LEWIS RIVER AQUATIC COORDINATION COMMITTEE

Facilitator: ERIK LESKO
503-412-8401

Location: TEAMS MEETING ONLY

Date: November 16, 2021

Time: 9:30 AM – 12:45 PM

AGENDA ITEMS

9:30 AM	Welcome ➢ Review and Accept 11/16/2021 Agenda ➢ Review and Accept 10/14/2021 Meeting Notes
10:00 AM	Public Comment Opportunity
10: 15 AM	ACC review of draft Lewis River Aquatic Monitoring and Evaluation Plan (AMEP)
10:45 AM	Aquatic Fund Presentations ➢ Swift Campground Creek Culvert Replacement – *Phill Thompson, Greg Robertson* ➢ Northwoods cold-water Refuge Habitat Restoration Project – *Kelley Jorgensen, Matt Harding*
11:30 AM	Fish Passage Subgroup Development – decision document *Bill Sharp*
12:00 PM	Study/Work Product Updates ➢ Flows/Reservoir Conditions Update ➢ ATS Update ➢ Fish Passage Update ➢ USFWS update on fish stranding above Swift (tentative)
12:30 PM	Next Meeting's Agenda Public Comment Opportunity
12:45 PM	Meeting Adjourn

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
November 16, 2021
TEAMS Meeting Only

ACC Representatives and Affiliates Present (15)
Bridget Moran, American Rivers
Sarah Montgomery Anchor QEA
Eli Asher, Cowlitz Indian Tribe
Amanda Froberg, Cowlitz PUD
Steve West, LCFRB
Chris Karchesky, PacifiCorp
Erik Lesko, PacifiCorp
Jeremiah Doyle, PacifiCorp
Mark Ferraiolo, PacifiCorp
J.D. Jones (USFS)
Jeff Garnett, USFWS
Peggy Miller, WDFW
Josua Holowatz, WDFW
Bryce Glaser, WDFW
Aaron Roberts, WDFW
Bill Sharp, Yakama Nation

Guest (6)
Jason Shappart (Meridian Environmental)
Jeannie Heltzel (Meridian Environmental)
Matt Harding (Northwoods)
Kelley Jorgensen (on behalf of Northwoods)
Phillip Thompson (USFS)

Calendar:

November 16, 2021	ACC Meeting	TEAMS Meeting

Assignments from November 16, 2021	**Status**
All: Provide comments on the Aquatic Monitoring and Evaluation Plan (AMEP) to Chris Karchesky by February 15, 2022.	**Ongoing**
All: Submit any written comments on Aquatic Fund proposals by Dec 3 to Erik Lesko and Sarah Montgomery.	**Complete**
All: Provide edits to the ACC Representatives list to Erik Lesko by December 9.	**Complete**
Erik Lesko and Bill Sharp: Finalize sections of the Fish Passage Subcommittee Decision Document.	**Ongoing**

Erik Lesko: look up the peak natural flow at Merwin Dam and provide to Josua Holowatz.	**Complete**
Bridget Moran: Ask Jonathan Stumpf who will be the Fish Passage Subcommittee representative for Trout Unlimited.	**Ongoing**
Erik Lesko: Extend the Aquatic Fund period of performance for the Chum Channel Project.	**Ongoing**

Assignments from August 13, 2020	**Status**
Jeff Garnett: Jim Byrne (Trout Unlimited) requested that Tim Romanski (USFWS, retired) investigate how and why the Merwin trap design was decided in 2005.	**Ongoing.**

Opening, Review of Agenda and Meeting Notes
Erik Lesko (PacifiCorp) called the meeting to order at 9:33 a.m. and reviewed the agenda. Lesko added an item to review the ACC Representatives list and an item to extend a previously approved Aquatic Funds project. Lesko reviewed the October 14, 2021, meeting notes. The meeting notes were approved at 10:00 a.m., with clarifying edits from Washington Department of Fish and Wildlife (WDFW).

Public Comment Opportunity
None

ACC Review of Draft Lewis River AMEP Review – Kick Off Meeting
Chris Karchesky (PacifiCorp) introduced Jason Shappart and Jeannie Heltzel (Meridian Environmental), who have been working with PacifiCorp and the ATS on revisions to the AMEP. He said the revised draft of AMEP was submitted to the ACC for 90-day review on November 15, 2021 and that comments were due on February 15, 2022. Also submitted was a comment-response matrix for the ACC to provide their comments and Karchesky asked that representatives reach out at any time with questions within the 90-day period.

As part of the kick-off meeting for AMEP review, Karchesky summarized the revision process that the ATS went through in order to develop the next 5-year revision of the plan. As a reminder, the Settlement Agreement for the Lewis River Hydroelectric Project required the Utilities to develop a monitoring and evaluation plan for all facets of the aquatics program including fish passage, bull trout, and water quality. It is stipulated that the plan is reviewed and, if needed, updated every 5 years. The current plan was finalized in 2017. Karchesky explained that as part of the technical review of the currently plan, a memorandum was developed that provided recommendations on potential improvements and where areas of focus need to be made in the revised plan. Besides technical changes to the objectives included in the AMEP, the document was revised to be more in line with the structure of the 2020 H&S Plan, including a similar layout and more information about how the programs relate. Shappart then provided a summary of the high-level technical changes to the AMEP:

- Reporting will now be conducted at the cohort or broodyear level instead of the calendar year.
- In order to provide estimates at the cohort or broodyear level, more juvenile fish will need to be PIT-tagged from different age classes. A feasibility study is included to determine an efficient way to achieve the number of tags needed.
    - Karchesky noted that collecting juveniles above the Swift Floating Surface Collector (FSC) has been a logistical shortcoming of the current plan, so the

feasibility study will determine how to get more marks upstream to make inference on estimates of abundance and other fish population metrics.

- For adult monitoring, the plan will temporally suspend annual spawning ground surveys for coho and winter steelhead, but will continue for spring Chinook in habitats upstream of Swift Dam.
    - For steelhead, existing data show that steelhead move around and use the existing habitat. Since steelhead spawning surveys are difficult and not particularly informative, spawning surveys are de-emphasized in the revised AMEP and more emphasis will be placed assessing population metrics using other information.
    - For Chinook salmon, spawning surveys will continue because there have been only three years where a sufficient number of fish were transported upstream to quantify spawning.
    - For coho, spawning surveys upstream of Eagle Cliffs are de-emphasized; however, coho that may be spawning in the drawdown zone downstream of Eagle Cliffs, could have a higher pre-spawn mortality than those spawning in other areas. For this reason, data will be evaluated to estimate pre-spawn mortality in the drawdown zone.
- Integrated population models (IPMs) will be developed for coho, steelhead, and Chinook. These will integrate data such as downstream passage, adult returns, and spawning surveys in order to determine broader-scale program metrics like ocean recruits and smolt-to-adult returns, as well as performance metrics for reintroduction species.

Karchesky said the Executive Summary within the revised draft plan also provides a discussion of the major changes in this revision of the AMEP. He offered that PacifiCorp can provide any additional presentations or materials to support the ACC's 90-day review upon request.

Bryce Glaser thanked Karchesky for PacifiCorp's work to revise the AMEP. He noted that the ATS continues to wrap up some smaller revisions to sections of the document. Glaser supports the inclusion of IPMs in the AMEP because it will help address several management-level questions and help inform recovery phases. He also noted that even though upstream of Swift steelhead and coho spawning ground surveys will be de-emphasized, estimates of spawner abundance will still be calculated.

Karchesky added that for any previous objectives that have been de-emphasized, it is because there is a more efficient way to gather the information.

The ACC will review the AMEP and provide comments to Karchesky by February 15, 2022.

<Break from 10:16 a.m. to 10:25 a.m.>

Aquatic Fund Presentations

Erik Lesko said two proposals for Aquatic Funds are available to review, and today's presentations are an opportunity for the ACC to discuss the proposals and ask questions of the applicants. Written comments are due by December 3.

Swift Campground Creek Culvert Replacement

Phil Thompson (USFS) introduced the Swift Campground Creek Culvert Replacement proposal, which addresses one of the last man-made barriers that block salmon spawning and rearing habitat in the upper Lewis River basin. Thompson provided an overview of the project (Attachment A). Questions and comments from the ACC followed:

- Peggy Miller (WDFW) recommended reviewing WDFW's guidance document on considering climate change when designing fish passage projects.
- Eli Asher (Cowlitz Tribe) said he appreciates the two-phase design and construction aspect of the proposal. He asked how the USFS would be involved in the construction phase.
    - Thompson said the lower barrier is on private land, and he has been working with the HOA of the community to come to agreement about the project; he is presenting the project at an upcoming HOA meeting.
    - Kate Day (USFS) noted that the USFS can use a "widen amendment" to give USFS approval to work on private lands. It is a simple agreement and allows for work that provides aquatic benefit to USFS lands.
    - The two culvert replacements can be designed together in one contract and built together as a separate contract.
- Miller asked about the involvement of the HOA.
    - Thompson said the HOA will likely provide access and approval, but does not have funds to contribute to the project.
- Lesko asked if there are any regulatory requirements to replace culverts on USFS or private lands, because Aquatic Funds cannot be used for projects that otherwise are required by law to be completed, such as by a state or county mandate.
    - Thompson and Day are not aware of any requirements but will check.
    - Miller noted that culverts on state and county roads are required to be replaced, but she is not aware of a mandate for private roads.
- Garnett asked about future maintenance of the culvert, and how that would be incorporated into the access agreement.
    - Day said USFS can write maintenance access into the Wyden Amendment, and USFS can take the lead on maintenance.
- Josua Holowatz (WDFW) noted that a large wetland system exists upstream of the FR90 crossing, which provides important habitat for sensitive species like the Oregon spotted frog.. He asked whether the wetlands would be reduced in quality or quantity.
    - Due to the amount of wood that would be proposed in the restoration design, Thompson does not anticipate negative effects to the wetland system, and this can be addressed during design and permitting.

Northwoods Cold-water Refuge Habitat Restoration

Kelly Jorgensen (consultant on behalf of Northwoods) and Matt Harding (Northwoods) introduced the proposal, Northwoods Cold-water Refuge Habitat Restoration, which aims to address chronic fish stranding issues in the upper Swift Reservoir. Jorgensen provided an overview of the project (Attachment B). Questions and comments from the ACC followed:

- Asher asked whether stranding impacts were covered under the Biological Opinion for the Lewis River projects.
    - Lesko said that neither the BiOp or FERC licenses have obligations related to reservoir stranding.
    - Garnett said the ACC will need further discussions about whether it is appropriate to address stranding issues through Aquatic Funds; however, the proposed project provides a strong approach.
- Glaser asked if the feasibility study will consider potential effects on the existing channel. He asked whether there is enough water in the existing channel to create a side channel.

    - Jorgensen said the study would consider daylighting more of the groundwater and hyporheic flow to create new habitat, and would not dewater the main flow on the left bank.
- Bill Sharp relayed his experience working on similar issues in the Columbia River basin, noting that in some cases, it makes more sense to provide fish a quick transition zone out of an area that they should not stay in for long. With this approach, an alternative would be to excavate the main channel and make more upland habitat.
    - Jorgensen noted that in her experience, the habitat in this reach is good, especially the cold-water inputs, and the fish are present because it is good habitat. Designing an off-channel area with cold-water refuge habitat would increase the quality and quantity of habitat available to fish without dewatering the main channel. Fast deep habitats are not lacking in this area, whereas off-channel cold-water habitats are.
- Peggy Miller asked about lake fluctuations and any needed maintenance.
    - Jorgensen said working in a deposition reach makes maintenance almost unavoidable, but it's likely that most of the sediment in the system came from the Mount St. Helens eruption. Looking at patterns of sediment distribution and transport during the design phase will help choose a low maintenance alternative.
- Miller also noted that because the project is within the FERC project boundaries, FERC approval would be needed.
    - Jorgensen said she will add a line item in the study to get FERC approval.
- J.D. Jones noted that the project includes over $700,000 for the design process and asked what a rough estimate for construction might be.
    - Jorgensen said the construction cost would hinge on the amount of material that needs to be moved and said a cost estimate will be provided as part of the design process.

Glaser noted that it will be important to resolve the question about regulatory requirements before the projects proceed to scoring. He asked for input from USFWS and NOAA. Jeff Garnett said he will continue working with NOAA staff to achieve clarity on the question of whether stranding above Swift Dam is an unidentified impact of the project. If so, it could potentially be classified as a regulatory requirement and projects related to addressing the impact would not be eligible for Aquatic Funds. Holowatz asked for an update on the balance of the Aquatic Fund. Lesko said he will look this up and provide this to the group.

