LEWIS RIVER AQUATIC COORDINATION COMMITTEE

Facilitator: ERIK LESKO
503-412-8401

Location: MERWIN HYDRO CONTROL CENTER
105 MERWIN VILLAGE COURT
ARIEL, WA 98603

Date: February 13, 2020

Time: 9:30 AM – 1:00PM

Agenda Items

9:30 a.m.	Welcome ➢ Review Agenda, ACC 12/12/19 & 1/9/20 Meeting Notes ➢ Comment & Accept Agenda, 12/12/19 & 1/9/20 Meeting Notes
9:40 a.m.	Public Comment Opportunity
9:45 a.m.	Draft Applications for FERC License Amendments 90-day review: ➢ Overview (PacifiCorp) ➢ Draft In-Lieu Monitoring Plan Presentation (Dr. Phil Roni)
11:00 a.m.	**Break**
11:15 a.m.	ACC Structure and Ground Rules Discussion
12:00 p.m.	**Lunch (Working Lunch)**
12:15 p.m.	Study/Work Product Updates o In Lieu Update o 2019/2020 Aquatic Fund Process Update o Flows/Reservoir Conditions Update o ATS Update o Saddle Dam Seismic Project Update o Fish Passage update
12:45 p.m.	➢ Next Meeting's Agenda ➢ Public Comment Opportunity Note: all meeting notes and the meeting schedule can be located at: https://www.pacificorp.com/energy/hydro/lewis-river/acc-tcc.html
1:00 p.m.	**Meeting adjourn**

PLEASE BRING YOUR LUNCH

Join by phone

(503) 813-6614 (US)	English (United States)
(503) 813-5252 [Portland, OR] (US)	English (United States)
(855) 499-5252 [Toll-Free] (US)	English (United States)

Conference ID: 5803472

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
February 13, 2020
Merwin Hydro Control Center

ACC Representatives Present (18)
Kim McCune, PacifiCorp
Chris Karchesky, PacifiCorp
Erik Lesko, PacifiCorp
Jeremiah Doyle, PacifiCorp
Todd Olson, PacifiCorp
Mark Ferraiolo, PacifiCorp
Jim Byrne, Trout Unlimited
Bryce Glaser, WDFW
Peggy Miller, WDFW
Josua Holowatz, WDFW
Steve West, LCFRB
Steve Manlow, LCFRB
Joshua Ashline, NMFS
Ruth Tracy, USFS
JD Jones, USFS
Tim Romanski, USFWS
Eli Asher, Cowlitz Indian Tribe
Amanda Froberg, Cowlitz PUD

Guests (2)
Kevin Malone, DJ Warren and Associates
Phil Roni, Cramer Fish Sciences

Calendar:

March 12, 2020	ACC Meeting	Merwin HCC

Assignments from February 13, 2020	**Status**
Lesko/Froberg - Incorporate ACC requested edits into the Terrestrial and Aquatic Coordination Committees Structure and Ground Rules document	
Lesko – Develop decision template using Cowlitz template as an example	

Parking Lot Items	**Status**
Tracy: Stage 0 webinar PowerPoint presentation to ACC. As of 11/14/19 Tracy is asking for an update from USFS staff regarding timeline for presentation in early winter 2020 or spring 2020.	**Tentative**

Opening, Review of Agenda and Meeting Notes
Erik Lesko (PacifiCorp) called the meeting to order at 9:32am and reviewed the agenda. The following two (2) items will be added to the agenda:

- Saddle Dam Seismic Project Update
- ATS Update

Lesko also reviewed the December 12, 2019 and January 9, 2020 meeting notes. The ACC approved the December 12th and January 9th meeting notes with WDFW edits at 9:50am.

Public Comment
None

Draft Applications for FERC License Amendments 90-day Review
Overview
Todd Olson (PacifiCorp) informed the ACC attendees that the Utilities have assembled draft applications for License amendments, posted them to PacifiCorp's website and mailed copies to the SA parties on February 5, 2020 for a 90-day review period (by May 13, 2020). The Utilities will then put together final applications with a target date of June 2020. The final will include a comment/response matrix identifying any comments received on the draft documents and the Utilities responses. The formal process with the FERC begins after the FERC submittal. The FERC will issue a public notice and will solicit public comments. PacifiCorp does not know the period of time the FERC provides for the public comment period.

