

# RECLAMATION

*Managing Water in the West*

## **Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2**

### **FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT**

**Rogue River Basin Project, Oregon**

**Pacific Northwest Region**

**PN FONSI 16-04**

**PN EA 16-04**



U.S. Department of the Interior  
Bureau of Reclamation  
Columbia-Cascades Area Office  
Yakima, Washington

June 2016

## **MISSION STATEMENTS**

### **U.S. Department of the Interior**

Protecting America's Great Outdoors and Powering Our Future

The Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

### **Bureau of Reclamation**

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

## Acronyms and Abbreviations

BA	biological assessment
BiOp	biological opinion
CCS	cryptocrystalline silicate
CFR	Code of Federal Regulations
Coho Salmon	Southern Oregon and Northern California Coast Coho Salmon
EA	environmental assessment
ESA	Endangered Species Act
ESU	evolutionary significant unit
FONSI	finding of no significant impact
IDP	Inadvertent Discovery Plan
ITA	Indian Trust Assets
LWM	large woody material
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA Fisheries	National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
RDG	River Design Group
Reclamation	Bureau of Reclamation
RM	river mile
Rogue River Project	Rogue River Basin Project
RPM	reasonable and prudent measure
SFLBC	South Fork Little Butte Creek
SHPO	Oregon State Historic Preservation Office
SONCC	Southern Oregon and Northern California Coast
T&C	terms and conditions
TCP	traditional cultural property
TFT	The Freshwater Trust
USFWS	U.S. Fish and Wildlife Service
WUA	weighted usable area

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# **Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2**

## **FINDING OF NO SIGNIFICANT IMPACT**

**U.S. Department of the Interior  
Bureau of Reclamation  
Columbia-Cascades Area Office**

**PN FONSI 16-04**

## **INTRODUCTION**

The Bureau of Reclamation has prepared this Finding of No Significant Impact (FONSI) to comply with Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA). This document briefly describes the proposed action, the alternatives considered, Reclamation's consultation and coordination activities, and Reclamation's findings. The final *Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2* (Project 2.2) *Environmental Assessment* (EA) documents the analysis.

## **BACKGROUND**

Reclamation's Rogue River Basin Project (Rogue River Project) is located near the cities of Medford and Ashland in southwest Oregon in two tributary basins to the Rogue River: Bear Creek and Little Butte Creek, and the tributaries of Jenny Creek in the Klamath Basin. Originally, a network of privately owned facilities, Congress authorized rehabilitation, reconstruction, and expansion of the Rogue River Project to serve multiple purposes including irrigation, flood control, fish and wildlife, recreation, and the generation and transmission of hydroelectric power in the Act of August 20, 1954 (68 Stat. 752, Public Law 83-606).

Section 7(a)(2) of the Endangered Species Act (ESA) requires Federal agencies to consult with the National Marine Fisheries Service (NOAA Fisheries) to ensure their actions are not likely to jeopardize ESA-listed species or adversely modify designated critical habitat. On March 15, 2012, Reclamation issued the *Biological Assessment on the Future Operation and Maintenance of the Rogue River Basin Project and Effects on Essential Fish Habitat under the Magnuson-Stevens Act* (Reclamation, 2012a). The proposed action included several ecological conservation measures to reduce the potential for adverse effects on Southern Oregon/Northern California Coast (SONCC) evolutionary significant unit (ESU) of Coho Salmon (*Oncorhynchus kisutch*).

These conservation actions included increasing minimum instream flows to benefit Coho Salmon habitat in Bear Creek and South Fork Little Butte Creek (SFLBC), while increasing instream habitat (large wood additions).

On April 2, 2012, the National Marine Fisheries Service (NOAA Fisheries) issued the *Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Future Operation and Maintenance of the Rogue River Basin Project (2012-2022), Rogue and Klamath River Basins (HUCs: 18010206, 17100308, 17100307), Oregon and California* [NOAA Fisheries, 2012] (BiOp). NOAA Fisheries reviewed the following: the status of the ESA-listed species affected by the proposed action; the environmental baseline for the action area; the effects of the proposed action; and the cumulative effects. NOAA Fisheries concluded that the proposed action is not likely to jeopardize the continued existence of the SONCC Coho Salmon. Specifically, NOAA Fisheries concluded that despite some adverse effects, benefits to habitat afforded by the proposed action would allow an increase in the abundance and productivity of the Upper Rogue River population of Coho Salmon, a core independent population located in the Interior Rogue diversity strata. Further, NOAA Fisheries concluded that the proposed action would allow the Upper Rogue River population to fulfill its role in the recovery of the Coho Salmon ESU. NOAA Fisheries also concluded the proposed action is not likely to adversely modify designated critical habitat for Coho Salmon. NOAA Fisheries reached this conclusion because “the proposed action’s minimum flow requirements, combined with large wood additions, fish passage improvements, and ramping rate procedures offset the adverse effects on a watershed scale.” (NOAA Fisheries 2012, p. 102)

The BiOp identifies the installation of large woody material (LWM) habitat structures as a reasonable and prudent measure (RPM) to minimize take of threatened Coho Salmon (NOAA Fisheries 2012). The BiOp also identifies Reclamation’s commitment to meeting the weighted usable area (WUA) uplift requirement for both median and dry flow years in Bear Creek, Emigrant Creek, SFLBC, and Little Butte Creek within the Rogue River basin for winter and summer rearing habitat, as identified in Table 1.

**Table 1.** Proposed instream habitat uplift targets for Emigrant, Bear, South Fork Little Butte, and Little Butte creeks.

**Increase in Habitat (ft<sup>2</sup> WUA)**

<b>Reach Name</b>	<b>Median Flow (50% exceedance)</b>	<b>Low Flow (80% exceedance)</b>	<b>Targeted Life Stage</b>
Emigrant Creek/Neil Creek	7,100	15,700	Winter rearing
Bear Creek/Ashland Creek	8,600	3,000	Winter rearing
Bear Creek below Oak Street	5,100	No uplift required	Summer rearing
South Fork Little Butte Creek	6,500	No uplift required	Winter rearing
Little Butte Creek	36,000	No uplift required	Summer rearing

## ALTERNATIVES CONSIDERED

One action alternative (Alternative 2) was considered and evaluated in the EA. The No Action Alternative was also evaluated as required by NEPA.

**Alternative 1 - No Action:** Under the No Action Alternative, instream habitat restoration projects would not be constructed within the Bear Creek and Little Butte Creek watersheds. Incidental take of juvenile Coho Salmon would continue as a result of Talent, Medford, and Rogue River Valley irrigation districts' operations and maintenance of the Rogue River Project. Avoiding the risk of incidental take for non-authorized (covered) activities by the districts would result in additional operating constraints, which would limit the availability and reliability of water supplies within the Rogue River Project.

**Alternative 2 - (Preferred Alternative) Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: SFLBC Project 2.2:** Instream habitat projects would be implemented in the Little Butte Creek watershed consistent with the proposed WUA requirements for the reaches identified in Table 1 and the terms and conditions of the BiOp.

## Proposed Action

Under the Preferred Alternative, through a financial assistance agreement with The Freshwater Trust (TFT), an instream habitat project would be implemented on the SFLBC river mile (RM) 2.2 property in the Little Butte Creek watershed, consistent with the *Instream Habitat Restoration EA/FONSI*. The work would be accomplished through Reclamation's Cooperative Agreement R15AC00036.

Reclamation proposes to construct a series of LWM installations to improve aquatic habitat on the SFLBC RM 2.2 property. This proposed project aims to add a substantial amount of stable large wood to SFLBC to enhance winter rearing habitat for juvenile Coho Salmon and increase channel complexity for all aquatic species. The proposed project involves the following: construction of temporary access routes and a staging and stockpile area; removal of an unauthorized berm; construction of cattle-exclusion fencing; installation of off-channel watering and a temporary, removable low-water livestock crossing; construction of four large wood tiered structures, five smaller large wood structures, three large wood-habitat structures; and restoration of disturbed areas through riparian plantings or seeding. Logs would be procured from a local timber operation working under the Oregon State Forest Practice Act.

The streambank toe would be excavated for the placement of rootwads, large wood, and ballast boulders, and then backfilled with gravel and cobbles either from the site or imported from a local source. Willows and other riparian vegetation would be planted along the face of the bank. The berm area and the temporary access routes would be planted with native seed.