Lesko reminded the ACC that written questions and comments on the two proposals are due back to him by December 3, 2021 so they can be provided to the applicants.

Fish Passage Subgroup Development

Bill Sharp provided an update on the development of the Fish Passage Subgroup (FPS). The FPS met earlier in November and have been working on a Decision Document, which he shared with the ACC. The Decision Document provides background for the formation of the FPS. A charter is also being developed, which can be updated as the group establishes itself. Lesko will work on revisions to the Decision Document and provide to Sharp for finalization at the next ACC meeting.

The FPS Charter was also shared with the ACC, and the FPS will continue revising it during their next meetings. Representatives and alternates for the FPS are identified in the Charter. Bridget Moran said she will follow up with Jonathan Stumpf to determine Trout Unlimited's representative for the FPS. Scott Anderson (NMFS) may also need a temporary replacement.

Study/Work Product Updates

Flows/Reservoir Conditions Update

Merwin Reservoir – currently at 229.3 (-10.34)
Yale Reservoir – currently at 473.5 (-16.5)
Swift Reservoir – currently at 990.1 (-9.9)
Total current hole – 36.80 feet (26.80 feet when Yale limitation is included)

There is approximately 11,358 cubic feet per second natural inflow at Merwin Dam and the current outflow from Merwin is 14,300 cubic feet per second.

Josua Holowatz asked what the peak natural flow at Merwin Dam is and estimated as high as 50,000 cfs. Lesko said he will look this up and provide the number to Holowatz.

ATS Update
Erik Lesko said the ATS is currently working to finish the 2022 AOP. He said he has sought support from Anchor QEA to assist in completing the Monitoring and Evaluation section due to the many changes resulting from the 2020 H&S Plan.

Lewis River Fish Passage Update (see also Attachment C for the October Fish Passage Report)
See Attachment C.

Merwin Fish Passage Update (see also Attachment D for the October Fish Passage Report)
Karchesky informed the ACC that the Merwin Adult Collection Facility has been taken offline due to design limits exceeded by high river flow conditions below Merwin Dam. The facility went offline on Friday November 12 and will go back into operation soon as tailrace flow returns to below exceedance limits. Karchesky also noted that the discharge hose to the adult fish release pipe at Eagle Cliff had been compromised due to high flows and that any fish being transported upstream will now be release at Swift Forest Camp Boat Launch. It is expected that the release pipe will be reinstalled once inflows at Swift Reservoir come down.

Karchesky noted that the coho run is strong so far, with just over 7,000 adult coho being transported upstream (mostly early Coho) to date.

Lesko asked if the coho run is high enough to potentially reach a record. Aaron Roberts said this run could potentially reach 40,000 to 50,000 adults, which is high, but not as high as record years like 2001 when over 100,000 early and late coho returned.

Swift Floating Surface Collector (see also Attachment E for the October Fish Passage Report)
Karchesky said the Swift Floating Surface Collector (FSC) was put back into service in early-November. Unfortunately, it was taken out of service for two days due to a pump failure. Currently, the FSC is in operation and so far, mostly coho parr have been collected, which are being pushed out by the high water. Though the facility continues to operate under high flows, debris has been an issue.

USFWS Update on Fish Stranding Above Swift Dam

See Northwoods Cold-water Refuge Habitat Restoration.

Update ACC Reps List

Lesko shared the ACC Representatives list and asked for any edits to it. The following edits were made:

- J.D. Jones was added as an alternate for USFS.
- Chris Karchesky was added as an alternate for PacifiCorp.

Representatives will consider additional edits needed and provide those to Erik by the next ACC meeting.

Extension Request for Aquatic Fund Chum Channel Project

Erik Lesko said he received an email from Todd Hillson (WDFW) stating that matching contributions from BPA were not available in 2022. Hillson requested a time extension for the project through 2023 to allow time to secure the matching contributions. Lesko said he does not object to extending the contract and asked for the ACC's feedback.

Bryce Glaser said he thinks that the contract allows for an extension with approval of the ACC. Glaser said the project is still likely to receive the other source of funding from Bonneville Power Administration, but if not, they are optimistic that other sources of funding could be found. Another option is to break the project into phases. Eli Asher said he does not see a problem with extending the period of performance for the grant.

Lesko will work on extending the project through 2023

Other

Lesko noted that ACC meetings have been scheduled through the end of 2022. Until decided otherwise, meetings will continue to be held virtually.

Bridget Moran requested that the calendar invites be shortened each month so that they match the anticipated end time of the meeting. She also requested that PacifiCorp add the meeting attachments to the calendar invite. Lesko said he and Montgomery will work on updating the meeting invites to reflect these changes for calendar year 2022.

Agenda Items for December 9, 2021

- Review November 16, Meeting Notes **(ACC COMMENTS DUE December 9, 2021)**
- Finish Decision Document: Fish Passage Subgroup
- Budget Update for Aquatic Fund
- Aquatic Monitoring and Evaluation Plan ACC Review Kickoff
- USFWS Update on Fish Stranding above Swift (Tentative)
- Study/Work Product Updates

Adjourn 12:15 p.m.

Next Scheduled Meeting

December 9, 2021
Teams Call Only

9:30 a.m. – 12:30 p.m.

Meeting Handouts & Attachments

- Meeting Notes from 10/14/2021
- Agenda from 11/16/2021
- **Attachment A –** Aquatic Fund Proposal: Swift Campground Creek Culvert Replacement
- **Attachment B –** Aquatic Fund Proposal: Northwoods Cold-water Refuge Restoration Project
- **Attachment C –** Lewis River Fish Passage Report (October 2021)
- **Attachment D –** Merwin Adult Trap Collection Report (October 2021)
- **Attachment E –** Swift FSC Facility Collection Report (October 2021)

Note: all meeting notes and the meeting schedule can be located at:
https://www.pacificorp.com/energy/hydro/lewis-river/acc-tcc.html

Join on your computer or mobile app
Click here to join the meeting

Or call in (audio only)
+1 563-275-5003,,86743835# United States, Davenport

Phone Conference ID: 867 438 35#

FULL PROPOSAL FORM

Lewis River Aquatic Fund

Form Intent:
To provide a venue for an applicant to clearly indicate the technical basis and support for proposed project. Specifically the project's consistency with recovery plans, Settlement Agreement Fund objectives and priorities, technical studies and assessments which support the proposed action and approach.

Full Proposal format:
Please complete the following form for your Full Proposal. Maps, design drawings and other supporting materials may be attached.

The deadline for a Full Proposal Form submission is **October 25th, 2021**. Please submit materials to:

Erik Lesko
PacifiCorp
825 NE Multnomah Street, Suite 1800
Portland, OR 97232
Erik.lesko@pacificorp.com

1. Project Title

Swift Campground Creek Culvert Replacement

2. Requested Funding Amount $74,390

3. Project Manager (name, address, telephone, email)

Phill Thompson, phillip.thompson@usda.gov
Greg Robertson, greg.robertson2@usda.gov, (509) 395-3366

4. Identification of problem or opportunity to be addressed

Problem:

The crossing of Forest Road 90 (FR-90) at Swift Campground Creek, is an undersized culvert that is a barrier to anadromous salmonids migrating upstream. In 2019, Coho spawning surveys conducted by Meridian Environmental in the approximately 900ft reach below the FS-90 culvert revealed 30 live and dead Coho, along with 10 redds. The reach above the FR-90 culvert yielded no observations of Coho or redds during these same surveys. This indicates the Coho are limited to only the 900ft reach of accessible habitat below FR-90. The reach below the FR 90 crossing contains some spawning gravels however, it is nearly absent of large wood. The reach is considered to be of low complexity compared to the substantially longer, and more complex spawning and rearing habitat upstream of the FR-90 crossing.

Figure 1. Culvert outlet (inlet bottom right) on FR-90. Note the high velocity, small size, perch, and lack of a jump pool.

USFS personnel have also identified a partial barrier culvert on Gates Drive in the reach below FS-90 that is also a migration issue (Figure 2). While Coho were observed above this culvert, it is undersized and poses a barrier to at least some life stages and species of fish.

Figure 2. Culvert inlet on Gates Drive.

Opportunity:

The FR-90 culvert is currently the last known man-made barrier blocking appreciable habitat to anadromous species on USFS lands in the Lewis River drainage above the reservoirs. To restore historic anadromous salmonid spawning and rearing habitat upstream of FR-90 to the headwaters, The Gifford Pinchot National Forest proposes to replace the FR-90 culvert and the Gates Drive culvert with an Aquatic Organism Passage (AOP) approved design. The project will create and sustain diverse habitats by restoring nearly 5,300 lineal feet of stream channel above FR-90 and allow the full migration of aquatic organisms including Coho and steelhead while at the same time reduce the risk of crossing failure and stream diversion causing increased sedimentation.

This newly available habitat, over a mile long, is of high quality and will provide more refugia during winter flows for juvenile salmonids, rearing opportunities for juvenile salmonids during summer months and increased spawning opportunities for adult salmonids. The Gifford Pinchot National Forest completed a climate change vulnerability assessment in 2019 (Hudec et al.). With respect to watershed stewardship, this analysis focused on potential thermal impacts to anadromous fish species, emphasizing the need to build aquatic habitat resiliency and connectivity. In alignment with USFS goals, this project will improve climate resiliency of habitat and infrastructure to the increased frequency and magnitude of flood events, lower summer low flows, and increased thermal pressure. The project will improve water storage and hyporheic exchange, lower stream temperatures, and increase habitat diversity and complexity.

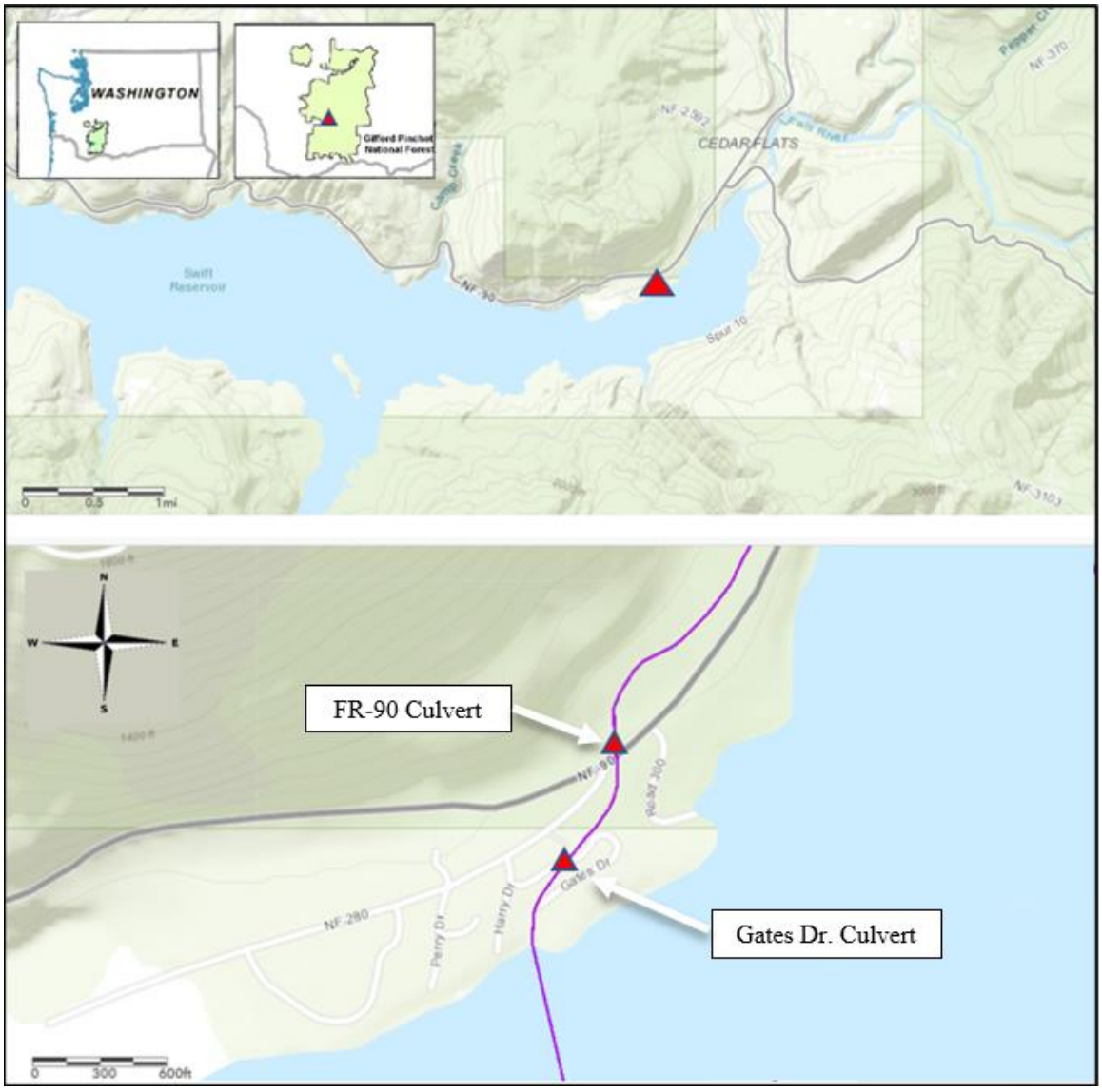

Figure 3. Swift Campground Creek Culvert Replacement project location.

