

LEWIS RIVER AQUATIC COORDINATION COMMITTEE

Facilitator: ERIK LESKO
503-412-8401

Location: TEAMS (online)

Date: July 13, 2023

Time: 9:30 AM – 1:00 PM

AGENDA

| | |
|----------|---|
| 9:30 AM | Welcome <ul style="list-style-type: none">➤ Review and Accept 07/13/2023 Agenda➤ Review and Accept 05/11/2023 Meeting Notes➤ Review and Accept 06/08/2023 Meeting Notes |
| 9:40 AM | Public Comment Opportunity |
| 9:45 AM | Steelhead Transition Plan Comment Review and Coho and Steelhead Decision Document discussion (<i>WDFW</i>) |
| 11:15 AM | Decision Template: Elements of Fish Passage. Discussion. (<i>Olson</i>) |
| 11:45 AM | Decision Template: Proposed Revision to Ground Rules (<i>Lesko</i>) |
| 12:00 PM | Study/Work Product Updates <ul style="list-style-type: none">➤ Flows/Reservoir Conditions (<i>Lesko</i>)➤ Reservoir Shoreline Development Projects (<i>ACC</i>)➤ WSDOT - Cougar Creek/Beaver Bay (<i>ACC</i>)➤ ATS (<i>Lesko, ATS</i>)➤ FPS (<i>Glaser, Olson</i>)➤ Fish Passage/Operations (<i>Karchesky</i>)➤ Merwin Trap Outage (<i>Karchesky</i>) |
| 12:45 AM | Next Meeting Agenda |
| 1:00 PM | Meeting Adjourn |

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

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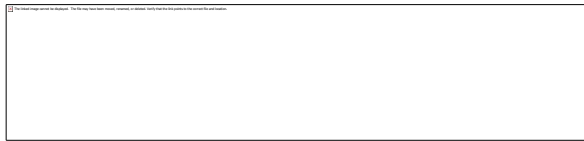
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**Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
July 13, 2023
TEAMS Meeting**

ACC Representatives and Affiliates Present (21)

Nina Maas, Anchor QEA
 Christina E. Donehower, Cowlitz Indian Tribe
 Dalton Fry, Cowlitz Indian Tribe
 Amanda Farrar, Cowlitz PUD
 Steve West, LCFRB
 Melissa Jundt, NMFS
 Chris Karchesky, PacifiCorp
 Erik Lesko, PacifiCorp
 Todd Olson, PacifiCorp
 Jeremiah Doyle, PacifiCorp
 Josua Holowatz, WDFW
 Peggy Miller, WDFW
 Kale Bentley, WDFW
 Keely Murdoch, Yakama Nation
 Bill Sharp, Yakima Nation
 Steve Manlow, LCFRB
 Anne Baxter, Ecology
 Emi Melton, NOAA
 Kathryn Blair, NMFS
 Jim Byrne, Trout Unlimited
 Jonathan Stumpf, Trout Unlimited

Guests (0)

None

Calendar:

| | | |
|---------------|-------------|-----------------------------------|
| June 08, 2023 | ACC Meeting | IN PERSON and TEAMS Meeting |
|---------------|-------------|-----------------------------------|

Assignments:

| Assignments from July 13, 2023 | Status |
|---|-----------------|
| ACC members to review Elements of Fish Passage decision template. | Ongoing. |

| Assignments from July 13, 2023 | Status |
|---|-----------------|
| ACC members to review Revision to Ground Rules Decision template. | Ongoing. |

| Assignments from July 13, 2023 | Status |
|---|-------------------|
| Erik Lesko send out Aquatic Fund Announcement letter. Due August 1. | Completed. |

| Assignments from July 13, 2023 | Status |
|--|----------------------------------|
| Erik Lesko send draft HPP to ATS and ACC. Due before August ACC meeting. | Completed. (8/4/2023) |

| Assignments from July 13, 2023 | Status |
|---|-------------------|
| WDFW to send out final comment/response matrix for the steelhead and Coho transition plan | Completed. |

| Assignments from March 9, 2023 | Status |
|--|--|
| Glaser, Miller: Identify the types of decisions that should be brought from the FPS to the ACC to clarify protocols for the FPS. | Completed. (ACC to decide on modifying ground rules text) |

| Assignments from April 14, 2022 | Status |
|--|--|
| Erik Lesko: Coordinate with the TCC regarding the timing for WSDOT's Cougar Creek culvert project. | Completed. July 12-15 work period |

Opening, Review of Agenda and Meeting Notes

Erik Lesko (PacifiCorp) called the meeting to order at 9:32 a.m. and reviewed the agenda. Minor revisions to the agenda were made, and the agenda was accepted. Meeting note revisions were reviewed, and the May 11, 2023 and June 8, 2023 notes were approved.

Public Comment Opportunity

There were no public present. Josua Holowatz received a call from the public about interest in the water level of the Swift Reservoir and recent drafting. Erik Lesko stated that he has also received a number of calls about reservoir levels and drafting. He will expand on this during the updates later in the meeting.

Lewis River Steelhead Transition Plan Comment Review (WDFW) (see also Attachment A)

Josua Holowatz began discussion of the *Lewis River Steelhead Transition Plan* (Steelhead Transition Plan). He said that Washington Department of Fish and Wildlife (WDFW) had received comments from Trout Unlimited and PacifiCorp and compiled them into a comment/response matrix along with WDFW responses. Holowatz said that comments did not result in substantive changes to the plan, yet some details need to be finalized and addressed in

the hatchery and genetic monitoring plans (HGMPs). He reiterated that the Coho Salmon and steelhead transition plans are living documents and intended to be updated as additional information becomes available. Holowatz stated that WDFW will send out a comment/response matrix to the ACC soon. He said the ACC could also go through the comments after the comment/response matrix has been distributed and then come to a vote if that is preferred by ACC members.

Erik Lesko mentioned that PacifiCorp had a discussion with Kale Bentley to clarify some details of the Steelhead Transition Plan and that it was very helpful. Lesko asked for clarification on whether the comment/response matrix would be discussed today.

Emi Melton said National Oceanic and Atmospheric Administration (NOAA) prefers the stepping-stone approach, as described in the Steelhead Transition Plan, be implemented as soon as possible. Lesko clarified that the plan, if approved, would be implemented in 2024. Melton responded that this was a sufficient timeline.

Bentley stated that he was happy to step through the comment/response matrix if needed. He said that WDFW added details after meeting with PacifiCorp, and he is happy to review those. Bentley reiterated that most edits were editorial, and the main substance of the Steelhead Transition Plan in terms of recommendations for future programs has not changed. Lesko clarified that Trout Unlimited also made comments. Bentley confirmed that the comments made to the Steelhead Transition Plan by Trout Unlimited are also in the comment/response matrix.

Lesko stated that if there is a vote today, PacifiCorp will abstain because PacifiCorp is currently uncomfortable voting without having all comments fully addressed. Lesko asked WDFW whether the ACC would be voting today. Bentley stated that based on his discussion with Bryce Glaser, WDFW would prefer to vote today because the comment period has officially ended. Bentley stated that if there are enough concerns, the vote can be pushed back due to the slight delay in the deadline for HGMPs. Bentley asked which specific comments PacifiCorp is uncomfortable with, and whether there were any way PacifiCorp would vote today. Lesko said that, based on discussions earlier this week and assumptions made in the Steelhead Transition Plan, there is nothing in the Steelhead Transition Plan that is a red flag. PacifiCorp would like to ensure that the Steelhead Transition Plan aligns with Lewis River Settlement Agreement (Settlement Agreement). Chris Karchesky agreed, and stated that he would like to go over the responses from WDFW to the comments from PacifiCorp. Jonathan Stumpf said that he would also like to go over the comment/response matrix and that he is prepared to vote. Karchesky asked for Bentley to review comment/response matrix.

Bentley presented the comment/response matrix. He began with a comment from PacifiCorp regarding the Steelhead Transition Plan overview section, to which WDFW had added more detail, as requested, specifically in relation to the Settlement Agreement. Bentley clarified that the stepping-stone plan is a near-term plan. WDFW added a description to the overview section of the process used to evaluate alternatives to the current harvest-focused, early winter (Chambers) hatchery program and why WDFW recommended transitioning to a harvest-focused “stepping-stone” variant program. Lesko stated that he wanted to ensure that the stepping-stone program benefits the reintroduction program because the Settlement Agreement states no changes may adversely affect the hatchery program. Lesko also mentioned the F2 genetic impacts that have not been addressed in the Steelhead Transition Plan, and after discussion with Bentley, PacifiCorp will accept the genetic risk due to benefits to both the conservation and

hatchery programs. Lesko said that he is more comfortable voting on the Steelhead Transition Plan, with the caveat that HGMPs have not been finalized. Holowatz clarified that the Coho Salmon and steelhead transition plans are guiding documents that feed into the HGMPs. Bentley asked whether he should continue discussing each comment in the comment/response matrix. Lesko said that it is unnecessary from the standpoint of PacifiCorp to continue discussing the comment/response matrix. Bentley said that he will quickly finish discussion of the PacifiCorp comment.

Bentley stated that WDFW was aware that the existing steelhead program needed to be changed, and the new program would be dually focused on conservation and harvest goals while minimizing hatchery impact. Bentley stated that the presented stepping-stone alternative met all objectives better than other alternative approaches evaluated. He clarified that WDFW has not developed a prioritization plan, although there is one for the current steelhead program. The new stepping-stone program will require the F1 recruits from the conservation program for brood. He stated that although this could affect numbers of fish for upstream transport, based on the modeling, it would only occur at very low population numbers of fish. Bentley said that the stepping-stone program results in production of the most natural-origin return fish, including F1s discounted for relative reproductive success. Bentley said that the second main concern in the PacifiCorp comment was genetic risk. Bentley stated that after modeling using proportionate natural influence (PNI) to evaluate all program alternatives in different scenarios, the stepping-stone program presented similar genetic risk to the fully-integrated program. The early-timed alternative program presented the largest genetic risk.

Lesko said that WDFW has addressed comments in the comment/response matrix and suggested that the ACC vote today. Lesko asked Trout Unlimited whether they would like any further discussion. Jim Byrne said that he is concerned that WDFW has come up with a new hatchery program, and the new policy has turned its back on accepted scientific guidance (e.g., proportion of hatchery origin spawners [pHOS]). He stated that this is a mitigation policy and scientific procedures (regarding pHOS and proportion of natural origin broodstock [pNOB]) should be continued. Bentley stated that within the ACC group, the metrics mentioned are being used as part of the guidance documents, and in evaluation. Bentley stated there have been discussions in the Aquatic Technical Subcommittee (ATS) about updating the annual monitoring procedures so that PNI are being estimated accurately. Byrne stated that he wanted to ensure policy guidance was being followed for accurate monitoring data. Bentley stated that he appreciated the feedback, and accountability is important. Byrne had no further concerns.

Melton wanted to reiterate that the modeling Bentley used is also used for the NOAA consultation process. She stated that NOAA does its own analysis and has been working closely with WDFW to make sure the Steelhead Transition Plan stepping-stone program has been developed soundly with no concerns from NOAA.

Keely Murdoch stated that the Klickitat Hatchery receives Coho Salmon type N from the Lewis River, and the Coho Salmon transition plan states that the type N will be used heavily in transitioning. Murdoch asked whether the supplemental Klickitat fish have been accounted for in the Coho Salmon transition plan. Holowatz clarified that there would be no challenges to continuing to supplement the Klickitat Hatchery and US v Oregon obligations, and the brood collected would be part of the traditional type-N timeframe.

Karchesky asked whether the language he added to the Steelhead Transition Plan clarifying the intent of the plan's harvest possibilities was incorporated. He added that he copied the language over from the Coho Salmon transition plan, which the ACC added during June 8, 2023, committee meeting to clarify potential release and harvest scenarios for adult Coho Salmon upstream of Merwin Dam. Bentley found the additional language and gave an overview of response from WDFW. Bentley said that Glaser still had sections to add to the Steelhead Transition Plan, and he is unsure whether this language is part of upcoming additions. Bentley did not add the suggested text, and there is similar language already in the plan. Bentley said that the language is similar, but if the text was added to the Coho Salmon transition plan, it should be added to the Steelhead Transition Plan to be consistent. Steve Manlow agreed. Bentley copied the suggested language into the Steelhead Transition Plan. Holowatz agreed that this text is important and this language was planned to be added.

Lesko asked for any further comments on the Coho and Steelhead Transition Plans.

Melton stated that NOAA has not made edits to the Coho Salmon or steelhead transition plans. She asked whether it is possible to implement the Steelhead Transition Plan as soon as possible. Lesko said that the final version of the Steelhead Transition Plan stated that the plan is scheduled for implementation in 2024. Melton stated that she would like the schedule to reflect a 2024 start date and for the phrase "post consultation with NOAA" to be removed. Bentley removed requested language.

Lesko called for a vote on both the Coho Salmon and steelhead transition plans. Lesko displayed a list of representatives and voting status to call for votes.

Lesko clarified that PacifiCorp will abstain because HGMPs are not complete, but this does not imply the Coho Salmon and steelhead transition plans are not supported by PacifiCorp.

The United States Fish and Wildlife Service abstained from voting because representatives have not had sufficient time to review both transition plans.

Because some ACC members were absent from the meeting, the official vote will be sent in email, and if no comments are made during the 7-day review period, the Coho Salmon and steelhead transition plans will be accepted.

Peggy Miller asked that a title be added to the decision template. Lesko said that he will add a title. The decision will be included as a 2023 decision. Holowatz asked to clarify that abstentions are "not willing to stand in the way" of the voting procedure. Lesko said yes.

The vote tally was as follows:

Transition Plan

| | Organization | ACC Representatives | Coho Salmon | Steelhead |
|----|--|---|--------------------|------------------|
| 1 | American Rivers | Bridget Moran | Not Present | Not Present |
| 2 | Cowlitz Indian Tribe | Christina Donehower Dalton Fry | Approve | Approve |
| 3 | Fish First | Alex Maslov Janae Brock | Not Present | Not Present |
| 4 | Lewis River Community Council | Mariah Stoll-Smith Reese | Not Present | Not Present |
| 5 | Lower Columbia River Fish Recovery Board | Steve Manlow Steve West | Approve | Approve |
| 6 | National Marine Fisheries Service | Emi Melton (proxy) Bonnie Shorin Melissa Jundt | Approve | Approve |
| 7 | Utilities | Erik Lesko Chris Karchesky Amanda Farrar | Abstain | Abstain |
| 8 | Trout Unlimited | Jim Byrne Jonathan Stumpf | Approve | Approve |
| 9 | US Fish & Wildlife | Jeff Garnett | Abstain | Abstain |
| 10 | USDA Forest Service | Josh Chapman JD Jones Kyle Wright | Not Present | Not Present |
| 11 | Washington Dept. of Fish & Wildlife | Bryce Glaser Peggy Miller Josua Holowatz (proxy) Aaron Roberts | Approve | Approve |
| 12 | WA Recreation/Conservation Office | Adam Cole | Not Present | Not Present |
| 13 | Yakama Nation | Bill Sharp Keely Murdoch | Approve | Approve |

No objections were received during the 7-day review period.

Decision Template: Elements of Fish Passage. Discussion (Olson; see also Attachment B)

Todd Olson reminded the ACC that the ACC walked through the Elements of Fish Passage document during the last ACC meeting, and the document has been out for review. He stated that PacifiCorp received comments from WDFW, and most were accepted, and the decision template was also distributed. He stated that he is aware ACC members were hesitant to vote during this meeting, but asked where members were in their comfort level with the edits made and to discuss which way they are leaning with their vote.

Bill Sharp stated that he is ready to vote once the internal committee at the Yakima Nation approves, and he believed that would occur by the next month's ACC meeting. Christina Donehower stated that there are ongoing internal discussions with the Cowlitz Tribe, and she would reserve her comments for the following meeting if the vote is postponed. Jeff Garnett stated that USFWS is prepared to vote, but he said that this does not imply pressure on other parties who are not ready to vote. Peggy Miller stated that WDFW was not ready to vote because its legal team and the Attorney General's office needs to approve, but she was hopeful this would be completed by the August meeting. Jonathan Stumpf stated Trout Unlimited was not fully prepared to vote; he clarified Trout Unlimited would be ready to vote by the August meeting. Melissa Jundt said the National Marine Fisheries Service (NMFS) was prepared to vote but would like to finalize some language regarding the baseline studies section of the Elements of Fish Passage document. Olson requested NMFS send PacifiCorp specific edits on the baseline studies section of the Elements of Fish Passage document if possible. Jundt stated that she would send redlined text. Steve Manlow stated that there are no major issues, but Lower Columbia Fish Recovery Board (LCFRB) was

not ready to vote yet. Olson stated that he understands that there are organizational reviews and asked whether all members could be ready for a vote in August. No opposition was stated, so the ACC will vote in August on the Elements of Fish Passage decision template. Olson reiterated that if there are concerns or edits, he is happy to discuss them further.

Decision Template: Proposed Revision to Ground Rules (Lesko; see also Attachment C)

Erik Lesko presented the decision template for the Proposed Revision to Ground Rules. He reminded the ACC that this document relates to discussion the ACC had in the past about the way decisions are made in the technical subcommittees. He stated that there is language in the Ground Rules about which decisions need a decision template. Lesko mentioned that there is confusion about how to handle smaller decisions that do not technically require a decision template, and he added text about these decisions to the Ground Rules. The text added by Lesko states that decisions that do not require a decision template "...will be stated in the meeting notes and highlighted in a red bold font and included in the record of decision matrix." Lesko asked the ACC for questions or concerns. Melissa Jundt asked whether Bonnie Shorin had received this. Lesko clarified that if she is on the distribution list, then she received it. Peggy Miller stated that she is not ready to vote on this and is still concerned about how to decide which decisions are made at the subcommittee group level versus which are moved to the ACC level. Lesko agreed with Miller's concern. Lesko stated that he has no issues delaying a vote on this and is happy to accept edits. Miller suggested that this should also be brought up at the Terrestrial Coordination Committee because the Ground Rules document is a joint document. Lesko stated that he would follow up with Kendell Emmerson. Lesko asked for further comments or questions. No members responded; the vote was delayed until the August meeting.

Study/Work Product Updates

Flows/Reservoir Conditions Update (see also Attachment D)

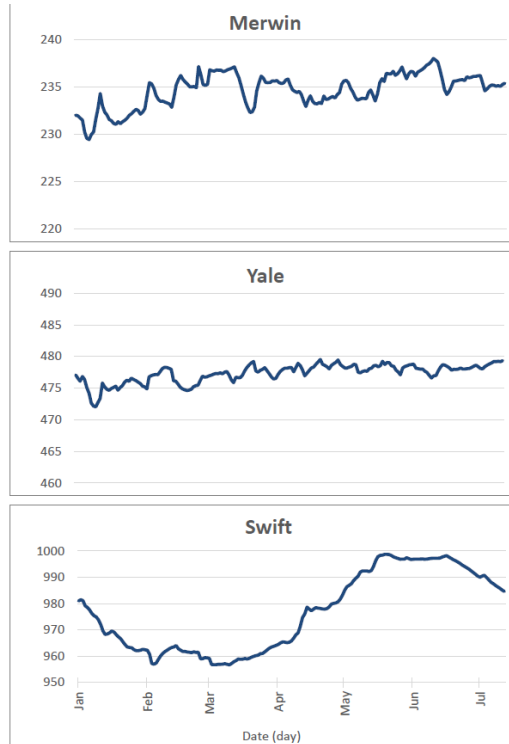
Erik Lesko presented the reservoir elevations from May until present. He stated that combined elevations are down 5 feet from May. He stated the total draft is 30.45 feet with the Yale restriction. Peggy Miller asked what the normal draft of this time of year is and whether the current draft is it average or below normal. Todd Olson said that this year falls within the range of drafts that have been previously observed. He stated that in 2015 during a drought, the Swift boat ramp was not usable for the entire summer. Olson stated that due to last year's good snowpack during winter and prolonged spring runoff, the reservoir levels were higher than they are now by at least 6 to 7 feet. Given that the 2023 spring was dry, he stated the current levels are likely the new normal. Miller said that she was trying to understand what level of water is present and how it related to the requested reduction in minimum flow. Olson stated that the Yale Reservoir does not have much water in it, and if it is reduced by a foot, then boat launches will become unusable. Olson stated that PacifiCorp has been pulling water from Swift Reservoir to meet the minimum Federal Energy Regulation Commission (FERC) flows downstream, except for the July 4th holiday, when Search and Rescue were present. After approximately July 4, PacifiCorp pulled 0.5 foot. from the Swift Reservoir daily and has begun to decrease that amount.

Reservoir Elevations

Jan 1 – July 11, 2023

Total Draft = - 30.45 feet
 (-20.45 with Yale Restriction)
 Δ since May 11 = - 4.90

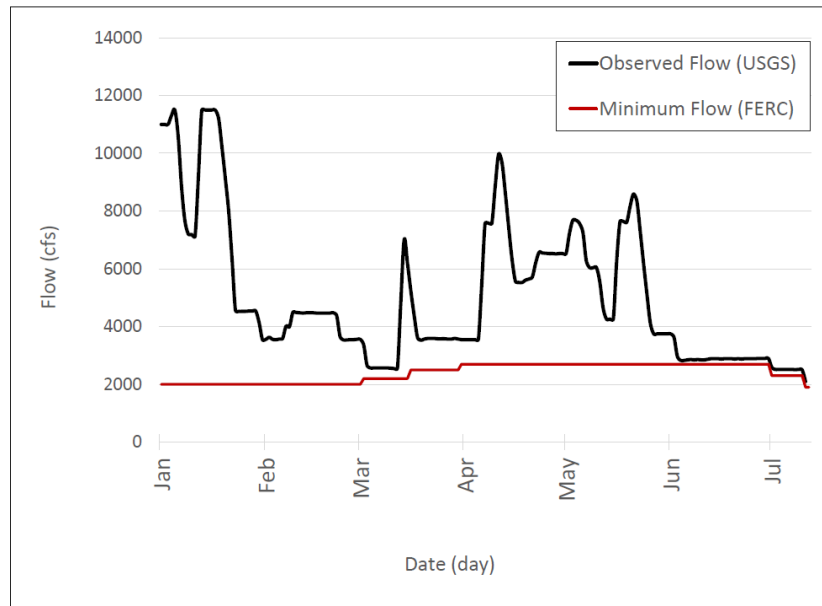
Reservoir Elevation (ft., msl)



Lesko presented flow downstream of Merwin. He stated that the flows are close to the FERC minimum. He stated there are no major updates to discuss. If a minimum flow reduction is implemented, flows will return to the FERC minimum flow rate by August 1 (1,200 cubic feet per second [cfs]).