The instream construction is expected to occur summer of 2016 during the Oregon Department of Fish and Wildlife (ODFW) established work window for the SFLBC, which is June 15 through September 15. The project site would not be isolated from active flow. A silt curtain would be installed along the channel edge to trap silt and sediment within the disturbed work

zone. If water quality issues arise due to construction activities occurring in active flow, the contractor would use the best management practice of operating 30 minutes in the water with a 1-hour wait period before resuming in-water work.

As stipulated in the *Instream Habitat FONSI/EA*, a Public Safety Risk Matrix and Property Damage Risk Matrix was completed by TFT and River Design Group (RDG) and was reviewed by Reclamation's River Systems Analysis Group. Review of and comment on the matrices occurred at each design phase (concept, 30%, 60%, 90%, and 100%), and comments were submitted to TFT and RDG by a hydraulic engineer in the Pacific Northwest Region Geology and River Systems Analysis Group.

## Findings

Reclamation issued a *Finding of No Significant Impact for the Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds Environmental Assessment* (Instream Habitat Restoration EA/FONSI) on July 8, 2015. The *Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: SFLBC Project 2.2 Environmental Assessment* tiers from the *Instream Habitat Restoration EA* and provides project specific information as necessary.

Since specific actions in specific locations were not identified in the *Instream Habitat Restoration EA*, the environmental effects determinations represented the typical effects associated with the implementation of LWM structures. Reclamation committed to evaluate site-specific projects individually to determine if the typical effects described in the *Instream Habitat Restoration EA* were adequately analyzed. In addressing cumulative effects of the proposed activities, the assessment assumes compliance with the BiOp regarding the WUA required within each identified reach, according to Table 1.

Reclamation has determined that the analysis present in the *Instream Habitat Restoration EA* sufficiently analyzed the project's impacts on the following resources: climate change, water quality, fish and wildlife, Indian Trust Assets (ITA), and environmental justice; therefore, those sections are incorporated by reference from the *Instream Habitat Restoration EA* and were not further analyzed. This *Project 2.2 EA* discusses the existing environment and the environmental consequences of the two alternatives on the following resources: riparian vegetation, threatened and endangered species, and cultural resources.

Based on the following summary of the implementation effects of the Preferred Alternative (as discussed in the attached *Project 2.2 EA* and the *Instream Habitat Restoration EA*), there would be no significant impacts on the quality of the human environment; therefore, an environmental impact statement is not necessary and will not be prepared.

## Riparian Vegetation

The general effects of the Preferred Alternative and cumulative impacts on riparian vegetation were analyzed in the *Instream Habitat Restoration EA*; however, site-specific effects are discussed in the project-specific EA.



During construction of LWM, berm removal, general ingress and egress, and staging, disturbance to native and non-native vegetation will occur. There are also some areas within the construction boundary where non-native species (e.g. Himalayan blackberries) are established and would need to be removed to allow for safe access, staging, and construction. Upon the completion of construction, removed non-native species would be replaced with native species to satisfy county permitting requirements.

The benefits of project implementation will begin to accrue in the short term and persist in the long term. Cattle will immediately be excluded from the project vicinity, allowing both the undisturbed and the newly planted vegetation to thrive. Beneficial effects will occur with the following activities: installing cattle-exclusion fencing, installing an off-channel watering system, limiting access to the creek by installing a fenced corridor for low-water crossing, replanting disturbed areas, and augmenting existing trees and understory. The following are the resultant beneficial effects: improve water quality by trapping sediment (which reduces downstream sediment concentration), moderate river temperatures, and create channel systems where incision of the river banks is limited. In addition, a restored riparian zone becomes self-supporting and sustaining; for example, LWM placement to protect streambanks allowing trees to grow, which ultimately supplies more LWM to the system.

The cumulative beneficial effect of berm removal would lower channel velocity and broaden the wetted width, enhancing structure performance and mitigating the risk of project failure. The berm currently hosts some native and non-native vegetation that would be replaced with riparian plantings.

## **THREATENED AND ENDANGERED SPECIES**

The effects of the proposed project on federally listed threatened and endangered species were analyzed in Reclamation's BA and NMFS' BiOp. The Coho Salmon is the only ESA-listed species that may be affected by implementation of the proposed project.

The BiOp identified terms and conditions (T&C) to minimize incidental take of Coho Salmon caused by implementation of this project. Reclamation and its contractors must comply with the T&C to implement the reasonable and prudent measures included in the BiOp.

The construction of the LWM structures would result in immediate, juvenile Coho Salmon habitat formation, including the following:

- Pool formation to provide slower, deeper water as an insulator to high water temperatures from direct solar radiation and to provide areas of rest.
- Overhead cover for protection against predation and to provide shade.
- Refugia from high-velocity flows, as the LWM would slow flows around and through the structure.
- Sorting of gravel, including the deposition of spawning gravel, would increase and develop a more complex habitat.

Reclamation anticipates that *Project 2.2* would provide a gross WUA of 2,066 ft<sup>2</sup>. The benefits would begin to accrue in the short term and persist in the long term. Implementation of the proposed project would result in a substantial increase of winter and summer instream rearing habitat and stream complexity conditions that are beneficial to juvenile Coho Salmon.

Reclamation anticipates that long-term beneficial impacts of LWM installations would aid in the recovery of the Coho Salmon population to a viable level.

Reclamation has determined that implementation of the proposed project will not affect ESA-listed species under the jurisdiction of the U.S. Fish & Wildlife Service (USFWS).

## Cultural Resources

On February 29, 2016, Reclamation sent pre-project consultation letters, notifying the following Tribes as to the location and intent of the cultural resource inventory by Cascade Research, LLC: Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz, Cow Creek Band of Umpqua Indians, Quartz Valley Indian Reservation, and Klamath Tribes. The Cow Creek Band of Umpqua Indians requested a copy of the final report.

Cascade Research conducted the records search at the SHPO in Salem, Oregon, and conducted the cultural resource surveys on the APE. Research at SHPO revealed that the most common recorded pre-contact site types in the area are upland assay and quarry areas related to the procurement of CCS tool stone. Cascade Research conducted a cultural resource survey on March 18 and April 13, 2016. The entire western bank of SFLBC RM 2.2 property within the APE was inventoried for cultural resources. Visibility in the proposed LWM habitat structure areas approached 100 percent due to active flooding within the APE. No historic or pre-contact sites or isolated finds were noted during the course of surface inventory.

The Cow Creek Band of Umpqua Indians were sent a copy of the cultural resource survey on May 13, 2016. Reclamation has developed an inadvertent discovery plan (IDP) at the request of the Cow Creek Band of Umpqua Indians, which would be provided to TFT. TFT would be responsible to ensure that onsite contractors have a copy of the IDP on-hand at all times.

Reclamation initiated consultation with the SHPO in a letter dated April 20, 2016. Reclamation determined that *Project 2.2* would have no effect on any significant archaeological objects or sites and that additional archaeological research is not anticipated for this project. Reclamation did not receive a letter of concurrence from the SHPO; however, under the Code of Federal Regulations (CFR), specifically 36 CFR 800.3 (c) (4), Reclamation can proceed with the project, provided the 30-day comment period has elapsed without a response from the SHPO.

**Traditional Cultural Properties (TCP).** Reclamation consulted with area Tribes to determine if TCP are present in the project vicinity. Reclamation did not receive responses from the Tribes.

## Permits

Per the *Instream Habitat Restoration EA/FONSI*, the following permit, authorization, review, and exemption applications have been submitted for *Project 2.2*:

- U.S. Army of Corps of Engineers Nationwide Permit No. 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)
- Jackson County Type 1 Land Use Permit-Floodplain Development Permit
- Oregon Department of State Lands Removal/Fill Exemption with notice for voluntary habitat restoration activities
- Oregon Department of Fish and Wildlife concurrence on Procedures for Generating Shade Credits

The project will not commence until all applicable permits, authorizations, reviews, and exemptions have been received by TFT and forwarded to Reclamation.

## DECISION

It is my decision to authorize the Preferred Alternative, the implementation of Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2.

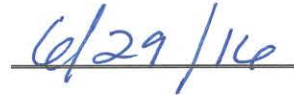
### Finding of No Significant Impact

Based on the analysis of the environmental impacts presented in the final EA, and implementation of all environmental commitments, Reclamation has concluded the implementation of the Preferred Alternative will have no significant impacts on the quality of the human environment or natural and cultural resources of the area. Reclamation concludes that preparation of an environmental impact statement is not required, and that this EA and FONSI satisfy the requirements of NEPA.