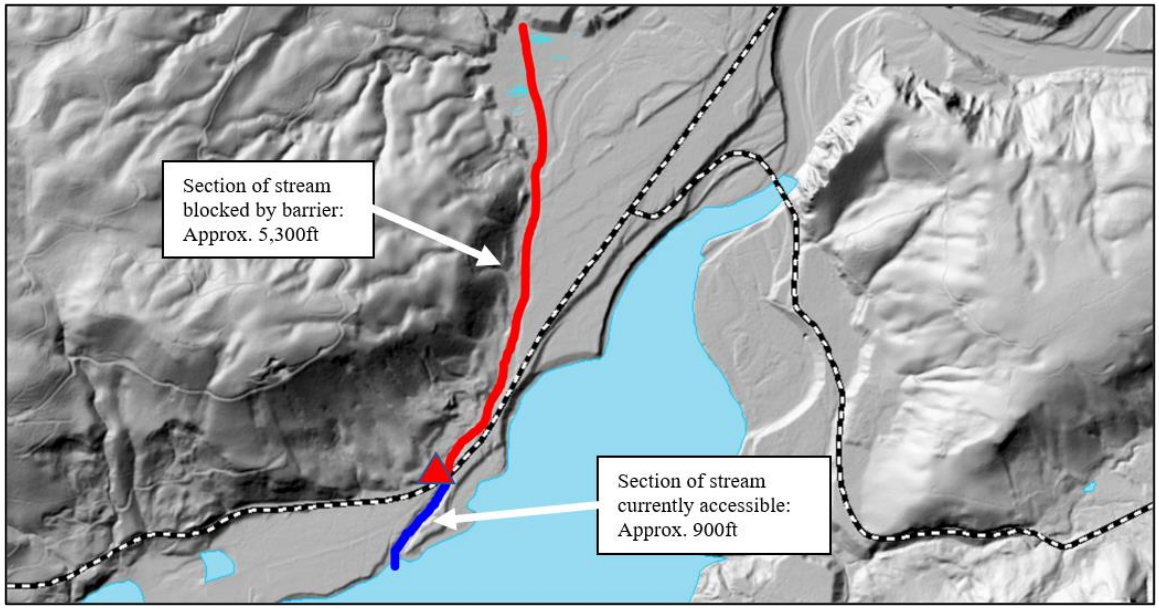

Figure 4. Map representing difference in lengths of accessible habitat.

5. Background

Swift Campground Creek is above the Lewis River hydropower system, which had blocked all upstream adult migration for about 75 years. As part of the most recent FERC license, PacifiCorp and Cowlitz PUD are implementing salmon and steelhead reintroduction in the upper basin. Adult Coho, steelhead, and spring Chinook are transported and released to the upper basin to spawn naturally. Coho are currently using the site below the FR-90 culvert, and we anticipate greater numbers of upstream-bound adults over time after replacement of the culverts. This project is in alignment with Lewis River recovery goals by restoring access to blocked spawning and rearing habitat in the Lewis River Basin that will help support the reintroduction of anadromous fish throughout the basin.

Swift Campground Creek is ranked as a Tier 3 reach by the Lower Columbia Fish Recovery Board (LCFRB) with Contributing designation for Coho and winter steelhead, Primary designation for spring Chinook, and Stabilizing designation for summer steelhead.

The current LCFRB SalmonPort GIS layer shows the Tier 3 available habitat available for 6,335ft with the majority above the culvert barrier (Figure 5). The lower gradient habitat above the FR-90 culvert barrier possesses more desirable habitat conditions (Table 1).

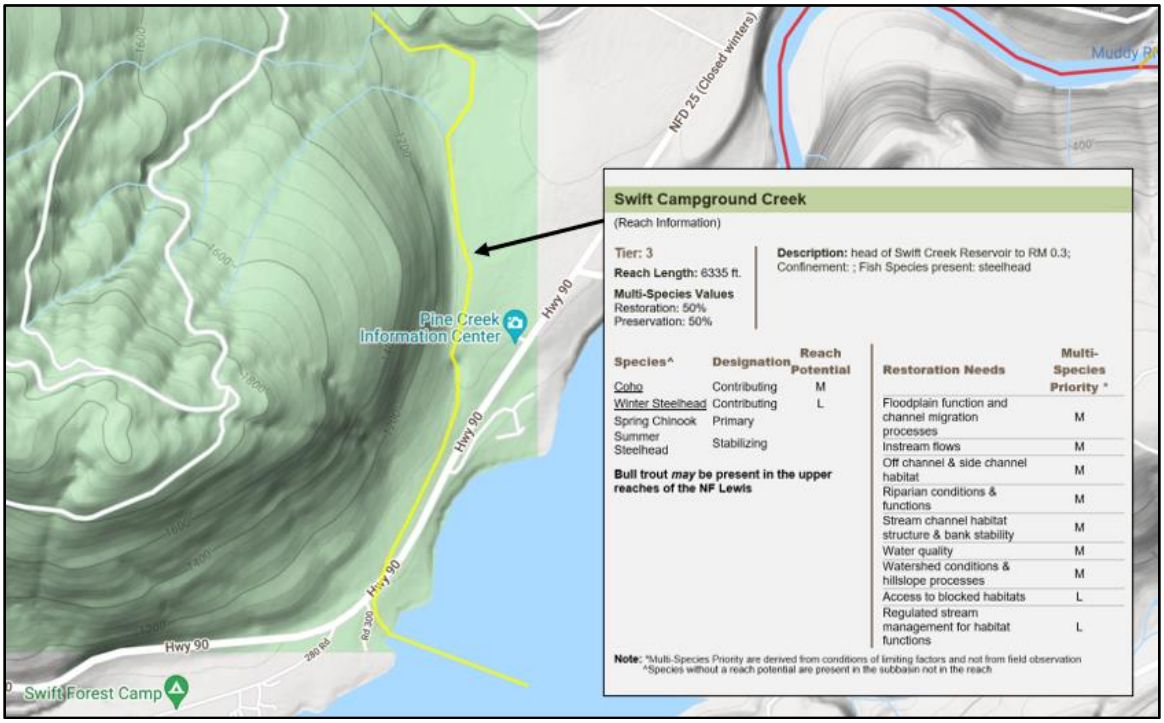

Figure 5. LCFRB map showing the Tier 3 habitat of Swift Campground Creek.

Table 1. Habitat assessment of Swift Campground Creek, surveyed on March 26, 2020. Courtesy of Meridian Environmental.

Attribute	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6
Currently accessible to anadromous fish	yes	yes	no	no	no	no
Photo numbers	1, 2	3, 4, 5, 6	7, 8	9, 10	11, 12, 13, 14, 15	16, 17, 18
Station start (feet from edge of reservoir full pool)	-300	0	975	1,875	2,675	6,275
Station end (feet from edge of reservoir full pool	0	900	1,875	2,675	6,275	---
Total reach length (feet)	300	900	900	800	3,600	>1,000 feet of small channels in wetland
Average gradient (% slope)	3.5%	2.5%	1.5%	0.5%	1.5%	0.5%
Channel form	single thread	single thread	single thread	single thread	single thread	multiple channels
Valley form	constrained by low terrace	hillslope constrained	constrained by low terrace	unconstrained	constrained by low terrace	unconstrained
Average wetted width (feet)	10	5	6	5	7	2
Average depth (feet)	0.3	0.8	0.7	1.3	0.7	0.5
Average pool maximum depth (feet)	1.0	1.3	1.5	2.0	2.0	1.3
Average active channel width (feet)	12	6.5	7	5.5	9	4
Average flood prone width (feet)	na	7	20	75	30	>100
Dominant habitat type	riffle	riffle	riffle	glide/riffle	riffle	glide/riffle
Subdominant habitat type	rapid	pool	pool	pool	pool	pool
Pool frequency	low	low	low	common	common	low to common
Large wood frequency	scarce	scarce	scarce	low	low	low to common
Dominant substrate	cobble	cobble	gravel	sand	gravel	sand/silt
Subdominant substrate	boulder	gravel	cobble	gravel	sand	gravel
Anadromous fish spawning gravel patch frequency	scarce	low	low to common	common	abundant	low
Undercut bank frequency	none	low	low	common	common	common
Riparian composition	unvegetated	forested through area of cabins	mature forested	wet meadow/ scattered trees	mature forested	wet meadow/ scattered trees
Side/off-channel frequency	none	none	none	none	none	several small channels through wetland

Note. Table values are approximate and based on visual estimates from survey on March 26, 2020.
Note. FR-90 culvert downstream end is at approx. station 900 feet and the upstream end is at station 975 feet from the edge of the reservoir full pool (i.e., culvert is 75 feet long).

6. Project Objective(s)

The objective of this project proposal is to remove and replace two anadromous fish barriers on Swift Campground Creek to facilitate the unobstructed passage of migrating salmonids. Removal and replacement of these culverts will open over a mile of stream channel, restoring connectivity to salmonid spawning and rearing habitat. This proposal is for the design portion of the projects. Individual objectives include:

- Provide full fish passage in Swift Campground Creek by replacing two man-made barriers with crossings to accommodate aquatic organism passage for all life stages and all flows.
- Provide channel continuity through the new crossing through stream simulation principles. Improve hydraulic capacity to mitigate infrastructure failure risk at the crossings.
- Provide access to habitat with preferable spawning substrate upstream of the FR-90 crossing.
- Provide access to cooler average rearing temperatures upstream of the FR-90 road crossing.

Other project objectives that coincide with the culvert replacement is to add large wood to the channel and floodplain in the creek above FR-90 and perform stream simulation in small areas where necessary. This would accelerate floodplain development and would provide an opportunity for sediment retention. Retaining sediment behind the large wood would provide an increase in adult spawning potential through gravel retention and juvenile rearing by creating forced pools, side channels, retention of nutrients, cover, and habitat complexity. The USFS has a stockpile of large wood near the project site at the Pine Creek Work Center that could potentially be used for these purposes.

Figure 6. Typical habitat upstream of the FR-90 culvert.

This project addresses the following Aquatic Fund priorities:

Priority 1: Benefit fish recovery throughout the North Fork Lewis River, with priority to federal ESA-listed species.

Lower Columbia ESU Chinook, Coho, and steelhead are listed as a threatened species under the ESA. This project will contribute to the recovery of these species by increasing the amount and quality of spawning and rearing habitat.

Priority 2: Support the reintroduction of anadromous fish throughout the basin.

This proposal will complete the design for access to over a mile of rearing and refugia habitat for juvenile anadromous salmonids that is currently blocked. Once implemented, the project will improve the habitat characteristics that will promote survival and promotion of reintroduced anadromous fish.

*Priority 3: Enhance fish habitat in the Lewis River Basin-, with priority given to the North Fork Lewis River***.**

This project is located in the North Fork Lewis River basin and will restore and enhance habitat in Swift Campground Creek, which is a tributary to the North fork Lewis River. This project will improve aquatic function and increase instream habitat diversity and is expected to contribute toward increasing fish production in the North Fork Lewis River.

7. Tasks

The tasks of work to be completed focus on the final designs of the culvert replacements. Prior to the USFS issuing a request for proposals for design work, the following tasks will be completed:

- Task: Consult with USFS botanist, wildlife biologist, and archeologist for potential resources that may be affected by culvert removal for aquatic Environmental Analysis. Deliverable: USFS approval. March 2022.
- Task: Contract Preparation and award. Deliverable: Design contract awarded. April-May 2022.