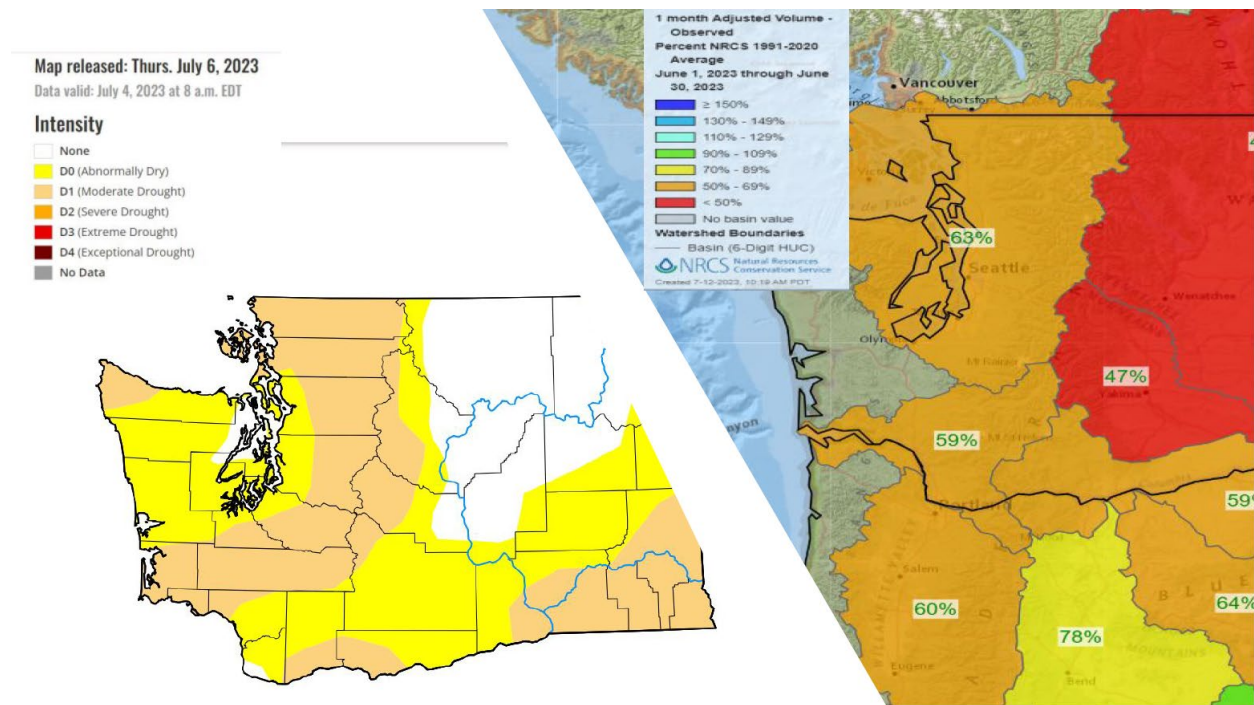
North Fork Lewis River Stream flow below Merwin Dam

Jan 1 – July 11, 2023



Lesko said that he is aware that the Washington State Department of Ecology (Ecology) had issued a drought advisory. He presented a map displaying drought intensity in Washington State. Lesko stated that he will be requesting to convene the Low-Flow Committee. He stated that this request will be made via email and would include information on meeting FERC minimum downstream flows while also attempting to keep at least one boat ramp open for recreational

purposes. Lesko stated that he will propose a new minimum of 200 cfs, lower than the FERC-required minimum for this month (July). He stated that he should have all information for this email by tomorrow and will send it as soon as possible. He asked for questions or comments from the ACC. Peggy Miller asked whether the Low-Flow Committee needs to make the decision right away. Lesko stated that he would prefer a decision right away, and if possible, he would like a decision by Tuesday of next week and is happy to schedule a meeting if there are concerns. Jeff Garnett stated that he recalls Swift Reservoir is planning on being drawn down to 950 feet. He asked whether that drawdown is still scheduled and whether it was involved in any of the calculations for the low-flow request. Lesko said that the drawdown at Swift Reservoir is planned for this fall for the spill gate inspection. Olson stated that the drawdown will provide some water in the fall for the fall Chinook Salmon. He stated that PacifiCorp is trying to reduce flows for the last couple of weeks of July (which will result in a 1.5-inch stage change at the USGS Lewis River at Ariel gage) to get through Labor Day.



Anne Baxter asked who will be on the Low-Flow Committee because Ecology would like to discuss flow and impacts to water quality. Lesko said that Ecology is on the committee, and all agencies on the ACC would have a representative to the Low-Flow Committee.

Reservoir Shoreline Development Projects

Campers Hideaway

Steve Manlow stated that there has been a comment letter submitted by LCFRB to Clark County, which is processing shoreline permit for the Campers Hideaway construction. Clark County has taken comments and forwarded them to proponent and asked for responses. Manlow has received proponent responses and responded to Clark County again. He stated that he is waiting to hear back on how the comments have been received. He stated that Ecology has the final say, but LCFRB is hoping the comments can inform the upcoming decision.

WSDOT – Cougar Creek

Jeremiah Doyle stated that construction has started, and further updates will be made in the next meeting.

Aquatic Technical Subcommittee (ATS) Update

Erik Lesko provided an overview of highest concerns for PacifiCorp being discussed by the ATS:

- PacifiCorp, in coordination with WFDW and Cramer Fish Sciences, is developing a genetic monitoring strategy.
- PacifiCorp is also in discussions with WDFW with the help of Anchor QEA, LLC, to develop a strategy for monitoring smolt-to-adult survival for spring Chinook Salmon evaluations.
- Chris Karchesky added that there is ongoing work on integrated population modeling and PacifiCorp is working with Kale Bentley and United States Geologic Survey (USGS) to present an internal discussion during the upcoming ATS meeting.
- Josua Holowatz stated that there has been ongoing discussions about the need for a steelhead genetic review this summer. Lesko asked whether Holowatz's statement was in reference to the juvenile salmon collection in the lower Lewis River. Holowatz said yes.
- Lesko stated that there is an existing model being worked on with USGS for improving methods to more accurately determine pHOS in the lower river for steelhead, as this is a difficult metric to attain for steelhead, which return to the ocean.

Fish Passage Subcommittee (FPS) Update

Todd Olson stated that there are no updates, and the meeting occurring today will be abbreviated. He reiterated that the intent will be to vote next month on the Elements of Fish Passage decision template. Peggy Miller stated that the group also discussed capacity on Swift upstream during the last meeting. Olson said that the Fish Passage Subcommittee discussed the comments to the Elements of Fish Passage document last meeting and distributed the final document.

Lewis River Fish Passage

See Attachment E.

Merwin Fish Passage Update (see also Attachment F)

Chris Karchesky mentioned that the Merwin Trap outage to adjust the Fish Lift and Conveyance System had started and reminded the ACC that the current outage is addressing modifications to the crowder system. Currently the infrastructure updates are being made this year, with modification to the crowder itself occurring during the summer 2024. Karchesky stated that the crew is slightly ahead of schedule and is also working on general maintenance, including the ladder water supply pumps. He said that he will update the ACC if anything changes that delays the current project schedule. Currently, he is anticipating that the trap will be back in operation in early August, 2023. He also stated that he will work with both PacifiCorp field crew and various hatchery staff when the trap is turned back on.

Swift Floating Surface Collector (see also Attachment G)

Chris Karchesky stated that overall, it has been a good year at the Swift Floating Surface Collector, but water temperatures are rising and will be 18°C soon, indicating that the outage season is approaching. He reminded the ACC that the net transition structure will be undergoing modifications because PacifiCorp has learned that the fish collection channel is a major point of rejection. The modifications will help alleviate the problem and will be tested next spring. Modifications will start this month or early August and will be completed by early October when the Swift Floating Surface Collector turns back on.

Karchesky mentioned that last year, he presented a mid-year check-in to the ACC, presenting fish collection numbers. He said that he will present a similar presentation, which will take approximately an hour, during the August ACC meeting.

Merwin Gate Test (Lesko)

Erik Lesko mentioned there will be a gate test at Merwin next week (July 17, 2023) and all activities fall within compliance of FERC. No adjustment to reservoir elevation will be made.

Habitat Preparation Plan (HPP; Lesko)

Erik Lesko stated that he would get a draft of the Habitat Preparation Plan out for 2023 in August. He stated that there is no ATS meeting this month, but the plan will be sent to that subcommittee. He said there were little to no changes for this plan, and he will send to the ACC before the August ACC meeting.

Administrative Updates

Erik Lesko reminded the ACC that the September meeting would be in person, and he asked the group whether a meeting room had been reserved. Josua Holowatz stated that he booked the large conference room at the WDFW Region 5 office. He reminded the ACC that the September meeting will be hybrid as well.

Lesko stated that there is usually an Aquatic Fund Announcement letter sent out around this time. He will finalize it and send it out by August 1. He reminded the ACC that the letter will include a schedule, and applicants will give their proposals in person.

Lesko reminded the group that he will be out of office in August, and he needs a facilitator for that meeting. He suggested that Chris Karchesky or Amanda Farrar will likely facilitate that meeting.

Public Comment Opportunity

None present.

Agenda Items for August 1, 2023

- Study/Work Product Updates
- Decision Template: Proposed Revision to Ground Rules
- Decision Template: Elements of Fish Passage
- Swift PSC Fish Collection Update
- Review and Approve the Habitat Preparation Plan

Adjourn 11:53 pm

Next Scheduled Meeting

| |
|------------------------|
| August 10, 2023 |
| Teams Call |
| 9:30 a.m. – 12:00 p.m. |

Meeting Handouts & Attachments

- Agenda from 6/11/2023

- **Attachment A** – Coho and Steelhead Transition Plans, Review Matrixes, Decision Request (Approved)
- **Attachment B** – Elements of Fish Passage – Decision Template
- **Attachment C** – Revision to Ground Rules – Decision Template
- **Attachment D** – Flow/Reservoir Conditions (May–June 2023)
- **Attachment E** – Lewis River Fish Passage Report (June 2023)
- **Attachment F** – Merwin Adult Trap Collection Report (June 2023)
- **Attachment G** – Swift FSC Facility Collection Report (June 2023)

Lewis Coho -Hatchery Transition Plan

Program(s): Lewis River Coho Salmon

Affected Recovery Population(s) and Recovery Designation(s):

| Population Name | Population Recovery Designation |
|-----------------------|---------------------------------|
| North Fork Lewis Coho | Contributing |

Overview

This document provides a synopsis of the current and alternative hatchery programs for North Fork Lewis River coho salmon. The overall goal of this document is to identify a program that maximizes the probability of achieving the Anadromous Fish Reintroduction Outcome Goal (Reintroduction Outcome Goal) as outlined in Section 3.1 of the Lewis River Hydroelectric Project Settlement Agreement (SA); *to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations.*

Currently, hatchery coho salmon production in the North Fork Lewis River consists of two separate programs. The first program is an early (Type S) segregated program that aims to release 1.1 million smolts. The second program is a late (Type N) integrated program that aims to use at least 30% natural-origin adults in its broodstock and release 900,000 smolts . Returning hatchery-origin adults from both programs have been used for reintroduction purposes in the Upper Lewis Basin above Merwin Dam (currently above Swift Dam only). Moving forward, we are proposing several changes to the current coho hatchery programs that will be implemented using a phased approach.

The first phase of the transition will be to maintain the status quo production targets for each program. Specifically, maintain a 1.1M early (Type S) segregated program while transitioning the 900K integrated program from a “late” program to one integrated across the full breadth of the natural origin coho return, including both the early and late time periods (approximately late-August through January). Once adults from the newly integrated program begin to return, only integrated coho will be used for reintroduction purposes. This action provides an advancement towards recovery by improving the genetic composition of the integrated program used for reintroduction, while maintaining contribution to fisheries from both the early segregated (harvest only) and integrated (conservation/harvest) programs. The early segregated coho program could still be used for Habitat Preparation in Yale and Merwin and could be used as a backfill for reintroduction purposes in years of forecasted extremely poor coho abundance, if deemed appropriate and approved by the Lewis River Aquatic Coordination Committee (ACC).

The second phase of the program will include evaluation of program performance to ensure the integrated program is meeting conservation objectives of returning enough fish for broodstock and reintroduction needs, and to ensure both the integrated and segregated programs are meeting harvest objectives. This phase will also include development of recovery phase transition targets that can be used to further assess recovery progress and the role of hatchery programs in achieving recovery. Additionally, planning for fish passage into Yale and Merwin reservoirs is underway, which will include development of transport targets for hatchery coho into those reservoirs for reintroduction purposes.

The third phase of the program will use evaluation results, recovery phase transition targets and additional hatchery fish transport goals for Yale and Merwin to adaptively manage production size and the split between early segregated and integrated programs to ensure the Reintroduction Outcome Goal and harvest objectives will be met.

Ultimately, these programmatic changes are designed to ensure adult abundance of hatchery fish available for reintroduction and harvest and improve integration of fish used for reintroduction to better represent the historical natural-origin coho population for the North Fork Lewis River.

List of Acronyms in Lewis Coho Transition plan

| | |
|-----------|--|
| Ad..... | Adipose clip |
| ACC..... | Aquatic Coordination Committee |
| AHN..... | Above Hatchery Need |
| AMEP..... | Aquatic Monitoring and Evaluation Plan |
| AOP..... | Annual Operating Plan |
| CWT..... | Coded Wire Tag |
| CBP..... | Columbia Basin Partnership |
| DIT..... | Double Index Tag |
| Fpp..... | Fish Per Pound |
| H&S..... | Hatchery and Supplementation Plan |
| HOR..... | Hatchery Origin Returns |
| HSRG..... | Hatchery Scientific Review Group |
| HPP..... | Habitat Preparation Plan |
| NOAA..... | National Oceanographic Atmospheric Association |
| NOR..... | Natural Origin Returns |
| pHOB..... | Proportion of Hatchery Origin Broodstock |
| pHOS..... | Proportion of Hatchery Origin Spawners |
| PNI..... | Proportionate Natural Influence |
| pNOB..... | Proportion of Natural Origin Broodstock |
| QET..... | Quasi-Extinction Threshold |
| Rmax..... | Maximum recruitment under average environmental conditions |
| RRS..... | Relative Reproductive Success |
| VSP..... | Viable Salmonid Population |
| WDFW..... | Washington Department of Fish and Wildlife |

Recovery Phases and Goals

The goals included in this section are derived from the Lewis River Settlement Agreement and the Healthy and Harvestable concept outlined by the Columbia Basin Partnership Task Force. Recovery phases are defined by the HSRG (2020).

Settlement Agreement Section 3: ANADROMOUS FISH REINTRODUCTION OUTCOME GOALS

“The reintroduction outcome goal of the comprehensive aquatics program contained in Sections 4 through 9 of the Lewis River Settlement Agreement is to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations (“Reintroduction Outcome Goal”).”

Healthy and Harvestable Defined:

As stated in *A vision for Salmon and Steelhead Goals to Restore Thriving Salmon and Steelhead to the Columbia River Basin. Phase 2 Report of the Columbia Basin Partnership (CBP) Task Force of the Marine Fisheries Advisory Committee- October 2020.*

https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null

The intent of this plan is to achieve Healthy and Harvestable abundance levels that would sustain very high levels of species viability, significant fishery opportunities and harvest as well as recover upper basin coho populations with the near-term goal of preventing population declines and the long-term goal of achieving ESA delisting through expanded diversity and resiliency.

Goal of new program(s) by recovery phase (i.e., conservation/harvest, etc.):

| Population Recovery Phase | Goal of hatchery program | Thresholds/Triggers/Decision Rules required to transition from one phase to next |
|---------------------------|---|---|
| Preservation | Conservation (promote recovery) and harvest | <p>Natural origin population at risk of extirpation</p> <p><i>Not applicable – as population is already past this phase.</i></p> <ul style="list-style-type: none"> • 5 yr. geomean total abundance (when counting NOR adults, plus HOR adults up to the number which would cause pHOS to equal the pHOS goal for Local Adaptation) is LESS than the quasi-extinction threshold (QET to be determined during Population Phase Assessment). • Vast majority/all historical habitat is unusable/heavily impacted/inaccessible currently (e.g., blocked by dams with no passage) |

| | | |
|------------------|---|---|
| Recolonization | Conservation (promote recovery) and harvest | <p>Natural origin population at low abundance; habitat underutilized.</p> <p>Lewis coho (considered one population) is assumed to be in this phase.</p> <ul style="list-style-type: none"> • 5 yr geomean total abundance (when counting NOR adults, plus HOR adults up to the number which would cause pHOS to equal the pHOS goal for Local Adaptation) is MORE than quasi-extinction threshold but LESS than the number needed to meet the interim viability goal (NOAA VSP criteria or alternative). • Interim viability goal can be expressed as seeding a percentage (e.g., 50%) of the freshwater habitat, and can be estimated by stock recruit analysis (e.g., estimate spawner abundance required to produce 50% of Rmax). • Enough historical habitat is currently accessible (including by trap and haul) for maintenance of an equilibrium population size greater than QET (to be determined during Population Phase Assessment). |
| Local Adaptation | Conservation (promote recovery) and harvest | <p>Natural origin population nearing full seeding of currently available habitat.</p> <p>Assuming current population is not yet in this phase.</p> <ul style="list-style-type: none"> • Develop/Confirm assessment criteria for trigger(s): <ul style="list-style-type: none"> ○ Escapement ○ R_{max} ○ Adult to adult productivity ○ Number needed to meet the interim viability goal (NOAA VSP criteria or alternative). • Early within the duration of the revised H&S Plan, the ATS will develop these criteria, incorporating biological, logistical, and management considerations. <ul style="list-style-type: none"> ○ Such as integrating R_{max}, SAR and/or adult to adult productivity into phase triggers. |
| Full Recovery | Maintain Recovery and provide Harvest | <p>Natural origin population is both above full-seeding of available habitat AND is meeting the Reintroduction Outcome Goal. (healthy and harvestable recovery goals).</p> <p>Assuming current population is not yet in this phase. Revisit criteria if population assessment confirms populations are currently in Local Adaptation phase.</p> <ul style="list-style-type: none"> • 5 yr geomean of spawner NOR abundance (not counting HORs) is MORE than minimum interim viability objective when only counting NOR spawners and is also at or MORE than healthy/harvestable recovery goal. • CBP Task Force Healthy Harvestable Goal: 21,000 |

Current Program(s)

This section provides a description of the current hatchery programs affecting the North Fork Lewis coho salmon population.

Lower North Fork Lewis Coho Salmon

Program Type: Segregated early fall (Type S) – current program

Population Recovery Phase: Recolonization

Goal of Program(s): Conservation (Reintroduction Outcome Goal)/Harvest

| Adult Broodstock Collection | |
|--|--|
| Broodstock Source | Lewis segregated HOR fish |
| Broodstock Collection location/methods | Lewis River Hatchery and Merwin Upstream Collection Facility (Merwin FF) |
| Integration Rate | pNOB goal of 0.0 |

Collection timing curves:

Estimated Broodstock Collection Curve (2020)

| Week Of | Males | Females | Jacks | |
|----------------|--------------|----------------|--------------|-----|
| 6-Sep | 50 | 55 | 5 | 8% |
| 13-Sep | 63 | 68 | 6 | 10% |
| 20-Sep | 94 | 102 | 6 | 15% |
| 27-Sep | 125 | 136 | 7 | 20% |
| 4-Oct | 138 | 150 | 7 | 22% |
| 11-Oct | 94 | 102 | 6 | 15% |
| 18-Oct | 63 | 68 | 5 | 10% |
| TOTAL | 626 | 682 | 42 | |

Secondary sources/plans for lack of adults; HORs collected the Cedar Creek trap.

Adult Transportation & Disposition

| Target | Rank | Quantity (range) | Release Location | Dates |
|-----------------------|------|---|-----------------------------------|------------------------------------|
| Upper Lewis | 1 | Up to 9500 AHN (in combination with Type-N Late-Coho) | Eagle Cliffs & Swift Forrest Camp | Sept-Oct |
| Yale Reservoir | 2 | 1800 AHN (per Yale HPP) | Yale Park and Saddle Dam | Sept-Oct until 2024 - per HPP plan |
| Merwin Reservoir | NA | NA | NA | Sept-Oct |
| Surplus -Food Quality | 3 | Above transport and hatchery needs | Food Bank | Sept-Oct |
| Nutrient Enhancement | 4 | Spawned carcasses, non-food grade fish above transport and hatchery needs | Lewis River Basin - Various | Sept-Oct |

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group volitional followed by force out |
| Quantity | 1,100,000 |
| Release Age/size | 1+ / Released at 16fpp |
| Release Location/Timing | Lewis Salmon Hatchery – April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 950,000 Ad Only • 75,000 CWT + Ad • 75,000 CWT only DIT Group |
| Fish Management needs | <ul style="list-style-type: none"> • Adipose clip required to allow harvest in mark-selective fisheries. • CWT validation of age composition. |
| Evaluation Needs | <ul style="list-style-type: none"> • Adipose clip allows for evaluation of pHOS.. • CWT validation/ age composition (compared to scale). • DIT group evaluates mark selective harvest. |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Fish Facility.
- Broodstock is held at the Lewis River Hatchery.
- Spawning and incubation occur at the Lewis River Hatchery.
- Juvenile rearing occurs at the Lewis River Hatchery in raceways.

Program Performance Metrics

| | |
|--------------------------------|--|
| pHOS level | Target: TBD (currently in recolonization phase) Recent Performance: Mean: 54% (2010-2021) |
| pNOB levels | Target: NA Recent Performance: NA |
| Broodstock mining rate* | Target: NA |

*Broodstock mining rate = percentage of natural-origin adults from a specific return year that can be used for broodstock.

Current Monitoring Program:

- Lower Lewis mainstem and tributary spawning ground surveys.
- Lower Lewis spot creel surveys conducted by WDFW staff interviews anglers to collect in season biological data and numbers of released NOR coho. These data are then compared post season with Catch Record Card data submitted by anglers.
- Broodstock sampling at hatchery facilities.

Lower Lewis Subbasin Coho Salmon

Program Type: Integrated late fall (Type N) – current program

Population Recovery Phase: Recolonization

Goal of Program(s): Conservation (Reintroduction Outcome Goal)/Harvest

| Adult Broodstock Collection | |
|--|---|
| Broodstock Source | Lower Lewis HOR & NOR fish |
| Broodstock Collection location/methods | Lewis Hatchery and Merwin Fish Facility |
| Integration Rate Target | pNOB goal of 0.30 |

Collection timing curves:

Estimated Broodstock Collection Curve (2020)

| Week Of | Males | Females | Jacks |
|---------|-------|---------|-------|
| 20-Nov | 80 | 80 | 8 |
| 27-Nov | 80 | 80 | 8 |
| 4-Dec | 882 | 882 | 48 |
| 11-Dec | 883 | 883 | 48 |
| 18-Dec | 80 | 80 | 8 |
| TOTAL | 2005 | 2005 | 120 |

*Includes US v OR, RSI, and Lewis on-station Late Program

Secondary sources/plans for lack of adults; HOR coho from the Cedar Creek trap.

Hatchery Adult Transportation & Disposition

| Target | Rank | Quantity (range) | Location | Dates |
|-----------------------|------|--|---------------------------------|------------|
| Upper Lewis River | 1 | Up to 9,500 total coho AHN (in combination with Type-S Early-Coho) | Eagle Cliffs/Swift Forrest Camp | Nov-Dec |
| Yale Reservoir | NA | 0 (see Yale HPP) | NA | NA |
| Surplus -Food Quality | 2 | Above transport and hatchery needs | Food Bank | Sept-March |
| Nutrient Enhancement | 3 | Spawned carcasses, non-food grade fish above transport and hatchery needs. | Lewis Basin | Sept-March |

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group volitional followed by force out. |
| Quantity (range) | 900,000 |
| Release Age/size | 1+/Released at 16fpp |
| Release Location/Timing | Lewis Hatchery – April/May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 750,000 Ad • 75,000 Ad + CWT • 75,000 CWT only DIT group |
| Fish Management needs | <ul style="list-style-type: none"> • Adipose clip required to allow harvest in mark-selective fisheries • CWT evaluation of age composition |
| Evaluation Needs | <ul style="list-style-type: none"> • Adipose clip allows for evaluation of pHOS/pHOB and PNI. • CWT evaluation of age composition • DIT group evaluates mark selective harvest |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Fish Facility.
- Broodstock is held at the Lewis River Hatchery.
- Spawning and incubation occur at the Lewis River Hatchery.
- Juvenile rearing occurs at the Lewis River Hatchery in raceways.

Program Performance Metrics

| | |
|--------------------------------|--|
| pHOS level | Target: TBD (currently in recolonization phase) Recent Performance: Mean: 54% (2010-2021) |
| pNOB levels | Target: 0.30 Recent Performance: 21% (5yr. avg.) |
| Broodstock mining rate* | Target: less than 30% |

*Broodstock mining rate = percentage of natural-origin escapement from a specific return year that are used for broodstock.

Current Monitoring Program:

- Lower Lewis mainstem and tributary spawning ground surveys.
- Lower Lewis spot creel surveys conducted by WDFW staff to collect in season biological data and numbers of released NOR coho. These data are then compared post season with Catch Record Card data submitted by anglers.
- Broodstock sampling at hatchery facilities. Current Lower Lewis Coho Harvest Management Strategy

Lewis coho harvest strategies are the same for both segregated (Type S Early) and the integrated (Type N late) coho programs.

Current (until we have management targets for NOR populations)

| Area | Abundance | | |
|----------------------|---|--|--|
| | Low | Normal | Above Normal |
| Lower Lewis | Currently, pre-season management based on overall coho forecast strength; Seasons set via North of Falcon. | Currently, pre-season management based on overall coho forecast strength; Seasons set via North of Falcon. | Currently, pre-season management based on overall coho forecast strength; Seasons set via North of Falcon. |
| | Excess HORs transported to upper Lewis ABOVE those needed for Lewis hatchery program in support of reintroduction program. | Excess HORs transported to upper Lewis ABOVE those needed for Lewis hatchery program in support of reintroduction program.. | Excess HORs transported to upper Lewis ABOVE those needed for Lewis hatchery program in support of reintroduction program.. |
| | Restricted Mark-Selective fishery (reduced bag limit or full closure); (generally 6 hatchery fish with 2 adults). | Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults). | Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults). Potential for increased bag limits. |
| | In-season management based on actual hatchery/Merwin FF returns of HOR adults. | In-season management based on actual hatchery/Merwin FF returns of HOR adults. | In-season management based on actual hatchery/Merwin FF returns of HOR adults. |
| Ocean/Columbia River | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. |
| | Mark-Selective fishery (reduced bag limit or full closure); Seasons set via North | Mark-Selective fishery (reduced bag limit or full closure); Seasons set via | Mark-Selective fishery (increased bag limit duration); Seasons set via |

| | | | |
|--|--|--|--|
| | of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip | North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip | North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip |
| | In-season management based on creel surveys. | In-season management based on creel surveys. | In-season management based on creel surveys. |

Proposed Program(s)

This section provides a description of coho hatchery programs proposed to replace current programs upon approval of this Transition Plan by the ACC.