#### Recommended:



Candace McKinley  
Environmental Program Manager  
Yakima, Washington



Date

#### Approved:



Dawn Wiedmeier  
Area Manager, Columbia-Cascades Area Office  
Yakima, Washington



Date

ACTING  
FOR

# RECLAMATION

*Managing Water in the West*

## **Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2**

### **ENVIRONMENTAL ASSESSMENT**

**Rogue River Basin Project, Oregon  
Pacific Northwest Region**

**PN EA 16-04**

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**CONTENTS**

**INTRODUCTION ..... 1**

**Purpose of and Need for Action ..... 3**

        Purpose..... 3

        Need ..... 3

        Project Location ..... 3

**Authorities and Related Laws..... 4**

**ALTERNATIVES..... 4**

**Alternative 1 - No Action ..... 4**

**Alternative 2 - Preferred Alternative: Instream Habitat Restoration in the Bear Creek and Little Butte Creek Watersheds—SFLBC Project 2.2..... 5**

**AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES ..... 8**

**Introduction..... 8**

**Riparian Vegetation..... 8**

        Affected Environment..... 8

        Environmental Consequences ..... 10

        Cumulative Effect ..... 13

        Mitigation..... 13

**Threatened and Endangered Species ..... 13**

        Affected Environment..... 13

        Environmental Consequences ..... 14

        Cumulative Effect ..... 16

        Mitigation..... 16

**Cultural Resources..... 16**

        Affected Environment..... 16

        Environmental Consequences ..... 18

        Mitigation..... 19

**CONSULTATION AND COORDINATION..... 19**

**ESA Section 7 Consultation..... 19**

**NHPA Section 106 Consultation ..... 19**

**Coordination ..... 20**

**Permits and Authorizations Needed..... 21**

**LITERATURE CITED..... 22**

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# **Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2**

## **ENVIRONMENTAL ASSESSMENT**

**U.S. Department of the Interior  
Bureau of Reclamation  
Columbia-Cascades Area Office**

**PN EA 16-04**

## **INTRODUCTION**

The Bureau of Reclamation's Rogue River Basin Project (Rogue River Project) is located near the cities of Medford and Ashland in southwest Oregon in two tributary basins to the Rogue River: Bear Creek and Little Butte Creek, and the tributaries of Jenny Creek in the Klamath Basin. Originally, a network of privately owned facilities, Congress authorized rehabilitation, reconstruction, and expansion of the Rogue River Project to serve multiple purposes including irrigation, flood control, fish and wildlife, recreation, and the generation and transmission of hydroelectric power in the Act of August 20, 1954 (68 Stat. 752, Public Law 83-606).

Section 7(a)(2) of the Endangered Species Act (ESA) requires Federal agencies to consult with the National Marine Fisheries Service (NOAA Fisheries) to ensure their actions are not likely to jeopardize ESA-listed species or adversely modify designated critical habitat. On March 15, 2012, Reclamation issued the *Biological Assessment on the Future Operation and Maintenance of the Rogue River Basin Project and Effects on Essential Fish Habitat under the Magnuson-Stevens Act* (Reclamation, 2012a). The proposed action included several ecological conservation measures to reduce the potential for adverse effects on Southern Oregon/Northern California Coast (SONCC) evolutionary significant unit (ESU) of Coho Salmon (*Oncorhynchus kisutch*). These conservation actions included increasing minimum instream flows to benefit Coho Salmon habitat in Bear Creek and South Fork Little Butte Creek (SFLBC), while increasing instream habitat (large wood additions).

On April 2, 2012, the NOAA Fisheries issued the *Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Future Operation and Maintenance of the Rogue River Basin Project (2012-2022), Rogue and Klamath River Basins (HUCs: 18010206, 17100308,*

17100307), *Oregon and California* [NOAA Fisheries, 2012] (BiOp). NOAA Fisheries reviewed the following: the status of the ESA-listed species affected by the proposed action; the environmental baseline for the action area; the effects of the proposed action; and the cumulative effects. NOAA Fisheries concluded that the proposed action is not likely to jeopardize the continued existence of the SONCC Coho Salmon. Specifically, NOAA Fisheries concluded that despite some adverse effects, benefits to habitat afforded by the proposed action would allow an increase in the abundance and productivity of the Upper Rogue River population of Coho Salmon, a core independent population located in the Interior Rogue diversity strata. Further, NOAA Fisheries concluded that the proposed action would allow the Upper Rogue River population to fulfill its role in the recovery of the Coho Salmon ESU. NOAA Fisheries also concluded the proposed action is not likely to adversely modify designated critical habitat for Coho Salmon. NOAA Fisheries reached this conclusion because “the proposed action’s minimum flow requirements, combined with large wood additions, fish passage improvements, and ramping rate procedures offset the adverse effects on a watershed scale.” (NOAA Fisheries 2012, p. 102)

The BiOp identifies the installation of large woody material (LWM) habitat structures as a reasonable and prudent measure (RPM) to minimize take of threatened Coho Salmon (NOAA Fisheries 2012). The BiOp also identifies Reclamation’s commitment to meeting the weighted usable area (WUA) uplift requirement for both median and dry flow years in Bear Creek, Emigrant Creek, South Fork Little Butte Creek (SFLBC), and Little Butte Creek within the Rogue River basin for winter and summer rearing habitat, as identified in Table 1.

Reclamation issued a Finding of No Significant Impact (FONSI) for the *Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds Environmental Assessment (Instream Habitat Restoration EA/FONSI)* on July 8, 2015. Based on the analysis of the environmental impacts presented in the Final EA, Reclamation concluded that the implementation of instream habitat restoration projects would have no significant impacts on the quality of the human environment or natural and cultural resources of the area. This *Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: South Fork Little Butte Creek Project 2.2 (Project 2.2) Environmental Assessment* tiers from the July 2015 EA above and provides project-specific information.

The *Instream Habitat Restoration EA/FONSI* (Reclamation 2015) states that Reclamation would complete projects within the two watersheds to increase the quality of instream habitat and habitat complexity by placing LWM in targeted areas. These LWM projects intend to increase pool habitat for juvenile rearing. Project activities would also improve geomorphic forms and processes and create more hydraulic diversity. The LWM projects would be designed to increase WUA winter or summer rearing habitat within the Bear Creek and Little Butte Creek watersheds for juvenile Coho Salmon, according to Table 1.

In addition, the *Instream Habitat Restoration EA/FONSI* stated that prior to individual project implementation, a cultural resource survey would be completed and site-specific protection measures would be implemented to preserve the integrity of all recorded sites determined to be eligible to the National Register of Historic Places (National Register) or considered unevaluated. Such cultural resource sites would be buffered, avoided, or otherwise protected as determined in consultation with the Oregon State Historic

Preservation Office (SHPO). This may include oversight by an archaeologist during project implementation.

**Table 1.** Proposed instream habitat uplift targets for Emigrant, Bear, South Fork Little Butte, and Little Butte creeks.

**Increase in Habitat (ft<sup>2</sup> WUA)**

<b>Reach Name</b>	<b>Median Flow (50% exceedance)</b>	<b>Low Flow (80% exceedance)</b>	<b>Targeted Life Stage</b>
Emigrant Creek/Neil Creek	7,100	15,700	Winter rearing
Bear Creek/Ashland Creek	8,600	3,000	Winter rearing
Bear Creek below Oak Street	5,100	No uplift required	Summer rearing
South Fork Little Butte Creek	6,500	No uplift required	Winter rearing
Little Butte Creek	36,000	No uplift required	Summer rearing

## **Purpose of and Need for Action**

### **Purpose**

The purpose of the proposed instream habitat restoration projects is to aid in the recovery of Coho Salmon population at a viable level. This would be accomplished by increasing quality instream habitat and habitat complexity through targeted LWM placement. Through increasing channel complexity, these projects seek to form pool habitat for juvenile rearing. Project activities are also intended to improve geomorphic forms and processes and create more hydraulic diversity.

### **Need**

The proposed instream habitat restoration actions are needed to rehabilitate Bear Creek and Little Butte Creek in order to enhance natural populations of anadromous fish in these degraded stream systems. Water temperature and flow, sedimentation, and the lack of instream habitat (pools, cool water refugia, and instream complexity) limit aquatic life in the system (Bredikin et al. 2006). In addition, implementing this conservation action is necessary to obtain the reasonable and prudent measure (RPM) requirements of the BiOp, as outlined in Table 1.