Josh Ashline (NMFS) mentioned briefly that NMFS issued a letter (**Attachment B**) this month regarding the ADR process and if the ACC had any questions to contact him directly. Ashline further noted that if parties wish to have a second ADR meeting they should contact NMFS.

Olson noted that the draft implementation, draft monitoring and draft bull trout plans have been revised per comments received from NMFS in 2019 and in further consideration of comments provided by the ACC at the committee meeting in August 2019. The draft monitoring plan will be reviewed today.

Representatives from WDFW and Cowlitz Indian Tribe expressed confusion about the ACC review process and would like clarification before the documents are submitted to the FERC. What is the process of engagement and approval of next steps? Bryce Glaser (WDFW) expressed that a 90 day review period followed by a comment/response matrix did not seem to constitute ACC approval as outlined in the pre-decision letter from NMFS. After discussion, it was determined the approval process should be a future agenda topic for more discussion by the ACC.

Olson noted the documents are available for 90-day review and the Utilities are willing to have additional presentations on the draft plans or have discussions on the plans.

Steve Manlow, LCFRB, is trying to understand the context and scope of the 90-day review. He is concerned there will be a material impact on fish recovery due to a delayed decision on Yale. He did not see that issue addressed in the documents. This is a huge gap; concerned the documents are too narrow in scope.

PacifiCorp would like to move forward with securing ACC approval before the FERC submittal.

Draft In-Lieu Monitoring Plan Presentation: (Dr. Phil Roni - Cramer Fish Sciences)
Dr. Phil Roni, Cramer Fish Sciences provided a PowerPoint presentation outlining the revisions incorporated into the Draft In-Lieu Monitoring Plan as a result of ACC comments/questions received and to address the following components:

- Overview of the key components of plan
- The approach for reach and population level monitoring
- Discuss challenges to design and implementation
- Get input on optimal approach

The presentation in its entirety is attached to these meeting notes and located at the following link on the Lewis River website:
/content/dam/pcorp/documents/en/pacificorp/energy/hydro/lewis-river/license-implementation/acc/02132020%20In%20Lieu%20PP%20presen.pdf

Roni reviewed three (3) major types of monitoring:

Monitoring types	Objectives	Examples
Implementation (compliance)	**Determines if project was implemented as planned**	**Did contractor place number and size of logs as described in plan?**
Effectiveness	**Determines if actions had desired effects on watershed, physical processes, or habitat**	**Did pool area increase?**
Validation	**Evaluates whether the hypothesized cause and effect relationships between restoration action and response (physical or biological) were correct**	**Did change in pool area lead to desired change in fish or biota abundance?**
* Status and trend monitoring can also provide useful information on project effectiveness		

The goal of the In Lieu plan is to increase adult Chinook salmon, coho salmon, and winter steelhead abundance in the North Fork of the Lewis River (Support Settlement Agreement Outcome Goal)
"Achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations."

Roni addressed monitoring approaches and designs to include Reach scale monitoring, designs, replication, parameters, protocols and selecting controls and treatments.

Reach Scale - Parameters and Protocols

Restoration Type	Survey type (protocol)	Parameters and metrics
Large wood placement	Large wood	Number, length, width, volume, location, function
	Channel morphology and topography	Habitat type (e.g., pool, riffle, glide, cascade), area, and volume, residual pool depth
	Snorkel surveys	Juvenile fish abundance by species (fish/m^2) (Summer and Winter)
Floodplain restoration	Large wood	Number, length, width, volume, location, function
	Channel morphology and topography	Habitat type, area, and volume, residual pool depth; MQI, change in DEM, geomorphic change, GUT; side channel length, area, number of junctions, ratio, wetted area at bankfull flow
	Snorkel surveys	Juvenile fish abundance by species (fish/m^2) (Summer and Winter)
Road removal	Channel Morphology/Long-profile	Residual pool depth, Long-profile habitat survey
	Sediment (egg boxes, bulk samples, pebble counts)	Percent fines bulks samples, depth to fines (V*), scour and fine sediment infiltration, sediment size
Riparian planting	Plant survival	Planting survival, growth, browse damage

To finalize this plan prior to implementation, the Lewis River In-Lieu Plan (ILP) must be completed (Post FERC Orders). That final ILP will select location and type of restoration treatments. The final monitor design is dependent on specifics of ILP, will finalize monitoring actions based on specifics of ILP, will refine field methods and sampling methods, and identify information to be collected for baseline/pre-project status.