Proposed Program #1: Lower North Fork Lewis Subbasin Early Coho Salmon

Program Type: Segregated Early-Fall (Type S) – proposed program

Population Recovery Phase: Recolonization

Goal of Program(s): Harvest

Timing for Transition 2023-2025

| Adult Broodstock Collection | |
|--|---|
| Broodstock Source | Lewis segregated HOR fish |
| Broodstock Collection location/methods | Lewis River Hatchery Merwin Upstream Collection Facility (Merwin FF) |
| Integration Rate | Segregated: 0.0 |

Collection timing curves:

Estimated Broodstock Collection Curve (2020)

| Week Of | Males | Females | Jacks | |
|---------|-------|---------|-------|-----|
| 6-Sep | 50 | 55 | 5 | 8% |
| 13-Sep | 63 | 68 | 6 | 10% |
| 20-Sep | 94 | 102 | 6 | 15% |
| 27-Sep | 125 | 136 | 7 | 20% |
| 4-Oct | 138 | 150 | 7 | 22% |
| 11-Oct | 94 | 102 | 6 | 15% |
| 18-Oct | 63 | 68 | 5 | 10% |
| Total | 626 | 682 | 42 | |

Adult Transportation & Disposition

Lewis HORs (early segregated)

| Target Area | Rank | Quantity (range) | Location | Dates |
|-------------------------------|------|--|---|------------|
| Broodstock | 1 | Up to program need | Merwin Upstream Collection Facility and Lewis River Hatchery and Cedar Creek trap (potentially) | Sept - Oct |
| Swift, Yale and Merwin basins | 2 | AHN; Available for HPP Available for reintroduction in low abundance years if deemed appropriate and approved by ACC. | See HPP | Sept - Oct |
| Surplus | 3 | All food grade quality fish above hatchery and upstream transport needs. | N/A | Sept - Oct |
| Nutrient Enhancement | 4 | Spawned carcasses, non-food grade fish above transport and hatchery needs. | Lewis River Basin | Sept - Oct |

Juvenile Release(s)

| | |
|---------------------------------------|---|
| Release Strategy | 1 group volitional followed by force out. |
| Quantity (range) | 1,100,000 |
| Release Age/size | 1+ / Released at 16fpp |
| Release Location/Timing | Lewis Salmon Hatchery – April-May |
| Marking/Tagging strategy ¹ | <ul style="list-style-type: none"> • 950,000 Ad/Vent clip • 75,000 CWT + Ad/Vent clip • 75,000 CWT only DIT Group |
| Fish Management needs | <ul style="list-style-type: none"> • Differential mark needed to identify early segregated returns from integrated program. • Adipose clip required to allow harvest in mark-selective fisheries. • CWT allows for evaluation of stock composition to fisheries. • CWT validation of age composition. |
| Evaluation Needs | <ul style="list-style-type: none"> • Differential marking from integrated program allows for independent evaluation of these two programs. • Adipose clip allows for evaluation of pHOS. • CWT allows for evaluation of stock composition on spawning grounds. • CWT validation/training of age composition (compared to scale). • DIT group evaluates mark selective harvest. |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Merwin Upstream Collection Facility and Lewis River Hatchery.
- Broodstock is held at the Speelyai Hatchery.
- Eyed eggs from Speelyai are transferred to Lewis River Hatchery.
- Juvenile rearing and releases occur at the Lewis River Hatchery in raceways.

Lower Lewis Segregated Early Harvest Management Strategy

Proposed (until we have updated management targets for NOR populations)

| Area | Abundance | | |
|----------------------|--|--|--|
| | Low | Normal | Above Normal |
| Lower Lewis | Pre-season management based on overall coho forecast strength; Seasons set via North of Falcon Mark-Selective fishery (reduced bag limit or full closure); (generally 6 hatchery fish with 2 adults) In-season management based on actual Lewis hatchery/Merwin FF returns of HOR adults. | Pre-season management based on overall coho forecast strength; Seasons set via North of Falcon Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults) In-season management based on actual Lewis hatchery/Merwin FF returns of HOR adults. | Pre-season management based on overall coho forecast strength; Seasons set via North of Falcon Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults) Potential for increased bag limits In-season management based on actual Lewis Hatchery/Merwin FF returns of HOR and NOR adults. |
| Ocean/Columbia River | Currently, pre-season management based on combined Lower Columbia forecast strength Mark-Selective fishery (reduced bag limit or full closure); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Currently, pre-season management based on combined Lower Columbia forecast strength Mark-Selective fishery (reduced bag limit or full closure); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Currently, pre-season management based on combined Lower Columbia forecast coho forecast strength Mark-Selective fishery (increased bag limit duration); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys |

Program Performance Metrics

| | |
|---------------------------------------|---|
| Proportionate Natural Influence (PNI) | NA |
| pHOS level | TBD – currently in recolonization phase |
| pNOB levels | pNOB = 0.0 |
| Brood stock mining rate | NA – NORs not needed for program |

Monitoring and Analysis needs associated with Adaptive Management trigger points

- Monitor SARs for program.
- Evaluate fishery contributions and harvest rates.

Bio-programming considerations for all programs (capacity, water, how it fits with other programs): WDFW hatchery staff in conjunction with PacifiCorp will evaluate bio-programming considerations for the suite of all hatchery programs upon completion of transition plans.

Proposed Program #2: North Fork Lewis Subbasin Integrated Coho Salmon

Program Type: Integrated – proposed program

Integration will occur across the full breadth of the natural origin coho return and will capture both early and late timing.

Population Recovery Phase: Recolonization

Goal of Program: Conservation (Reintroduction Outcome Goal)/Harvest

Timing for Transition 2023-2025

Adult Broodstock Collection: The following table outlines a prioritized matrix of broodstock collection and spawning strategies across a range of NOR and HOR abundance. The integration rate target for the program is a pNOB of 0.5, but actual pNOB will be allowed to vary based on actual NOR returns and the maximum broodstock mining rate of 30%. The table also identifies the concept of “demographic replacement” which is defined as the total number of “wild equivalent” spawners (i.e., hatchery-origin spawner discounted by their relative reproductive success) that must be allowed to spawn in the wild to replace the number of natural-origin adults that are collected for broodstock. Demographic replacement must be equal to or greater than one to have a neutral or positive impact on population demographics, respectively. If demographic replacement is less than 1, the hatchery is having a net negative impact on the population. To achieve demographic replacement ≥ 1 , $NOB/HOS < RRS$.

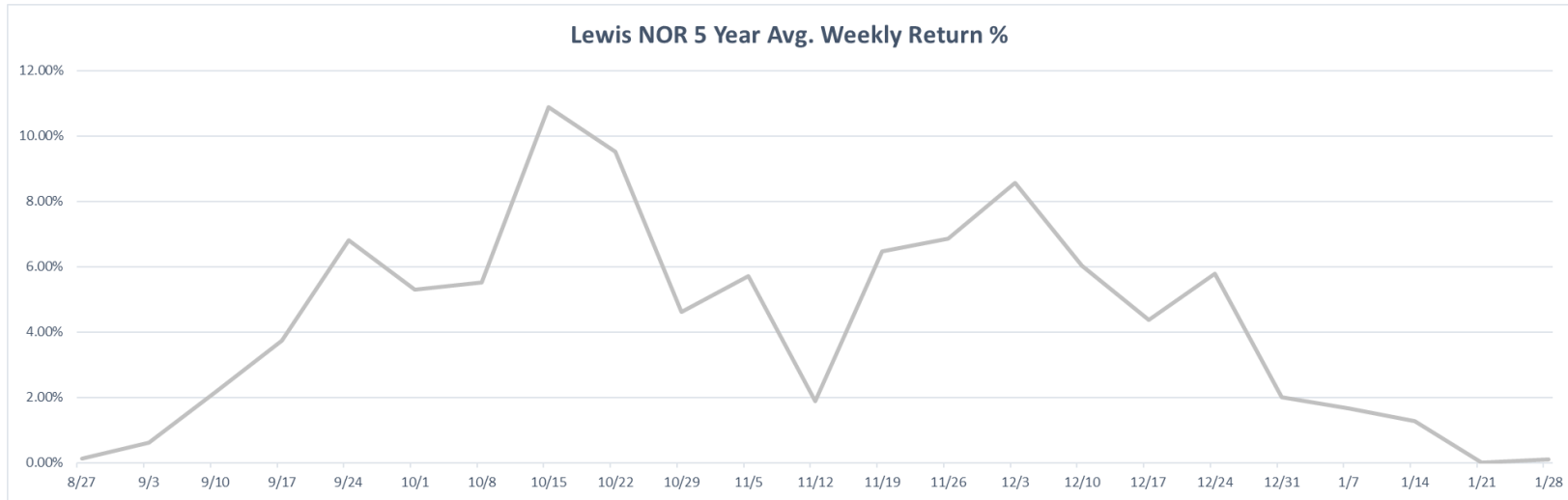
| Adult Broodstock Collection | |
|--|--|
| Broodstock Source | Integrated Lewis HOR and Lewis Basin NOR fish |
| Broodstock Collection location/methods | Lewis River Hatchery and Merwin Upstream Collection Facility (Merwin FF) |
| Integration Rate Target | pNOB target of 0.5 |

| Priority | | Collection Strategy | pNOB Target | Brood Source | Spawning Strategy |
|----------|------------------------------------|---|---|--|---|
| 1 | Normal HOR/NOR return, no shortage | Collect at Lewis R. Hatchery and Merwin Upstream Collection Facility (Merwin FF) | 50%; actual will be variable | a. Lewis Basin NORs and integrated HORs | a. HOR x NOR when possible b. HOR x HOR when necessary to backfill c. Re-use NOR males once, if needed, |
| 2 | Low NOR, Normal HOR | Collect at Lewis R. Hatchery and Merwin Upstream Collection Facility (Merwin FF) | 50% or lower if necessary | b. Lewis Basin NORs and integrated HORs c. Reduce pNOB goal to less than 50%. | a. HOR x NOR when possible, b. HOR x HOR when necessary to backfill. c. Re-use NOR males (potentially more than once) d. Accept a lower pNOB/integration rate |
| 3 | Low HOR return, Normal NOR | Collect at Lewis R. Hatchery and Merwin Upstream Collection Facility (Merwin FF) and potentially Cedar Creek trap | 50%; or High as achievable while meeting seeding targets for NORs | a. Lewis Basin NORs and integrated HORs -Retain all HORs above demographic replacement needs b. Retain up to 30% Lewis Basin NOR c. Restrict harvest | a. HOR x NOR; b. Exceed pNOB limit but not mining rate (potentially unless seeding target is established) c. Re-use NOR males once, if needed. |
| 4 | Shortages across board | Collect at Lewis R. Hatchery and Merwin Upstream Collection Facility (Merwin FF) and potentially Cedar Creek trap | 10-50% | a. Retain all HORs as needed to meet program goals b. Retain up to 30% NOR c. Restrict harvest | a. HOR x NOR when possible b. Re-use NOR males (potentially more than once) c. Accept we may be below program goal d. Accept a lower pNOB/integration rate e. May consider single year exception to demographic replacement to achieve broodstock goals, depending on seeding levels. |

Note: ATS to develop definitions of: Low NOR, Low HOR, Normal NOR, Normal HOR

Integration Target: 50% or less if necessary; NOR brood stock mining rate: 30% max; Demographic Replacement: ≥ 1 wild spawner equivalent

Collection timing curves and weekly collection goal table: Example only, actual collection goals will be set via Annual Operating Plan



Recent, 5 year average (2017-2021) return per program by week and respective broodstock collection goals for the proposed integrated program.

Table reflects HOR and NOR collection/return example. This collection is updated annually and documented in the Annual Operating Plan (AOP). The table does not include an additional 3,210 adults needed to provide eggs for the US. v. Oregon coho program transferred to the Klickitat and educational Remote Site Incubator (RSI) program. Eggs for US. v. Oregon program are collected from this program when available, but can also be collected from other WDFW facilities (i.e., Washougal) if needed. Eggs to fulfill these obligations come from HOR x HOR crosses only. Fish collected from Aug. 27 to the beginning of November (shaded) are retained at Speelyai Hatchery until water temperatures improve. After that, brood are retained at Lewis River Hatchery.

| | Week Ending | Brood Adults** | Males | Females | Percent Brood | 5yr Ave. Cumulative Return | Jack Collection | |
|-------------------|--------------------|-----------------------|--------------|----------------|----------------------|-----------------------------------|------------------------|-----------|
| <u>Speelyai H</u> | 27-Aug | 3 | 1 | 2 | 0.30% | 0.30% | 0 | |
| | 3-Sep | 10 | 5 | 5 | 1.00% | 1.30% | 1 | |
| | 10-Sep | 36 | 17 | 19 | 3.40% | 4.70% | 2 | |
| | 17-Sep | 46 | 22 | 24 | 4.40% | 9.20% | 2 | |
| | 24-Sep | 116 | 55 | 61 | 11.20% | 20.30% | 6 | |
| | 1-Oct | 67 | 32 | 35 | 6.40% | 26.80% | 3 | |
| | 8-Oct | 71 | 33 | 37 | 6.80% | 33.60% | 4 | |
| *US v OR & RSI | 15-Oct | 168 | 79 | 88 | 16.20% | 49.80% | 8 | |
| | 22-Oct | 104 | 49 | 55 | 10.00% | 59.80% | 5 | |
| | 29-Oct | 42 | 20 | 22 | 4.00% | 63.90% | 2 | |
| <u>Lewis R. H</u> | 5-Nov | 75 | 36 | 40 | 7.30% | 71.20% | 4 | |
| | 12-Nov | 14 | 6 | 7 | 1.30% | 72.50% | 1 | |
| | 19-Nov | 46 | 22 | 24 | 4.40% | 76.90% | 2 | |
| | 26-Nov | 46 | 22 | 24 | 4.40% | 81.30% | 2 | |
| | 3-Dec | 35 | 17 | 18 | 3.40% | 84.70% | 2 | |
| | 10-Dec | 28 | 13 | 14 | 2.70% | 87.40% | 1 | |
| | 17-Dec | 37 | 17 | 19 | 3.60% | 90.90% | 2 | |
| | 24-Dec | 65 | 31 | 34 | 6.30% | 97.20% | 3 | |
| | 31-Dec | 20 | 10 | 11 | 2.00% | 99.20% | 1 | |
| | 7-Jan | 6 | 3 | 3 | 0.60% | 99.80% | 0 | |
| | 14-Jan | 1 | 1 | 1 | 0.10% | 99.90% | 0 | |
| | 21-Jan | 0 | 0 | 0 | 0.00% | 100.00% | 0 | |
| | 28-Jan | 0 | 0 | 0 | 0.00% | 100.00% | 0 | |
| | Total*** | | 1,035 | 490 | 545 | 100.00% | | 52 |

* US. v. Oregon and RSI fish (inset) collected over approximately 4-5 weeks from mid-Oct to mid-Nov.

Total 3,210 additional adults needed for US v Oregon and RSI.

**Weekly collection totals may vary slightly from Male/Female numbers due to rounding.

*** Total brood collection for all programs is approximately 4,245 adults.

Adult Transportation & Disposition

Lewis NORs

| Target Area | Rank | Quantity (range) | Location | Dates (Range) |
|--|------|--|--|---------------|
| Follow Mining Rate | 1 | < or = 30% of all returning NOR adults | Upper Lewis River (Swift, Yale and Merwin basins) | Sept – Jan |
| Broodstock | 2 | Up to program need not to exceed 30% mining rate | Merwin Upstream Collection Facility, Lewis River Hatchery, Cedar Creek trap (potentially) | Sept – Jan |
| Upper Lewis River (Swift, Yale and Merwin basins) | 3 | AHN | Swift (Eagle Cliff Bridge), Yale and Merwin Basins (TBD) See Upper Lewis River Salmon and Steelhead Transport Plan | Sept – Feb. |
| Surplus | N/A | N/A | N/A | N/A |
| Nutrient Enhancement | 4 | Spawned carcasses | Lewis River Basin | Sept – Jan. |

Lewis HORs (integrated)

| Target Area | Rank | Quantity (range) | Location | Dates (Range) |
|--|------|---|--|---------------|
| Demographic Replacement | 1 | Dependent on # of NOR fish taken for broodstock, establish an HOR RRS value. Currently no harvest. When future harvest is established, develop, and incorporate harvest rate. | See Upper Lewis River Salmon and Steelhead Transport Plan | Sept - Jan |
| Broodstock (including U. v. OR and RSI program) | 2 | Up to program need | Merwin Upstream Collection Facility, Lewis River Hatchery, Cedar Creek trap (potentially) | Sept - Jan |
| Upper Lewis River (Swift, Yale and Merwin basins) | 3 | AHN; Goal of 9,500 adults released above Swift Dam. Adjust to incorporate transport goals for Yale and Merwin when established. Also available for HPP. | Swift (Eagle Cliff Bridge), Yale and Merwin Basins (TBD) See Upper Lewis River Salmon and Steelhead Transport Plan and HPP | Sept - Jan |
| Surplus | 4 | All food grade quality fish above hatchery and transport needs | N/A | Sept - Jan |
| Nutrient Enhancement | 5 | Spawned carcasses, non-food grade fish above transport and hatchery needs. | Lewis River Basin | Sept - Jan |

Juvenile Releases

| | |
|--------------------------|---|
| Release Group | 1 group – additional groups to evaluate the effect of release timing and release size may occur to optimize program performance. |
| Quantity (range) | 900,000 |
| Release Age/size | 16 fpp |
| Release Location/Timing | April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • HORS: Majority will be adipose fin clipped and a portion of fish will be Ad+CWT or CWT only (DIT group) as determined by M&E needs. • Note: Early coho program (segregated) will be differentially marked. <ul style="list-style-type: none"> ○ Identify this need in the marking/tagging strategy document that will need to be developed along with implementation of downstream transport at Merwin and Yale. |
| Fish Management needs | <ul style="list-style-type: none"> • Differential mark needed to identify early segregated returns from integrated program. • Adipose clip required to allow harvest in mark-selective fisheries • CWT allows for evaluation of stock composition to fisheries <ul style="list-style-type: none"> ○ CWT validation of age composition |
| Evaluation Needs | <ul style="list-style-type: none"> • Differential marking of segregated program allows for independent evaluation of these two programs. • Adipose clip allows for evaluation of pHOS • CWT allows for evaluation of stock composition on spawning grounds • CWT validation/training of age composition (compared to scale) <ul style="list-style-type: none"> ○ DIT group evaluates mark selective harvest |

Summary of Hatchery Configuration/Infrastructure Modifications:

- Prolonged collection and numerous egg takes of integrated brood over the entire run timing will require implementation of hatchery infrastructure to accommodate this change. One option is installation of industrial chillers to manipulate development of the earliest egg takes while in the hatchery. Reviewing other potential alternatives and implementing the preferred alternative should be completed before transition of this program is fully implemented.
- Utilize/install crowder channels in ponds 1-5 to divide egg takes during early rearing.
- Evaluate water to water adult transfer system at Lewis River Hatchery and repair/upgrade as needed.
- Adult collection for this program occurs primarily at the Merwin Upstream Collection Facility and Lewis River Hatchery.
- Broodstock is held at the Speelyai Hatchery and Lewis River Hatchery.
- Eggs are transferred to Lewis River Hatchery from Speelyai Hatchery
- Juvenile rearing and release occurs at the Lewis River Hatchery in raceways

Fishery Management Strategy

Currently, directed angling and harvest opportunity for hatchery coho in the NF Lewis River is limited to areas below Merwin Dam while implementation of fish passage and reintroduction efforts above Merwin Dam continue. Future changes to coho fishery management in the Upper Lewis (i.e., areas above Merwin Dam) will require both technical and policy level discussion. These discussions are contingent on development of improved modeling identified in the Aquatic Monitoring and Evaluation Plan for the Lewis River (AMEP) to better quantify key biological reference points needed for setting management targets and evaluating thresholds established in the Settlement agreement (e.g., recovery phase triggers, transport goals, ocean recruits, etc.). The role of hatchery fish in future harvest opportunities also has not been discussed/established.

The following fishery management strategies are divided into two tables. The first describes the proposed strategy in the interim period while modeling efforts are completed and technical/policy discussions are carried out. The second provides a conceptual strategy that includes both hatchery and natural-origin fish in fishery options. This “long-term” conceptual strategy will be adjusted to reflect decisions made in future technical/policy discussions, including consideration of Settlement Agreement Section 8.3.2.3 regarding reductions in hatchery targets.

Proposed fishery management framework (until biological reference points and management targets for NOR populations are updated)

Interim/Recolonization Phase

| Area | Abundance | | |
|----------------------|---|--|---|
| | Low | Normal | Above Normal |
| Upper Lewis | No harvest proposed. | No harvest proposed. | No harvest proposed. |
| Lower Lewis | Managed based on forecasted hatchery returns; Seasons set via North of Falcon; Restricted Mark-Selective fishery (generally 6 hatchery fish with 2 adults); In-season management based on actual Lewis hatchery/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. | Managed based on forecasted hatchery returns; Seasons set via North of Falcon; Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults); In-season management based on actual Lewis hatchery/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. | Managed based on forecasted hatchery returns; Seasons set via North of Falcon; Full Season Mark-Selective fishery (generally 6 hatchery fish with 2 adults); Potential for increased bag limits. In-season management based on actual Lewis/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. |
| Ocean/Columbia River | Mark-Selective fishery; Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Mark-Selective fishery; Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Mark-Selective fishery (increased bag limit/duration); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys |

Conceptual fishery management framework – modification will occur to reflect future technical/policy discussions and decisions. This framework is intended for discussion about potential fishery implementation during the local adaptation phase of recovery, but may be phased out when full recovery is achieved. This framework does not imply endorsement of specific harvest management strategies in the future.

Long Term – (conceptual framework for future discussion).

| Area | Abundance | | |
|-------------|---|--|--|
| | Low | Normal | Above Normal |
| Lower Lewis | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Fishery on excess HORs; Seasons set via North of Falcon; Restricted Mark-Selective fishery (reduced bag limit or full closure); In-season management based on actual Lewis Hatchery/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Fishery on both HOR/ <u>NOR</u> (non-mark selective fisheries) could occur consistent with management plans that assure natural origin populations will meet goals; Seasons set via North of Falcon; Full Season Non-Mark-Selective fishery (HOR/ <u>NOR</u> bag limits TBD); In-season management based on actual Lewis hatchery/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Fishery on both HOR/NOR (non-mark selective fisheries) could occur consistent with management plans that assure natural origin populations will meet goals; Seasons set via North of Falcon; Full Season Non-Mark-Selective fishery (increased bag limits); In-season management based on actual Lewis Hatchery/Merwin FF returns of HOR/NOR and/or estimates of returns back to the Lewis River, when available. |
| Upper Lewis | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Potential fishery on excess HORs transported to Upper Lewis Basin ABOVE those needed to replace NORs used for broodstock (hatchery equivalents); Seasons set via North of Falcon; Restricted Mark-Selective fishery (reduced bag limit or full closure); In-season management | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Potential fishery on both HOR/ <u>NOR</u> transported to Upper Lewis Basin (non-mark selective fisheries) could occur consistent with management plans that assure natural origin populations will meet goals; Seasons set via North of Falcon; Full Season Non-Mark-Selective fishery (HOR/ <u>NOR</u> bag limits TBD); In-season management based | Managed based on forecasted HOR/NOR returns, broodstock needs and management goals; Potential fishery on both HOR/NOR transported to Upper Lewis Basin (non-mark selective fisheries) could occur consistent with management plans that assure natural origin populations will meet goals; Seasons set via North of Falcon; Full Season Non-Mark-Selective fishery (increased |

| | | | |
|----------------------|---|--|---|
| | based on actual Lewis Hatchery/Merwin FF returns of HOR/NOR. | on actual Lewis hatchery/Merwin FF returns of HOR/NOR. | bag limits); In-season management based on actual Lewis Hatchery/Merwin FF returns of HOR/NOR. |
| Ocean/Columbia River | Pre-season management based on combined Lower Columbia forecast strength. Mark-Selective fishery (reduced bag limit/duration); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Pre-season management based on combined Lower Columbia forecast strength. Mark-Selective fishery; Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys | Pre-season management based on combined Lower Columbia forecast strength. Mark-Selective fishery (increased bag limit/duration); Seasons set via North of Falcon; Lewis stock part of CR coho aggregate. Limited by Non-Ad-Clip In-season management based on creel surveys |

Harvest Management Notes:

Steps needed to achieve long term management:

- Better define current transport target for areas above Swift (i.e., 9500 coho transport goal). Is it the total transport target (NOS + HOS), just HOS independent of NOS, or a ceiling for HOS dependent on the number of NOS that return? Also, is this absolute number of HOS or “wild equivalents”?
- Establish biological reference points and management targets (i.e., Rmax and transport targets).
- Determine hatchery equivalent value (“wild spawner equivalent”) used for NOR replacement and establish general management guideline for NOR replacement.
- WDFW - update FMEP to include above strategy and consult with NMFS. Verify ESA permitting needs with NMFS.
- Forecasts by Lewis basin specific HOR/NOR instead of aggregates.
- Develop earlier in-season predictors of total return for management purposes.