Work completed by the selected professional architect and engineering (A&E) firm will include the following:

- Task 1: Site survey
- Task 2: Contractor hydraulic modeling, geotechnical investigation (if needed, section 106 permit will be acquired by USFS staff), fieldwork and flood analysis will be completed to help determine proper sizing and details of the structures and stream/habitat design work. Deliverable: June 2022
- Task 3: Regular meetings with consultant to track project progress. Deliverable: Meeting notes and deliverables from the consultant. May 2022 and on.
- Task 4: Complete alternatives assessment and preliminary design report, and cost estimate comparisons Deliverable: 30% designs and preferred structure alternative selected. June – July 2022.
- Task 5: Complete 90% design of preferred alternative. Deliverable: 90% drawings, technical specifications package, and estimate of project costs. September 2022.
- Task 6: Final design. Deliverable: Final design report, final drawings for contracting, technical specifications, construction quantities and costs. October 2022. *

* It is the USFS's goal to have a completed design in hand in time to apply for Aquatics Funds in October 2022 to partially fund implementation with USFS match in 2023.

The USFS has completed hundreds of aquatic organism passage improvement projects and instream wood projects using the principles of natural channel design. The USFS has detailed protocols, procedures and specifications that incorporate decades of lessons learned through the planning and implementation of aquatic organism passage projects. The USFS has a trusted pool of A&E consultants familiar with natural channel design principles, and a streamlined contracting and process to hire experienced consultants with a proven record of designing successful AOP projects.

8. Methods

The stream channel at the culvert replacement sites will be designed using the stream simulation process per USFS AOP direction. This work consists installing logs, trees, root wads and specified fill to simulate natural stream profile, and streambed through culverts, bridge structures, and existing stream channels. Typical examples of this work include developing materials, hauling materials, dewatering, sediment control, placing bedding and backfill to construct stream simulation channels inside and outside of the structures placing, keying, sealing, and compacting designed streambed fill, constructing instream structures, reconstructing existing channels, and all other streambed work to complete the project.

Designs will include bankfull width, plan view drawing overlaid with proposed actions of specific dimensions, and project profile and cross sections at the replacement locations showing substrate gradations and water surface elevations relevant to the design including design flows. Project alternatives will be included at the 30% conceptual design phase and will evaluate the most effective and cost-efficient structures that meet the hydraulic and ecological project objectives (i.e., bridge vs open-bottom arch, etc.)

Examples of the typical engineering plans used at these types of sites are shown below (Figures 7-10.).

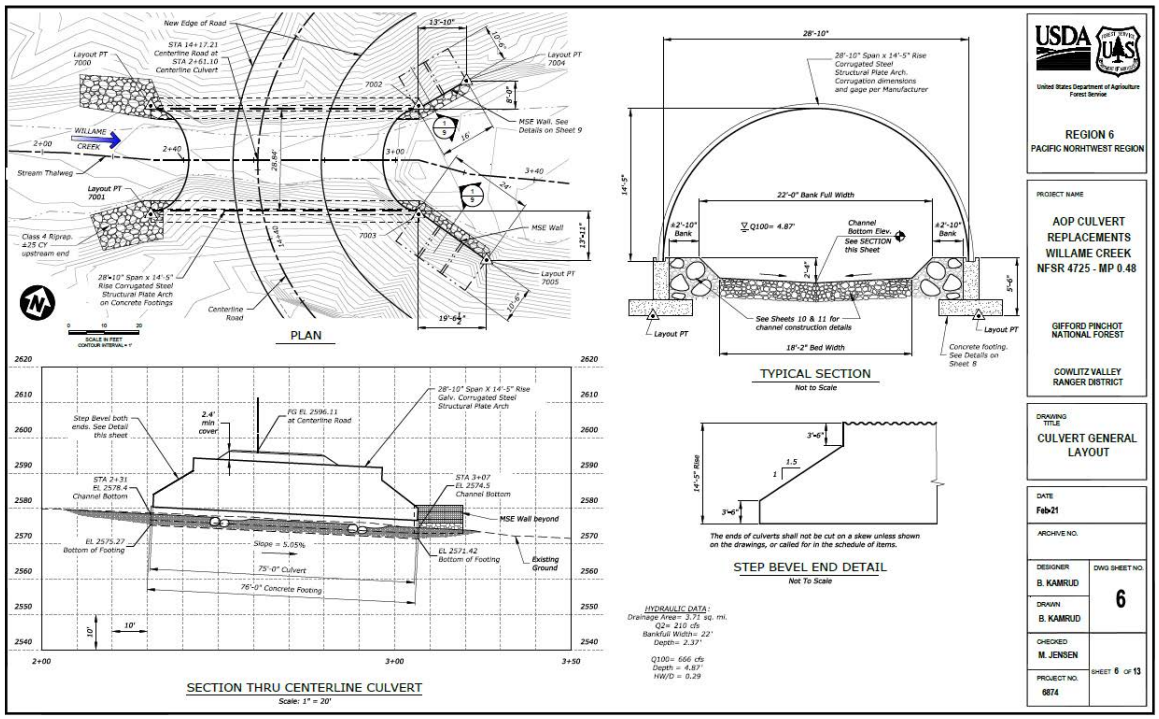

Figure 7. Design example of a typical open-bottomed arch structure with pre-cast concrete footings to provide AOP at all flows and life stages.

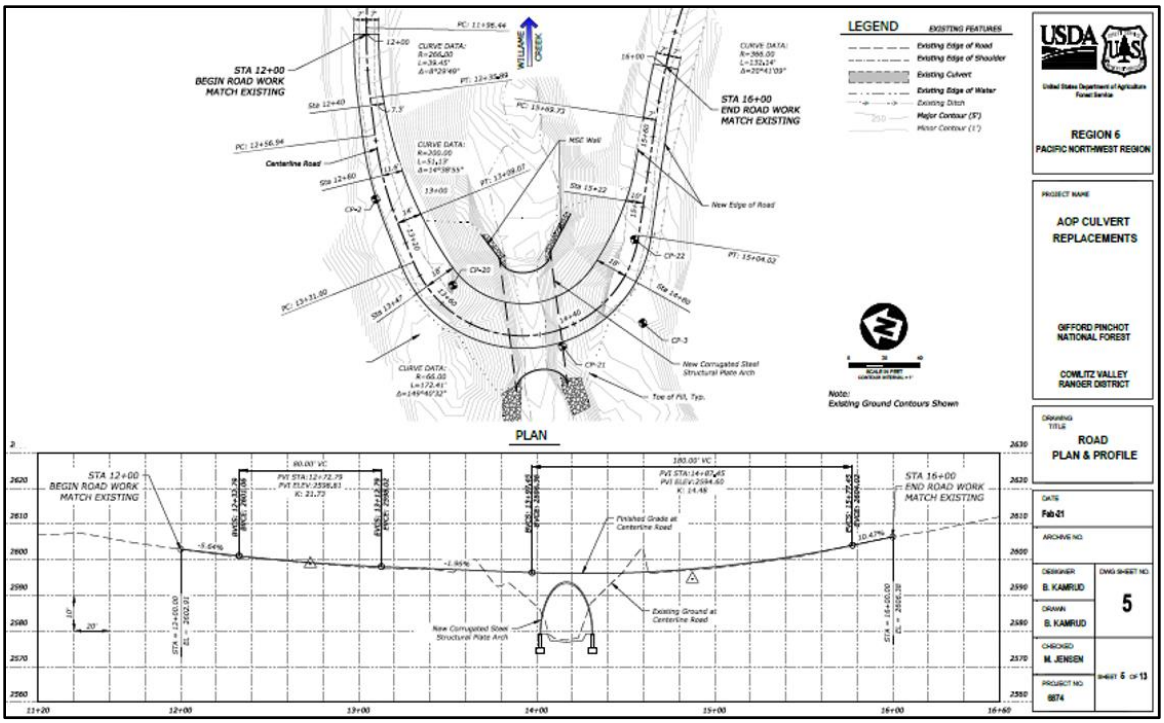

Figure 8. Road plan and profile of a typical open-bottomed arch structure with pre-cast concrete footings to provide AOP at all flows and life stages.

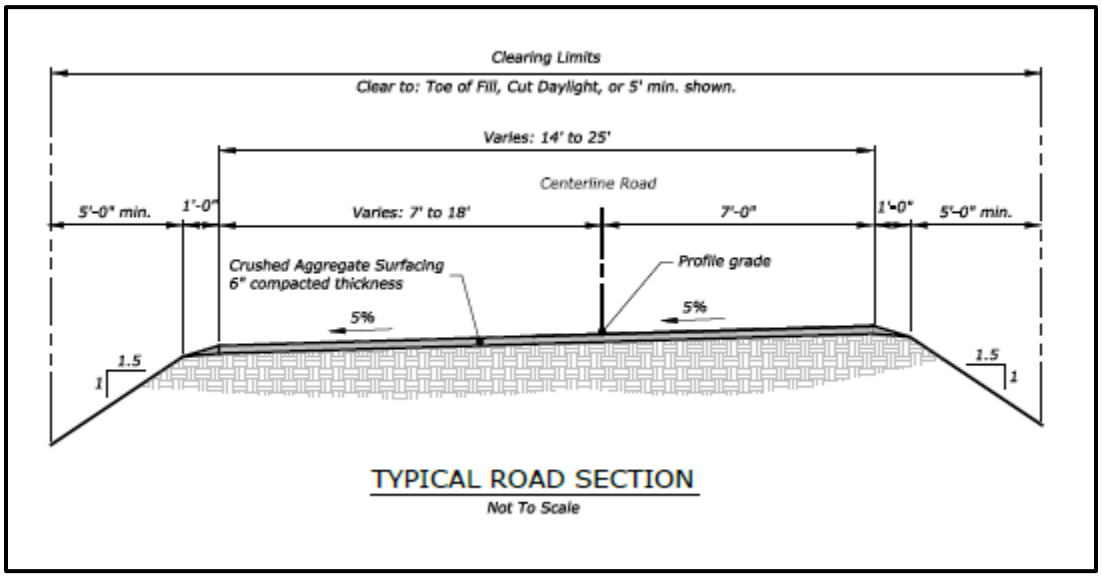

Figure 9. Design example of a typical road section.

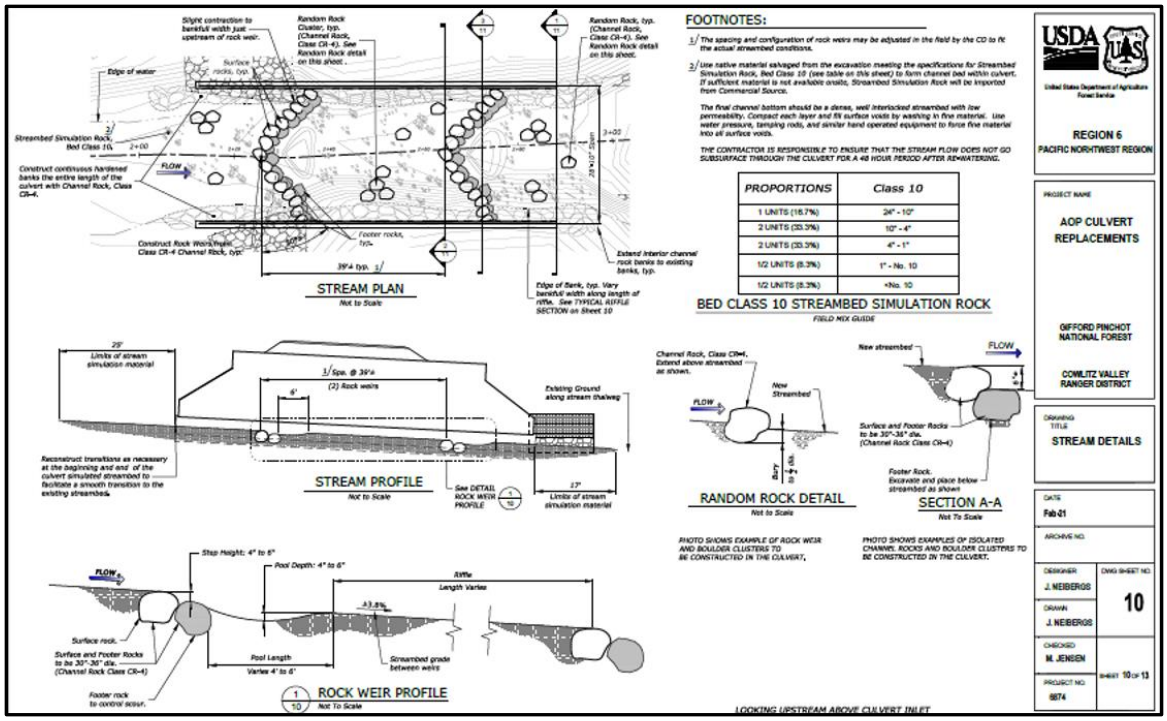

Figure 10. Design example of stream channel simulation performed in an AOP.