### **Project Location**

The project area is located on private property along the southwest and northeast bank of the SFLBC, approximately 2.2 miles upstream and southeast of the community of Lake Creek, Oregon. At Lake Creek, the SFLBC joins the North Fork Little Butte Creek to form the main stem of Little Butte Creek that meets at the Rogue River approximately 17 miles farther west. The approximate 4-acre project area lies within Jackson County in Section 33, Township 36 South, Range 2 East.

## Authorities and Related Laws

This section is incorporated by reference from the *Instream Habitat Restoration EA*.

## ALTERNATIVES

This chapter describes basic features of the alternatives analyzed in this document.

### Alternative 1 - No Action

The No Action Alternative represents a continuation of the existing conditions and provides a comparative baseline for evaluating changes and impacts of the Proposed Action Alternative. Under the No Action Alternative, Reclamation would take no action to improve Bear Creek and Little Butte Creek watershed resources for juvenile Coho Salmon. The following natural process would proceed without intervention:

- Stream reaches would continue to lack habitat complexity that provides juvenile salmon with refuge from high velocity flows, predation, and high temperatures.
- Streams would continue to be disconnected from their floodplains, resulting in sediment fines remaining in channel.
- Invasive weeds would continue to proliferate, choking out native riparian vegetation.
- Direct solar radiation would continue to increase stream temperatures that can be fatal to juvenile Coho Salmon.
- Riparian vegetation would continue to be degraded and would not be enhanced along the existing riparian corridor.

The No Action Alternative would not minimize take according to the requirements of the BiOp. Incidental take of juvenile Coho Salmon would continue as a result of Talent, Medford, and Rogue River Valley irrigation districts' operation and maintenance of the Rogue River Project. Avoiding the risk of incidental take for non-authorized (covered) activities by the districts would result in additional operating constraints, which would limit the availability and reliability of water supplies within the Rogue River Project. Environmental conditions under the No Action Alternative would diminish species recovery efforts, and the basic goal to maintain or aid recovery of the basin's native Coho Salmon population at a genetically viable level would not be achieved.

## **Alternative 2 - Preferred Alternative: Instream Habitat Restoration in the Bear Creek and Little Butte Creek Watersheds—SFLBC Project 2.2**

Under Alternative 2, through a financial assistance agreement with The Freshwater Trust (TFT), an instream habitat project would be implemented on the SFLBC river mile (RM) 2.2 property in the Little Butte Creek watershed, consistent with the *Instream Habitat Restoration EA/FONSI*. The work would be accomplished through Reclamation's Cooperative Agreement R15AC00036.

Reclamation proposes to construct a series of LWM installations to improve aquatic habitat on the SFLBC RM 2.2 property. This proposed project aims to add a substantial amount of stable large wood to SFLBC to enhance winter rearing habitat for juvenile Coho Salmon and increase channel complexity for all aquatic species. The proposed project involves the following: construction of temporary access routes and a staging and stockpile area; removal of an unauthorized berm; construction of cattle-exclusion fencing; installation of off-channel watering and a temporary, removable low-water livestock crossing; construction of four large wood tiered structures, five smaller large wood structures, three large wood-habitat structures; and restoration of disturbed areas through riparian plantings or seeding. Logs would be procured from a local timber operation working under the Oregon State Forest Practice Act. The streambank toe would be excavated for the placement of rootwads, large wood, and ballast boulders, and then backfilled with gravel and cobbles either from the site or imported from a local source. Willows and other riparian vegetation would be planted along the face of the bank. The berm area and the temporary access routes would be planted with native seed.

Ingress and egress would be on the existing South Fork Little Butte Creek Road that leads to an established gravel drive and dirt road. No road currently exists within the project vicinity. Equipment and staging area would be accessed via a grassy, rock-covered pasture. The equipment and material staging area is approximately 60,000 ft<sup>2</sup> and would be located near SFLBC in an area with little exposed soil, covered primarily by alluvial cobbles and gravel placed by high-water events. Temporary access roads may be used to access large wood placement areas; however, the temporary access roads should not require improvements to facilitate construction equipment access. These access points would be reconditioned to as-good-as or better-than pre-project conditions. Access across water shall be via a temporary bridge or culvert to maintain flow and fish passage. No equipment would cross through the stream bed.

An unauthorized push-up rock berm was hastily erected after flood-stage waters of 1997, to prevent flood damage to Project 2.2 property and the property of a downstream landowner. The berm, averaging slightly over 3-foot high was created from alluvial cobbles deposited on the pasture during the 1997 flood. The berm parallels SFLBC on its western bank and prevents the active channel from interacting with the higher floodplain. Under historically high flow conditions (pre-1997), the active channel could spread out, lowering the velocity and energy of the flood waters. Currently, the berm constricts the river, channeling water during high flow events onto downstream habitat structures. The downstream (RM 1.9)

habitat structures were completed under cooperative agreement R14AC00048 by TFT. During high flow events, the channeling of water onto the downstream habitat structures could accelerate scouring, potentially increasing the risk of structure failure. The berm was partially breached by flooding in 2005 (Cascade Research, 2016). Removing the remaining berm would lower channel velocity and broaden the wetted width, enhancing structure performance and mitigating the risk of project failure. The berm currently hosts some native and non-native vegetation that would be replaced with riparian plantings along with the restoration of other disturbed areas. Approximately 1,700 yd<sup>3</sup> of material would be removed and disposed of at an appropriate offsite location determined by the contractor.

Livestock features have been incorporated into the design, including cattle-exclusion fencing, a temporary low-water crossing, and an alternative stock-watering tank. The cattle-exclusion fence would be installed to restrict cattle access to the creek and restored riparian areas, placed at the approximate interface of the 50-foot riparian zone and pasture, and terminated at existing fence lines. It would consist of steel T-posts and H-braces with three-barbed and one-smooth wire strung the length of the fence line. The existing SFLBC crossing would be removed and disposed of at an appropriate disposal facility, and replaced with new, removable fencing strung between pressure-treated wood posts permanently placed 100-feet off center of SFLBC. The temporary, low-water livestock crossing would have a removable section of barbed wire in the cattle-exclusion fencing to facilitate the movement of cattle from the grazing areas located on the western and eastern sides of SFLBC. This would restrict cattle movement across the creek into a narrow corridor, and would only be used during low-water conditions. A crushed-rock pad would be constructed near the western edge of the temporary cattle crossing fence line, and a large stock-tank would be placed on top of the pad to serve as a replacement watering source, as the livestock would not be able to access the creek.

Four large wood tiered structures are proposed along the main channel of SFLBC. The tiered structures would consist of a base layer of four lengths of trees (members) with rootwads placed within an excavated foundation. Approximately 160 yd<sup>3</sup> would be excavated per structure. The bank-line foundation would conform to structure dimensions to avoid excavation and disturbance of in-situ materials outside of the structure footprint. Subsequent layers of key members, with and without rootwads, would be placed at a slight vertical skew and tied into the existing floodplain trees, if available. The layers (11 members total) would form a stable, interlaced matrix and would not extend more than 3 feet above ground surface. The structures would be further anchored to each other with all-thread rods and nuts. Exposed metal would be painted with brown rust-inhibiting all-weather paint. Ballast boulders, gravel, cobbles, and excavated materials would also be used for anchoring. Micro piles, groupings of small diameter and large wood members would be woven into the structure at variable vertical angles and extend to the top of the log structure; slash piles would be incorporated within the first 8 feet from the ordinary high-water mark toward the bank. Plantings of willow and other riparian vegetation would be placed within the backfill areas at a minimum of four clumps per structure. A scour pool (approximately 30 by 8 feet by 3 feet deep) would be excavated in the stream bed to deepen the creek and initiate pool formation, which would deepen the creek to provide areas of rest, cooler temperatures, and cover for juvenile Coho Salmon.

Five smaller, three-member large wood structures are proposed, which would require the excavation of approximately 25 yd<sup>3</sup> per structure and would not exceed the footprint of the proposed structure. Base members would be placed within the excavated foundation with key members with rootwads placed across the base member at a slight vertical skew. The structures would tie into existing floodplain trees, if available. These structures would be constructed with three pieces of LWM with a minimum of six micro piles per structure. The structures would be stabilized with ballast boulders, gravel, cobbles, and excavated materials. Willow and other riparian plants would be secured and placed within the backfill at a minimum of four clumps per structure. A scour pool (approximately 30 by 8 feet by 3 feet deep) would be excavated in the streambed to deepen the creek and initiate pool formation, which would deepen the creek to provide areas of rest, cooler temperatures, and cover for juvenile Coho Salmon.