Program Performance Metrics

| | |
|---------------------------------------|---|
| Proportionate Natural Influence (PNI) | TBD – currently in recolonization phase |
| pHOS level | TBD – currently in recolonization phase |
| pNOB levels | pNOB target of 0.5 |
| Brood stock mining rate | <0.3 |

Monitoring and Analysis needs associated with Adaptive Management trigger points

- Complete analysis of SARs for current programs (Early and Late and Seg vs Int) to determine what impacts transitioning to one integrated program will have on adult returns.
- Following construction of juvenile and adult passage facilities, evaluation of each facility will be necessary to determine if assumptions for basin productivity and survival are correct.

Bio-programming considerations for all programs (capacity, water, how it fits with other programs):

- Broodstock is held at the Speelyai and Lewis River Hatchery.
- Eggs are transferred to Lewis River Hatchery from Speelyai Hatchery.
- Juvenile rearing and release occurs at the Lewis River Hatchery in raceways.

List of Reference Materials

- Fishery contribution analysis
- Integrated vs. Segregated program size modeling

A vision for Salmon and Steelhead Goals to Restore Thriving Salmon and Steelhead to the Columbia River Basin. Phase 2 Report of the Columbia Basin Partnership (CBP) Task Force of the Marine Fisheries Advisory Committee- October 2020. https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null

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ATS (North fork Lewis River Aquatic Technical Subgroup). 2022. Annual Operating Plan (AOP). Hatchery and Supplementation Program; North Fork Lewis River. North fork Lewis River Aquatic Technical Subgroup. December 2022.

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PacifiCorp and Cowlitz County PUD. 2020. Lewis River Hatchery and Supplementation Plan- FINAL (FERC Project Nos. 935, 2071, 2111, 2213). December 2020 Available online: [Microsoft Word - HS PLAN FINAL 2020.docx \(pacificorp.com\)](Microsoft Word - HS PLAN FINAL 2020.docx)

Note: This Transition Plan is intended to serve as a step toward Recovery goals. It will be Evaluated for its progress toward achieving those objectives through the Annual Operating Plan (AOP) and will be updated through adaptive management as described in that process as necessary. The Hatchery Scientific Review Group (HSRG) evaluation guidelines will be evaluated for applicability during each step of recovery.

Lewis Steelhead -Hatchery Transition Plan

Program(s): Lewis River Winter and Summer-run steelhead

Affected Recovery Population and Recovery Designation:

| Population Name | Population Recovery Designation |
|----------------------------------|---------------------------------|
| Lewis River Winter-run Steelhead | Contributing |

Overview

This document provides a synopsis of the current and alternative hatchery programs for North Fork (NF) Lewis winter- and summer-run steelhead. The overall goal of this document is to identify a program or suite of programs that maximizes the probability of achieving the Anadromous Fish Reintroduction Outcome Goal (Reintroduction Outcome Goal) as outlined in Section 3.1 of the Lewis River Hydroelectric Project Settlement Agreement (SA): to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations and advance population(s) to the next Recovery Phase.

Currently, hatchery steelhead production in the NF Lewis River consists of three separate programs. Two of the programs (one summer, one winter) are operated as segregated programs and have the objective of augmenting harvest opportunity. The summer-run hatchery program uses Skamania-derived broodstock and aims to release 175,000 smolts annually directly from Merwin hatchery, plus another 60,000 smolts that are released from an in-river cooperative net pen in the lower NF Lewis. The segregated winter-run steelhead program uses Chambers Creek derived broodstock and aims to release 100,000 adipose-clipped smolts annually. Chambers Creek hatchery steelhead originally came from Puget Sound and thus, is an out-of-ESU stock. The second winter-run steelhead program in the NF Lewis is operated as an integrated hatchery program and primarily uses natural-origin adults for broodstock to produce the annual planting goal of 50,000 unclipped (Adipose fin intact) Blank Wire Tagged (BWT) smolts. The objective of the integrated program is to help conserve the natural-origin population by generating adults that can be used for reintroduction into the upper NF Lewis River above Merwin Dam (currently above Swift Dam only).

In preparation for consultation with NOAA Fisheries on the forthcoming NF Lewis River Hatchery Genetic Management Plans (HGMPs), the Washington Department of Fish and Wildlife (WDFW) completed an evaluation of alternative hatchery strategies for NF Lewis steelhead using a structured decision-making approach. The objective of the evaluation was to identify an alternative hatchery strategy that could replace the existing harvest-focused, segregated winter-run steelhead program. The preferred alternative would be one that maximizes conservation and harvest benefits while minimizing hatchery risks to the natural-origin population. Three main, alternative hatchery strategies were identified all of which involved maintaining a harvest-focused, segregated summer-run steelhead program (but potentially at a different smolt plant size) and discontinuing the existing harvest-focused, segregated winter-run steelhead program. The first two strategies maintained the current conservation-based, integrated winter steelhead program and created either a new, locally-derived segregated program or a “stepping stone” program (see next paragraph for further description). The third strategy proposed an expansion of the existing integrated winter steelhead program thereby creating a single winter-run hatchery

program with a dual objective of both conservation and harvest. With the alternative hatchery strategies identified, each one was modeled alongside the natural-origin population at a sub-basin scale using a deterministic life-cycle model. The life-cycle model was constructed by linking parameters (aka assumptions) that can generally be categorized as either demographic- (e.g., survival rates, relative survival, straying, productivity & capacity, and relative reproductive success) and management-based (e.g., harvest rates, broodstock collection, transport rates) parameters. The parameters used were based on the best-available information from in-basin data and estimates from published or gray literature. Sets of parameters were combined to create several scenarios of interest, which primarily focused on smolt-to-adult ratios (SAR; 1%, 3%), juvenile collection efficiency at the Swift Fish Collection Facility (30%, 95%), and in-basin harvest rates (30%, 65%). The three alternative hatchery strategies were evaluated and compared when populations were at equilibrium using a suite of standardized metrics that were separated into conservation- (abundance, genetics) and harvest-based (amount, timing) categories. Additional details and results on the alternative hatchery strategy evaluation can be found in Appendix A. Overall, based on the results of the alternative hatchery strategy evaluation, WDFW recommended updating the NF Lewis steelhead hatchery programs using a phased approach.

During the first phase of the transition, the existing conservation-focused, integrated winter-run program (50,000 smolt plant) will be maintained while both existing harvest-focused programs will be updated. The first, and largest, programmatic change will be to eliminate the segregated Chambers Creek winter-run program, and replace it with a “stepping stone” program (HSRG 2014). In short, the stepping stone program was selected as the preferred alternative in the near-term because it results in similar genetic risks to the fully integrated program while resulting in higher natural-origin and effective natural-origin spawner abundance (primarily because it requires fewer natural-origin adults for broodstock). The stepping-stone program also ameliorates the risk of either over-mining the natural-origin population or failing to meet broodstock goals in years where both SARs and juvenile collection efficiency are low relative to the fully integrated population. A new, locally-derived segregated program was the least favorable option as it would result in the highest genetic risks (PNI <0.5 across all scenarios) and overtime resembling the characteristics of the Chambers program has produce extraordinarily low harvest rates in recent years (<10%). The new winter-run, harvest mitigation stepping stone hatchery program will be derived using adult returns from the winter-run conservation program. Unlike the Chambers Creek program, which is a fully segregated and domesticated stock derived from outside the lower Columbia River ESU, this new stepping stone program will use returning in-basin, first generation (F1) adults to maintain genetic continuity between the localized hatchery and natural-origin population thereby reducing genetic risks. This program is a slight variation from a traditional “stepping stone” program in that rather than slowly increasing the size of the integrated portion of the program as natural origin abundance/availability increases, this program will maintain consistent production goals for the integrated and stepping stone components until a second phase evaluation (described below) is completed. Also, this “stepping stone variant” program will aim to only use BWT positive, adipose intact adults (aka F1s) for broodstock to propagate this program. Therefore, unlike a standard segregated program, the broodstock will always be only one or two generations removed from natural origin parents. The second change proposed during the first phase of the transition will be to transfer 25,000 smolts from the winter-run harvest program to the summer-run harvest program. This change will result in the stepping-stone variant winter-run program aiming to produce 75,000 Adipose fin (Ad) clipped smolts annually and the summer-run program aiming to produce 200,000 (plus the current 60,000 net

pen) Ad clipped smolts. Based on WDFW's evaluation, this reallocation of smolts will provide conservation and harvest benefits.

The second phase of the program will include evaluation of the updated program's performance to ensure that the integrated program is meeting conservation objectives of returning enough fish for broodstock and reintroduction needs, and to ensure the "stepping stone variant" program is meeting harvest objectives. This phase will also include an assessment/refinement of recovery phases and phase triggers. Additionally, planning for fish passage into Yale and Merwin reservoirs is underway, which will include development of transport targets and strategies for steelhead into those reservoirs for reintroduction purposes.

The third phase of the program will use evaluation results, hatchery reform phases and phase triggers and additional hatchery fish transport goals for Yale and Merwin recolonization phases to adaptively manage production size and the split between harvest and conservation programs to ensure the Reintroduction Outcome Goal and harvest objectives will be met.

Ultimately, these programmatic changes are designed to ensure adult abundance of hatchery fish available for reintroduction and harvest and improve integration of fish used for reintroduction to better represent the historical natural-origin steelhead populations in the North Fork Lewis River.

List of Acronyms Lewis Steelhead Transition plan

| | |
|------|--|
| Ad | Adipose-fin clip |
| ACC | Aquatic Coordination Committee |
| AHN | Above Hatchery Need |
| AMEP | Aquatic Monitoring and Evaluation Plan |
| AOP | Annual Operating Plan |
| BWT | Blank Wire Tag (snout) |
| CBP | Columbia Basin Partnership |
| Fpp | Fish Per Pound |
| H&S | Hatchery and Supplementation Plan |
| HOR | Hatchery Origin Returns |
| HSRG | Hatchery Scientific Review Group |
| NOAA | National Oceanographic Atmospheric Association |
| NOR | Natural Origin Returns |
| pHOB | Proportion of Hatchery Origin Broodstock |
| pHOS | Proportion of Hatchery Origin Spawners |
| PNI | Proportionate Natural Influence |
| pNOB | Proportion of Natural Origin Broodstock |
| QET | Quasi-Extinction Threshold |
| Rmax | Maximum recruitment under average environmental conditions |
| VSP | Viable Salmonid Population |
| WDFW | Washington Department of Fish and Wildlife |

Recovery Phases and Goals

The goals included in this section are derived from the Lewis River Settlement Agreement and the Healthy and Harvestable concept outlined by the Columbia Basin Partnership Task Force. Recovery phases are defined by the HSRG (2020).

Settlement Agreement Section 3: Anadromous Fish Reintroduction Outcome Goals

“The reintroduction outcome goal of the comprehensive aquatics program contained in Sections 4 through 9 of the Lewis River Settlement Agreement is to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations (“Reintroduction Outcome Goal”).”

Healthy and Harvestable Defined:

As stated in *A Vision for Salmon and Steelhead Goals to Restore Thriving Salmon and Steelhead to the Columbia River Basin. Phase 2 Report of the Columbia Basin Partnership (CBP) Task Force of the Marine Fisheries Advisory Committee- October 2020.*

https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null

“The intent of this plan is to achieve Healthy and Harvestable abundance levels that would sustain very high levels of species viability, significant fishery opportunities and harvest as well as recover upper basin steelhead populations with the near-term goal of preventing population declines and the long-term goal of achieving ESA delisting through expanded diversity and resiliency.”

Goal of current integrated and proposed stepping stone variant winter-run program by recovery phase (i.e., conservation/harvest):

| Population Recovery Phase | Goal of Hatchery Program | Thresholds/Triggers/Decision Rules required to transition from one phase to next |
|---------------------------|---|---|
| Preservation | Conservation (promote recovery) and harvest | <p>Natural origin population at risk of extirpation</p> <p><i>Not applicable – as population is already past this phase.</i></p> <ul style="list-style-type: none"> • 5 yr. geomean total abundance (when counting NOR adults, plus HOR adults up to the number which would cause pHOS to equal the pHOS goal for Local Adaptation) is LESS than the quasi-extinction threshold (QET to be determined during Population Phase Assessment). • Vast majority/all historical habitat is unusable/heavily impacted/inaccessible currently (e.g., blocked by dams with no passage) |

| | | |
|-------------------------|--|---|
| <p>Recolonization</p> | <p>Conservation (promote recovery) and harvest</p> | <p>Natural origin population at low abundance; habitat underutilized.</p> <p>Lewis winter steelhead (considered one population) is assumed to be in this phase.</p> <ul style="list-style-type: none"> • 5 yr. geomean total abundance (when counting NOR adults, plus HOR adults up to the number which would cause pHOS to equal the pHOS goal for Local Adaptation) is MORE than quasi-extinction threshold but LESS than the number needed to meet the interim viability goal (NOAA VSP criteria or alternative). • Interim viability goal can be expressed as seeding a percentage (e.g., 50%) of the freshwater habitat, and can be estimated by stock recruit analysis (e.g., estimate spawner abundance required to produce 50% of R_{max}). • Enough historical habitat is currently accessible (including by trap and haul) for maintenance of an equilibrium population size greater than QET (to be determined during Population Phase Assessment). |
| <p>Local Adaptation</p> | <p>Conservation (promote recovery) and harvest</p> | <p>Natural origin population nearing full seeding of currently available habitat.</p> <p>Assuming current population is not yet in this phase.</p> <ul style="list-style-type: none"> • Develop/Confirm assessment criteria for trigger(s) <ul style="list-style-type: none"> ○ Escapement ○ R_{max} ○ Adult to adult productivity ○ Number needed to meet the interim viability goal (NOAA VSP criteria or alternative). • Early within the duration of the revised H&S Plan, the ATS will develop these criteria, incorporating biological, logistical, and management considerations. <ul style="list-style-type: none"> ○ Such as integrating R_{max}, SAR and/or adult to adult productivity into phase triggers. |
| <p>Full Recovery</p> | <p>Maintain Recovery and provide Harvest</p> | <p>Natural origin population is both above full-seeding of available habitat AND is meeting the Reintroduction Outcome Goal (harvestable recovery goals).</p> <p>Assuming current population is not yet in this phase. Revisit criteria if population assessment confirms populations are currently in Local Adaptation phase.</p> <ul style="list-style-type: none"> • 5 yr. geomean of spawner NOR abundance (not counting HORs) is MORE than minimum interim viability objective when only counting NOR spawners and is also At or MORE than healthy/harvestable recovery goal. • CBP Task Force Healthy Harvestable Goal: 3,000 |

Current Lewis Hatchery Steelhead Program(s)

This section provides a description of the current hatchery programs affecting the North Fork Lewis steelhead population.

Current Program #1: Early segregated winters (aka Chambers)

Population Recovery Phase: NA

Goal of Program: Harvest augmentation/mitigation

Population Recovery Phase: NA

| Adult Broodstock Collection | |
|-----------------------------------|---|
| Broodstock Type | Lewis Segregated HOR adults |
| Broodstock Source | F1s from early segregated winter program (in-basin) |
| Broodstock Collection location(s) | Lewis River Hatchery Merwin Upstream Collection Facility |
| Integration Rate | 0% (segregated; hatchery-origin brood only) |

Collection timing:

Broodstock Collection

| Week Ending | Brood Adults | Males | Females |
|--------------|--------------|-----------|-----------|
| 4-Dec | 5 | 2 | 3 |
| 11-Dec | 6 | 3 | 3 |
| 18-Dec | 6 | 3 | 3 |
| 25-Dec | 12 | 6 | 6 |
| 1-Jan | 11 | 5 | 6 |
| 8-Jan | 12 | 6 | 6 |
| 15-Jan | 16 | 8 | 8 |
| Total | 68 | 33 | 35 |

Secondary sources/plans for lack of adults; HORs collected the Cedar Creek trap.

Adult Transportation & Disposition – Early Segregated winters (aka Chambers)

| Target | Rank | Quantity (range) | Location | Dates |
|-----------------------|------|----------------------|---|----------|
| Broodstock | 1 | 65-70 | Lewis Hatchery & Merwin Upstream Facility | Dec-Jan |
| Surplus -Food Quality | 2 | Above hatchery needs | Food Bank | Sept-Oct |

Juvenile Release(s)

| | |
|--------------------------|--|
| Release Strategy | 1 group volitional followed by force out |
| Quantity | 100,000 |
| Release Age/size | 1+/ Released at 5.5fpp |
| Release Location/Timing | Merwin Hatchery – April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 100,000 Ad Only |
| Fish Management needs | <ul style="list-style-type: none"> • Ad clip required to allow harvest in mark-selective fisheries. |
| Evaluation Needs | <ul style="list-style-type: none"> • Adipose clip allows for evaluation of pHOS |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Upstream Fish Collection Facility.
- Broodstock is held at the Merwin Hatchery.
- Spawning and incubation occur at the Merwin Hatchery.
- Juvenile rearing occurs at the Merwin Hatchery in raceways.

Program Performance Metrics

| | |
|-------------------------------|--|
| pHOS level | Target: TBD (currently in recolonization phase) Recent Performance: unknown |
| pNOB levels | Target: NA Recent Performance: NA |
| Broodstock mining rate | Target: NA |

Current Monitoring Program:

- Protocols for population monitoring are described in the Lewis River AOP (ATS 2022) associated with the H&S plan (PacifiCorp 2020).

Current Program #2: Late integrated winters (aka BWT Ad intact)

Program Type: Integrated late winter

Program: Conservation (Reintroduction Outcome Goal)

Population Recovery Phase: Recolonization

| Adult Broodstock Collection | |
|--|---|
| Broodstock Type | Integrated |
| Broodstock Source | In-basin natural-origin adults; F1s from late integrated winter program (BWT Ad intact) |
| Broodstock Collection Location/Methods | Lewis River Hatchery and Merwin Upstream Collection Facility |
| pNOB target | 100% but variable depending on mining rate |

Collection timing:

Broodstock Collection (2023)

| Week Ending | Brood Adults | Males | Females |
|--------------|--------------|-------|---------|
| 18-Dec | 1 | 1 | 0 |
| 25-Dec | 1 | 0 | 1 |
| 1-Jan | 0 | 0 | 0 |
| 8-Jan | 1 | 1 | 0 |
| 15-Jan | 1 | 0 | 1 |
| 22-Jan | 0 | 0 | 0 |
| 29-Jan | 1 | 1 | 0 |
| 5-Feb | 0 | 0 | 0 |
| 12-Feb | 1 | 0 | 1 |
| 19-Feb | 2 | 1 | 1 |
| 26-Feb | 1 | 1 | 0 |
| 5-Mar | 2 | 1 | 1 |
| 12-Mar | 2 | 1 | 1 |
| 19-Mar | 2 | 1 | 1 |
| 26-Mar | 2 | 1 | 1 |
| 2-Apr | 3 | 2 | 1 |
| 9-Apr | 4 | 2 | 2 |
| 16-Apr | 7 | 4 | 3 |
| 23-Apr | 6 | 3 | 3 |
| 30-Apr | 6 | 3 | 3 |
| 7-May | 4 | 2 | 2 |
| 14-May | 3 | 2 | 1 |
| 21-May | 3 | 2 | 1 |
| 28-May | 2 | 1 | 1 |
| Total | 55 | 30 | 25 |

Secondary sources/plans for lack of adults; HOR (BWT) steelhead from the Cedar Creek trap.

**Hatchery Adult Transportation & Disposition - Late integrated winter (aka BWT Ad intact)
Steelhead**

| Target | Rank | Quantity (range) | Location | Dates |
|-------------------|------|------------------------------|---|----------|
| Upper Lewis River | 1 | 1239 - 1700* | Eagle Cliffs/Swift Forrest Camp | Jan-June |
| Broodstock | 2 | Backfill for NORs (up to 55) | Lewis River Hatchery & Merwin Upstream Facility | Jan-June |

*The H&S Plan (PacifiCorp 2020) identifies a 1700 fish transport target; however updated EDT analysis was used to identify the transport target of 1239, which is the current management target in use.

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group volitional followed by force out. |
| Quantity (range) | 50,000 |
| Release Age/size | 1+/Released at 6-8fpp |
| Release Location/Timing | Lewis River Hatchery – May/June |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 50,000 BWT Ad intact |
| Fish Management needs | <ul style="list-style-type: none"> • BWT identifies conservation program returns from NOR steelhead • Unclipped adipose restricts harvest |
| Evaluation Needs | <ul style="list-style-type: none"> • BWT identifies program fish |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Upstream Fish Facility.
- Broodstock is held at the Merwin Hatchery.
- Spawning and incubation occur at the Merwin Hatchery.
- Juvenile rearing occurs at the Merwin Hatchery in raceways.

Program Performance Metrics

| | |
|-------------|---|
| pHOS | <p>Target: TBD (currently in recolonization phase)</p> <p>Recent Performance:</p> <ul style="list-style-type: none"> - Lower mainstem NF Lewis (via M-R tangle net surveys) <ul style="list-style-type: none"> • 2016: 51% [90% CI: 41.3%, 60.4%] • 2018: 27.2% [90% CI: 21.1%, 33.9%] • Estimates were not generated for any other year. - Upper basin (transported from Merwin FCF to Swift); prelim. <ul style="list-style-type: none"> • 2022: 78% • 2023 (as of May 23rd): 81% • Data exist for other years but have not been summarized. |
| pNOB | <p>Target: 100%; actual will be variable based on mining rate & collection schedule</p> <p>Recent Performance:</p> <ul style="list-style-type: none"> • Pre-2022: 100% • 2022: ~90% • 2023: ~60% <p>NOTE: Beginning in 2022, the broodstock collection strategy was updated. In short, achieving a mining rate of 30% or less and demographic replacement of 2:1 became the primary targets instead of prioritizing a pNOB target of 100% (which was the sole target in all previous years). Also, an updated collection schedule was generated. Here, when insufficient natural-origin adults are</p> |

| | |
|--------------------------------|---|
| | available to meet the collection schedule, hatchery-origin adults could be collected if demographic replacement has been met. |
| PNI | Target: TBD (currently in recolonization phase) Recent Performance: has not been estimated |
| Broodstock mining rate* | Target: less than 30% |

*Broodstock mining rate = percentage of natural-origin escapement from a specific return year that are used for broodstock.

Current Monitoring Program:

- Protocols for population monitoring are described in the Lewis River AOP (ATS 2022) associated with the H&S plan (PacifiCorp 2020).

Current Program #3: Segregated summers

Program Type: Segregated summer

Goal of Program: Harvest augmentation/mitigation

Population Recovery Phase: Natural population considered functionally extirpated

| Adult Broodstock Collection | |
|--|---|
| Broodstock Type | Lewis segregated HOR fish |
| Broodstock Source | F1s from segregated summer program (in-basin) |
| Broodstock Collection location/methods | Lewis River Hatchery Merwin Upstream Collection Facility |
| Integration Rate | pNOB goal of 0.0% |

Collection timing:

Broodstock Collection Curve (2023)

| Week Ending | Brood Adults | Males | Females |
|--------------|--------------|-------|---------|
| 25-Jun | 15 | 7 | 8 |
| 2-Jul | 18 | 9 | 9 |
| 9-Jul | 17 | 8 | 9 |
| 16-Jul | 19 | 9 | 10 |
| 23-Jul | 24 | 12 | 12 |
| 30-Jul | 22 | 11 | 11 |
| 6-Aug | 19 | 9 | 10 |
| 13-Aug | 19 | 9 | 10 |
| 20-Aug | 18 | 9 | 9 |
| 27-Aug | 19 | 9 | 10 |
| 3-Sep | 18 | 9 | 9 |
| 10-Sep | 16 | 8 | 8 |
| 17-Sep | 15 | 7 | 8 |
| Total | 239 | 116 | 123 |

Secondary sources/plans for lack of adults; HORs collected at the Cedar Creek trap.