9. Specific Work Products

See Project Duration

10. Project Duration

Table 2. Deliverables listed by date.

Deliverables	Completion Date
Contract between PacifiCorp and FS (modification to existing collection agreement)	*February. 2022*
NEPA compliance and programmatic permit consistency review completion	*March, 2022*
Preparation and award of contract	*April, 2022*
Contract solicitation and award	*May, 2022*
Completed alternatives assessment	*June, 2022*
Completed preliminary design of preferred alternative	*September, 2022*
Final Design	*October, 2022*

Note: Status updates will be provided to ACC as project invoices are processed.

11. Permits and Authorizations

Permitting of this project will occur through consultation and inter-agency agreements between federal and state entities. NEPA completion under the USFS Region 6 Environmental Assessment for Aquatic Restoration Projects is anticipated in March 2022, although NEPA compliance is not required to proceed with the design process. USFS Best Management Practices standards will be incorporated into the implementation of the project to ensure environmental compliance is met through the USFS programmatic consultations and Memorandum of Understandings with regulatory agencies that govern aquatic and terrestrial projects on USFS lands. Project activities are designed to restore natural channel and floodplain function and reduce potential threat to Forest and private infrastructure.

The FR-90 culvert and all points upstream are located on National Forest System Lands, while the Gates Drive culvert is located on private land within the Swift Creek Estates. The USFS is currently in contact and working with the HOA and Board of Directors of Swift Creek Estates to facilitate the potential signing of a Release Agreement for the Gates Drive culvert. The USFS has the authority to design and implement projects off National Forest System Lands through cooperative agreements with willing participants for protection, restoration and enhancement of fish and wildlife habitat under the Wyden Authority.

The project is in an area where floodways have not been mapped by FEMA. However, FEMA preliminary reports indicate that the Gates Drive culvert is within the floodplain of Swift Reservoir.

12. Matching Funds and In-kind Contributions

The USFS will provide project design oversite and provide resources necessary to the consultant in addition to a $10,000 match for contracting costs (Table 3.).

Table 3. USFS matching contributions and in-kind items.

USFS Matching Contributions		
Swift Campground Creek Culvert Replacement In-kind Items	**Quantity**	**Rate**
Contract Administration	*25 days @ $400 a day*	$10,000.00
Large Wood	*Stockpile, many pieces*	$2,400.00
Vehicle Mileage	*3,200mi @ $.58 per mile*	$1,856.00
Contracting Cost	*USFS $ contribution*	$10,000.00
	Total Matching Cost	**$24,256.00**

13. Peer Review of Proposed Project

The proposed project has been reviewed by USFS employees.

14. Budget

Table 4. Design cost estimates.

Design Costs		
Category	**Task Description**	**Rate**
Data collection	*Contractor: site surveys, mapping, data preparation, data processing, topo map and design surface creation, quality control checks*	$8,214.00
Assessments (geologic, hydraulic, etc.)	*Geotechnical Investigation*	$36,280.00
Conceptual design	*30% Conceptual Design Alternatives*	$9,950.00
Preliminary design	*90% Construction Design*	$12,432.00
Final design	*Final Construction Design*	$5,653.00
Other	*Contractor: Mileage, Per Diem, lodging, materials*	$1,861.00
	Total Cost	**$74,390.00**

15. Photo Documentation (*Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects – August 27, 2007*):

Final designs with photos will be provided to the ACC in October 2022.

16. Insurance. All qualifying applicants shall comply with PacifiCorp's insurance requirements set forth in Appendix A. The policy limits are deemed sufficient by PacifiCorp for project activities involving significant risk, including placement of large woody debris in navigable waterways, and are presumed to be sufficient for all activities likely to be funded under this Full Proposal Form. Should applicant's insurance program not meet these requirements, bid pricing should include any additional costs applicant would incur to comply with these requirements.

Appendix A
Insurance Requirements
(Risk Mgmt to evaluate risk by project and report needed insurance limits to Lewis River Project Coordinator)

1. INSURANCE

Without limiting any liabilities or any other obligations of [CONTRACTOR], [CONTRACTOR] shall, prior to commencing the Project, secure and continuously carry with insurers having an A.M. Best Insurance Reports rating of A-:VII or better the following insurance coverage:

1.1 Workers' Compensation. [CONTRACTOR] shall comply with all applicable Workers' Compensation Laws and shall furnish proof thereof satisfactory to PacifiCorp prior to commencing the Project.

All Workers' Compensation policies shall contain provisions that the insurance companies will have no right of recovery or subrogation against PacifiCorp, its parent, divisions, affiliates, subsidiary companies, co-lessees, or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the parties that the insurance as effected shall protect all parties.

1.2 Employers' Liability. Insurance with a minimum single limit of $1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limit.

1.3 Commercial General Liability. The most recently approved ISO policy, or its equivalent, written on an occurrence basis, with limits not less than $1,000,000 per occurrence/ $2,000,000 general aggregate (on a per location and/or per job basis) bodily injury (with no exclusions applicable to injuries sustained by volunteers working or participating in the Project) and property damage, including the following coverages:

a. Premises and operations coverage
b. Independent contractor's coverage
c. Contractual liability
d. Products and completed operations coverage
e. Coverage for explosion, collapse, and underground property damage
f. Broad form property damage liability
g. Personal and advertising injury liability, with the contractual exclusion removed
h. Sudden and accidental pollution liability, if appropriate
i. Watercraft liability, either included or insured under a separate policy

1.4 Business Automobile Liability. The most recently approved ISO policy, or its equivalent, with a minimum single limit of $1,000,000 each accident for bodily injury and property damage including sudden and accidental pollution liability, with respect to

[CONTRACTOR]'s vehicles whether owned, hired or non-owned, assigned to or used in the performance of the Project.

1.5 Umbrella Liability. Insurance with a minimum limit of $4,000,000 each occurrence/aggregate where applicable to be provided on a following form basis in excess of the coverages and limits required in Employers' Liability insurance, Commercial General Liability insurance and Business Automobile Liability insurance above. [CONTRACTOR] shall notify PacifiCorp, if at any time their minimum umbrella limit is not available during the term of this Agreement, and will purchase additional limits, if requested by PacifiCorp.

In addition to the requirements stated above any and all parties providing underground locate, engineering, design, or soil sample testing services including [CONTRACTOR], subcontractor and all other independent contractors shall be required to provide the followings insurance:

Professional Liability: [CONTRACTOR] (or its contractors) shall maintain Professional Liability insurance covering damages arising out of negligent acts, errors or omissions committed by [CONTRACTOR] (or its contractors) in the performance of this Agreement, with a liability limit of not less than $1,000,000 each claim. [CONTRACTOR] (or its subcontractors of any tier) shall maintain this policy for a minimum of two (2) years after completion of the work or shall arrange for a two (2) year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of work or services contracted or permitted under this Agreement and caused by any error, omission for which the [CONTRACTOR] its subcontractor or other independent contractor is held liable.

Except for Workers' Compensation insurance, the policies required herein shall include provisions or endorsements naming PacifiCorp, its affiliates, officers, directors, agents, and employees as additional insureds.

To the extent of [CONTRACTOR]'s negligent acts or omission, all policies required by this Agreement shall include provisions that such insurance is primary insurance with respect to the interests of PacifiCorp and that any other insurance maintained by PacifiCorp is excess and not contributory insurance with the insurance required hereunder, provisions that the policy contain a cross liability or severability of interest clause or endorsement, and that [CONTRACTOR] shall notify PacifiCorp immediately upon receipt of notice of cancellation, and shall provide proof of replacement insurance prior to the effective date of cancellation. No required insurance policies, except Workers' Compensation, shall contain any provisions prohibiting waivers of subrogation. Unless prohibited by applicable law, all required insurance policies shall contain provisions that the insurer will have no right of recovery or subrogation against PacifiCorp, its parent, affiliates, subsidiary companies, co-lessees, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all parties.

A certificate in a form satisfactory to PacifiCorp certifying to the issuance of such insurance shall be furnished to PacifiCorp prior to commencement of the Project by [CONTRACTOR] or its volunteers or contractors. If requested, [CONTRACTOR] shall

provide a copy of each insurance policy, certified as a true copy by an authorized representative of the issuing insurance company, to PacifiCorp.

[CONTRACTOR] shall require subcontractors who perform work at the Project to carry liability insurance (auto, commercial general liability and excess) workers' compensation/ employers' or stop gap liability and professional liability (as required) insurance commensurate with their respective scopes of work. [CONTRACTOR] shall remain responsible for any claims, lawsuits, losses and expenses including defense costs that exceed any of its subcontractors' insurance limits or for uninsured claims or losses.

PacifiCorp does not represent that the insurance coverage's specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations [CONTRACTOR], and [CONTRACTOR] shall be solely responsible for any deficiencies thereof.

Appendix B

Response to ACC Requests for Clarification


Swift Reservoir Fish Rescue | *August 5, 2021*

Prepared for Erik Lesko, Matt Harding and ACC

Prepared by Kelley Jorgensen, Karen Adams and Hannah Mortensen, Plas Newydd LLC

WAPATO VALLEY
MITIGATION AND CONSERVATION BANK

Isolated Channel - Stranding Location

- Date of survey 08/05/2021
- Water temperature in far end pool at start of survey: 64°F
- Pool length: ~550 feet
- Pool depth: ~2.5 feet at deepest point

Fish Rescued 08052021

Fish Species	Count	Fork Length (mm)
Bull Trout	9	110, 120 (x3), 125, 135, 140, 10, 180
Steelhead/Rainbow Trout	5	35-70
Coho Salmon	238	35-100
Lamprey sp.	0	110
Sculpin sp.	17	30-120
Three-spined stickleback	2	10-60

Bull trout and coho salmon

Bull trout and sculpin sp.

Bull trout

Bull trout

Bull trout and coho salmon

Bull trout
Too large for photarium at ~180mm

Coho salmon and steelhead/rainbow trout

Coho salmon and steelhead/rainbow trout

Coho salmon and steelhead/rainbow trout


10
20
30
40
50
60
70
80
90
100
110
120
130
photarium
a product of Wild Fish Conserv
© Plas Newydd LLC 2021

Lamprey

Isolated channel with stranded fish. Looking upstream towards upper Lewis River. Notice wall of large wood and river cobble/sediment blocking upstream channel inlet. 8/5/2021

Isolated channel with stranded fish Looking downstream towards Swift Res. Notice fragmented pools and upland vegetation colonizing on lake bed.
8/5/2021

UAV (drone) image of stranding area on 8/21/2020 Northwoods on right, looking upstream towards upper Lewis River.

UAV (drone) image of stranding area on 8/5/2021. Northwoods on right, looking upstream towards upper Lewis River.

UAV (drone) image of stranding area on 8/21/2020. Looking upstream, Northwood docks on right bank.

UAV (drone) image of stranding area on 8/5/2021
Looking upstream
Northwoods on right

UAV (drone) image of stranding area on 8/5/2021. Northwoods on left, looking downstream towards Swift Res.

FULL PROPOSAL FORM

Lewis River Aquatic Fund

Form Intent:
To provide a venue for an applicant to clearly indicate the technical basis and support for proposed project. Specifically, the project's consistency with recovery plans, Settlement Agreement Fund objectives and priorities, technical studies and assessments which support the proposed action and approach.

Full Proposal format:
Please complete the following form for your Full Proposal. Maps, design drawings and other supporting materials may be attached.

