

RECLAMATION

Managing Water in the West

Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: Neil Creek Project 2.0

FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT

Rogue River Basin Project, Oregon

Pacific Northwest Region

PN FONSI 16-06

PN EA 16-06



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

July 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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Finding of No Significant Impact

**U.S. Department of the Interior
Bureau of Reclamation
Columbia-Cascades Area Office
PN FONSI 16-06**

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: Neil Creek Project 2.0* (Project 2.0) *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 (ft² WUA)

Reach Name	Median Flow (50% exceedance)	Low Flow (80% exceedance)	Targeted Life Stage
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: Neil Creek Project 2.0: Instream habitat projects would be implemented in the Bear 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 Alternative 2, through a financial assistance agreement with The Freshwater Trust (TFT), an instream habitat project would be implemented on the Neil Creek river mile (RM) 2.0 property in the Bear 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 Neil Creek 2.0 property. This proposed project aims to add a substantial amount of large wood to Neil Creek 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; construction of cattle-exclusion fencing; installation of off-channel watering, four hardened livestock crossings and one livestock and equipment bridge crossing; construction of 12 large wood-tiered structures, 7 smaller large wood structures, and 77 individual log placements; 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 and hazard trees removed from Reclamation's campground at Howard Prairie Reservoir. 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 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 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 Neil Creek, 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: Neil Creek Project 2.0 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, riparian vegetation, 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 2.0 EA* discusses the existing environment and the environmental consequences of the two alternatives on the following resources: 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 2.0 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.

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 2.0* would provide a gross WUA of 2,005 ft². 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 in April 2016 and October 2015. The cultural resource inventory of the APE included all associated temporary access routes, staging/stock pile areas, bridge and hardened crossing placement, and

areas for the large wood structures. Visibility in the proposed LWM habitat structure areas approached 80 percent due to vegetation coverage within the APE. Further information cannot be provided due to the sensitivity of the area.

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 May 3, 2016. Reclamation determined that *Project 2.0* would have no effect on any significant archaeological objects or sites and that additional archaeological research is not anticipated for this project. Reclamation received a letter of concurrence from the SHPO on May 12, 2016.

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 2.0*:

- 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: Neil Creek Project 2.0*.

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

7/12/16
Date

Approved:



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

7/12/16
Date

RECLAMATION

Managing Water in the West

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ENVIRONMENTAL ASSESSMENT

Rogue River Basin Project, Oregon

Pacific Northwest Region

PN EA 16-06

June 2016

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Instream Habitat Restoration in Bear Creek and Little Butte Creek Watersheds: Neil Creek Project 2.0

ENVIRONMENTAL ASSESSMENT

U.S. Department of the Interior
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PN EA 16-06

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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: Neil Creek Project 2.0 (Project 2.0) 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 (ft² WUA)

Reach Name	Median Flow (50% exceedance)	Low Flow (80% exceedance)	Targeted Life Stage
Emigrant Creek/Neil Creek	7,100	15,700	Winter rearing
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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 Emigrant Creek/Neil Creek reach of the Bear Creek watershed 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 northeast and southwest sides of Neil Creek and along the east and west banks of a short section of Clayton Creek, approximately 3 miles southeast of the Ashland, Oregon, along Highway 66. The confluence of Clayton Creek with Neil Creek is near the middle of the proposed project. Neil Creek feeds into Bear Creek farther downstream and beyond the project area. The approximate 9-acre project area lies within Jackson County in Sections 13 and 24 of Township 39 South, Range 1 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—Neil Creek Project 2.0

Under Alternative 2, through a financial assistance agreement with The Freshwater Trust (TFT), an instream habitat project would be implemented on the Neil Creek river mile (RM) 2.0 property in the Bear 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 Neil Creek 2.0 property. This proposed project aims to add a substantial amount of large wood to Neil Creek 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; construction of cattle-exclusion fencing; installation of off-channel watering, four hardened livestock crossings and one livestock and equipment bridge crossing; construction of 12 large wood-tiered structures, 7 smaller large wood structures, and 77 individual log placements; 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 and hazard trees removed from Reclamation's campground at Howard Prairie Reservoir. 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 Highway 66 that leads to an established gravel drive and dirt road. An undeveloped road currently exists within the project vicinity. Equipment and staging areas would be accessed via a grassy, rock-covered pasture. The equipment and material staging areas are approximately 3,000 ft² and 7,000 ft², located on the northeast and southeast of Neil Creek respectively. The staging sites are in areas with compact silt/loam on the grass and star thistle covered ground above the floodplain. 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 permanent bridge or culvert to maintain flow and fish passage. No equipment would cross through the stream bed.