Additional brood above program need are collected to mitigate for extended hold time before spawn.

Adult Transportation & Disposition – Summer Steelhead

| Target | Rank | Quantity (range) | Location | Dates |
|-----------------------|------|------------------------------------|--|------------|
| Broodstock | 1 | 224-260 | Merwin Upstream Collection Facility & Lewis River Hatchery | June-Sept. |
| Surplus -Food Quality | 2 | Above recycling and hatchery needs | Food Bank | June-Nov |

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group volitional followed by force out |
| Quantity | 235,000 (175,000 Merwin Hatchery+60,000 Echo net pens) |
| Release Age/size | 1+/ Released at 5.5fpp |
| Release Location/Timing | Merwin Hatchery and Echo Park net pens – April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 235,000 Ad Only |
| Fish Management needs | <ul style="list-style-type: none"> • Adipose clip required to allow harvest in mark-selective fisheries. |
| Evaluation Needs | <ul style="list-style-type: none"> • Adipose clip allows for evaluation of pHOS |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Upstream Fish Facility.
- Broodstock is held at the Merwin Hatchery.
- Spawning and incubation occur at the Merwin Hatchery.
- Juvenile rearing occurs at the Merwin Hatchery in raceways.

Program Performance Metrics

| | |
|-------------------------------|---|
| pHOS level | Target: NA Population considered extirpated Recent Performance: NA |
| pNOB levels | Target: NA Recent Performance: NA |
| Broodstock mining rate | Target: NA |

Current Monitoring Program:

- Protocols for population monitoring are described in the Lewis River AOP (ATS 2022) associated with the H&S plan (PacifiCorp 2020).

Current Lewis Steelhead Harvest Management Strategy

- Lewis River steelhead harvest strategies are the similar for both segregated winter [Current Program #1] and summer steelhead [Current Program #1] programs, except that summer steelhead AHN can be recycled to the lower Lewis for additional angler opportunity.
- No harvest opportunity for the late integrated winter steelhead program (used exclusively for conservation objectives)
- No harvest opportunity for natural-origin adults (until we have management targets for NOR populations)

| Area | Abundance | | |
|----------------------|--|--|---|
| | Low | Normal | Above Normal |
| Lower Lewis | Currently, pre-season management based on overall hatchery program needs | Currently, pre-season management based on overall hatchery program needs. | Currently, pre-season management based on overall hatchery program needs. |
| | Excess summer HORs ABOVE those needed for Lewis hatchery program recycled to lower Lewis | Excess summer HORs ABOVE those needed for Lewis hatchery program recycled to lower Lewis | Excess summer HORs ABOVE those needed for Lewis hatchery program recycled to lower Lewis. |
| | Restricted Mark-Selective fishery (reduced bag limit or full closure); (generally 3 hatchery adults > 20 inches). | Full Season Mark-Selective fishery (generally 3 hatchery adults >20 inches). | Full Season Mark-Selective fishery (generally 3 adults >20 inches). Potential for increased bag limits. |
| | In-season management based on actual hatchery/Merwin FF returns of HOR. | In-season management based on actual hatchery/Merwin FF returns of HOR. | In-season management based on actual hatchery/Merwin FF returns of HOR. |
| Ocean/Columbia River | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. |
| | Mark-Selective fishery (reduced bag limit or full closure); Seasons set via North of Falcon; Lewis stock part of CR steelhead aggregate. | Mark-Selective fishery (reduced bag limit or full closure); Seasons set via North of Falcon; Lewis stock part of CR steelhead aggregate. | Mark-Selective fishery (increased bag limit duration); Seasons set via North of Falcon; Lewis stock part of CR steelhead aggregate. |
| | In-season management based on hatchery returns. | In-season management based on hatchery returns. | In-season management based on hatchery returns. |

Proposed Lewis Hatchery Steelhead Programs

Proposed Program #1: “Stepping Stone Variant” winters

During the first phase of the transition, the existing integrated conservation winter-run program (50,000 smolt plant) will be maintained and the largest programmatic change will be to eliminate the segregated Chambers Creek winter-run program, and replace it using a “stepping stone” approach (HSRG 2014). This new winter-run, harvest mitigation hatchery program will be derived using adult returns from the winter-run conservation program. Unlike the Chambers Creek program, which is a fully segregated and domesticated stock derived from outside the lower Columbia River ESU, this new stepping stone program will use returning in-basin, first generation (F1) adults to maintain genetic continuity between the localized hatchery and natural-origin population thereby reducing genetic risks. This program is a slight variation from a traditional “stepping stone” program in that rather than slowly increasing the size of the integrated portion of the program as natural origin abundance/availability increases, this program will maintain consistent production goals for the integrated and stepping stone components until a second phase evaluation (described below) is completed. Also, this “stepping stone variant” program will only select BWT-positive adults (F1s) for broodstock to propagate this program, meaning the broodstock will always be only one or two generations removed from natural origin parents, unlike a standard segregated program.

Program Type: “Stepping Stone Variant”

Population Recovery Phase: Recolonization

Goal of Program(s): Harvest

Timing for Transition: 2024

| Adult Broodstock Collection | |
|--|---|
| Broodstock Source | Lewis integrated HOR F1 adults (BWT Ad intact) |
| Broodstock Collection Location/Methods | Lewis Hatchery Merwin Upstream Fish Facility |
| Integration Rate | Segregated: 0.0 |

| Priority | Collection Strategy | pNOB Target | Brood Source | Spawning Strategy |
|----------|---|--|--|--|
| 1 | Normal HOR/NOR return, no shortage Collect at Lewis Hatchery and Merwin Upstream Fish Facility | Conservation Program: 100%; actual will be variable. | Conservation Prog. Lewis Basin NORs and F1s from integrated program (BWT/ Ad intact), if needed. | Conservation Prog. a. NOR x NOR when possible. b. NOR x HOR when necessary to backfill. c. Re-use NOR males once, if needed. |

| | | | | | |
|---|----------------------------|---|--|--|---|
| | | | | Retain up to 30% Lewis Basin NORs. | |
| | | | Stepping Stone Var. 0% | Stepping Stone Var. F1s from integrated program (BWT/ Ad intact). | Stepping Stone Var. HOR x HOR |
| 2 | Low NOR, Normal HOR | Collect at Lewis Hatchery and Merwin Upstream Fish Facility | Conservation Program: 100%; actual will be variable and likely <100% | Conservation Prog. Lewis Basin NORs and F1s from integrated program (BWT/ Ad intact). Retain up to 30% Lewis Basin NORs. | Conservation Prog. a. NOR x NOR when possible, b. NOR x HOR when necessary to backfill. c. Re-use NOR males (potentially more than once) d. Accept a lower pNOB/integration rate |
| | | | Stepping Stone Var. 0% | Stepping Stone Var. F1s from integrated program (BWT/ Ad intact). | Stepping Stone Var. a. HOR x HOR |
| 3 | Low HOR return, Normal NOR | Collect at Lewis Hatchery, Merwin Upstream Fish Facility and potentially Cedar Creek trap | Conservation Program: 100%; actual will be variable | Conservation Prog. Lewis Basin NORs and F1s from integrated program (BWT/ Ad intact). Retain up to 30% Lewis Basin NORs. | Conservation Prog. a. NOR x NOR when possible, b. NOR x HOR when necessary to backfill. c. Re-use NOR males (potentially more than once) |
| | | | Stepping Stone Var. 0% | Stepping Stone Var. F1s from integrated program (BWT/ Ad intact). Consider using F2s (returns from stepping-stone variant program) as backfill with ACC approval. | Stepping Stone Var. a. HOR x HOR b. Re-use HOR males (potentially more than once) c. Accept we may be below program goal |
| 4 | Shortages across board | Collect at Lewis | Conservation Program: | Conservation Prog. | Conservation Prog. a. HOR x NOR when possible |

| | | | | |
|--|--|--|--|---|
| | Hatchery, Merwin Upstream Fish Facility and potentially Cedar Creek trap | 100%; actual will be variable and likely <100% | Lewis Basin NORs and F1s from integrated program (BWT/ Ad intact). Retain up to 30% Lewis Basin NORs Retain all HORs above demographic replacement needs, if needed. | <ul style="list-style-type: none"> b. Re-use NOR males (potentially more than once) c. Accept we may be below program goal d. Accept a lower pNOB/integration rate e. May consider single year exception to demographic replacement to achieve broodstock goals, depending on seeding levels. |
| | | Stepping Stone Var. 0% | Stepping Stone Var. F1s from integrated program (BWT/ Ad intact). Consider using F2s (returns from stepping-stone variant program) as backfill with ACC approval. | Stepping Stone Var. <ul style="list-style-type: none"> a. HOR x HOR b. Re-use HOR males (potentially more than once) c. Accept we may be below program goal |

Note: ATS to develop definitions of: Low NOR, Low HOR, Normal NOR, Normal HOR

Broodstock Collection and Timing:

- Collect 50 Males and 60 Females (F1s from integrated program; BWT/ Ad intact.)
 - The broodstock collection goal for this program will be proportionally higher than the integrated conservation program.
 - This relatively higher goal will help ensure ripe fish are available when spawning events need to occur and allow for additional egg take/grading of production.
- Number and timing of spawning events will be determined during the implementation phase of the project via the AOP with the following goals:
 - Condensing the number of spawning events to:
 - maximize the ability to rear juveniles to an optimal smolt-release size that maximizes post-release survival and minimizes residualism. Spawning fish later in the spring (generally after June 1st) decreases the ability to rear juveniles to appropriate release sizes.
 - Operate the program using the current hatchery infrastructure which is currently limited by early-rearing vessels.
 - Minimize impact on the relative return timing of hatchery fish transported upstream of Merwin Dam.
- Prioritization of use for F1s from integrated program (upstream transport vs. broodstock) will be determined during the implementation phase of the project via the AOP
- Broodstock collection will start February 1st.

- Collection rate will be determined during the implementation phase of the project via the AOP to achieve adequate collection of broodstock by the time of spawning events.
- Program performance will drive adaptive management of the program through annual review during AOP development.

Adult Transportation & Disposition

Lewis HORs - Winter Steelhead Stepping Stone Variant (Ad Only)

| Target Area | Rank | Quantity (range) | Location | Dates |
|-------------|------|--|---|----------|
| Surplus | 1 | All fish above hatchery needs and after harvest. | Food grade – Food bank/tribal donation Non-food grade -Disposal (i.e., landfill) | Dec-June |
| Broodstock | 2 | In shortage years, consider using F2s (returns from stepping-stone variant program) as backfill with ACC approval. | Merwin Upstream Fish Facility and Merwin Hatchery Cedar Creek trap (potentially) | Feb-May |

Lewis HORs - Winter Steelhead Conservation Program (BWT Ad intact)

| Target | Rank | Quantity (range) | Location | Dates |
|-------------------|------|------------------|---|----------|
| Upper Lewis River | 1 | 1239 - 1700* | Eagle Cliffs/Swift Forrest Camp | Jan-June |
| Broodstock | 2 | 100-110 | Lewis Hatchery & Merwin Upstream Facility | Jan-June |

*The H&S Plan (PacifiCorp 2020) identifies a 1700 fish transport target above Swift Dam; however updated EDT analysis was used to identify the transport target of 1239, which is the current management target in use.

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group - volitional followed by force out. |
| Quantity (range) | 75,000 |
| Release Age/size | 1+ / Released at 5.5fpp |
| Release Location/Timing | Merwin Hatchery – April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> • 75,000 Adipose fin-clipped |
| Fish Management needs | <ul style="list-style-type: none"> • Differential mark needed to identify stepping -stone variant program returns from integrated conservation program. The current marking strategy is an Adipose fin clip only for the harvest program and BWT with Adipose intact for the conservation program. • Adipose clip required to allow harvest in mark-selective fisheries |

| | |
|------------------|--|
| Evaluation Needs | <ul style="list-style-type: none">• Differential marking from integrated program allows for independent evaluation of these two programs.• Adipose clip allows for evaluation of pHOS |
|------------------|--|

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program would occur at the Lewis River Hatchery and Merwin Upstream Fish Facility.
- Broodstock is held at the Merwin Hatchery.
- Spawning and incubation occur at the Merwin Hatchery.
- Juvenile rearing occurs at the Merwin Hatchery in raceways.

Proposed Monitoring Program:

- Protocols for population monitoring will be described in the Lewis River AOP associated with the H&S plan (PacifiCorp 2020).

Proposed Program #2: Late integrated winters (aka BWT Ad intact)

Program Type: Integrated late winter

Recovery Phase: Recolonization

Goal of Program(s): Conservation

This program will remain the same as the current late integrated winter steelhead program described earlier in this document. To avoid confusion, program information was not repeated here. A description of broodstock collection, adult transportation and disposition for the integrated late winter conservation program as it relates to the stepping stone variant program is described in the previous section (Proposed Program #1: Late Winter “Stepping Stone Variant”).

Proposed Program #3: Segregated summers

Program Type: Segregated summer

Recovery Phase:

Goal of Program(s): Harvest

| Adult Broodstock Collection | |
|--|---|
| Broodstock Source | Lewis segregated HOR fish |
| Broodstock Collection location/methods | Lewis Hatchery Merwin Upstream Fish Facility |
| Integration Rate | Segregated: 0.0 |

Collection Timing:

Estimated Broodstock Collection Curve

| Week Ending | Brood Adults | Males | Females |
|-------------|--------------|-------|---------|
| 25-Jun | 16 | 8 | 8 |
| 2-Jul | 19 | 9 | 10 |
| 9-Jul | 19 | 9 | 10 |
| 16-Jul | 21 | 10 | 11 |
| 23-Jul | 27 | 13 | 14 |

| | | | |
|--------------|-----|-----|-----|
| 30-Jul | 24 | 12 | 12 |
| 6-Aug | 20 | 10 | 10 |
| 13-Aug | 21 | 10 | 11 |
| 20-Aug | 20 | 10 | 10 |
| 27-Aug | 21 | 10 | 11 |
| 3-Sep | 20 | 10 | 10 |
| 10-Sep | 17 | 8 | 9 |
| 17-Sep | 16 | 8 | 8 |
| Total | 261 | 127 | 134 |

Secondary sources/plans for lack of adults; HORs collected the Cedar Creek trap.

Adult Transportation & Disposition

| Target | Rank | Quantity (range) | Location | Dates |
|-----------------------|------|----------------------------------|---|-----------|
| Broodstock | 1 | 250-300 | Merwin Upstream Fish Facility and Merwin Hatchery | June-Sept |
| Surplus -Food Quality | 2 | Above recycle and hatchery needs | Food Bank | Sept-Oct |

Juvenile Release(s)

| | |
|--------------------------|---|
| Release Strategy | 1 group volitional followed by force out |
| Quantity | 260,000 (200,000 Merwin Hatchery+60,000 Echo net pens) |
| Release Age/size | 1+ / Released at 5.5fpp |
| Release Location/Timing | Merwin Hatchery – April-May |
| Marking/Tagging strategy | <ul style="list-style-type: none"> 260,000 Ad Only |
| Fish Management needs | <ul style="list-style-type: none"> Adipose clip required to allow harvest in mark-selective fisheries. |
| Evaluation Needs | <ul style="list-style-type: none"> Adipose clip allows for evaluation of pHOS |

Summary of Hatchery Configuration/Infrastructure:

- Adult collection for this program occurs at the Lewis River Hatchery and Merwin Upstream Collection Facility.
- Broodstock is held at the Merwin Hatchery.
- Spawning and incubation occur at the Merwin Hatchery.
- Juvenile rearing occurs at the Merwin Hatchery in raceways.

Program Performance Metrics

| | |
|-------------------------------|---|
| pHOS level | Target: NA Population considered extirpated Recent Performance: NA |
| pNOB levels | Target: NA Recent Performance: NA |
| Broodstock mining rate | Target: NA |

Proposed Monitoring Program:

- Protocols for population monitoring will be described in the Lewis River AOP associated with the H&S plan (PacifiCorp 2020).

Lewis Winter and Summer Steelhead Fishery Management Strategy

Currently, directed angling and harvest opportunity for hatchery steelhead in the NF Lewis River is limited to areas below Merwin dam while implementation of fish passage and reintroduction efforts above Merwin Dam continue. Future changes to steelhead fishery management in the Upper Lewis (i.e., areas above Merwin Dam) will require both technical and policy level discussion. These discussions are contingent on development of improved modeling identified in the Aquatic Monitoring and Evaluation Plan for the Lewis River (AMEP) to better quantify key biological reference points needed for setting management targets and evaluating thresholds established in the Settlement Agreement (e.g., recovery phase triggers, transport goals, ocean recruits, etc.). The role of hatchery fish in future harvest opportunities also has not been discussed nor established.

The following fishery management strategies are divided into two tables. The first describes the proposed strategy in the interim period while modeling efforts are completed and technical/policy discussions are carried out. The second provides a conceptual strategy that includes both hatchery and natural-origin fish fishery options. This “long-term” conceptual strategy will be adjusted to reflect decisions made in future technical/policy discussions.

Proposed fishery management framework (until biological reference points and management targets for NOR populations are updated)

Interim/Recolonization Phase

| Area | Abundance | | |
|----------------------|---|---|---|
| | Low | Normal | Above Normal |
| Lower Lewis | Currently, pre-season management based on overall hatchery program needs | Currently, pre-season management based on overall hatchery program needs. | Currently, pre-season management based on overall hatchery program needs. |
| | Excess summer HORs AHN recycled to lower Lewis | Excess summer HORs AHN recycled to lower Lewis | Excess summer HORs AHN recycled to lower Lewis |
| | Restricted Mark-Selective fishery (reduced bag limit or full closure) | Full Season Mark-Selective fishery (generally 3 hatchery adults >20 inches). | Full Season Mark-Selective fishery (generally 3 adults >20 inches). Potential for increased bag limits. |
| | In-season management based on actual hatchery/Merwin FCF returns of HOR. | In-season management based on actual hatchery/Merwin FCF returns of HOR. | In-season management based on actual hatchery/Merwin FCF returns of HOR. |
| Ocean/Columbia River | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. | Currently, pre-season management based on combined Lower Columbia forecast strength. |
| | Mark-Selective fishery (reduced bag limit or full closure); Seasons considered via North of Falcon; Lewis | Mark-Selective fishery (reduced bag limit or full closure); Seasons considered via North of Falcon; Lewis | Mark-Selective fishery (increased bag limit duration); Seasons considered via North of |

| | | | |
|--|---|---|---|
| | stock part of CR steelhead aggregate. | stock part of CR steelhead aggregate. | Falcon; Lewis stock part of CR steelhead aggregate. |
| | In-season management based on hatchery returns. | In-season management based on hatchery returns. | In-season management based on hatchery returns. |

Conceptual fishery management framework – modification will occur to reflect future technical/policy discussions and decisions. This framework is intended for discussion about potential fishery implementation during the local adaptation phase of recovery, but may be phased out when full recovery is achieved. This framework does not imply endorsement of specific harvest management strategies in the future.

Long Term /Local Adaptation Phase

| Area | Abundance | | |
|-------------|---|--|---|
| | Low | Normal | Above Normal |
| Lower Lewis | Utilize Lewis specific forecasts (once developed) for pre-season management. Restricted Mark-Selective fishery (reduced bag limit or full closure). In season management based on actual hatchery /Merwin FCF returns of HOR. | Utilize Lewis specific forecasts (once developed) for pre-season management. Once seeding/escapement goals are established and met: Full Non Mark Selective fishery (HOR/NOR) Bag limits TBD. In season management based on actual hatchery/Merwin FCF returns of HOR/NOR. | Utilize Lewis specific forecasts (once developed) for pre-season management. Once seeding/escapement goals are established and met: Full Non Mark Selective fishery (HOR/NOR); Potential increased Bag limits. In season management based on actual Hatchery/Merwin FCF returns of HOR/NOR. |
| | Excess summer HORs AHN for Lewis hatchery program recycled to lower Lewis | Excess summer HORs AHN for Lewis hatchery program recycled to lower Lewis | Excess summer HORs AHN for Lewis hatchery program recycled to lower Lewis |
| | Restricted Mark-Selective fishery (reduced bag limit or full closure). | Full Season Mark-Selective fishery (generally 3 hatchery adults >20 inches). | Full Season Mark-Selective fishery (generally 3 adults >20 inches). Potential for increased bag limits. |
| | In-season management based on actual hatchery/Merwin FCF returns of HOR. | In-season management based on actual hatchery/Merwin FF returns of HOR. | In-season management based on actual hatchery/Merwin FF returns of HOR. |
| Upper Lewis | Utilize Lewis specific forecasts (once developed) for pre-season management. Fishery on excess HORs transported to upper Lewis AHN to replace NORs used for broodstock (hatchery equivalents). | Utilize Lewis specific forecasts (once developed) for pre-season management. Fishery on excess HORs transported to upper Lewis AHN to replace NORs used for broodstock (hatchery equivalents). Potential NOR harvest if above escapement goals | Utilize Lewis specific forecasts (once developed) for pre-season management. Fishery on excess HORs transported to upper Lewis AHN to replace NORs used for broodstock (hatchery equivalents). Potential NOR harvest if above escapement goals |
| | Once seeding/escapement goals are established: | Once seeding/escapement | Once seeding/escapement |

| | | | |
|----------------------|--|--|--|
| | Restricted Mark-Selective fishery (reduced bag limit or full closure); In-season management based on actual hatchery/Merwin FCF returns of HOR/NOR. | goals are established and met: Full Season Non Mark-Selective fishery (HOR/NOR bag limits TBD). In-season management based on actual hatchery/Merwin FCF returns of HOR/NOR. | goals are established and met: Full Season Non Mark-Selective fishery (HOR/NOR bag limits TBD). In-season management based on actual hatchery/Merwin FCF returns of HOR/NOR |
| Ocean/Columbia River | Mark-Selective fishery Ocean fishery is negligible Lewis stocks part of LCR steelhead aggregate for Columbia River Fishery Management. Seasons considered via North of Falcon | Mark-Selective fishery Ocean fishery is negligible Lewis stocks part of LCR steelhead aggregate for Columbia River Fishery Management. Seasons considered via North of Falcon | Mark-Selective fishery Ocean fishery is negligible Lewis stocks part of LCR steelhead aggregate for Columbia River Fishery Management. Seasons considered via North of Falcon |

Harvest Management Notes:

Steps needed to achieve long-term management targets:

- Establish Rmax and return targets
- Achieve juvenile collection efficiency goals at all downstream collection points for every identified transport species
- Determine hatchery equivalent value used for NOR demographic replacement and establish general management guideline for NOR replacement
- WDFW - update FMEP to include above strategy and consult with NMFS. Verify ESA permitting needs with NMFS.
- Forecasts by Lewis basin specific HOR/NOR instead of aggregate
- Develop earlier in-season predictors of total return for management purposes.

Monitoring and Analysis needs associated with Adaptive Management trigger points

- Monitor SARs for program.
- Evaluate fishery contributions and harvest rates.
- Complete analysis of SARs for current programs (“stepping stone variant” and the late integrated winter (aka BWTs) steelhead) to determine what impacts transitioning to one integrated program will have on adult returns and how this transition would affect recovery.
- Following construction of juvenile and adult passage facilities, evaluation of each facility will be necessary to determine if assumptions for basin productivity and survival are correct.

Bio-programming considerations for all programs (capacity, water, how it fits with other programs):

- Broodstock will be held at the Merwin Hatchery.

- Eggs will be incubated at Merwin Hatchery
- Juvenile rearing and release will occur from the Merwin Hatchery in raceways and the Echo Park net pens.

List of Reference Materials

A vision for Salmon and Steelhead Goals to Restore Thriving Salmon and Steelhead to the Columbia River Basin. Phase 2 Report of the Columbia Basin Partnership (CBP) Task Force of the Marine Fisheries Advisory Committee- October 2020. https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null

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ATS (North fork Lewis River Aquatic Technical Subgroup). 2022. Annual Operating Plan (AOP). Hatchery and Supplementation Program; North Fork Lewis River. North fork Lewis River Aquatic Technical Subgroup. December 2022.