The three large habitat wood structures would deflect the hydraulic forces away from the streambank, while providing habitat to juvenile Coho Salmon. The large wood structures would require the excavation of approximately 550 yd<sup>3</sup> for the footprint of the structure, preserving and protecting as much of the existing trees and vegetation as possible. Approximately 25 large wood members would be used to construct the large habitat structure. To add additional habitat complexity, 30 micro piles and 45 yd<sup>3</sup> of slash and/or tree tops would be incorporated into the structure. The large wood members would be anchored to each other with all-thread rods and nuts. Exposed metal would be painted with brown, rust-inhibiting, all-weather paint. Ballast boulders, gravel, and cobbles would also be used for anchoring. At least 16 willow clumps would be placed along the bank face to provide quick-growing riparian cover and, eventually, would anchor the structure. The bank-line margins would be graded to reduce potential for terminus scour and flanking. A scour pool (approximately 75 by 8 feet by 3 feet deep) would be excavated in the stream bed to deepen the creek and initiate pool formation, which would deepen the creek to provide areas of rest, cooler temperatures, and cover for juvenile Coho Salmon.

The instream construction is expected to occur summer of 2016 during the Oregon Department of Fish and Wildlife (ODFW) established work window for the SFLBC, which is June 15 through September 15. The project site would not be isolated from active flow. A silt curtain would be installed along the channel edge to trap silt and sediment within the disturbed work zone. If water quality issues arise due to construction activities occurring in active flow, the contractor would use the best management practice of operating 30 minutes in the water with a 1-hour wait period before resuming in-water work.

As stipulated in the *Instream Habitat FONSI/EA*, a Public Safety Risk Matrix and Property Damage Risk Matrix was completed by TFT and River Design Group (RDG) and was reviewed by Reclamation's River Systems Analysis Group. Review of and comment on the matrices occurred at each design phase (concept, 30%, 60%, 90%, and 100%), and comments were submitted to TFT and RDG by a hydraulic engineer in the Pacific Northwest Region Geology and River Systems Analysis Group.

# AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## Introduction

Reclamation issued a *Finding of No Significant Impact for the Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds Environmental Assessment* (Instream Habitat Restoration EA/FONSI) on July 8, 2015. The *Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: SFLBC Project 2.2 Environmental Assessment* tiers from the *Instream Habitat Restoration EA* and provides project specific information as necessary.

Since specific actions in specific locations were not identified in the *Instream Habitat Restoration EA*, the environmental effects determinations represented the typical effects associated with the implementation of LWM structures. Reclamation committed to evaluate site-specific projects individually to determine if the typical effects described in the *Instream Habitat Restoration EA* were adequately analyzed. In addressing cumulative effects of the proposed activities, the assessment assumes compliance with the BiOp regarding the WUA required within each identified reach, according to Table 1.

This chapter describes the affected environment, including existing conditions and future anticipated conditions if the No Action Alternative is selected, the anticipated effects to the environment if the proposed activities are implemented, and the cumulative impacts of the proposed activities.

Reclamation has determined that the analysis present in the *Instream Habitat Restoration EA* sufficiently analyzed the project's impacts on the following resources: climate change, water quality, fish and wildlife, Indian Trust Assets (ITA), and environmental justice; therefore, those sections are incorporated by reference from the *Instream Habitat Restoration EA* and were not further analyzed. This *Project 2.2 EA* discusses the existing environment and the environmental consequences of the two alternatives on the following resources: riparian vegetation, threatened and endangered species, and cultural resources. Where applicable, mitigation measures are recommended to reduce adverse environmental effects.

## Riparian Vegetation

### Affected Environment

Riparian areas are the vegetated areas adjacent to waterbodies including rivers, streams, lakes, ponds, reservoirs, marshes, and wet meadows. The vegetation and microclimate conditions in riparian areas depend on the presence and influence of the water source, local water tables, and soil moisture content. Riparian areas are variable in width and do not conform to a specific distance from the waterbody and vary widely in shape. Plants adapt to natural river flow patterns and habitat conditions—winter rainstorms and spring snowmelt floods scour away dormant seedlings and saplings growing too close to the river's edge;



seeds released in spring and early summer sprout higher on the bank when the water level is high; and seedlings on these higher surfaces grow during spring snowmelt.

Riparian areas provide streambank stability, slow velocities of flow, reduce erosion, increase filtration of overland flows, store and release water over long periods, and insulate waterbodies from summer and winter extremes. Streambanks dominated by vegetation without extensive root masses are subject to undercutting during high-flow events, which can result in bank collapse and the introduction of high sediment loads being introduced into the stream. Standing vegetation (e.g., trees) help regulate water temperature through shade during the spring and summer months, and offer organic litter (e.g., leaves) which provides nutrients to aquatic species in autumn. Trees are a sustainable source of coarse woody material that can fall into the stream, dissipate flood energy, and create aquatic habitat. Riparian vegetation is also important to terrestrial species, as it provides nesting, roosting, cover, and food sources.

The *Instream Habitat Restoration EA* provides a broader statement of the affected environment within the Rogue River basin and is incorporated into this EA by reference. The following describes the site-specific details of the effects to riparian vegetation.

The area of potential effect (APE) for *Project 2.2* is located along the southwest and northeast bank of SFLBC and covers approximately 4 acres. Most of the APE is on the western bank of SFLBC, which has shifted its course significantly over the past several years. The APE consists of a flood-irrigated pasture (grass covered) that borders a narrow band of riparian vegetation along the western edge of the SFLBC. Some vegetation grows along the pasture/riparian interface and includes a variety of willows, thistles, mullein, snowberry, Oregon grape, a few Himalayan blackberries, and non-native grasses. Alluvial cobbles and gravel with very little soil constitutes approximately 75 percent of the ground surface within the APE. A berm of alluvial cobbles, averaging approximately 3-feet high, parallels SFLBC on its western bank.

*Project 2.2* is located on a dynamic floodplain. The low floodplain within the annual active channel averages 150 feet wide and contains multiple gravel bars. These gravel bars, which support diverse age classes of willow species (*Salix spp.*), as well as limited recruitment of white alder (*Alnus rhombifolia*) and black cottonwood (*Populus trichocarpa*), receive consistent scour and deposition during high-flow events. Much of this active channel contains large areas of bare ground and large-sized substrate (gravel and cobbles), with a few patches of reed canary grass (*Phalaris arundinacea*). Cattle grazing up to the channel's edge has suppressed the establishment of herbaceous and woody vegetation, supporting the infestation of noxious weeds including Himalayan blackberry (*Rubus bifrons*) and reed canary grass. This degradation is especially evident on the south side (river left bank).

The higher floodplain experiences the same heavy grazing pressure as the lower floodplain, resulting in a sparse distribution of willow and white alder along approximately 75 percent of the 1,350 feet of stream on the south side (river left bank) of the project. As with the lower floodplain, the groundcover layer is primarily cobbles and gravel, though pasture grasses are present.

No roads currently exist within the APE. The proposed primary access route is temporary and crosses through a cultivated, grass-covered field along the southwestern side of SFLBC. The grass is frequently grazed, and an abundance of rodent-burrowing dirt piles exist within the field.

In 1997, an unauthorized push-up rock berm was constructed, and it currently prevents the active channel from interacting with the higher floodplain. The berm also constricts the river in a reach that, under historical conditions, would see the channel spread out, lowering in velocity and energy. With an instream habitat project recently completed immediately downstream of the RM 2.2 site (at RM 1.9), this berm currently channels water during high-water events onto downstream habitat structures, which accelerates scouring and increases the risk of structural failure.

About 25 percent of the project area is located at the upstream-most end and is dominated by a mature stand of black cottonwood, white alder, and Oregon ash (*Fraxinus latifolia*). This overstory reaches a height of 50 to 150 feet. The low-to-mid-story native shrub layer (5 to 30 feet high) is largely absent, although some common snowberry (*Symphoricarpos albus*), Pacific madrone (*Arbutus menziesii*), and beaked hazel (*Corylus cornuta*) is present. Himalayan blackberry occupies the understory of the site and is often the only vegetation that has not been grazed by livestock. Himalayan blackberry suppresses native tree and shrub recruitment and outcompetes small statured species; therefore, it is substantially disrupting the natural successional processes within the riparian area.