Livestock features have been incorporated into the design, including the following: cattle-exclusion fencing; four low-water, hardened livestock crossings on Neil Creek; removal of a failed culvert crossing on Clayton Creek; installation of a permanent, railcar bridge for livestock and equipment crossing over Clayton Creek; and installation of stock-watering tanks. The cattle-exclusion fence would be installed to restrict cattle access to the creek and restored riparian areas, which would be 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 wires and one smooth wire strung the length of the fence line. The low-water, hardened livestock crossings include excavating the footprint of the crossing location; disposing of excavated material in an upland area; placement of geotextile separation fabric between subgrade and base materials; and covering of geotextile fabric with compacted, crushed rock. Livestock exclusion fencing would restrict cattle movement across the creek into a narrow corridor in areas currently used by cattle and would only be used during low-water conditions. Construction elements for the Clayton Creek bridge crossing include the removal and disposal (at an appropriate disposal facility) of the existing culvert; clearing and grubbing the footprint of the work area; installation of abutments (outside of the 100-year floodplain) and scour protection; construction of streambed; and placement of crushed rock for road approaches, ramps, and road surfacing on either side of the bridge. Crushed-rock pads would be constructed and large stock-tanks would be placed on top of the pads to serve as a replacement watering source, as the livestock would not be able to access the creek. It is anticipated that the location of the stock-watering tanks would be installed in upland areas from where cattle currently access the creeks.

Twelve large wood tiered structures are proposed within the project area. The tiered structures would consist of a base layer of two lengths of trees (members), one with rootwad and one without, to be placed within the excavated foundation. Approximately 125 yd³ 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 (five members total) would form a stable, interlaced matrix and would not extend more than 3 feet above ground surface. 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 20 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.

Seven smaller, three-member large wood structures are proposed, which would require the excavation of approximately 25 yd³ 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 15 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.

Approximately 77 individual logs would be placed in the channels of Neil and Clayton creeks. Twenty-seven single, large wood members with rootwads would be placed and pinned by boulder ballast. Approximately 5 yd³ of material would be excavated and the log would be in direct contact with the channel bottom and scour pool. A scour hole (maximum depth of 3 feet) would be created beneath and downstream of each structure. The associated scour pool would be approximately 15 feet by 6 feet by 3 feet deep to initiate pool formation. The remaining 50 individual logs, 25 with rootwad and 25 without rootwad, would be placed within Neil and Clayton creeks, with the locations determined by the project manager. Each of the fifty individual logs would require approximately 2 yd³ of excavation and two-thirds of its length would be buried into the channel bank. The 50 single logs would be in direct contact with the channel bed, and the scour pools would not be created.

The instream construction is expected to occur summer of 2016 during the Oregon Department of Fish and Wildlife (ODFW) established work window for the Neil Creek, 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: Neil Creek Project 2.0 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, riparian vegetation, 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 2.0 EA* discusses the existing environment and the environmental consequences of the two alternatives on the following resources: threatened and endangered species and cultural resources. Where applicable, mitigation measures are recommended to reduce adverse environmental effects.

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 is not implemented, Reclamation would not satisfy the required conservation actions of the BiOp, and would trigger re-consultation 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.

The failed culvert project (two undersized culverts, placed side by side) on Clayton Creek has reduced hydraulic connectivity between Clayton Creek and Neil Creek. Both creeks are designated as essential salmon habitat. Two activities have resulted in degradation of water quality: (1) the creeks have been used for moving equipment between pastures, and (2) livestock has had unimpeded access to the creek.

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.