HSRG (Hatchery Scientific Review Group). 2020. Developing recovery objectives and phase triggers for salmonid populations. Available online: [HSRG 2020 White Paper Final Draft.pdf](HSRG_2020_White_Paper_Final_Draft.pdf) (streamnet.org)

HSRG (Hatchery Scientific Review Group). 2014. On the Science of Hatcheries: An updated perspective on the role of hatcheries in salmon and steelhead management in the Pacific Northwest. A. Appleby, H.L. Blankenship, D. Campton, K. Currens, T. Evelyn, D. Fast, T. Flagg, J. Gislason, P. Kline, C. Mahnken, B. Missildine, L. Moberand, G. Nandor, P. Paquet, S. Patterson, L. Seeb, S. Smith, and K. Warheit. June 2014; revised October 2014. Available online: <http://hatcheryreform.us>

PacifiCorp and Cowlitz County PUD. 2020. Lewis River Hatchery and Supplementation Plan- FINAL (FERC Project Nos. 935, 2071, 2111, 2213). December 2020 Available online: <Microsoft Word - HS PLAN FINAL 2020.docx> (pacificorp.com)

Appendix A

Please see attached as separate document.

Strategy evaluation of future NF Lewis winter steelhead hatchery programs (short Version for ATS).pdf

This slide deck was presented by Kale Bentley (WDFW) to the Lewis River Aquatic Technical Committee (ATS) on April 27, 2023. This presentation was intended to provide information and context of the decision process and conclusions to initiate the winter steelhead “stepping stone variant” program.

Lewis Coho Transition Plan Review- ACC Question and Response Matrix

Distributed To ACC April 25, 2023

| Org. | Page | Text/Section Reference | Comment/Question | WDFW Response |
|------------------------------|-----------------|---|---|---|
| US Fish and Wildlife Service | p. 12; p. 18 | Adult Transportation & Disposition Tables | The proposed quantity of adult coho to be released into Yale and Swift reservoirs is unclear. Please provide additional detail. USFWS continues to prefer early-fall (type S) coho to be prioritized for release in these reservoirs to limit superimposition of bull trout redds. USFWS would also appreciate a slow introduction of coho into these reservoirs to document any competitive interactions that may occur between coho and bull trout. | Upstream transport quantity and other protocols for reintroduction are outside the scope of the transition plans and will be detailed in the Fish Transport Plans associated with fish passage implementation. H&S plan section 3.2.2 describes the stock origin for coho supplementation. |
| PacifiCorp | 19 | Water conditions | Is this temp? | Yes temperature |
| PacifiCorp | 20 | Adult Transport and Disposition Table | Date range collect brood into Jan? | Collection table in doc. is an example only based on recent return timing. Actual collection goals will be set via Annual Operating Plan |
| PacifiCorp | 20 | Adult Transport and Disposition Table | I don't believe brood collection goes into the new year. | See previous response |
| PacifiCorp | 22 | Fish Management Strategy | This section needs to specific reference to Section 8.3.2.3 (reductions in hatchery targets) as part of any long-term strategy and as it relates to the reintroduction outcome goal. | Added reference to this section. |

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| PacifiCorp | 24 | Table: Long Term Conceptual Harvest Framework | In season management based on actual Lewis Hatchery and Merwin FF returns? Replace with "back to Lewis River" | There is currently no in-season estimate of river mouth returns available. When this method is developed, we will use this tool as well. We modified language in framework to include and or back to Lewis River. |
| PacifiCorp | 24 | Table: Long Term Conceptual Harvest Framework | Upper basin harvest should only follow after achievement of the priority objective of recovery of wild stocks in the basin to healthy and harvestable levels. | This is a conceptual framework. The determination of when upper basin harvest should be implemented has not been decided and will come through future discussions as described in the Fish Management Strategy Section. |
| PacifiCorp | 24 | Table: Long Term Conceptual Harvest Framework | HORs used to supplement NORs to reach upstream transport goals? What is excess HORs here? | See previous response. This will depend on recovery phase and future agreement on management targets |
| PacifiCorp | 24 | Table: Long Term Conceptual Harvest Framework | If Excess NORs transported upstream, then no HOR supplementation needed upstream. Not sure what is being referred to here. | We did not find a reference to "excess NORs" in the doc. |
| PacifiCorp | 25 | Harvest Management Notes: | Not sure I follow – transport target is based on the EDT capacity estimate of adult coho needed to fully seed the available habitat existing upstream of Swift Dam. HOR coho are used to supplement this target, but to achieve the Reintroduction outcome goal adults should be composed entirely of NOR. | It appears from your answer that your understanding is that the transport target applies to NORs. If this is the case, more detail is needed on how HOR vs NOR transport occurs in season. We suggest that this be discussed at ATS/ACC |
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Lewis Steelhead Transition Plan Review- ATS Question and Response Matrix

Distributed To ACC June 1, 2023;
 Updated on 7/12/2023

| Org. | Page | Text/Section Reference | Comment/Question | WDFW Response |
|------|------|--|--|--|
| NMFS | 9 | Current Program #2 Late Winter (BWT steelhead) | Flagging this as potentially something we might discuss through the consultation process, though it's hard for me to speak with any concreteness without specific numbers. You may want to think about PNI as a metric because it will give you flexibility between managing for pNOB vs. pHOS depending on what the fish are doing that year. We will be looking at PNI in the BiOp (so we <i>might</i> ask for a higher pNOB than 30 if NO returns support that), though I'm not sure what level of PNI we would ask for at this point without looking at all the data. Happy to discuss further offline if need be. | Agree that we need to develop more specific metrics for evaluating performance as we move into implementation of this transition. PNI will be a key metric. Also- we found an error in the document – the target pNOB for the integrated winter steelhead program (conservation program) is 100% (dependent on NOR availability), not 30%. This has been corrected in the latest draft. |
| NMFS | 13 | Proposed Program #1 Late Winter Stepping Stone Variant | Would it be 100% returns from the integrated program? Or would it be mix of integrated and segregated returns? | The objective would be to use 100% returns from the integrated program return (i.e., BWT positive) fish, which are the progeny of NOR x NOR crosses. However, in the event of an extreme shortfall segregated returns from the stepping-stone program could be considered for broodstock with approval by ACC/ATS. |
| NMFS | 13 | Proposed Program #1 Late Winter Stepping Stone Variant | As opposed to collecting throughout the run? Wouldn't this skew which hatchery returns you would use, or does selecting the 1 out of 2 account for that? | In the Stepping stone program, broodstock will come from the F1 returns of the Conservation program (i.e. BWT positive fish). Therefore, returning progeny (F2s) will not be spawned. Their purpose will be to provide harvest opportunities. An expansion of the section on broodstock collection for the stepping-stone program has been added to provide additional clarity. |

| Org. | Page | Text/Section Reference | Comment/Question | WDFW Response |
|------------|------|------------------------|---|--|
| PacifiCorp | 2 | Overview | <p>The program proposes to increase production using F1 brood. Seems that increasing production would also increase genetic risks (from current), especially to diversity and Ne.</p> | <p>To clarify, the plan does not increase winter steelhead production (it actually proposes a 25K reduction).</p> <p>Overall, the plan is focused on modifying the winter steelhead hatchery program that is centered on harvest mitigation. We have proposed eliminating the early-timed, fully segregated program (Chamber's Creek stock derivative) and transitioning to a broad-timed, stepping-stone program. This modification has trade-offs as it pertains to genetic risks on the natural-origin population. Although this change will increase the temporal overlap of harvest mitigation and natural-origin spawners thereby increasing the risk of introgression, the stepping-stone program adults will have much higher genetic fitness given that spawners will only be 1-2 generations removed from the wild thereby reducing domestication risks. Our analysis of these tradeoffs indicates this is a net conservation gain that will also provide more harvest opportunity.</p> <p>Also, the NF Lewis winter steelhead population is recognized as a single population (above and below Merwin Dam excluding EF Lewis). The majority of spawning habitat is above Merwin Dam. As reintroduction efforts continue, additional passage is implemented, and collection efficiencies are improved to meet SA requirements, opportunities to further manage for genetic fitness improvement and population productivity will be gained.</p> |

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| PacifiCorp | 2 | Overview | I would like to discuss further for my own clarity on this. Adding a segregated program isn't typically a recommendation for conservation (for late winter steelhead). This may have benefits, so I would like to understand those benefits better. | <p>To clarify, the plan outlined does not add a segregated program. It transitions the existing segregated early-timed program (Chamber's creek stock derivative) to a later timed stepping-stone program. The stepping-stone program will use only HOR x HOR crosses, so it is technically "segregated", but it will use F1s from the Conservation program (which has a goal of 100% pNOB), so it will essentially always be only 1-2 generation removed from the natural-origin population.</p> <p>Also, see response above.</p> |
| PacifiCorp | 5 | <p>Table: Goal of current integrated and proposed stepping stone variant winter-run program by recovery phase (i.e., conservation/harvest):</p> <p><u>Recolonization</u></p> | the interim viability goal will likely define the length of time that the integrated population stays in the recolonization phase. Also, it seems that the segregated program will put added pHOS pressure on the integrated population delaying local adaption phase | <p>As previously mentioned, the NF Lewis winter steelhead population is recognized as a single population. The majority of spawning habitat is above Merwin Dam. As reintroduction efforts continue, additional passage is implemented, and collection efficiencies are improved to meet SA requirements, there will be opportunities to adaptatively manage the hatchery programs and transport strategies to ensure recovery goals are being met (e.g., pHOS, PNI targets).</p> <p>Based on our analysis of various hatchery strategies, converting the early-timed segregated program to a broad-time, stepping stone program will improve the overall genetic impacts of the hatchery populations as measured using NOAA's multi-population PNI model.</p> <p>Currently, the Upper Lewis is being managed solely for reintroduction and recovery, with steelhead harvest mitigation focused in the Lower Lewis. The largest potential gains and biggest drivers for population advancement towards local adaptation will come through achieving recovery objectives in the Upper Basin.</p> |

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| PacifiCorp | 5 | Table: Goal of current integrated and proposed stepping stone variant winter-run program by recovery phase (i.e., conservation/harvest): <u>Local Adaptation</u> | There will always be some hatchery production so PNI, pHOS and Ne would be important metrics to assess whether local adaptation is moving in the expected direction or trigger for moving back to recolonization. | Agree – these will be important performance metrics. |
| PacifiCorp | 5 | Table: Goal of current integrated and proposed stepping stone variant winter-run program by recovery phase (i.e., conservation/harvest): <u>Full Recovery CBP H&H goal:400-3000</u> | Very broad and not particularly useful. Ultimately determined by the Services. Agreed. Lewis River EDT (NOAA 2019) provides a much more refined estimate of abundance based on site-specific parameters of habitat within the Upper LR Basin. CBP EDT is based on meta-data. | We should discuss at ATS who makes the determination on when healthy/harvestable (i.e., full recovery) is achieved. The CBP H&H goal is the top end of the range, which equates to 3000. We made this edit for clarity. This is included in the table as a potential reference point, but we are open to adding more language to clarify need for verification of this target through a life-cycle modeling approach. |
| PacifiCorp | 6 | Adult Transportation & Disposition: | No transport targets for Chambers. | Agreed - will delete transport |
| PacifiCorp | 8 | Current Program #2 Late Winter (BWT steelhead) Table: Hatchery Adult Transportation and Disposition | There doesn't seem to be a consensus on the transport target number. The current H&S plan calls for adult capacity of 1,700 (NOR + BWT) upstream of Swift for 100% seeding. This was from an older EDT run. Chris indicates that NOAA (2019) modeling estimates of adult capacity for steelhead upstream of Swift are 1,239. And here the target is 500. Where did this number come from? Suggest using the NOAA value of 1,239 adults. Will need to update H&S plan in the future. | We have updated this to 1700 to match the current H&S Plan (and AOP) target. |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant | A diagram might be helpful in comparing this program to the integrated. It is more complex than coho or other species. | Copied narrative from the Overview section down to this section for additional clarity, per Chris' suggestion. We are open to working with the ATS on development of a diagram to further clarify this program change if time allows or during implementation of the program and description of the program in the AOP. |

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| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant | Similar to Erik’s comment above, would be helpful to include a brief summary of what this Program Alternative is. What “Stepping Stone” means, etc. Subsequent alternatives below should also have a summary provided that includes how they differ from each other at a high level. | We copied narrative from the Overview section down to this section for additional clarity. |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Broodstock Collection Integration Rate: 0.0 | The segregated program will increase pHOS for the integrated program. Reduced pHOS will really only come from NOR returns from natural production and high ODS. This will probably delay moving the integrated program to the adaptation phase. | We agree with the assessment that reduced pHOS will come with increased NOR returns and high ODS. We disagree with the assessment that this program will increase pHOS and delay progress towards moving to the local adaptation. In the current phase of recolonization, the recovery approach is to utilize hatchery fish (from the conservation program) to seed the upper watershed while ODS improvements are made and NOR abundance grows. This approach purposefully maintains a high pHOS in the recolonization phase. We are proposing to transition to a program that has improved genetic fitness (compared to early winter, chambers creek stock). So, while it is true that “effective” pHOS (overlap) may increase in the lower river, genetic impact of that pHOS is not expected to delay recovery. Phase triggers will be developed to determine when it is appropriate to shift into the local adaptation phase. |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Broodstock Collection Timing: | This doesn’t match the brood for 50K integrated program – should be less than 70 total brood for 75K production – not 110. | Additional language was added to this section to better clarify broodstock numbers needed, collection protocol and timing. We can review this during ATS meeting on the 25 th . |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Broodstock Collection Timing: | This rate (50%) is also too high given brood needs | Additional language was added to this section to better clarify broodstock numbers needed, collection protocol and timing. We can review this during ATS meeting on the 25 th . |

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| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Transportation and Disposition (100-120 needed) | Revise | Additional language was added to this section to better clarify broodstock numbers needed, collection protocol and timing. We can review this during ATS meeting on the 25 th . |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Transportation and Disposition (Yale and Merwin Basin) | Not sure I follow why segregated fish would be used here? | Good catch – we inadvertently left transport into Merwin/Yale in the table. This was a carry-over from the Coho transition plan. We have corrected the table to reflect the two options for this program – broodstock or surplus. This is the same as the current early winter steelhead program. |
| PacifiCorp | 13 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Adult Transportation and Disposition (surplus) | It is not clear what do we do with segregated returns at the trap? Segregated program is using BWT's as brood. Not sure if we would transport any of the segregated fish either. All surplus? Needs further discussion. | Good catch – we inadvertently left transport into Merwin/Yale in the table. This was a carry-over from the Coho transition plan. We have corrected the table to reflect the two options for this program – broodstock or surplus. This is the same as the current early winter steelhead program. |
| PacifiCorp | 14 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Juvenile Release(s) | BWT + AD would be a differential mark, but this may be a confusing problem | The F1s from this program would be AD clipped only. The integrated conservation program would remain BWT/Adipose intact. This would identify the two returns and inform the transport and disposition of the two programs. |
| PacifiCorp | 14 | Proposed Program#1 Late Winter Stepping Stone Variant Table: Juvenile Release(s) | Need to discuss what the evaluation needs are. These two programs will spawn naturally together in the lower river (despite efforts to reduce with harvest). It's not clear how to keep the segregated program separate from integrated. Probably needs further discussion. | Agree – we suggest this discussion will come during the implementation phase of these programs via development of the AOP. |

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| PacifiCorp | 18 | Lewis Winter and Summer Steelhead Fishery Management Strategy Table: Long Term/Local Adaptation Phase: Upper Lewis | Similar to comments regarding coho. If the population is in the local adaptation phase, then this assumes that the natural component is self-sustaining. PacifiCorp does not support harvest until the self-sustaining component of the Reintroduction Outcome Goal is met, or rather the population is in the local adaptation phase. | We included the same language that was added to the Coho Transition plan regarding the conceptual nature of the long-term strategy and the need for future technical/policy discussions. <i>"The second provides a conceptual strategy that includes both hatchery and natural-origin fish fishery options. This "long-term" conceptual strategy will be adjusted to reflect decisions made in future technical/policy discussions."</i> |
| PacifiCorp | 18 | Lewis Winter and Summer Steelhead Fishery Management Strategy Table: Long Term/Local Adaptation Phase: Upper Lewis | Not just escapement goals, but self-sustaining | See comment above. |

The following comments were received during the 30-day ACC review period & responses were generated by WDFW on July 12th, 2023

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| PacifiCorp | 1 | Overview | Should provide more rationale or justification of why the stepping stone program was selected. Also include what other alternatives were considered such as one larger integrated program. This rationale needs to show how the stepping stone program benefits the reintroduction/conservation (e.g., provides more NOR for upstream transport) to be consistent with the Settlement Agreement. I can help draft this relative to the SA. | The Overview section has been updated (see paragraphs #3 and #4) to provide more detail on the evaluation and rationale for the stepping stone program being the recommended, near-term alternative. |
| PacifiCorp | 9 | Program Performance Metrics | [PNI] needs to be included [in the table] as identified [as a monitoring metric] in Objective 8 of the H&S Plan | The table has been updated to include PNI |
| PacifiCorp | 12 | Current Lewis Steelhead Harvest Management Strategy | Added an additional bullet that states "Currently no harvest opportunity for the integrated steelhead program." Added comment "Not sure what this means" to existing bullet point that states "Current (until we have management targets for NOR populations)" | The bulleted list has been updated to reflect harvest opportunities for all NF Lewis steelhead populations |

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| PacifiCorp | 13 | Proposed Program #1: Late Winter "Stepping Stone Variant" | Relative to what? The temporal overlap of this new program will have genetic risks due to the release of F2 juveniles that will spawn with NOR. So, relative to the current integrated program, the stepping stone program increases risks due to more hatchery releases interacting with natural spawners (i.e., increased pHOS and potential reduction if fitness) in lower river. This may reduce fitness of NOR's transported upstream. | <p>See our response to the previous comment at the top of page 2 that stated "The program proposes to increase production using F1 brood. Seems that increasing production would also increase genetic risks (from current), especially to diversity and Ne."</p> <p>Based on our modeling evaluation, the new stepping stone program decreases the genetic risks of the harvest-focused winter steelhead program on the natural-origin population. In comparison with the alternative of a single, fully integrated program, the stepping stone program (paired with the existing conservation program) has similar genetic risks (e.g., multi-population PNI estimates are extremely similar across all modeled scenarios). This result makes sense based on the characteristics of the programs. In short, the integrated program requires more natural-origin brood (higher pNOB) but this results in fewer natural-origin spawners (higher pHOS) while the stepping stone program doesn't directly use natural-origin spawners but it needs F1s from the integrated program (low pNOB) which results in more natural-origin recruits being left on the spawning grounds (lower pHOS).</p> |
| PacifiCorp | 13 | Proposed Program #1: Late Winter "Stepping Stone Variant" | Table includes both integrated and stepping stone programs under the stepping stone heading. Suggest separate tables for each program to reduce confusion. Formatting issue. | The "Proposed Lewis Hatchery Steelhead Programs" section contains separate sub-sections for each proposed program. Thus, the (new) stepping stone program [Proposed Program #1] and the (existing) integrated program [Proposed Program #2] are separated into two different sub-sections and have their own summary tables. The integrated program is listed in several places in the stepping stone tables because the stepping stone programs requires recruits (i.e., F1s) from the integrated program. |

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| PacifiCorp | 14/15 | Proposed Program #1: Late Winter "Stepping Stone Variant" | <p>If the program is at the point of considering the use of F2 returns, then the reintroduction program is essentially non-existent and more substantial changes are needed. Recommend removing this contingency.</p> | <p>This likely isn't the case re: "if the program is at the point of considering the use of F2 returns, then the reintroduction program is essentially non-existent..."</p> <p>The purpose of the Transition Plan is to outline how hatchery programs would be generally operated, which included a table of broodstock sources for both the conservation and harvest programs under varying conditions.</p> <p>The specific table referenced here table does describe the prioritization of returning conservation hatchery program fish (aka F1s), which can be used as broodstock for both programs as well as transported to the upper basin for reintroduction. These details will be developed by the ATS and described in the Annual Operating Plan and Transport Plan.</p> <p>Based on these existing criteria for the conservation program, we (WDFW) anticipate the starting point for the prioritization of F1s with a new harvest-focused, stepping-stone program would be:</p> <ol style="list-style-type: none"> 1. Upstream transport first to ensure demographic replacement (and maybe some minimum demographic boost) 2. Excess goes to harvest hatchery program and conservation program. <p>All said, we don't anticipate this topic being a major issue. F1s aren't subject to fisheries (as they are adipose intact) and have had relatively large returns in recent years. While there will certainly be a reduction in the absolute number of F1s transported for reintroduction with the new broodstock needs for the stepping stone hatchery program, the largest benefit to reintroduction will come with increased juvenile capture efficiencies at the Swift FSC.</p> |
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| PacifiCorp | 15 | Proposed Program #1: Late Winter "Stepping Stone Variant": Broodstock Collection and Timing | Spawning window should be defined here | Sentence has been updated to clarify that steelhead will generally not be spawned after June 1 st |
| PacifiCorp | 15 | Proposed Program #1: Late Winter "Stepping Stone Variant": Broodstock Collection and Timing | Yes, and required by the SA | Noted. No changes have been made but word-smith additions would be considered if specific language is provided. |
| PacifiCorp | 15 | Proposed Program #1: Late Winter "Stepping Stone Variant": Broodstock Collection and Timing | This will have to be an accepted impact to reintroduction program. A statement at the beginning or end of this plan identifying that over the long-term this stepping stone program will have benefits to reintroduction program is needed for the Utilities to accept this impact. | The statement that this comment was in reference to has been updated. |
| PacifiCorp | 15/16 | Proposed Program #1: Late Winter "Stepping Stone Variant": Broodstock Collection and Timing | Suggested adding sentence that states "It is expected that collection will follow a generalize run-timing curve to ensure brood stock are selected across the run." | While we acknowledge that this suggested edit is likely to be largely true, we did not add it because more evaluation and discussion is needed (as the leading sentence indicates). |
| PacifiCorp | 16 | Proposed Program #1: Late Winter "Stepping Stone Variant": Adult Transportation & Disposition | These returns are not available for upstream, but it that absolute? A portion of these F2 returns will be spawning naturally downstream and will return with AD intact and transported upstream (identified as NOR's). Thus, the composition of the population will change with this stepping stone program and will result in some NOR's from F2 parents being transported upstream in the coming years. | While this new stepping stone program will be more genetically fit than the existing, segregated winter steelhead program (aka Chambers), the purpose of the program is still to solely generate recruits (returning adults) for harvest and not for conservation (i.e., transported to the upper basin). Certainly, a portion of F1s from the stepping stone program could stray and successfully spawn in the lower river and those recruits (F2) could return and be transported upriver. But this is no different than what may be happening now with the Chambers program except, again, that the resulting recruits would be less genetically fit. |
| PacifiCorp | 16 | Proposed Program #1: Late Winter "Stepping Stone Variant": Juvenile Release(s) | Yes, and a requirement of SA | Noted. No changes have been made but word-smith additions would be considered if specific language is provided. |

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| PacifiCorp | 21 | Lewis Winter and Summer Steelhead Fishery Management Strategy: Interim/Recolonization Phase | Suggested adding the following language “Conceptual fishery management framework – modification will occur to reflect future technical/policy discussions and decisions. This framework is intended for discussion about potential fishery implementation during the local adaptation phase of recovery, but may be phased out when full recovery is achieved. This framework does not imply endorsement of specific harvest management strategies in the future. | The language has been accepted. |
| PacifiCorp | 21 | Lewis Winter and Summer Steelhead Fishery Management Strategy: Long Term /Local Adaptation Phase | It is not clear why summer steelhead are included here as a segregated harvest program. Is there a long term conservation goal for summer steelhead? | Lewis River hatchery summer steelhead are included [in this table] because they are one of the existing and proposed steelhead hatchery programs. |
| PacifiCorp | 22 | Lewis Winter and Summer Steelhead Fishery Management Strategy: Harvest Management Notes | Does this apply to both summer and winter steelhead? Confusing. | Currently, no. Add “...for every identified transport species” to the end of the sentence to improve clarity. |
| PacifiCorp | 22 | Lewis Winter and Summer Steelhead Fishery Management Strategy: Harvest Management Notes | Why is this the only performance goal listed as necessary for achieving long term management goals? Especially if pertaining to summer steelhead | In short, the recovery of NF Lewis salmon and steelhead populations will not occur, and thus “long term” management strategies cannot be implemented, until juvenile collection efficiencies are improved. The Settlement Agreement stipulates what collection efficiencies must be met. Therefore, the identified step of “Achieve juvenile collection efficiency goals at all downstream collection points” is both accurate and a high priority. If there are other performance goals that PacifiCorp would like to be listed here, please provide specific language. |
| Trout Unlimited | 2 | Overview | Overall, we support transitioning away from the current Chambers Creek winter-run program to a “stepping stone” program, which will be derived from the integrated conservation program and used for future winter steelhead harvest in the basin. | Thank you – agreed. |