The deadline for a Draft Full Proposal Form submission is **October 25, 2021**. Please submit materials to:

Erik Lesko
PacifiCorp
825 NE Multnomah Street, Suite 1800
Portland, OR 97232
Erik.lesko@pacificorp.com

1. Project Title
   Northwoods Cold-water Refuge Habitat Restoration Project

2. Requested Funding Amount
   $657,757.50

3. Project Co-Managers (name, address, telephone, email)

   Kelley Jorgensen, jorgensenkelley@gmail.com, 971-285-6874
   Matt Harding, vmattharding@gmail.com, 503-246-4322

4. Identification of problem or opportunity to be addressed

   Problem: When Swift Reservoir is lowered during dry summer conditions, native, anadromous and Endangered Species Act (ESA)-listed fish get trapped and stranded in isolated pools and channel fragments that form in the uneven lakebed as the surface water levels draw down. As these isolated pools dry up, the fish are subject to mortality from dewatering, high water temperature, low Dissolved Oxygen and predation. Surveys of the isolated pools conducted by PacifiCorp in 2020 and 2021 documented hundreds of native fishes including ESA-listed species that were repeatedly trapped in a particular area along the Northwoods lakefront cabins where the natural Lewis River channel previously flowed. This area is fed by cold-water

hyporheic, spring and groundwater inputs and was recorded at a suitable temperature for salmonids despite high air and lake temperatures.

Opportunity: This proposal is for a habitat restoration feasibility investigation, alternatives analysis and selection, and 60% design of the chosen alternative (permit ready designs) to be documented in a Basis of Design Report. Goals include reducing mortality from fish stranding, improving juvenile rearing conditions in the reach and creating cold-water refuge habitat during the lowest water, warmest months of the year.

5. Background

Please refer to the attached Swift Reservoir Fish Rescue presentation from August 5, 2021 prepared by Kelley Jorgensen, Karen Adams and Hannah Mortensen for information about the stranding location, fish species and quantities of stranded fish that were documented in 2020 and 2021.

This project supports greater watershed objectives by reducing mortality of ESA-listed and reintroduced anadromous fish species with juveniles that rear in the North Fork Lewis River watershed above Swift Dam, and creates cold-water refuge, off-channel and complex rearing habitat in the vulnerable, late-summer juvenile rearing season in the upper Swift reservoir/North Fork Lewis River transition reach for these same species.

6. Project Objective(s)

Quantified "S.M.A.R.T.[1]" objectives will be developed as part of the design process. The goals of the habitat restoration design are to provide the following benefits for native, anadromous and ESA-listed fish species as well as other aquatic wildlife species:

- *restore and reconnect the former Lewis River channel to provide flow during low water conditions through the current stranding-prone area so it does not trap, strand and kill fish,*
- *provide cold-water refuge habitat when the reservoir water temperatures are elevated,*
- *increase habitat diversity by creating off-channel refuge habitat with low-energy rearing habitats for juvenile fish species,*
- *increase habitat complexity and provide cover from predators, flow refuge and improved food web functions with benefits to primary and secondary productivity by installing anchored large wood habitat elements in the flow-through channel,*
- *increase habitat complexity by creating additional edge habitat and improve water quality by reducing thermal gain from the large, exposed sand plain of the bed of the reservoir in the stranding prone reach by creating vegetated and forested islands from excavated material, and*

[1] SMART Objectives: Specific, Measurable, Attainable, Relevant, and Time-based

- *improving habitat quality through increases in shade and organic detritus inputs by planting the newly created islands with native upland tree and shrub species.*
- *A side benefit and compatible use of restoring the historic flow-through channel that was connected on both ends as a flow-through cold-water refuge habitat restoration project is the re-watering of the Northwoods shoreline where channel avulsion some years ago created a much higher abandoned channel that dewaters and creates stagnant pools where fish are isolated and mosquitos breed.*
- *The placement of excavated material in the lakebed will also serve to reduce the costs of hauling excavated materials away from the construction area.*

More details to be provided with Final Proposal. The Northwoods shoreline area of Swift Reservoir has no EDT ratings (Amelia Johnson, LCFRB, pers. Comm) and the reach of the Lewis that flows into Swift Reservoir is a Tier 1 Reach. Species that have been identified during fish rescue/stranding surveys include bull trout, steelhead/rainbow trout, coho salmon, lamprey species, sculpin species and three-spined stickleback.

7. Tasks

- *Feasibility Investigation including field data collection:*
  - *High-resolution topography/bathymetry,*
  - *Hydraulic/hydrologic field monitoring and modeling build out*
  - *Fish surveys and Fish Rescue*
  - *Sediment analysis -*
  - *Wetland delineation*
  - *Cultural Resources Survey*
- *Identification of conceptual alternatives selection criteria*
- *Conceptual alternatives analysis and selection*
- *60% Design of chosen alternative*
- *Presentation of alternatives to sponsor (Northwoods cabin community)*
- *Presentation of alternatives to ACC*
- *Address all comments*
- *Prepare Draft Basis of Design Report*
- *Prepare Final Basis of Design Reports*
- *Apply for required Environmental approvals and permits:*
  - *NEPA/SEPA*
  - *US Army Corps of Engineers*
  - *Section 106*
  - *ESA consultation*
  - *WDFW Hydraulic Project Approval*
  - *DNR SOAL*
  - *Skamania County Shoreline, Grading and Site Plan Authorizations*

8. Methods

To Be Determined

9. Specific Work Products

- *Draft and Final Basis of Design Reports documenting:*
  - *Baseline Conditions/Field Reconnaissance,*
  - *Technical studies results,*
  - *Feasibility analysis,*
  - *Identification of conceptual alternatives selection criteria,*
  - *Conceptual alternatives analysis and selection,*
  - *60% Design Drawings,*
  - *Construction Cost Estimates,*
  - *Necessary permits or approvals.*

10. Project Duration

18 months.

Schedule to be provided with Final Proposal.

11. Permits and Authorizations

To Be Determined – some permits and authorizations identified above in #7 Tasks.

Landowner Permission Forms to be provided with Final Proposal.

12. Matching Funds and In-kind Contributions

To Be Determined for Final Proposal.

13. Peer Review of Proposed Project

Third party peer review to be provided with Final Proposal.

14. Budget

See draft design budget below.

Draft ACC Proposal Budget for the Northwoods Cold-water Refuge Habitat Restoration Project			
Phase 1: Feasibility and Design, Basis of Design Report (BOD)			
Northwoods Match/In-kind:	TBD		
Task	**Subtask**	**Estimated Cost**	**Assumptions**
Liability Insurance		$ 2,500.00	
Feasibility Investigation & Field Data Collection			
High-resolution Topo/bathymetry for 2 miles of the N.F. Lewis River and the upper half of Swift Reservoir and aerial imagery	Green LiDAR	$ 50,000.00	
Field Reconnaisance	Spot checks/ground truth with survey grade RTK GPS	$ 14,000.00	If not done concurrent with sediment sampling and low-water field reconnaisance
Sediment analysis	Field Data Collection	$14,362	
	Analysis		
	Methods & Results for BOD		
Hydraulic/Hydrologic Monitoring	Field Data Collection	$ 28,255.00	
	Data Analysis		
	Data Mapping		
	Methods & Results for BOD		
Hydraulic/Hydrologic Modeling	DEM from LiDAR	$ 28,320.00	
	Model envelope buildout		
	Data Mapping		
	Methods & Results for BOD		
Fish Rescue & Fish Surveys		$ 31,975.00	visits/days for fish rescue and fish surveys
Wetland Delineation		$ 25,000.00	lump sum
Cultural Resources Survey		$ 25,000.00	lump sum
Develop Conceptual Alternatives and Analysis	Develop Ranked Project Goals and SMART Objectives	$ 53,330.00	
	Develop Selection Criteria for Conceptual Alternatives		
	Alternatives Development and Selection		
	Alternatives DEM buildout in GIS with biological, hydrologic and geomorphic functions comparison		
Draft 60 % Design Drawings		$ 60,790.00	
Design review		$ 25,370.00	
	Peer review		
	Presentation to Northwoods Community		
	Presentation to ACC		
Final 60% Design Drawings	Address all comments	$ 34,990.00	Assumes one round of edi
Draft Basis of Design Report		$ 48,296.00	
Final Basis of Design Report		$ 33,306.00	Assumes one round of edi
Environmental approvals and Permits		$ 50,712.00	
Contingency 25%	1.25	$ 131,551.50	
Total		**$ 657,757.50**	

15. Photo Documentation (*Per National Marine Fisheries Service's Biological Opinion for Relicensing of the Lewis River Hydroelectric Projects – August 27, 2007*):

    Schedule of photo documentation to be provided with final proposal. Baseline condition or "Before" photos will be included in the Basis of Design Report. During Construction photos would be provided within 60 days following construction, and "After" construction photos would be provided Quarterly for two years post-construction.

16. Insurance. All qualifying applicants shall comply with PacifiCorp's insurance requirements set forth in Appendix A. The policy limits are deemed sufficient by PacifiCorp for project activities involving significant risk, including placement of large woody debris in navigable waterways, and are presumed to be sufficient for all activities likely to be funded under this Full Proposal Form. Should applicant's insurance program not meet these requirements, bid pricing should include any additional costs applicant would incur to comply with these requirements.

Appendix A
Insurance Requirements
(Risk Mgmt to evaluate risk by project and report needed insurance limits to Lewis River Project Coordinator)

1. INSURANCE

Without limiting any liabilities or any other obligations of [CONTRACTOR], [CONTRACTOR] shall, prior to commencing the Project, secure and continuously carry with insurers having an A.M. Best Insurance Reports rating of A-:VII or better the following insurance coverage:

1.1 Workers' Compensation. [CONTRACTOR] shall comply with all applicable Workers' Compensation Laws and shall furnish proof thereof satisfactory to PacifiCorp prior to commencing the Project.

All Workers' Compensation policies shall contain provisions that the insurance companies will have no right of recovery or subrogation against PacifiCorp, its parent, divisions, affiliates, subsidiary companies, co-lessees, or co-venturers, agents, directors, officers, employees, servants, and insurers, it being the intention of the parties that the insurance as effected shall protect all parties.

1.2 Employers' Liability. Insurance with a minimum single limit of $1,000,000 each accident, $1,000,000 disease each employee, and $1,000,000 disease policy limit.

1.3 Commercial General Liability. The most recently approved ISO policy, or its equivalent, written on an occurrence basis, with limits not less than $1,000,000 per occurrence/ $2,000,000 general aggregate (on a per location and/or per job basis) bodily injury (with no exclusions applicable to injuries sustained by volunteers working or participating in the Project) and property damage, including the following coverages:

a. Premises and operations coverage
b. Independent contractor's coverage
c. Contractual liability
d. Products and completed operations coverage
e. Coverage for explosion, collapse, and underground property damage
f. Broad form property damage liability
g. Personal and advertising injury liability, with the contractual exclusion removed
h. Sudden and accidental pollution liability, if appropriate
i. Watercraft liability, either included or insured under a separate policy

1.4 Business Automobile Liability. The most recently approved ISO policy, or its equivalent, with a minimum single limit of $1,000,000 each accident for bodily injury

and property damage including sudden and accidental pollution liability, with respect to [CONTRACTOR]'s vehicles whether owned, hired or non-owned, assigned to or used in the performance of the Project.

1.5 Umbrella Liability. Insurance with a minimum limit of $4,000,000 each occurrence/aggregate where applicable to be provided on a following form basis in excess of the coverages and limits required in Employers' Liability insurance, Commercial General Liability insurance and Business Automobile Liability insurance above. [CONTRACTOR] shall notify PacifiCorp, if at any time their minimum umbrella limit is not available during the term of this Agreement, and will purchase additional limits, if requested by PacifiCorp.

In addition to the requirements stated above any and all parties providing underground locate, engineering, design, or soil sample testing services including [CONTRACTOR], subcontractor and all other independent contractors shall be required to provide the followings insurance:

Professional Liability: [CONTRACTOR] (or its contractors) shall maintain Professional Liability insurance covering damages arising out of negligent acts, errors or omissions committed by [CONTRACTOR] (or its contractors) in the performance of this Agreement, with a liability limit of not less than $1,000,000 each claim. [CONTRACTOR] (or its subcontractors of any tier) shall maintain this policy for a minimum of two (2) years after completion of the work or shall arrange for a two (2) year extended discovery (tail) provision if the policy is not renewed. The intent of this policy is to provide coverage for claims arising out of the performance of work or services contracted or permitted under this Agreement and caused by any error, omission for which the [CONTRACTOR] its subcontractor or other independent contractor is held liable.

Except for Workers' Compensation insurance, the policies required herein shall include provisions or endorsements naming PacifiCorp, its affiliates, officers, directors, agents, and employees as additional insureds.