## **Environmental Consequences**

### *No Action*

Under the No Action Alternative, LWM structures and riparian plantings would not occur. Stream courses would not be directed away from the bank to reduce or eliminate erosion and reduction in riparian habitat. The lack of quality and reduced riparian vegetation causes streambanks to be less stable, increasing their susceptibility to erosion. Other negative effects stemming from poor riparian conditions include reducing the amount of LWM and organic material available to the stream. The lack of LWM instream would continue to inhibit juvenile salmon rearing habitat, suitable spawning sites, and habitat diversity. Under this alternative, LWM contributions from existing immature stands would be limited for several years or decades; therefore, LWM accumulations would not likely reach historic levels which would impede the recovery of Coho Salmon runs and continue to limit their production within the project area for the long term.

Noxious weeds can out-compete native plants and reduce habitat for native insects and animals, thereby, threatening biological diversity. They can alter soil fertility, dry up water supplies, poison animals, decrease agricultural production, and infest rivers. While there would be no soil disturbance to provide additional habitat for noxious weeds, the spread of these weeds would continue through natural forces. Additionally, there would be no removal of noxious weeds to reduce the existing population or inhibit future populations.

## *Proposed Action*

The analysis in the *Instream Habitat Restoration EA* provides a broader statement of effects of the proposed action and is incorporated by reference. The following describes the site-specific details of the effects to riparian vegetation.

During construction of large wood material (LWM) structures, berm removal, and general ingress/egress and staging, there would be disturbance to native and non-native vegetation. Contractors and project managers would implement best management practices to limit the amount of disturbance, but there would be areas that would require restoration plantings. There are also some areas within the construction boundary where non-native species (e.g. Himalayan blackberries) are established and would need to be removed to allow for safe access, staging, and construction. Upon the completion of construction, removed non-native species would be replaced with native species to satisfy county permitting requirements.

Some areas immediately adjacent to installed habitat structures are also likely to see disturbance and would be revegetated with the same mix of native trees and shrubs to reinforce structural integrity and provide a source for future recruitment. Some agricultural pasture would also be disturbed during the course of construction (e.g., staging areas) and would require restoration seeding with an approved pasture mix.

The unauthorized 1997 berm would also be removed. This berm increases the risk of structures failing at the lower end of the project and on the neighboring project (RM 1.9) completed in 2015. Removing the berm would lower channel velocity and broaden the wetted width, enhancing structure performance and mitigating the risk of project failure. The berm currently hosts some native and non-native vegetation that would be replaced with native riparian plantings. Other disturbed areas (e.g., staging areas and access routes) would also be restored.

Livestock features have been incorporated into the design including installation of cattle-exclusion fencing, a temporary low-water crossing, and an alternative stock-watering tank. The cattle-exclusion fencing would restrict cattle access to the creek and restored riparian areas. The temporary cattle-exclusion fence would be placed at the approximate interface of the 50-foot riparian zone and pasture, and would be terminated at existing fence lines. It would consist of steel T-posts and H-braces with three-barbed and one-smooth wire strung the length of the fence line. The temporary, removable low-water cattle crossing would be installed near and in the creek to facilitate moving cattle from the grazing areas located on the western and eastern sides of SFLBC. The existing creek crossing would be removed and disposed of at an appropriate disposal facility and replaced with new, removable fencing strung between pressure-treated wood posts, permanently placed 100-feet off-center of the SFLBC. This would restrict cattle movement across the creek into a narrow corridor and used only during low-water conditions. A crushed-rock pad would be constructed near the western edge of the temporary cattle crossing fence, and a large stocktank would be placed atop the rock to serve as a replacement watering source, as the livestock would no longer have access to the creek.

General vegetation disturbance during construction would be short term, Vegetation would be rehabilitated to as-good-as or better-than preconstruction conditions. The project area would receive long-term benefits from the removal of noxious weeds and the use of native seed and vegetation in the areas of disturbance. Restoration of disturbed areas associated with construction would occur using the following strategy:

1. Mechanical clearing of noxious weeds (e.g., Himalayan blackberry) during LWM and berm removal construction
2. Chemical suppression of previously cleared noxious weeds, before and after project implementation
3. Pasture rehabilitation on 0.75 acre that may be postponed until spring 2017 if conditions are not appropriate for seed germination
4. Planting native trees and shrubs on 3.8 acres at ~1,000 stems/acre (tree/shrub ratio is 1 to 2). Exact timing is dependent on weather conditions. The following planting prescription allows for typical senescence (process of deterioration with age) of existing conditions and permit compliance:
  - a. Tree species examples—white alder (*Alnus rhombifolia*), black cottonwood (*Populus balsamifera v. trichocarpa*), incense cedar (*Calocedrus decurrens*), ponderosa pine (*Pinus ponderosa*), bigleaf maple (*Acer macrophyllum*), Pacific willow (*Salix lasiandra*), Douglas fir (*Psuedotsuga menziesii*), Oregon ash (*Fraxinus latifolia*)
  - b. Shrub species examples—Pacific ninebark (*Physocarpus capitatus*), coyote willow (*Salix exigua*), red-osier dogwood (*Cornus stolonifera*), blue elderberry (*Sambucus cerulean*), common snowberry (*Symphoricarpos albus*), western serviceberry (*Amelanchier alnifolia*), oceanspray (*Holodiscus discolor*), Oregon grape (*Mahonia aquifolium*), Woods’ rose (*Rosa woodsia*)
  - c. Willow staking during dormancy of plants and dependent upon flow conditions
5. Irrigation infrastructure set-up and watering of plants, dependent on water year and repeated annually until “free to grow” is established.

## **Cumulative Effect**

In addition to the cumulative effects discussed in the *Instream Habitat Restoration EA*, the following cumulative effects are site specific:

Livestock must have ready access to drinking water and this often means that livestock drink from, and loiter in, both large and small tributary waters. When livestock are allowed access, they trample and erode stream bottoms, stream banks and streamside vegetation as they seek water to cool themselves and drink. This increases sediment erosion and nutrient runoff, while increasing water temperature. The direct deposit of feces and urine also contributes to nutrient pollution and high bacteria counts in the waterways. Cattle exclusion practices keep livestock out of streams while protecting riparian vegetation that works naturally to limit nutrient and sediment runoff, provide shade, and stabilize banks.

The benefits of project implementation would begin to accrue in the short term and persist in the long term. Cattle would be immediately excluded from the project vicinity, allowing both the undisturbed and the newly planted native vegetation to thrive.

Installing cattle-exclusion fencing, an off-channel watering system, and a fenced corridor for low-water crossing limiting access to the creek, would have a cumulative beneficial effect when coupled with replanting disturbed areas and augmenting existing trees and understory in the riparian zone. These activities would improve water quality by trapping sediment (which reduces downstream sediment concentration), moderate river temperatures, and create channel systems where incision of the river banks is limited. In addition, a restored riparian zone becomes self-supporting and sustaining and LWM placement protects streambanks, allowing trees to grow, which ultimately supplies more LWM to the system.

The cumulative beneficial effect of berm removal would lower channel velocity and broaden the wetted width, enhancing structure performance and mitigating the risk of project failure. The berm currently hosts some native and non-native vegetation that would be replaced with riparian plantings.

## **Mitigation**

No mitigation is necessary. The proposed action includes Terms and Conditions (T&Cs) that reduce impacts on existing vegetation and actions to increase riparian vegetation, including rehabilitating all disturbed areas.

## **Threatened and Endangered Species**

### **Affected Environment**

The Coho Salmon is the only ESA-listed species that may be affected by implementation of the proposed project. Please see the evaluation of the Rogue River Project's over-arching effects on Coho Salmon at <http://www.usbr.gov/pn/programs/esa/oregon/rogue/rogueba.pdf>.

Other ESA-listed species in the Jackson County area under the jurisdiction of NOAA Fisheries include the North American green sturgeon and Pacific eulachon.

The ESA-listed species listed for Jackson County under the jurisdiction of the USFWS are the following (USFWS 2015):

- Birds: Northern Spotted owl (*Strix occidentalis caurina*)
- Crustaceans: Vernal Pool fairy shrimp (*Branchinecta lynchi*)
- Mammals: Gray wolf (*Canis lupus*)
- Amphibians: Oregon spotted frog (*Rana pretiosa*)
- Flowering Plants: Cook's lomatium (*Lomatium cookie*), Gentner's Fritillary (*Fritillaria gentneri*), and large-flowered woolly Meadowfoam (*Limnanthes floccosa ssp. grandiflora*)

## Environmental Consequences

### *No Action*

If the proposed action was not implemented, Reclamation would not satisfy the required conservation actions of the BiOp, and would trigger reconsultation with NOAA Fisheries.