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| Trout Unlimited | 2 | Overview | “...in order to assess the effectiveness of the program and make the necessary changes associated with this plan into the future, we support the planned monitoring and adaptive approaches within the plan.” | Monitoring and evaluation of these programs will be developed by the ATS and included in the H&S Plan (and corresponding Annual Operating Plan) and the AMEP, as necessary. |
| Trout Unlimited | 1 | Overview | We support the use of both the Lower Columbia Conservation and Sustainable Fisheries Plan (LCCSFP) and the Statewide Steelhead Management Plan (SSMP) as the guiding documents for risk tolerance of this plan and programs. While we understand that these are PacifiCorp hatchery programs, we strongly believe WDFW’s management plan should provide the overarching guidance for the hatchery strategies and policies | We agree and we believe this Transition Plan is in alignment with the overall goals/objectives of the LCCSFP and SSMP. References to these specific plans were not made directly in the Transition plan, as we view the Transition Plan as an extension of PacifiCorp’s H&S plan, which has the Utilities License and Settlement Agreement as the primary guidance documents. |
| Trout Unlimited | 4 | Recovery Phases and Goals | We’re pleased and supportive of the hatchery strategy evaluation separating the lower (below Merwin) and upper (above Swift) components of the population and the calculation of metrics at both the sub-population and total population scale. We acknowledge that winter steelhead in the Lewis are considered one recovery population, but we’d support the development of “soft metrics” for the sub-population in the lower basin, to prevent the lower basin from becoming a dumping ground for hatchery fish, while concurrently attempting to recover the upper basin. At least until downstream fish passage and collection through the entire hydro system is improved and to allow the upper river sub-population to begin to functionally recover. | Thank you – We agree that monitoring of the sub-populations and a roll-up to an evaluation at a total population scale is appropriate. We are supportive of developing “soft metrics” for the sub-populations. On-going discussions with the ATS for the development of the AOP along with the proposed Phase 2 evaluation and development of key management objectives are two places where “soft metrics” and monitoring needs can and should be discussed. |

| | | | | |
|-----------------|----|--|---|--|
| Trout Unlimited | 4 | Recovery Phases and Goals | <p>We support the upstream subpopulations being designated in a recolonization phase. We strongly support the effort to develop and complete the life-cycle modeling, which will inform when the population enters local adaptation or full recovery phase. However, we do not support the summer steelhead hatchery program being included in the recolonization phase designation, as it does not contribute to recovery and has the potential to cause harm to the natural-origin population. Instead, this population needs to be held to standards presented in the SSMP and LCCSFP.</p> | <p>Thank you for your support of the life-cycle modeling approach, we agree that this is important work that will be of great benefit to our understanding of the populations and in establishment of key biological reference points and management triggers.</p> <p>Our interpretation of the recovery phase designations and intention of their use is that they are applied to the natural population being recovered, rather than to specific hatchery programs for those species. The summer-run steelhead population in the NF Lewis is designated as Stabilizing in the NOAA Recovery plan and considered to be at very low abundance or potentially extirpated. Currently, the Lewis SA agreement does not identify the summer-steelhead run type as a formal “transport species”.</p> <p>With that said and as reintroduction progresses with passage provided for all NOR steelhead, it is conceivable that the summer-run steelhead population may gain a foothold in the upper basin. We are supportive of continued discussion with the ACC on how to best monitor and manage potential recovery of the NF Lewis summer steelhead population moving forward.</p> |
| Trout Unlimited | 22 | Monitoring and Analysis needs associated with Adaptive Management trigger points | <p>Genetic and ecological monitoring of hatchery impacts should be prioritized in the Lewis and its tributaries (except the EF Lewis River). In addition to general monitoring, there needs to be a prioritization for monitoring the impacts of the segregated Skamania summer-run hatchery program on the natural origin winter steelhead populations with future genetic monitoring possibly planning for the reemergence of natural origin summer steelhead in the basin. It is important in this phase of the project to assess the rainbow trout populations upstream of the reservoirs and identify whether they harbor summer steelhead genetics, especially with the efforts toward full implementation of downstream fish passage. In addition to completing the Genetic Monitoring Plan, as directed by the 2020 Lewis H&S Plan, this genetic data is necessary for PacifiCorp to adaptively manage during the implementation efforts.</p> | <p>Agreed.</p> <p>There is currently an effort by the ATS to develop and implement a steelhead genetic monitoring program in the lower and upper Lewis basins.</p> |

| | | | | |
|-----------------|----|--|---|---|
| Trout Unlimited | 22 | Bio-programming considerations for all programs | Any remaining non-migrant hatchery steelhead smolts should be transported to non-anadromous lakes to ensure they do not residualize in the Lewis River watershed and present ecological risks to the natural-origin population, either as precocious parr or through competition and predation. We also recommend a transition from Blank Wire Tags to Coded Wire Tags as another way to further improve data collection, such as age structure, survival, etc. | <p>Agreed that there needs to be agreement on the evaluation and disposition of non-migratory HOR steelhead juveniles. This should be a future topic of the ATS in development of the AOP.</p> <p>As long as the BWT are not adipose clipped, these fish would not show up in creel surveys, and very few steelhead carcasses are recovered in spawning ground surveys, so the cost may not be warranted, unless these fish are fatally spawned. CWTs in all harvest groups would be informative if a Lewis creel program is established. WDFW is open to utilization of CWTs and having discussion about the cost/benefit of doing so. This would be another good topic for discussion with the ATS in development of the AOP.</p> |
| Trout Unlimited | 22 | Harvest Management Notes: Steps needed to achieve long term management | Ongoing, PacifiCorp must improve their collection efficiencies, so fish are able to effectively utilize the high-quality habitat upstream of the hydro systems. Additionally, PacifiCorp must proceed, in earnest, to ensure the next round of fish collectors are built on time and as scheduled. | Agreed that CE as well as design, construction and operational timeliness of all passage facilities are crucial components in the recovery of all Lewis anadromous populations. |

North Fork Lewis River Project Request for Decision Template

North Fork Lewis River Coho Salmon, Winter Steelhead and Summer Steelhead Transition Plans

Part A –Decision Summary (to be completed after decision is made)

Date of Decision: 07-13-2023
Expected Implementation Date of Action (if applicable): 2024
Expected completion date of action (if applicable): Not Applicable

➤ **Decision Summary** (*brief summary of decision or action made by Committee*)

At the ACC meeting on July 13, 2023, the proposed actions were reviewed and discussed including comments received by representatives of the ACC. After discussing, the ACC followed voting protocols outlined in the ACC/TCC ground rules document. The proposed actions were approved by Representatives in attendance. The Utilities will distribute the approved decision template to Representatives not present at the July 13, 2023 ACC meeting for a required 7 day additional review period.

Part B –Decision Request (to be completed by Representative(s) requesting decision)

1. Representatives and Affiliations

WDFW in concert with the Lewis River Aquatic Technical Subgroup

2. Description and Justification of Request

- **Requested Action:** The ATS requests that the ACC adopts the Lewis River Coho Salmon and the Lewis River Winter and Summer-run Steelhead Hatchery Transition Plans as supplemental guidance documents to the Lewis River Hatchery and Supplementation (H&S) Plan (PacifiCorp 2020) to facilitate implementation of program changes for these hatchery stocks.
- **Introduction and background:** The H&S Plan (PacifiCorp 2020) describes hatchery production and supplementation components, monitoring and evaluation objectives, fish marking and tagging strategies, reintroduction outcome goals and an annual operating planning and reporting process. The H&S Plan is updated (at least) every 5 years and is structured to be consistent with Section 8 of the Lewis River Settlement Agreement (“Settlement Agreement”) dated November 30, 2004. The H&S Plan requires the development of an Annual Operating Plan (AOP), which provides for annual review and coordination of hatchery broodstock sources, production targets, fish release schedules, facility upgrades, broodstock collection and spawning protocols and monitoring & evaluation needs. The H&S Plan also calls for the development of Transition Plans (where appropriate) describing protocols for transitioning hatchery programs from segregated to integrated strategies. The ATS has worked together to develop these transition plans. Drafts of these

plans and associated analysis and technical materials were provided to the ATS by WDFW during the April and May ATS meetings for review and comment. Comments received were collated, discussed by the ATS, and incorporated into the final drafts of transition plans. These drafts were submitted to the ACC for an additional 30 day review. Comments received were again collated, discussed and incorporated into final versions of the Transition Plans. Both plans use a phased approach to implementation where Phase 1 starts implementation of program changes based on modeling and alternative analysis using currently available information and current recovery phase information. The goal of Phase 1 is to modify programs in a way that improves the recovery trajectory of listed populations affected by the programs (essentially better achieving conservation and reintroduction goals) while still providing fishery/harvest mitigation benefits. Phase 2 is the evaluation phase where program performance is evaluated alongside assessment/refinement of population biological reference points, recovery phase triggers and new management/transport objectives (i.e., implementation of fish passage at Yale and Merwin dams). Phase 3 is the adaptive management phase where program sizes and splits between conservation and harvest programs are adjusted based on program performance, recovery phase triggers and management/transport objectives.

Included in these Transition Plans are the following major objectives:

- Transition the existing integrated late coho (Type N) hatchery program to an integrated coho hatchery program that better represents the full breadth of the natural run timing of the Lewis coho population.
- Maintain an early coho segregated (Type S) hatchery program for harvest mitigation.
- Maintain the current integrated conservation winter steelhead hatchery program focused on providing fish for reintroduction.
- Discontinue the current out of basin (Chambers Creek stock) segregated early winter steelhead hatchery program.
- Transition the current harvest mitigation, early winter steelhead program to a winter steelhead stepping stone variant program utilizing adult returns from the current conservation program as broodstock.
- Reduce winter steelhead harvest program production (i.e., stepping stone variant) by 25,000 smolts, but increase the segregated summer steelhead production by 25,000 smolts, resulting in no net loss or gain of steelhead production.
- **Justification for requested action:**
 - The H&S Plan calls for the development of Transition Plans (where appropriate) describing protocols for transitioning hatchery programs from segregated to integrated strategies.
 - a) The transition to an integrated coho program that better represents the full breadth of run timing of the natural Lewis coho population provides a recovery benefit by improving the diversity of the hatchery stock being used for reintroduction into the Upper Lewis subbasin, while preserving harvest opportunity in the Ocean, mainstem Columbia and Lewis River provided by this hatchery program. The integrated coho

Request No. 2023-03

Request Date: 07-13-2023

program would run parallel to the current segregated early returning coho program, which has been shown to be a major contributor to ocean and freshwater fisheries.

- b) The transition to a new stepping stone variant steelhead program and discontinuation of the early winter steelhead program (Chambers Creek stock) is designed to reduce genetic risk to the natural origin winter steelhead population while increasing angling and harvest opportunity. Use of the Chambers Creek early-winter stock has not been supported by NOAA Fisheries in other hatchery program consultations with ESA listed populations in the Lower Columbia Basin.
- c) Lewis River hatchery programs will be undergoing consultation with NOAA Fisheries to obtain full coverage under the ESA. The first step in the consultation process is completion of Hatchery Genetic Management Plans (HGMPs), Transition Plans will provide the framework for development of HGMPs for the Lewis River steelhead and coho hatchery programs.

3. FERC or Settlement Agreement Requirement(s)

- What relevant FERC or SA articles justify this action?
[SA Articles 8.1, 8.2, 8.3, 8.4, 8.5, 9.5](#)
- Are there any other regulatory requirements to support the requested action?
[Consultation with Services as part of the HGMP submittal](#)

Part C – Committee Decision (to be completed by Committee)

4. Committee Decision

- Was the decision made by consensus (as defined in the Committee ground rules)? **Yes**
- Document voting record and tally (if applicable)

| | | Transition Plan | | |
|----|--|---|--------------------|------------------|
| | Organization | ACC Representatives | Coho Salmon | Steelhead |
| 1 | American Rivers | Bridget Moran | Not Present | Not Present |
| 2 | Cowlitz Indian Tribe | Christina Donehower Dalton Fry | Approve | Approve |
| 3 | Fish First | Alex Maslov Janae Brock | Not Present | Not Present |
| 4 | Lewis River Community Council | Mariah Stoll-Smith Reese | Not Present | Not Present |
| 5 | Lower Columbia River Fish Recovery Board | Steve Manlow Steve West | Approve | Approve |
| 6 | National Marine Fisheries Service | Emi Melton (proxy) Bonnie Shorin Melissa Jundt | Approve | Approve |
| 7 | Utilities | Erik Lesko Chris Karchesky Amanda Farrar | Abstain | Abstain |
| 8 | Trout Unlimited | Jim Byrne Jonathan Stumpf | Approve | Approve |
| 9 | US Fish & Wildlife | Jeff Garnett | Abstain | Abstain |
| 10 | USDA Forest Service | Josh Chapman JD Jones Kyle Wright | Not Present | Not Present |
| 11 | Washington Dept. of Fish & Wildlife | Bryce Glaser Peggy Miller Josua Holowatz (proxy) Aaron Roberts | Approve | Approve |
| 12 | WA Recreation/Conservation Office | Adam Cole | Not Present | Not Present |
| 13 | Yakama Nation | Bill Sharp Keely Murdoch | Approve | Approve |

5. Justification for Committee Decision

- What information (i.e. empirical data) and how was this information used to inform decision? [WDFW presented these coho and steelhead transition plans to the ATS for review and comment. Comments, questions, and responses were collated into a comment matrix and were addressed in final transition plans.](#)

6. Contingencies or Conditions of the Decision

- Is decision contingent on other actions or information? **No**
- Is implementation of decision contingent on specific actions or information? [ESA consultation for potential take of listed species](#)
- Are there any conditions attached to this decision? **No**

7. Additional Information or Notations

[Comment matrix attached](#)

North Fork Lewis River Project

Request for Decision

Elements of Lewis River Future Fish Passage

Part A –Decision Summary (to be completed after decision is made)

Date of Decision: XXXXX
Expected Implementation Date of Action (if applicable): Upon issuance of FERC Order
Expected completion date of action (if applicable): Various

➤ **Decision Summary** (brief summary of decision or action made by Committee)

The National Marine Fisheries Service and the US Fish and Wildlife Service (Services) have determined that fish passage into and through Merwin and Yale reservoirs remains appropriate (Service’s letters dated October 27 and December 23, 2021). To guide the design and implementation of new fish passage facilities, the Fish Passage Subcommittee (FPS) has prepared a document that contains key elements of the future fish passage program (“Elements of Lewis River Future Fish Passage”) including but not limited to dates for new facilities to be operational, guidance for upstream reservoir fish distribution (“Select Reservoir Release” and “Swim-Through Release” strategies) and facility sizing, and additional contributions to the Aquatic Fund. Upon ACC approval, the Elements of Lewis River Future Fish Passage document will be provided to the Services for approval then submitted to the Federal Energy Regulatory Commission (FERC) for approval and their issuance of an Order directing PacifiCorp and Cowlitz PUD (Utilities) to implement the Plan.

The ACC voted XXXXX to YYYYY the Future Fish Passage Plan as attached ZZZZ.

Part B –Decision Request (to be completed by Representative(s) requesting decision)

1. Representatives and Affiliations

The FPS submits this Request for Decision for ACC consideration. The FPS is composed of:

| Organization | Primary Contact/Alternate Contact |
|------------------------------------|-----------------------------------|
| American Rivers | Bridget Moran |
| Cowlitz Tribe | Christina Donehower |
| Lower Columbia Fish Recovery Board | Steve Manlow/ Steve West |
| Trout Unlimited | Jim Byrne |
| Yakama Nation | Bill Sharp/ Keely Murdoch |
| US Forest Service | Joshua Chapman |
| NOAA | Bonnie Shorin/Melissa Jundt |
| US Fish & Wildlife Service | Jeffrey Garnett |

Request No. [2023-01]

Request Date: [06-x-2023]

| | |
|-------------------------------------|----------------------------|
| PacifiCorp | Chris Karchesky/Todd Olson |
| Cowlitz PUD | Amanda Farrar |
| Washington Dept. of Fish & Wildlife | Bryce Glaser/ Peggy Miller |

2. Description and Justification of Request

- **Requested Action:** [What specifically is the Committee to decide?](#)

The FPS requests ACC review and consideration for approval of the Elements of Lewis River Future Fish Passage document.

The first draft of the document was provided by the Utilities in the spring of 2022, and over the past year, the FPS has considered and discussed the various elements, revising the document along the way. Members of the subcommittee have now reached agreement on the content and language within the document. A final draft has been distributed to the ACC for review and consideration for approval.

Of significance to the fish passage program is the type of new fish passage facilities and timing in which facilities will be operational. The Elements of Lewis River Future Fish Passage identifies the following:

| Facility | Facility Type | Operational Date: |
|-------------------|----------------------------|-------------------|
| Yale Downstream | Floating Surface Collector | June 26, 2026 |
| Yale Upstream | Trap with Truck Transport | June 26, 2026 |
| Swift Upstream | Trap with Truck Transport | June 26, 2026 |
| Merwin Downstream | To Be Determined | June 26, 2032 |

The document also identifies the general siting of the facilities, an adaptive management pathway for distribution of returning adult fish and identifies the Utilities contribution of \$3,511,516 to the Lewis River Aquatic Fund. The first payment of \$877,879 will be made within six months of FERC's approval of the document. A second contribution of \$2,633,637 to the Aquatic Fund will be provided in the calendar year following FERC's approval. Contribution will be administered consistent with the procedures outlined in Section 7.5 of the Settlement Agreement.

By approving the Request for Decision, the ACC will recognize and support the Services and FERC's consideration of adopting the Elements of Lewis River Future Fish Passage document.

3. FERC or Settlement Agreement Requirement(s)

- **What relevant FERC or SA articles justify this action? [Articles xx]**

SA 4.1.8(b) Upstream Transport After Full Adult Fish Passage

SA 4.1.8(d) Downstream Transport

Request No. [2023-01]

Request Date: [06-x-2023]

- SA 4.5 Downstream Passage at Yale Dam
- SA 4.6 Downstream Passage at Merwin Dam
- SA 4.7 Upstream Passage at Yale Dam
- SA 4.8 Upstream Passage at Swift Projects
- SA 8.0 Hatchery and Supplementation Program
- Lewis River FERC Licenses, Article 401. Scheduling and Reporting Requirements and Amendment Applications

Part C – Committee Decision (to be completed by the ACC)

4. Committee Decision

- **Was the decision made by consensus (as defined in the Committee ground rules)?**

- **Document voting record and tally (if applicable)**

All Representatives in attendance at the

Yes = x

No= y

Abstain= z

7-Day Additional Review =

| Representative Present | Vote |
|------------------------|------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

5. Justification for Committee Decision

- **What information (i.e., empirical data) and how was this information used to inform decision?**

The ACC used the Services final letters of determination regarding fish passage at the Yale and Merwin projects, engagement from several ACC members on the FPS, and individual review of the Elements of Lewis River Future Fish Passage document.

6. Contingencies or Conditions of the Decision

Request No. [2023-01]

Request Date: [06-x-2023]

- **Is decision contingent on other actions or information?**
No
- **Is implementation of decision contingent on specific actions or information?**
Yes, Services and FERC approval needed prior to implementation of the Plan
- **Are there any conditions attached to this decision?**
None

7. Additional Information or Notations

The final Elements of Lewis River Future Fish Passage document is attached.

Request No. [2023-02]

Request Date: [06-8-2023]

North Fork Lewis River Project Request for Decision

Proposed update to Section VIII of the Terrestrial and Aquatic Coordination Committees Structure and Ground Rules (revised May 2020)

Part A –Decision Summary *(to be completed after decision is made)*

Date of Decision: 06/08/2023

Expected Implementation Date of Action (if applicable):

Expected completion date of action (if applicable):

Decision Summary *(brief summary of decision or action made by Committee)*

Part B –Decision Request *(to be completed by Representative(s) requesting decision)*

1. Representatives and Affiliations

| <i>Organization</i> | <i>Representative</i> |
|---------------------|-----------------------|
| PacifiCorp | Erik Lesko |

2. Description and Justification of Request

Requested Action: What specifically is the Committee to decide?

PacifiCorp is requesting a minor revision to Section VIII of the Terrestrial and Aquatic Coordination Committees Structure and Ground Rules (revised May 2020). The intent of this revision is to clarify the process regarding committee decisions that do not require the use of a decision template (as described under Section VIII – Documentation of Committee Decisions).

This request provides additional text (included below in red italic) clarifying how these types of decisions are made and documented.

Excerpt from Section VIII. Responsibilities of Coordination Committee Representatives:

Documentation of Committee decisions

Representatives requesting review or decision by the Committee, shall complete the ‘Request for Decision’ template (Appendix D) for distribution to the Committee prior to the meeting as described under ‘Preparation’. A completed ‘Request for Decision’ template shall be attached to the meeting notes for the meeting in which the request was considered. Decisions by the

Request No. [2023-02]

Request Date: [06-8-2023]

5. Justification for Committee Decision

What information (i.e., empirical data) and how was this information used to inform decision?

At the May 11, 2023, ACC meeting this topic was discussed as part of the agenda and it was agreed that PacifiCorp would propose additional language in the structure and ground rules to clarify the decision making process by the ACC.

