.33	\$44,127.90		
<b>Cost Share to be used as Match</b>				
<b>Funding Source</b>	<b>Cash</b>	<b>In-kind</b>	<b>Total</b>	
California Conservation Corps	\$0	\$14,427.90	\$14,427.90	
Humboldt Redwood Company	\$0	\$29,700.00	\$29,700.00	
<b>TOTAL OF IN-KIND or THIRD-PARTY NON-FEDERAL CONTRIBUTIONS =</b>				<b>\$44,127.90</b>
<i>Certification: I certify that to the best of my knowledge this Certification of Nonfederal Contributions is correct and is directly related to the objectives of the project. I also certify that support documents are available in the project's file.</i>				
<b>Authorized Signature</b>		<b>Printed Name</b>	<b>Date</b>	
		Isaac Mikus	03/16/2022	