The lack of pools within the project area limits resting and rearing habitat for juvenile and adult salmonids. The poor pool quality would continue to have direct and indirect negative effects on the production of adult and juvenile salmon, trout, and other species.

Coho Salmon would continue to be subject to warm temperatures and predation as a result of shallow water and scattered riparian shade.

### *Proposed Action*

The analysis in the *Instream Habitat Restoration EA* provides a broader statement of effects of the proposed action and is incorporated by reference. The following describes the site specific details of the effects to Coho Salmon.

TFT and its contractor would consult with ODFW to determine if fish salvage is necessary. If fish salvage is determined necessary, TFT would coordinate with ODFW to remove existing fish at the project site prior to isolation and dewatering of the area. Fish salvage would be conducted by trained fisheries biologists and per ODFW rules and T & C identified in the 2012 NOAA Fisheries Rogue BiOp for LWM installations. Fish would be allowed to migrate out of the work area, if possible. If necessary, electrofishing or use of a seine net may be used to remove fish from the isolated work area. In cofferdam work areas and other isolated areas, water would be drawn down to help consolidate fish and improve salvage efforts, if deemed necessary by ODFW or contractor's biologists. If reduction in water volume is necessary, pumps would be fitted with approved fish screens that prevent impingement or entrainment of fish. For the period between capture and release, all captured aquatic life would be immediately put into clean 5-gallon buckets filled with clean river water. Fish species and life stage would be documented and fish would be released in a safe environment, as determined by ODFW or contractor's biologists.

The large habitat wood structures would deflect the hydraulic forces away from the streambank, while providing habitat to juvenile Coho Salmon. At least 20 willow clumps would be placed along the bank face to provide quick-growing riparian cover and, eventually, anchoring of the large wood habitat structure. As the willows mature, they would contribute additional woody material to the stream.

The restoration treatments function as small barbs. Barbs provide complex hydraulics and erosion and sedimentation patterns that ultimately lead to more complex instream habitats with beneficial protective cover. Barbs help develop a distinct thalweg, pools, and other complex habitat types in a fairly homogenous reach of the creek.

The construction of the LWM structures would result in the following immediate, juvenile Coho Salmon habitat formation:

- Pool formation to provide slower, deeper water as an insulator to high water temperatures from direct solar radiation and to provide areas of rest
- Overhead cover for protection against predation and to provide shade
- Refugia from high-velocity flows as the LWM would slow the flows around and through the structure
- Sorting of gravel, including the deposition of spawning gravel, would increase and develop a more complex habitat.

Reclamation anticipates that *Project 2.2* would provide a gross WUA of 2,066 ft<sup>2</sup>. The benefits would begin to accrue in the short term and persist in the long term. Implementation of the proposed project would result in a substantial increase of winter and summer instream rearing habitat and stream complexity conditions that are beneficial to juvenile Coho Salmon. Reclamation anticipates that long-term beneficial impacts of LWM installations would aid in the recovery of the Coho Salmon population to a viable level.

## Cumulative Effect

Reclamation has assessed past, present, and reasonably foreseeable future projects in the Bear Creek and Little Butte Creek watersheds for cumulative impacts. There are several reasonably foreseeable actions near Project 2.2 that have beneficial effects to Coho Salmon. Reclamation's BA and the NOAA Fisheries' BiOp, address Reclamation's conservation actions within both watersheds, which include the following: instream flows, ramping rates, fish passage modifications, riparian zone restoration (without LWM placement), and water conservation projects.

## Mitigation

No mitigation is needed. The effects of the proposed project on federally listed threatened and endangered species were analyzed in Reclamation's BA and NOAA Fisheries' BiOp. The proposed action, as a result of the BiOp, has T&C associated with it that are non-discretionary. Reclamation must comply with the T&C to implement the RPMs included in the BiOp. (See Appendix B for the RPMs and T&C associated with construction of the proposed project.)

Reclamation has determined that implementation of the proposed project would not affect ESA-listed species under the jurisdiction of USFWS.

## Cultural Resources

The National Historic Preservation Act (NHPA) requires Federal agencies to evaluate their impact on historic properties within the human environment. "Historic property" means any prehistoric or historic district, site, building, structure, TCPs, or object included in or eligible for inclusion in the National Register and includes any material, artifacts, or records related to and located within such historic properties. They may include irrigation systems that are more than 50-years-old and are associated with events or processes important in the history of the area. "Cultural resources" covers a wider range of resources than "historic properties," such as sacred sites, isolated artifacts, and archaeological collections.

## Affected Environment

The area of potential effect (APE) for Project 2.2 is located along the southwest and northeast bank of the SFLBC. The APE is located primarily on the western bank of SFLBC, with one LWM structure and some cattle-exclusion fencing being placed on the east side of SFLBC, and includes all areas associated with temporary access routes, the staging/stock pile areas, and the rock berm. The following section is extracted from the Cultural Resource Inventory completed by Cascade Research, LLC, in April 2016 (Gray 2016):

**Ethnography:** In the late prehistoric period the Takelma, a Penutian-speaking people resided in a territory that centered on the upper Rogue River drainage and extended east up Little Butte Creek to the crest of the Cascades. To the south, they occupied portions of the Bear Creek Valley as far as the Talent/Ashland area, and likely the current project area. On the west, the Applegate River Valley and Galice Creek marked the boundaries with their



Athapascan-speaking neighbors, the Dakubetede and the Taltuctunte. The Hoka-speaking Shasta shared the southern portion of the Bear Creek Valley with the Takelma. Shasta territory extended south and east into northern California along the Klamath, Shasta, and Scott Rivers (Holt 1946). The groups bordering Takelma territory to the north were the Molala and the Cow Creek Band of Umpqua Indians.

The Takelma, as defined by language dialect, were divided into two and possibly three distinct groups. The principal villages of the Lowland Takelma were centered on the Rogue River extending from the present-day town of Gold Hill downriver to perhaps Grave Creek. The Upland Takelmas winter village home territory was further upriver in the lower Bear Creek Valley near Table Rock and perhaps as far east as Ashland, Oregon. The drainage of Little Butte Creek was also considered Upland Takelma territory. A third dialect group of Takelma may have inhabited the upper reaches of the Rogue River drainage in the vicinity of Trail and Elk Creek, although little is known of this subgroup. All of the Takelma, as well as the neighboring Shasta and Athapascans shared a common way of life and a similar natural environment, though local differences in the availability of certain resources may have resulted in slightly different subsistence and settlement patterns.

**Archaeology:** A number of prehistoric sites have been recorded and tested in the Little Butte Creek drainage. Two of these sites have been identified as seasonal base-camps; two sites were classified as short-term campsites, and the other evaluated sites relate to quarry/assaying activities of locally available cryptocrystalline silicate tool stone (CCS) or chert tool stone.

On the rolling hills south of the South Fork of Little Butte Creek are located a series of seven prehistoric sites recorded by personnel from the Medford District of Bureau of Land Management (Winthrop 1993b). These sites consist of the remains of casual quarrying and assaying of local chert (CCS) cobbles. Broken cobbles, cores, and a few percussion flakes were the primary materials recovered from each site. The sites are located either in areas of shallow soil alongside seasonal drainages, or on rocky hillsides next to outcrops of CCS cobbles. No dateable material was recovered from six of the sites formally evaluated, and all of these sites exhibited low surface densities of lithic material. These sites represent the initial step in the lithic reduction process (i.e., the acquisition of useable tool-stone). Site 35JA264 was more intensively tested in 1997. Artifacts recovered from that research included over 3,000 pieces of debitage, 24 cores, several bifaces and two projectile points, dating to the Late Archaic. Functionally, the site served as a lithic reduction areas for the production of cores, bifaces, and flake blanks that were further reduced off-site (Gray 1997).

Two additional CCS quarry/assay sites are located west and north of the current APE. The extent of the sites remains undetermined, although they exceed more than 12 acres. Several hundred cultural pieces of CCS were noted within the inventoried portion of the sites, including cores, core fragments, early and late stage core reduction flakes, percussion bifacial reduction flakes, and one formed tool, the tip of an arrow-size projectile point. Much of the CCS appears fire affected (e.g., color change); both of the sites are considered low-density lithic scatters (Gray 2007).