To the extent of [CONTRACTOR]'s negligent acts or omission, all policies required by this Agreement shall include provisions that such insurance is primary insurance with respect to the interests of PacifiCorp and that any other insurance maintained by PacifiCorp is excess and not contributory insurance with the insurance required hereunder, provisions that the policy contain a cross liability or severability of interest clause or endorsement, and that [CONTRACTOR] shall notify PacifiCorp immediately upon receipt of notice of cancellation, and shall provide proof of replacement insurance prior to the effective date of cancellation. No required insurance policies, except Workers' Compensation, shall contain any provisions prohibiting waivers of subrogation. Unless prohibited by applicable law, all required insurance policies shall contain provisions that the insurer will have no right of recovery or subrogation against PacifiCorp, its parent, affiliates, subsidiary companies, co-lessees, agents, directors, officers, employees, servants, and insurers, it being the intention of the Parties that the insurance as effected shall protect all parties.

A certificate in a form satisfactory to PacifiCorp certifying to the issuance of such insurance shall be furnished to PacifiCorp prior to commencement of the Project by [CONTRACTOR] or its volunteers or contractors. If requested, [CONTRACTOR] shall provide a copy of each insurance policy, certified as a true copy by an authorized representative of the issuing insurance company, to PacifiCorp.

[CONTRACTOR] shall require subcontractors who perform work at the Project to carry liability insurance (auto, commercial general liability and excess) workers' compensation/ employers' or stop gap liability and professional liability (as required) insurance commensurate with their respective scopes of work. [CONTRACTOR] shall remain responsible for any claims, lawsuits, losses and expenses including defense costs that exceed any of its subcontractors' insurance limits or for uninsured claims or losses.

PacifiCorp does not represent that the insurance coverage's specified herein (whether in scope of coverage or amounts of coverage) are adequate to protect the obligations [CONTRACTOR], and [CONTRACTOR] shall be solely responsible for any deficiencies thereof.

Attachment A – Forest Camp Creek Rapid Habitat Assessment of Potentially Accessible Anadromous Fish Habitat

The purpose of the information present below is to describe currently accessible habitat within Forest Camp Creek downstream of the FR-90 culvert and the habitat upstream of the FR-90 culvert, which could be accessible to anadromous fish for spawning and rearing if the FR-90 culvert was made passable. During the 2019 Coho spawning surveys, a total of 10 redds and 30 Coho (live and dead) were observed throughout the 900-foot-long accessible reach downstream of the FR-90 culvert, yet no Coho or redds were observed upstream of the culvert during the same survey days. The FR-90 culvert is approximately 75 feet in length with a slope of 5 to 6 percent. The FR-90 road culvert appears to be an upstream migration barrier that limits the length of accessible habitat to about 900 lineal feet of stream channel for anadromous fish migrating upstream from Swift Reservoir.

Forest Camp Creek habitat was characterized by Jason Shappart (Senior Fisheries Scientist, Meridian Environmental) by walking the length of potentially accessible habitat and rapidly assessing general habitat conditions on March 26, 2020. Note that stream flow during the habitat assessment appeared about the same as when many Coho redds and live Coho spawners were observed on December 30, 2019. Though March 26 is within the potential steelhead spawning period, no adult steelhead were observed in the accessible reach downstream of the FR-90 culvert during the habitat survey. Six distinct geomorphic reaches were identified including: 1. draw- down zone of Swift Reservoir; 2. reservoir full pool to FR-90 culvert; 3. upstream of FR-90 culvert through forested area along FR-90; 4. open wet meadow area along FR-90; 5. forested area to the west of Pine Creek station to headwater wetland; and 6. multiple channels through headwater wetland. General habitat conditions for each of these reaches is summarized in Table 1. Reach and photo locations are depicted in Figure 1.

In general, the current accessible habitat from the edge of the reservoir full pool to the FR-90 culvert (approximately 900 feet in length) is of generally low complexity and primarily comprised of riffle habit, though scattered pools are present. Anadromous fish spawning gravel patches are also scattered through the reach. Large wood is nearly absent in the reach.

Upstream of the FR-90 culvert, Forest Camp Creek flows out of a large wetland, which is located to the northwest of the Pine Creek station, then flows southerly in fairly close proximity to the FR-90 road alignment before reaching the FR-90 culvert. The stream channel upstream of the FR-90 culvert is single thread and generally of low gradient (<1.5%). Potential anadromous fish spawning gravel patches are common to abundant. Habitat is substantially more complex than downstream of the FR-90 culvert; pools are much more common with many meanders and undercut banks. However, large wood is scattered. Within the headwater wetland, the stream disperses into many channels. The primary wetland channel flows southerly along the western edge of the wetland. This channel enters the wetland from a steep forested ravine. The wetland channels are relatively small and could potentially be used for anadromous fish rearing. In total, there is approximately 5,300 lineal feet of stream channel from the wetland outlet to the FR-90 culvert that could potentially be used for anadromous fish spawning and rearing if the FR-90 culvert was made passable.

Table 1. Forest Camp Creek rapid habitat assessment results (surveyed on March 26, 2020).

Attribute	Reach 1	Reach 2	Reach 3	Reach 4	Reach 5	Reach 6
Currently accessible to anadromous fish	yes	yes	no	no	no	no
Photo numbers	1, 2	3, 4, 5, 6	7, 8	9, 10	11, 12, 13, 14, 15	16, 17, 18
Station start (feet from edge of reservoir full pool)	-300	0	975	1,875	2,675	6,275
Station end (feet from edge of reservoir full pool	0	900	1,875	2,675	6,275	---
Total reach length (feet)	300	900	900	800	3,600	>1,000 feet of small channels in wetland
Average gradient (% slope)	3.5%	2.5%	1.5%	0.5%	1.5%	0.5%
Channel form	single thread	single thread	single thread	single thread	single thread	multiple channels
Valley form	constrained by low terrace	hillslope constrained	constrained by low terrace	unconstrained	constrained by low terrace	unconstrained
Average wetted width (feet)	10	5	6	5	7	2
Average depth (feet)	0.3	0.8	0.7	1.3	0.7	0.5
Average pool maximum depth (feet)	1.0	1.3	1.5	2.0	2.0	1.3
Average active channel width (feet)	12	6.5	7	5.5	9	4
Average flood prone width (feet)	na	7	20	75	30	>100
Dominant habitat type	riffle	riffle	riffle	glide/riffle	riffle	glide/riffle
Subdominant habitat type	rapid	pool	pool	pool	pool	pool
Pool frequency	low	low	low	common	common	low to common
Large wood frequency	scarce	scarce	scarce	low	low	low to common
Dominant substrate	cobble	cobble	gravel	sand	gravel	sand/silt
Subdominant substrate	boulder	gravel	cobble	gravel	sand	gravel
Anadromous fish spawning gravel patch frequency	scarce	low	low to common	common	abundant	low
Undercut bank frequency	none	low	low	common	common	common
Riparian composition	unvegetated	forested through area of cabins	mature forested	wet meadow/ scattered trees	mature forested	wet meadow/ scattered trees
Side/off-channel frequency	none	none	none	none	none	several small channels through wetland

Note. Table values are approximate and based on visual estimates from survey on March 26, 2020.
Note. FR-90 culvert downstream end is at approx. station 900 feet and the upstream end is at station 975 feet from the edge of the reservoir full pool (i.e., culvert is 75 feet long).

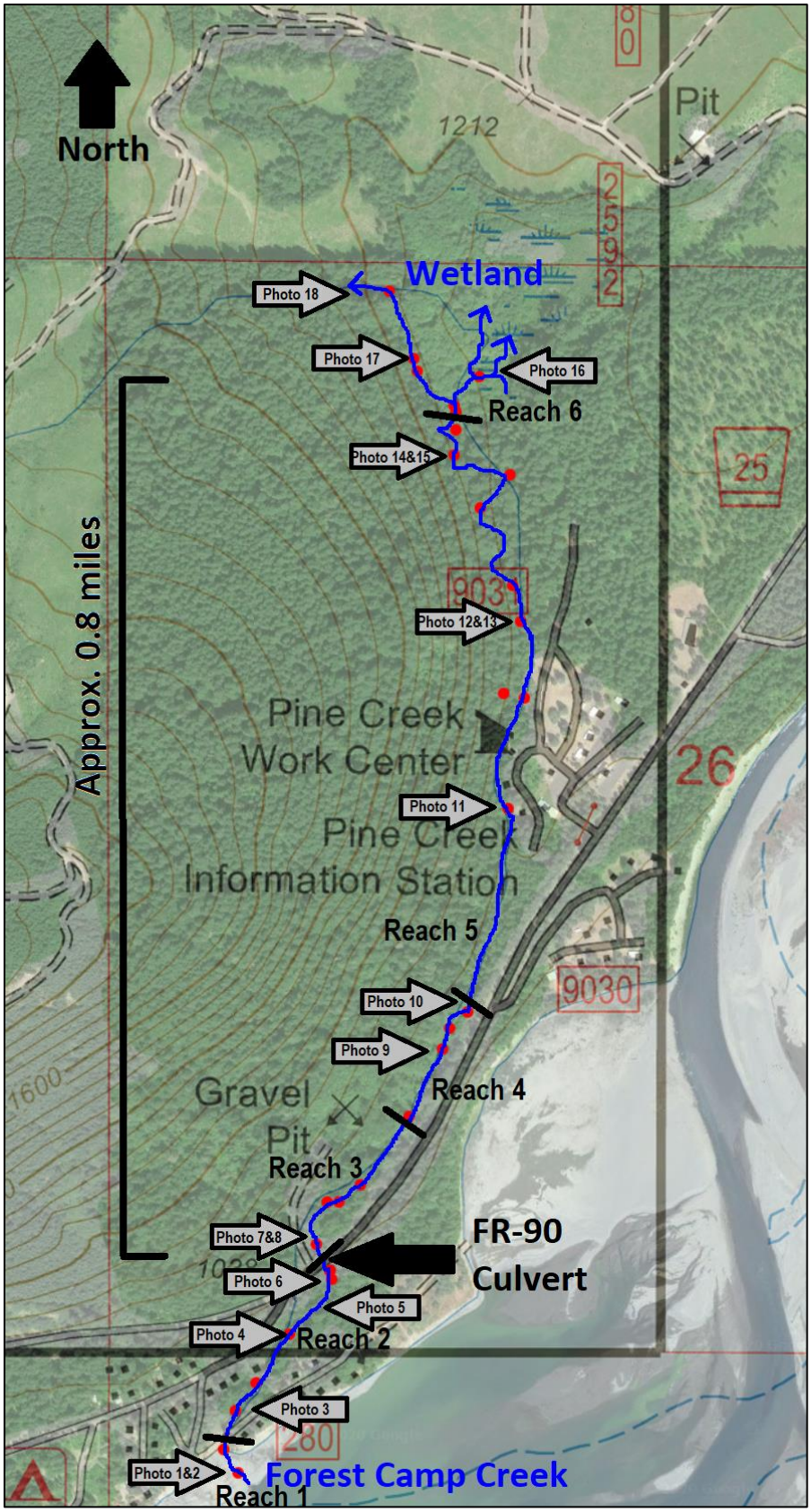

Figure 1. Forest Camp Creek reach and habitat survey photo index.

Photo 1. Drawdown zone.

Photo 2. Drawdown zone.

Photo 3. Upstream of drawdown zone.

Photo 4. Typical spawning habitat.

Photo 5. Typical spawning habitat

Photo 6. Downstream FR-90 culvert.

Photo 7. Upstream FR-90 Culvert.

Photo 8. Typical upstream FR-90.

Photo 9. Potential spawning habitat.

Photo 10. Potential spawning habitat.

Photo 11. Potential spawning habitat.

Photo 12. Potential spawning habitat.

Photo 13. Potential rearing habitat.

Photo 14. Potential rearing habitat.

Photo 15. Potential spawning habitat.

Photo 16. Wetland channels to east.

Photo 17. Western Fork typical habitat.

Photo 18. Western Fork ravine.

Lewis River Fish Passage Report

October 2021

Merwin Fish Collection Facility and General Operations

During the month of October, a total of 7,390 fish were captured at the Merwin Dam Adult Fish Collection Facility (MFCF). Early run coho were the most prevalent species collected this month (n= 6,002), followed by late run coho (1,059) fall Chinook (n= 259), cutthroat trout (n=42), and hatchery summer steelhead (n= 25). Two (n= 2) Pink, and one (n=1) Chum Salmon were also collected in October. Year-to-date coho collection totals remain substantially higher than the 2014-2020 average (Figure 1). By the end of October, seventy (70) adult coho containing PIT tags had been detected passing the Merwin facility. All of thesefish had been PIT tagged as juveniles at the Swift Floating Surface Collector (FSC) in the spring of 2020.