The Freshwater Trust 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 dewatering of the area. Fish salvage would be conducted by trained fisheries biologists, per ODFW rules and BiOp T&Cs 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. 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 project would provide four hardened livestock crossings on Neil Creek and one railcar bridge for fish passage, equipment, and livestock travel on Clayton Creek. Construction elements for the Neil Creek's crossings include excavating the footprint of the crossing location, disposing of excavated material in a designated upland area, and placement of geotextile separation fabric between subgrade and base materials. Construction elements for the Clayton Creek bridge include the following: removing the failed culvert crossing; clearing and grubbing the work area footprint; installing abutment scour protection;

constructing a streambed with matrix rock and washing in natural gravels and fines to seal the streambed matrix; grading the constructed streambed to match existing streambed along natural transition lines; placing crushed rock for road approaches and ramps; and placing the bridge and abutments outside the 100-year floodplain per manufacturer's recommendations. The area is devoid of vegetation; therefore, woody vegetation is not expected to be adversely effected by removing the culvert and replacing the railcar bridge. Collectively, these actions would support the implementation of *Project 2.0* and would indirectly contribute to Coho Salmon recovery. The completed project would result in a stream channel that would allow for improved fish passage and movement, more natural stream processes, and a long-term solution to address resource concerns.

The large habitat wood structures would deflect the hydraulic forces away from the streambank at high flows, while providing habitat to juvenile Coho Salmon at low flows. Willow clumps would be placed along the bank face to provide quick-growing riparian cover and, eventually, increase the stability of the large wood habitat structure. As these willows and other riparian tree species mature, they will provide additional woody material to the stream.

The smaller large wood structures function as 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 distinct pools, tail-outs, thalweg, and other complex habitat patterns in an otherwise homogenous reach of the creek.

The individual logs function similar to barbs, but on a smaller scale. Individual logs protect the stream bank by increasing the resistance of the bank and pushing the higher velocity flow toward the center of the channel, while providing instream habitat through scour and cover.

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 2.0* would provide a gross WUA of 2,005 ft². 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 2.0 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 2.0 is located along the northeast and southwest sides of Neil Creek and along the east and west banks of a short section of Clayton Creek. The APE includes all areas associated with temporary access routes, staging, and the construction of fencing, hardened crossings, bridges, and large wood structures. The following section is extracted, or adapted, 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 and historic sites have been recorded and tested in the Bear Creek drainage. Additional information cannot be provided due to the sensitivity of the findings.

History: The lands of the upper Bear Creek along Neil Creek were settled and patented by the early 1860s (Lalande 1980). It was at this point that the current historic home of Patrick Dunn, located on the west side of Highway 66 at the south end of Project 2.0, was constructed (ca. 1860, and, since 1977 listed on the National Register of Historic Places). The historic Dunn property has been used for either farming or livestock grazing since the early 1850s. The current project is located within Donation Land Claims 56 and 57. DLC 57 was claimed by William F. Songer, who arrived in Oregon in September of 1852. William Songer was born in Orange, Indiana, in July 1826 and according to the U.S. Census of 1860, was a stock grower with a personal value of \$2,500. His Donation Land Claim (No. 56) neighbor to the southwest, Patrick Dunn, was also 34 years of age in 1860. Dunn, after surviving the hostilities of the 1850s, was listed as a farmer with a land value of \$5,000 and a personal value of \$3,700 (U.S. Census records 1860); Dunn Butte, named for this early settler, lies due east of the APE.

Emigrant Lake (Reservoir) lies to the east and south of the APE and is a major recreational resource for residents of Bear Creek Valley, as well as part of the Talent Irrigation District system for local crops and orchards. Songer Butte, Songer Gap, and Songer Wayside (recalling the name of one of the area's earliest pioneers) are near the Reservoir. A dam was constructed in 1924 by the Talent Irrigation District to form the original Reservoir. In 1960, Reclamation enlarged the dam and increased the pool height (Morgan and Calaway 1994).

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 in April 2016 and October 2015. The cultural resource inventory of the APE included all associated temporary access routes, staging/stock pile areas, bridge and hardened crossing placement, and areas for the large wood structures. Visibility in the proposed LWM habitat structure areas approached 80 percent due to vegetation coverage within the APE. Further information cannot be provided due to the sensitivity of the area.

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 May 3, 2016. Reclamation determined that *Project 2.0* would have no effect on any significant archaeological objects or sites and that additional archaeological research is not anticipated for this project. Reclamation received a letter of concurrence from the SHPO on May 12, 2016.

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 May 3, 2016. Reclamation received a concurrence letter from SHPO on May 12, 2016.

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 Cuhacyan, 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 2.0:

- 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
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Gray 2016	Gray, Dennis J. Cascade Research, LLC, 2016. <i>Cultural Resource Inventory of the Riparian Improvement Project on Neil Creek Rm 2.0 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.