In summary, the excavated sites in the area surrounding the current project area, together with the surface find of a Paleo-Indian point near Butte Falls, attest to the presence of Native Americans in the immediate region for the last 10,000 to 12,000 years.

**History:** The small community of Lake Creek, Oregon, a little over two miles northwest of the current APE. According to McArthur (1992) the Lake Creek post office was established on December 10, 1886, but the postal service changed the name to "Lakecreek" on April 29, 1894. The name was officially changed back to Lake Creek in 2007. The commercial heart of Lake Creek includes a Grange building, volunteer fire department, cafe, general store, and Pioneer Hall (a community center). The surrounding area, including the current project locale, is devoted to ranching and agriculture.

## **Environmental Consequences**

### *No Action*

#### **Cultural Resources**

No impacts on cultural resources would occur, since there would be no construction.

#### **TCP**

No impacts to TCP would occur, since there would be no construction.

### *Proposed Action*

#### **Cultural Resources**

On February 29, 2016, Reclamation sent pre-project consultation letters, notifying the following Tribes as to the location and intent of the cultural resource inventory by Cascade Research, LLC: Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz, Cow Creek Band of Umpqua Indians, Quartz Valley Indian Reservation, and Klamath Tribes. The Cow Creek Band of Umpqua Indians requested a copy of the final report.

Cascade Research conducted the records search at the SHPO in Salem, Oregon, and conducted the cultural resource surveys on the APE. Research at SHPO revealed that the most common recorded pre-contact site types in the area are upland assay and quarry areas related to the procurement of CCS tool stone. Cascade Research conducted a cultural resource survey on March 18 and April 13, 2016. The entire western bank of SFLBC RM 2.2 property within the APE was inventoried for cultural resources. Visibility in the proposed LWM habitat structure areas approached 100 percent due to active flooding within the APE. No historic or pre-contact sites or isolated finds were noted during the course of surface inventory.

The Cow Creek Band of Umpqua Indians were sent a copy of the cultural resource survey on May 13, 2016. Reclamation has developed an inadvertent discovery plan (IDP) at the request of the Cow Creek Band of Umpqua Indians, which would be provided to TFT. TFT would be responsible to ensure that onsite contractors have a copy of the IDP on-hand at all times.

Reclamation initiated consultation with the SHPO in a letter dated April 20, 2016. Reclamation determined that *Project 2.2* would have no effect on any significant

archaeological objects or sites and that additional archaeological research is not anticipated for this project. Reclamation did not receive a letter of concurrence from the SHPO; however, under the Code of Federal Regulations (CFR), specifically 36 CFR 800.3 (c) (4), Reclamation can proceed with the project, provided the 30-day comment period has elapsed without a response from the SHPO.

### **TCP**

Reclamation consulted with area Tribes to determine if TCP are present in the project vicinity. Reclamation did not receive responses from the Tribes.

### **Mitigation**

No mitigation is needed.

## **CONSULTATION AND COORDINATION**

Reclamation consulted Federal agencies, Tribes, and state agencies during the preparation of this EA.

### **ESA Section 7 Consultation**

The effects of activities related to this action are addressed in Reclamation's BA and NOAA Fisheries' BiOp. The increase in WUA in Bear Creek and Little Butte Creek watersheds is a RPM of the BiOp, and addressed with specific T&C. Both the BA and the BiOp can be accessed online at <http://www.usbr.gov/pn/programs/esa/oregon/rogue>.

### **NHPA Section 106 Consultation**

On February 29, 2016, Reclamation sent pre-project consultation letters to the Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz, Cow Creek Band of Umpqua Indians, Quartz Valley Indian Reservation, and Klamath Tribes. The Cow Creek Band of Umpqua Indians were sent a copy of the cultural resource survey on May 13, 2016.

Reclamation initiated consultation with the SHPO in a letter dated April 20, 2016. Reclamation did not receive a response letter from SHPO, and intends to proceed with the implementation of Project 2.2 under 36 CFR 800.3 (c) (4).

## Coordination

Reclamation used an interdisciplinary approach to prepare this EA to comply with the mandate of the NEPA to “...utilize a systematic, interdisciplinary approach which would ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man’s environment” (40 CFR 1501.2(a)). The following principal disciplines and resource specialists were involved with preparation of the EA:

- Elizabeth Heether, Environmental Protection Specialist; Reclamation
- Christine Horting-Jones, Archaeologist; Reclamation
- Scott Willey, Fisheries Biologist; Reclamation
- Richard Rieber, Fisheries Biologist; Reclamation
- Christopher Cuhacian, Hydraulic Engineer; Reclamation

Reclamation worked with the following agencies during the development of this EA:

- National Marine Fisheries Service
- Oregon State Historic Preservation Office
- Oregon Department of Fish and Wildlife
- Confederated Tribes of Grand Ronde Community
- Confederated Tribes of Siletz
- Cow Creek Band of Umpqua Indians
- Quartz Valley Indian Reservation
- Klamath Tribes

Reclamation staff have met with and or presented information to the following agencies and interest groups in an effort to accomplish the LWM objectives in both the Bear Creek and Little Butte Creek watersheds. Generally, meetings with these groups have involved informal discussions, meetings, and formal presentations with question and answer periods. Reclamation has also gone on several field tours with most of these agencies, stakeholder groups and prospective restoration contractors:

- Bear Creek Watershed Council
- Little Butte Creek Watershed Council
- Oregon Department of Fish and Wildlife
- Rogue Valley Council of Governments
- City of Medford, OR
- City of Ashland, OR
- Talent Irrigation District
- Rogue River Valley Irrigation District
- Medford Irrigation District
- Water for Irrigation, Stream and Economy Project Partners
- Individual Local Landowners
- The Freshwater Trust

Reclamation also had an informational booth at the 2014 Bear Creek Salmon Festival.

## Permits and Authorizations Needed

Per the *Instream Habitat Restoration EA/FONSI*, the following permit/authorization/review/exemption applications have been submitted for Project 2.2:

- U.S. Army of Corps of Engineers Nationwide Permit No. 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)
- Jackson County Type 1 Land Use Permit-Floodplain Development Permit
- Oregon Department of State Lands Removal/Fill Exemption with notice for voluntary habitat restoration activities
- Oregon Department of Fish and Wildlife concurrence on “Procedures for Generating Shade Credits”

The project would not commence until all applicable permits, authorizations, reviews, exemptions have been received by TFT and forwarded to Reclamation.

## LITERATURE CITED

Reference	Description
Bredikin et al. 2006	Bredikin Bredikin, T., T. Atzet, and J. MacLeod. 2006. Watershed Health Factors Assessment: Rogue River Basin, Jackson, Josephine and Curry Counties, Oregon. Prepared for the Rogue Basin Coordinating Council. March 2006. <a href="http://www.oregon.gov/OWEB/docs/pubs/Rest_Priorities/WHFA_5-4-06Final.pdf">http://www.oregon.gov/OWEB/docs/pubs/Rest_Priorities/WHFA_5-4-06Final.pdf</a>
Gray 2016	Gray, Dennis J. Cascade Research, LLC, 2016. <i>Cultural Resource Inventory of the Sarthou Riparian Improvement Project on the South Fork of Little Butte Creek, Jackson County, Oregon.</i> April 2016.
NOAA Fisheries 2012	National Marine Fisheries Service. 2012. <i>Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Future Operation and Maintenance of the Rogue River Basin Project (2012-2022), Rogue and Klamath River Basins (HUCs: 18010206, 17100308, 17100307), Oregon and California.</i> National Marine Fisheries Service, Northwest Region, Seattle, Washington. April 2012.
Reclamation 2015	Bureau of Reclamation. 2015. <i>Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds Finding of No Significant Impact and Environmental Assessment, PN FONSI 15-05 and PN EA 15-05.</i> Pacific Northwest Region. Columbia-Cascades Area Office, Yakima Washington. July 2015.
Reclamation 2012a	Reclamation. 2012. <i>Biological Assessment on the Future Operation and Maintenance of the Rogue River Basin Project and Effect on Essential Fish Habitat under the Magnuson-Steven Act.</i> Pacific Northwest Region. U.S. Bureau of Reclamation, Lower Columbia Area Office, Portland, Oregon. March 2012.
Reclamation 2012b	Reclamation. 2012. <i>Decision Document Concerning NOAA Fisheries April 2012 Biological Opinion for the Future Operation and Maintenance of the Rogue River Basin Project, Talent Division.</i> Pacific Northwest Region. Bureau of Reclamation. May 2012.