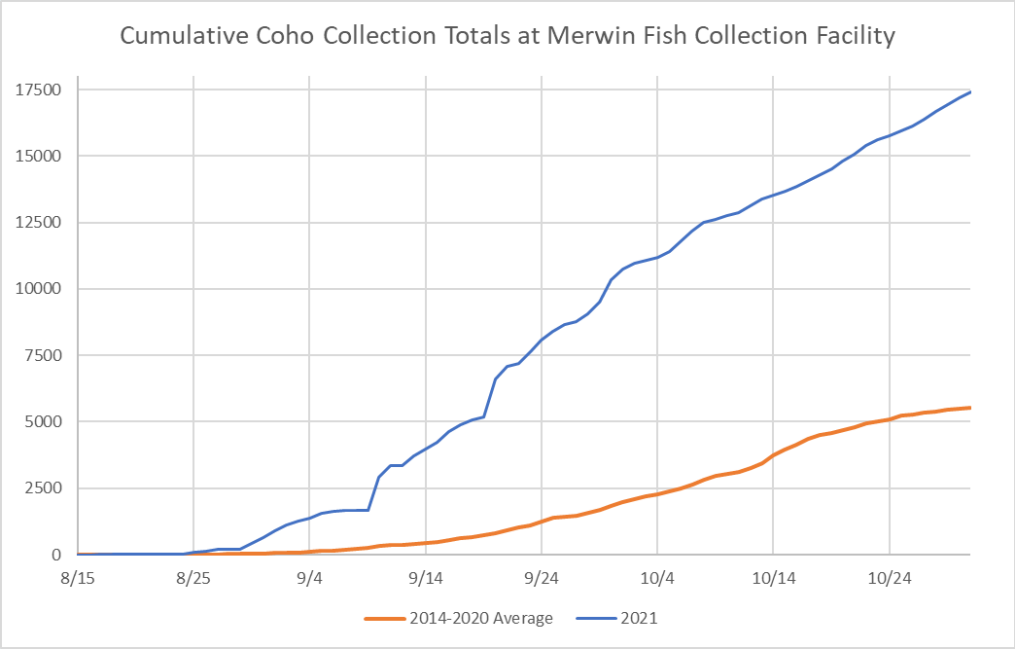

Figure 1. Year-to-date coho collection totals compared to 2014-2020 average collection totals.

The MFCF ran continuously throughout the month of October. Flows below Merwin Dam increased from approximately 1,200 cfs at the beginning of the month, to approximately 6,000 at the end of October (Figure 2).

Commented [KC(1]: Kin of… Right? Increased to 5,000 +plus by the end of the month?

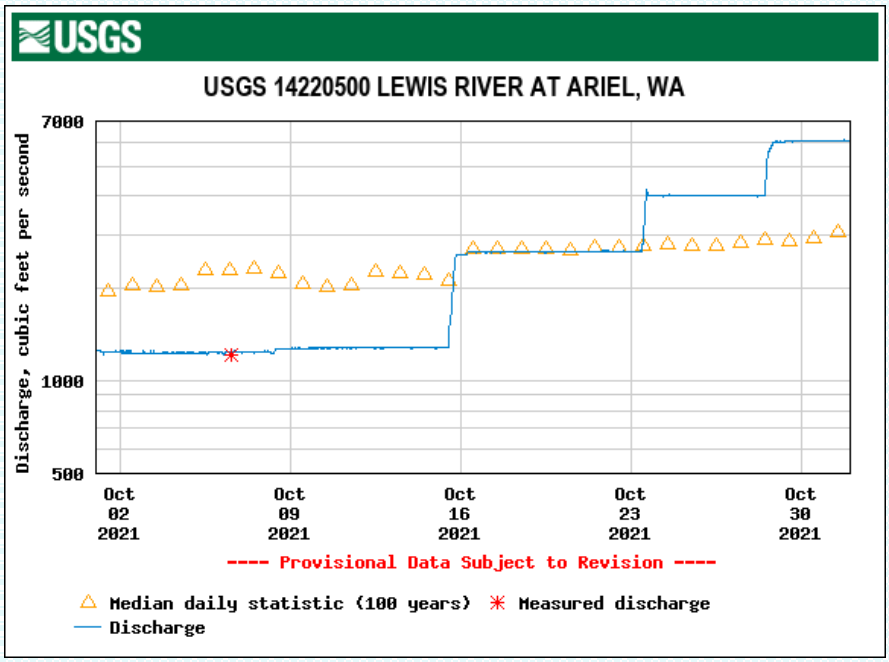

Figure 2. Discharge in cubic feet per second recorded at the USGS Ariel, WA gauge (14220500) located immediately downstream of Merwin Dam.

Upstream Transport

A total of total of 3,642 adult fish were transported upstream in October, the majority of which were early run coho (n=2,916), followed by late run coho (n=688), and cutthroat (n=38). Nearly all of the fish transported upstream in October were collected at the MFCF (n=3,427). Lewis River Hatchery supplied an additional 215 coho for upstream transport.

By the end of October, 5,537 early-run coho (3,776 HOR/1,761 NOR), 1,184 spring Chinook (897 HOR/ 287 NOR), 688 late run coho (505 HOR/183 NOR), 311 winter steelhead (207 BWT/104 NOR), and 92 cutthroat trout have been transported upstream of Swift Dam.

Floating Surface Collector (FSC)

The Swift Reservoir Floating Surface Collector (FSC) was taken out of operation on Monday, July 12th for the facility's summer maintenance period. With the completion of various construction upgrades and maintenance projects occurring the end of October, it is expected that the FSC will be returned to service the first week of November.

Fish Facility Report
Merwin Adult Trap
October 2021

Reporting Date	Spring Chinook (1)									Early Coho											
	AD-Clip			Wild			Recap			AD-Clip			CWT			Wild			Recap		
	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK
1-Oct										122	125	49	21	28	10	24	12	7			
2-Oct										46	71	28	14	17	3	6	7	3			
3-Oct										25	37	17	6	10	6	8	3	2			
4-Oct										40	38	16	6	9	2		1	3			
5-Oct										107	83	3	10	15	4	4	3	2			
6-Oct										136	141	58	18	28	16	6	5	1			
7-Oct										115	135	42	17	29	3	6	7	4			
8-Oct										91	126	53	14	29	4	9	9	1			
9-Oct										32	33	7	6	8		3	3	2			
10-Oct										38	52	15	4	6	6	6	12				
11-Oct										32	35	21	9	14	4	2	2	3			
12-Oct										60	92	66	14	14	8	10	6				
13-Oct										46	70	62	14	16	12	6	9	1			
14-Oct										44	51	44	5	11	4	1	3	1			
15-Oct										35	29	54	5	4	3	3	6	2			
16-Oct										31	46	53	6	11	11	5	10	2			
17-Oct										26	53	56	9	11	10	23	29	7			
18-Oct										33	24	48	20	2	8	37	24	8			
19-Oct										48	39	52	15	11	7	15	9	4			
20-Oct										73	42	64	21	15	14	8	10	3			
21-Oct										62	45	55	18	7	6	11	8				
22-Oct										74	37	79	26	8	12	17	11	5			
23-Oct										35	22	59	10	1	7	11	2	5			
24-Oct										39	31	20	4	2	3	16	17				
25-Oct										37	18	20	8	3	1	23	17	8			
26-Oct										47	18	17	12	8	2	27	6	6			
27-Oct										68	29	40	13	4	4	11	3	6			
28-Oct										84	19	48	24	4	9	6	3	7			
29-Oct										75	26	44	21	10	9	5	2	8			
30-Oct											1						1				
31-Oct																					
Monthly	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1701**	**1568**	**1190**	**370**	**335**	**188**	**309**	**240**	**101**	**0**	**0**	**0**
Annual	**920**	**835**	**703**	**153**	**114**	**18**	**0**	**0**	**0**	**4525**	**4422**	**3298**	**1013**	**989**	**709**	**651**	**542**	**211**	**0**	**0**	**0**

Reporting Date	Late Coho												S. Steelhead						W. Steelhead							
	AD-Clip			CWT			Wild			Recap			Fresh		Recap		Wild		AD-Clip		BWT		Recap		Wild	
	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1-Oct													5	2												
2-Oct																										
3-Oct																										
4-Oct													1													
5-Oct																										
6-Oct														1												
7-Oct														2												
8-Oct																										
9-Oct													1													
10-Oct														1												
11-Oct																										
12-Oct														1												
13-Oct		3																								
14-Oct																										
15-Oct	1	2																								
16-Oct														1												
17-Oct													1	1												
18-Oct		2																								
19-Oct	5	9	1				3	3	3																	
20-Oct	2	13	21		2	4	1	3																		
21-Oct	3	15	15			3	1	2																		
22-Oct	4	20	17		1	4	4	7					1	1												
23-Oct	9	14	12	1	4	2	4	13	1																	
24-Oct		16	4		2	2		6					1	1												
25-Oct	2	10	3		2		3	13						2												
26-Oct	2	21	14				2	9					1	1												
27-Oct	17	24	23		4		5	8																		
28-Oct	23	24	20	8	9	1	5	1																		
29-Oct	15	24	8	6	11	3	3	4																		
30-Oct	65	63	47	23	28	8	12	10																		
31-Oct	52	52	9	23	17	2	31	24	2																	
Monthly	**200**	**312**	**194**	**61**	**80**	**29**	**74**	**103**	**6**	**0**	**0**	**0**	**11**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Annual	**201**	**313**	**200**	**61**	**80**	**29**	**108**	**126**	**10**	**0**	**0**	**0**	**263**	**551**	**46**	**176**	**2**	**10**	**82**	**231**	**84**	**124**	**0**	**0**	**72**	**97**

Reporting Date	Fall Chinook									Sockeye		Chum		Pink		Cutthroat	Rainbow (< 20 inches)	Bull Trout	Daily Total
	AD-Clip			Wild			Recap												
	M	F	JK	M	F	JK	M	F	JK	M	F	M	F	M	F				
1-Oct	11	7		1	4	3													**431**
2-Oct	9	2	1	1	2	3													**213**
3-Oct	3	1			2	2													**122**
4-Oct	3	3	1		4	1													**128**
5-Oct	2	2			1														**236**
6-Oct	3	1		1	4														**419**
7-Oct	1			2															**363**
8-Oct	7	4		1	2	4													**354**
9-Oct	2	1		2	3											2			**105**
10-Oct	5	3		8	5	1										1			**163**
11-Oct	2	3	1	2	10	3													**143**
12-Oct	1	2		2	2	1										1			**280**
13-Oct	2	3		1		1										1			**247**
14-Oct	1	5			1	1										1			**173**
15-Oct	2	3		2	5	1													**157**
16-Oct	1	2		3	4	3													**189**
17-Oct	1	3		2	4	2									1				**239**
18-Oct	1			2	7	1										3			**220**
19-Oct		1			3														**228**
20-Oct	2			1		1										3			**303**
21-Oct	1				1														**253**
22-Oct	3			1	1								1			1			**335**
23-Oct			1	2												5			**220**
24-Oct					2	1													**167**
25-Oct					2	1										4			**177**
26-Oct	1			1	2											4			**201**
27-Oct		1		1	2									1		4			**268**
28-Oct	1				1											1			**298**
29-Oct			1													7			**282**
30-Oct				1															**259**
31-Oct					1											4			**217**
Monthly	**65**	**47**	**5**	**37**	**75**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**42**	**0**	**0**	**7390**
Annual	**252**	**190**	**30**	**112**	**173**	**59**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**97**	**0**	**0**	**22886**

1 Only hatchery verses wild distinctions are currently being made. All hatchery fish are labeled as "AD-Clip".
2 Total counts do not include recaptured salmon.

Fish Facility Report

Swift Floating Surface Collector

October 2021

	Coho			Chinook			Steelhead				Cutthroat			Bull	Planted	
Day	**fry**	**parr**	**smolt**	**fry**	**parr**	**smolt**	**fry**	**parr**	**smolt**	**kelt**	**fry**	**<13 in**	**> 13 in**	**Trout**	**Rainbow**	**Total**
1																
2																
3																
4																
5																
6																
7																
8																
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28																
29																
30																
31																
Monthly	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	400	4201	39736	27	512	1936	23	146	5390	34	3	645	17	6	4130	**57206**