6. Contingencies or Conditions of the Decision

- **Is decision contingent on other actions or information?**

No

- **Is implementation of decision contingent on specific actions or information?**

No

- **Are there any conditions attached to this decision?**

No

7. Additional Information or Notations

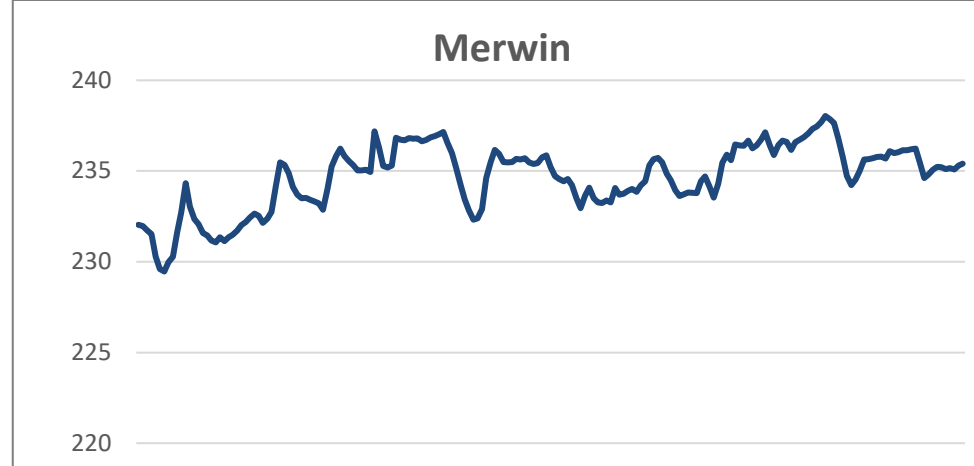
None

Reservoir Elevations

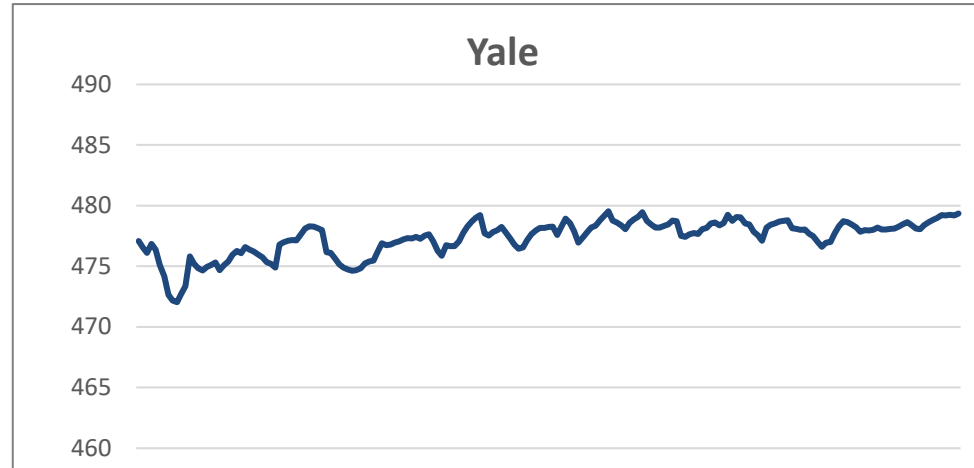
Jan 1 – July 11, 2023

Total Draft = - 30.45 feet
(-20.45 with Yale Restriction)
 Δ since May 11 = - 4.90

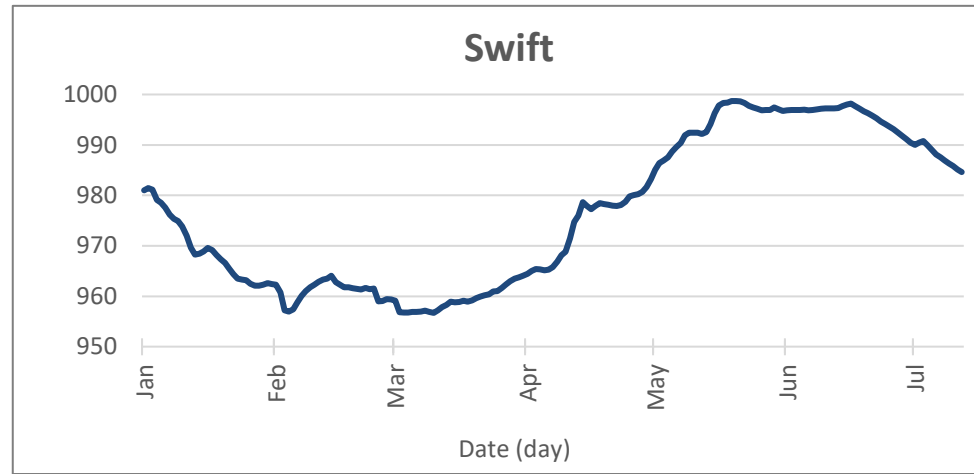
Reservoir Elevation (ft., msl)



235.20
-4.40
 Δ = +0.90



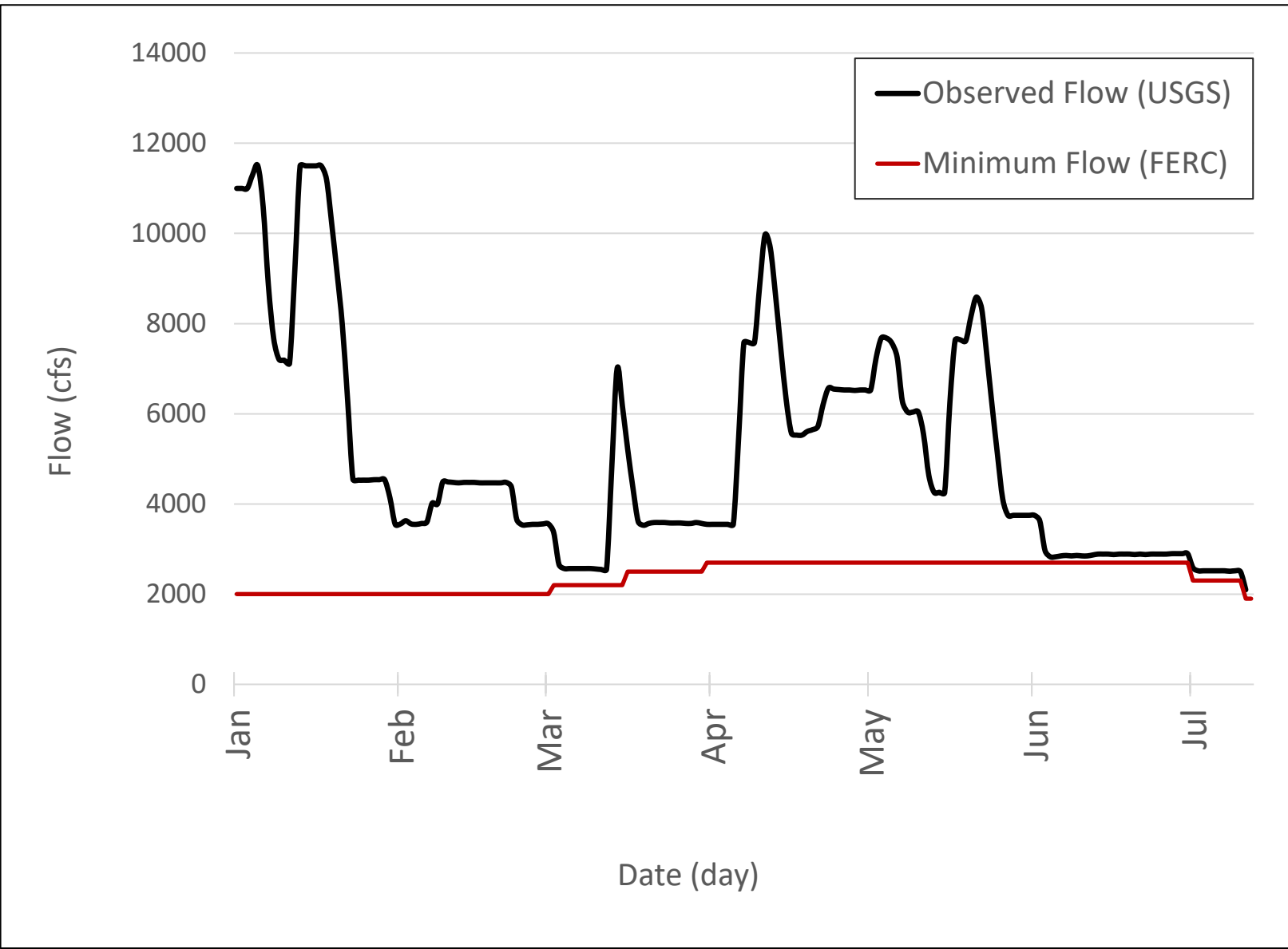
479.10
-10.86
 Δ = +1.70



984.80
-15.18
 Δ = -7.50

North Fork Lewis River Stream flow below Merwin Dam

Jan 1 – July 11, 2023

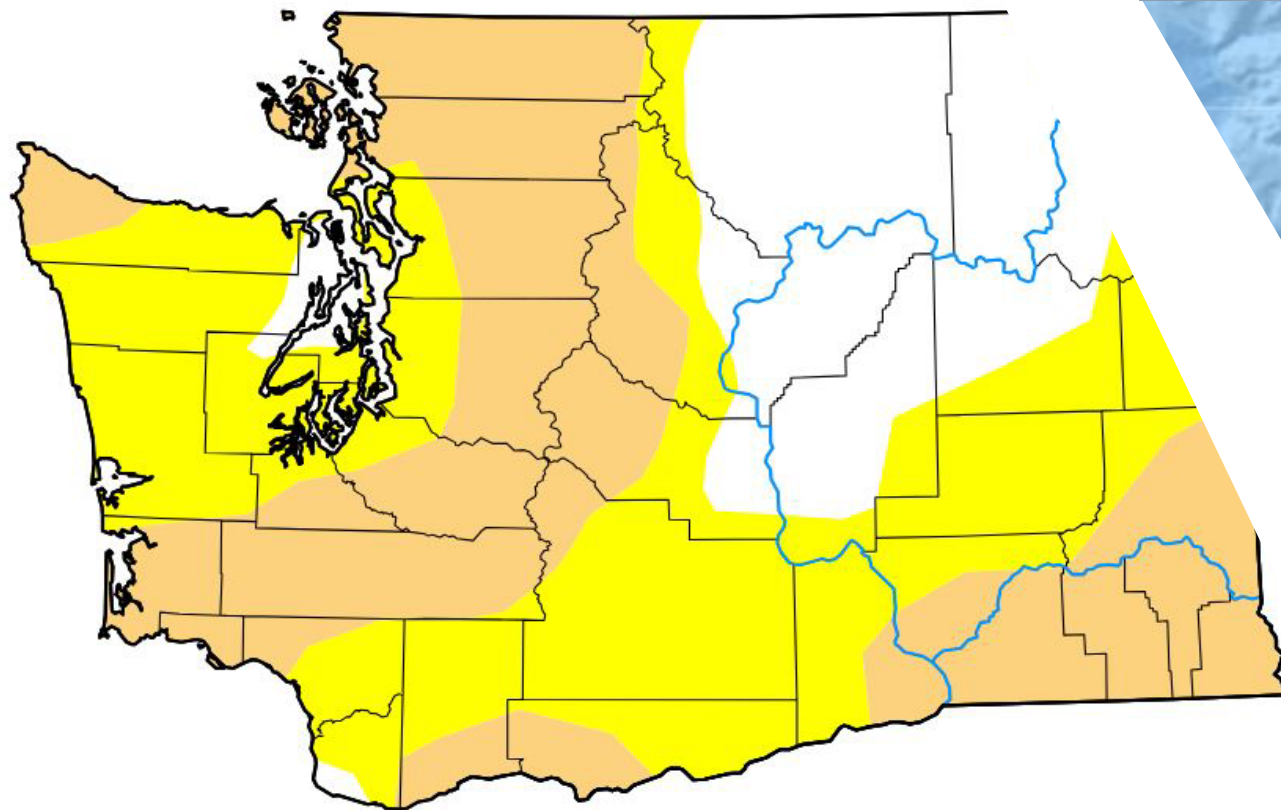


Map released: Thurs. July 6, 2023

Data valid: July 4, 2023 at 8 a.m. EDT

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

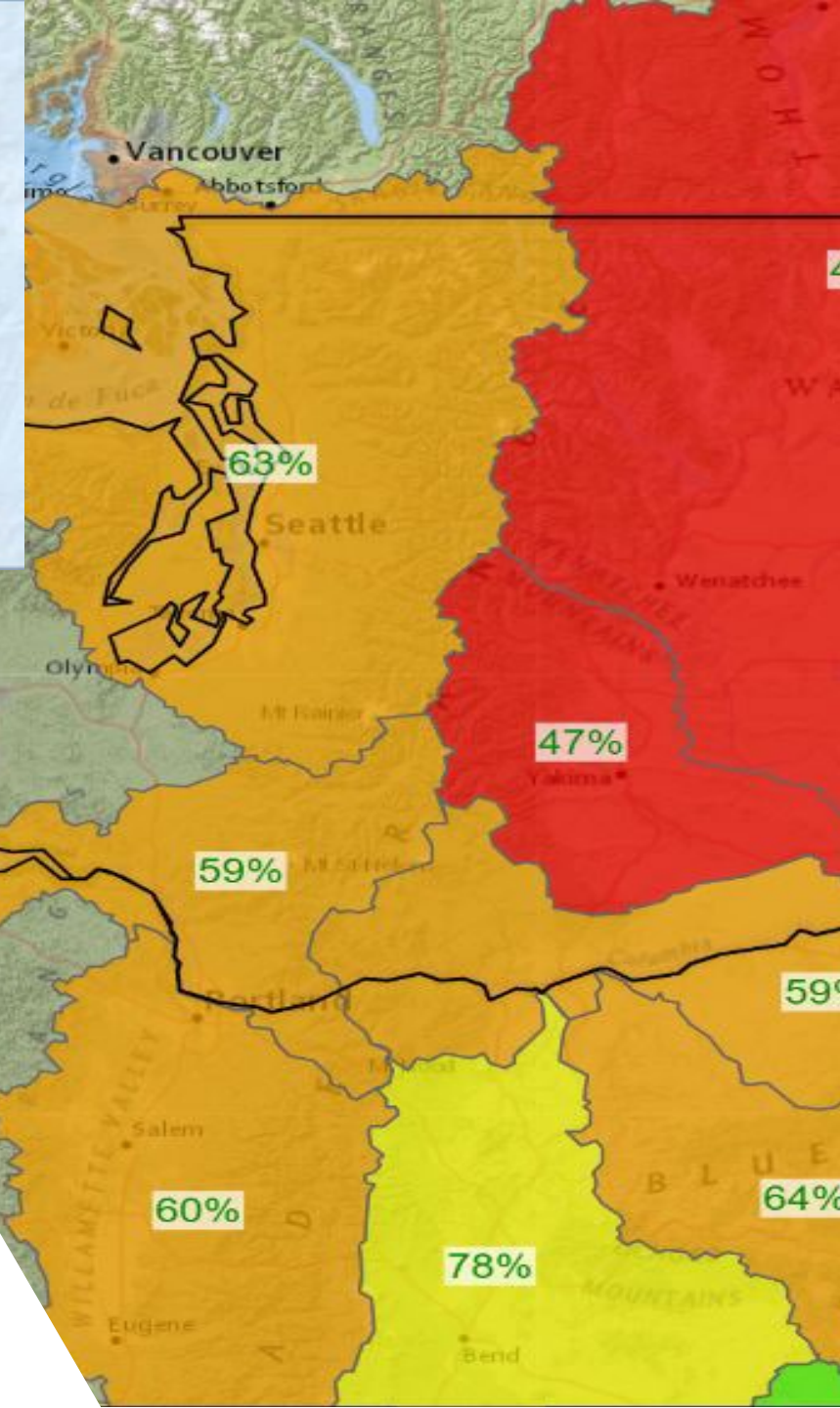


1 month Adjusted Volume - Observed
Percent NRCS 1991-2020 Average
June 1, 2023 through June 30, 2023

- ≥ 150%
- 130% - 149%
- 110% - 129%
- 90% - 109%
- 70% - 89%
- 50% - 69%
- < 50%
- No basin value

Watershed Boundaries
— Basin (6-Digit HUC)

NRCS Natural Resources Conservation Service
Created 7-12-2023, 10:19 AM PDT



Lewis River Fish Passage Report

June 2023

Merwin Fish Collection Facility and General Operations

During the month of June, 886 fish were collected at the Merwin Dam Adult Fish Collection Facility (MFCF), which was down from May's total of 2,488. Spring Chinook (n= 474) and summer steelhead (n= 402) were the primary species collected.

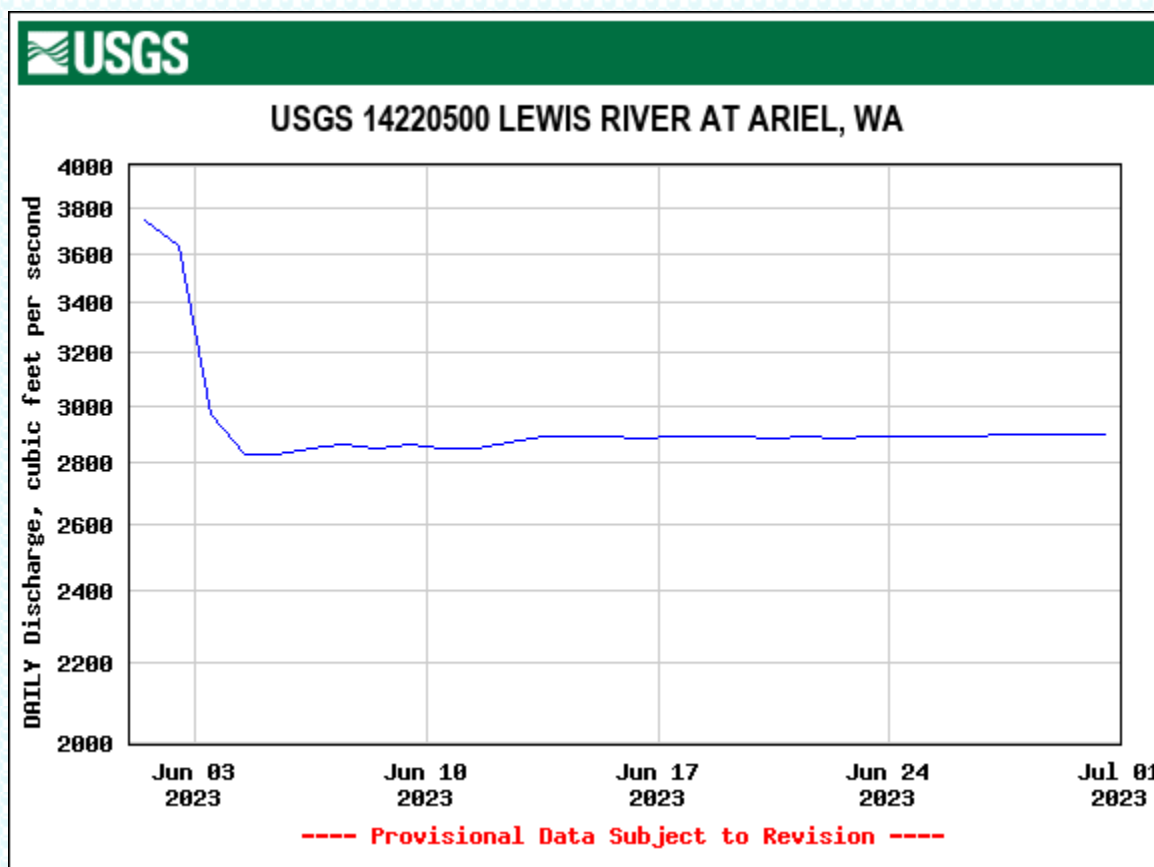


Figure 1. Flow in cubic feet per second recorded at the USGS Ariel, WA gauge (14220500) located immediately downstream of Merwin Dam.

The MFCF lift and conveyance system were taken out of service on June 19, 2023, due a faulted limit switch on the fish lift. The MFCF was returned to service the following day, after the limit switch was replaced. Flows below Merwin Dam ranged from approximately 2,800 to 3,700 cubic feet per second in June (Figure 1).

Two of the fish collected at the MFCF in June had been previously PIT-tagged. Both were winter steelhead that had been tagged in the Lewis River Basin. For calendar year 2023 to-date, a total of 38 previously PIT tagged fish have been collected at the MFCF (32 winter steelhead, three cutthroat trout, two spring Chinook, and one natural origin coho). Tagging history and detections of PIT tagged fish passing through the Lewis River Fish Passage Facilities are available through Columbia Basin PIT Tag Information System (PTAGIS).

Upstream Transport

A total of 340 adult fish were transported upstream in June, of which the majority were adult Spring Chinook (n= 332), followed by winter steelhead (n= 7), and cutthroat (n= 1). Of the fish transported upstream in June, 282 were collected at the MFCF, while 58 were captured at Lewis River Hatchery. Year-to-date in 2023, a total of 1,752 spring Chinook (1,496 HOR and 256 NOR), 808 winter steelhead (631 BWT and 177 NOR), 38 late run coho, and 29 cutthroat trout have been transported upstream of Swift Dam.

Floating Surface Collector (FSC)

The Swift Floating Surface Collector was taken offline on June 22, 2023 due to an electrical fault on one of the Sort Area Flow pumps. It was returned to service the next day on June 23, 2023, following pump repairs.

A total of 37,347 fish were collected at the Swift FSC during the month of June, which is the greatest number of fish collected in June since the commissioning of the facility (Table 1). The majority of the fish collected were juvenile coho (n= 35,610). Hatchery rainbow trout “Goldendales” (n= 641), juvenile spring Chinook (n= 585) and Steelhead (n= 377), cutthroat trout (n= 130), and Bull Trout (n= 4) made up the balance of fish collected in June. All Bull Trout were returned to Swift Reservoir. Bull Trout fork lengths were: 125 mm, 353 mm, and 600 mm. The 600 mm Bull Trout was collected twice in June (6/12 and again on 6/25).

Table 1: Total number of out-migrating juvenile salmonids (by species) collected at the Swift FSC during the month of June since 2013.

| Run Year | June Collection Numbers by Run Year at Swift FSC | | | | |
|-----------------|---|----------------|------------------|------------------|---------------|
| | Coho | Chinook | Steelhead | Cutthroat | TOTAL |
| 2013 | 5,415 | 297 | 52 | 3 | 5,767 |
| 2014 | 2,353 | 419 | 117 | 108 | 2,997 |
| 2015 | 7,192 | 300 | 152 | 68 | 7,712 |
| 2016 | 10,118 | 75 | 131 | 89 | 10,413 |
| 2017 | 6,947 | 44 | 467 | 149 | 7,607 |
| 2018 | 13,844 | 365 | 306 | 184 | 14,699 |
| 2019 | 30,603 | 2,064 | 341 | 214 | 33,222 |
| 2020 | 11,125 | 678 | 355 | 53 | 12,211 |
| 2021 | 19,278 | 503 | 390 | 75 | 20,246 |
| 2022 | 14,113 | 166 | 1,009 | 212 | 15,500 |
| 2023 | 35,610 | 585 | 377 | 130 | 36,702 |

Fish Facility Report
Swift Floating Surface Collector
June 2023

| Day | Coho | | | Chinook | | | Steelhead | | | | Cutthroat | | Bull Trout | Planted Rainbow | Total | | |
|----------------|------|------|-------|---------|------|-------|-----------|------|-------|------|-----------|--------|------------|-----------------|-------|---------|--|
| | fry | parr | smolt | fry | parr | smolt | fry | parr | smolt | kelt | fry | <13 in | | | | > 13 in | |
| 1 | 20 | | 862 | 7 | | 13 | | 1 | 53 | | | 13 | | 0 | 39 | 1008 | |
| 2 | 4 | | 1470 | 2 | 1 | 5 | | | 26 | | | 2 | | 0 | 14 | 1524 | |
| 3 | | | 1765 | 5 | | 30 | | 10 | 70 | | | 20 | | 0 | 45 | 1945 | |
| 4 | 1 | | 1759 | 1 | | 0 | | | 11 | 1 | | | | 0 | 101 | 1874 | |
| 5 | | | 4888 | | | 41 | | | 32 | | | 63 | | 0 | 116 | 5140 | |
| 6 | 5 | | 991 | | | 0 | | | 4 | | | | | 0 | 21 | 1021 | |
| 7 | 7 | | 932 | | | 11 | | | 22 | | | | | 0 | 47 | 1019 | |
| 8 | 7 | | 1366 | | | 30 | | 1 | 12 | | | 1 | | 0 | 70 | 1487 | |
| 9 | 20 | | 1826 | | | 4 | | | 0 | 1 | | 12 | | 0 | 61 | 1924 | |
| 10 | 6 | | 1590 | 7 | 7 | 0 | | | 0 | 2 | | 1 | 1 | 0 | 21 | 1635 | |
| 11 | 1 | | 1480 | | 9 | 2 | | | 2 | | | 2 | | 0 | 19 | 1515 | |
| 12 | | | 377 | | 8 | 11 | | | 20 | 2 | | 1 | | 1 | 15 | 435 | |
| 13 | 4 | | 1201 | | 1 | 2 | | | 2 | | | 1 | | 1 | 11 | 1223 | |
| 14 | 6 | | 2460 | | 1 | 34 | | 1 | 2 | | | | 1 | 0 | 25 | 2530 | |
| 15 | 5 | | 474 | 13 | | 5 | | | 1 | | | | | 0 | 1 | 499 | |
| 16 | | | 545 | 3 | 1 | 37 | | | 10 | 2 | | | | 0 | 2 | 600 | |
| 17 | | | 217 | 6 | 2 | 2 | | | 1 | 1 | | | | 0 | 0 | 229 | |
| 18 | 1 | | 450 | 2 | | 2 | | | 0 | | | 1 | | 0 | 0 | 456 | |
| 19 | 3 | | 177 | 2 | | 10 | | 1 | 10 | 2 | | 1 | | 0 | 1 | 207 | |
| 20 | 1 | | 620 | 9 | 2 | 0 | | | 0 | 1 | | | | 0 | 0 | 633 | |
| 21 | | | 216 | | 3 | 10 | | | 0 | | | | | 0 | 0 | 229 | |
| 22 | | | | | | | | | | | | | | | | | |
| 23 | 10 | 3 | 762 | 3 | 2 | 2 | | | 14 | 2 | | 7 | | 0 | 3 | 808 | |
| 24 | 6 | 5 | 775 | 9 | 13 | 16 | | | 1 | | | | | 0 | 0 | 825 | |
| 25 | 6 | 3 | 1781 | 8 | 12 | 8 | | | 20 | | | | | 1 | 2 | 1841 | |
| 26 | 10 | | 1456 | 6 | | 58 | | | 34 | | | | | 0 | 23 | 1587 | |
| 27 | 1 | 3 | 2651 | 5 | 7 | 13 | | | 0 | | | 1 | | 0 | 4 | 2685 | |
| 28 | | | 1387 | 2 | 24 | 0 | | | 1 | | | 1 | | 1 | 0 | 1416 | |
| 29 | | | 553 | 1 | 3 | 25 | | | 1 | | | 1 | | 0 | 0 | 584 | |
| 30 | | 1 | 440 | | | 27 | | | 0 | | | | | 0 | 0 | 468 | |
| Monthly | 124 | 15 | 35471 | 91 | 96 | 398 | | | 349 | 14 | | 128 | 2 | 4 | 641 | 37347 | |
| Total | 321 | 5083 | 62064 | 233 | 138 | 2546 | | 2 | 43 | 4319 | 31 | 499 | 48 | 10 | 2019 | 77356 | |