Several questions were asked regarding the ability of the plan to address and detect a population level response. Discussion included concern about the ability of the plan to meet the intent of the NMFS pre-decision letter. WDFW indicated that more clarification may be needed from NMFS regarding the intent of the pre-decision letter for the ACC to determine if the proposed plan will meet objectives.

<Break & working lunch 12:10pm>
<Reconvene 12:35pm>

ACC Structure and Ground Rules Discussion
In response to a request from Bryce Glaser (WDFW) the ACC is reviewing the Terrestrial and Aquatic Coordination Committees Structure and Ground Rules document (link to document is provided below) with a goal of creating a more comprehensive decision making and tracking process for substantive decisions and comments.
https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/hydro/lewis-river/license-implementation/meetings/12152017_FINAL_CC_ground_rules_Utilities.pdf

Glaser provided two (2) examples of an issue paper and a decision document (**Attachment C**) for ACC review that can be modified to suit the needs of the ACC. The ACC wish to add the following as the initial first draft of edits:

- On page 5 (Meeting Notes) add a timeline for an ACC/TCC representative to submit substantive comments i.e., 8 days before the next ACC or TCC meeting

- Consider placing the decision document on the Lewis River website as a separate document from the meeting notes
- Add language in Decision Making paragraph (pg. 7) that speaks to Decision/Issue documents
- The ACC agreed that a decision making document is not required for every decision
- Chairperson asks for a formal vote at each meeting, when needed
- Need to establish Subgroup/Subcommittee ground rules and add to the larger ACC/TCC ground rules document.

Study/Work Product Updates

Saddle Dam Seismic Project Update
The ACC requested information about the Yale reservoir drawdown for seismic concerns and dam safety. The ACC became aware of the issue when The Columbian published the information on January 16, 2020. The article indicates FERC was notified of the change in pool height in late November.
Olson shared with the ACC that PacifiCorp is working with the FERC constantly to review the integrity of the dams. Given a recent evaluation of the Yale Saddle Dam, at FERC instruction (November 2019), PacifiCorp has lowered the Yale full pool elevation from 490 feet to 480 feet as a precaution. PacifiCorp dam safety engineers are working on remediation and reviewing reservoir operations.

The following update was made available for the public after release of The Columbian news article: Dam safety is a commitment that PacifiCorp takes very seriously and thorough evaluations of our dams are performed on a routine basis to ensure they remain safe. Such an evaluation was recently performed on the Yale Saddle Dam, located on the North Fork of the Lewis River. Our evaluation identified soils beneath the dam that could possibly be impacted during a significant earthquake and potentially lead to damaging the dam.

PacifiCorp is presently at work with industry experts to develop a remediation plan and implement necessary seismic upgrades by the end of 2023. As a precautionary measure, PacifiCorp is limiting the maximum operating level of Yale Reservoir to a target level that is about 10 feet below its current maximum operating level of 490 above sea level. This 10 feet of additional clearance space will greatly reduce the likelihood of water being released from the dam in the event a significant earthquake occurs prior to the completion of the seismic upgrades. PacifiCorp understands there may be some impacts to recreational activities on the Yale reservoir until these seismic upgrades can be performed. PacifiCorp is proud to offer the recreational benefits that Yale Reservoir provides to the local area and we will work to minimize those impacts as we complete these project upgrades.

Flows/Reservoir Conditions Update
Olson informed the ACC attendees that at the end of January 2020 there was a 7Q10 event; natural inflow was over 33,000 cfs into Merwin. During the event, PacifiCorp released a total combined outflow of 20,000 cfs at Merwin. We also needed to drop the fish barrier net at Yale during the high flows, but its back up now. As of February 13th, flows are back at 9,000 cfs at Merwin; full operations at the powerhouse without spill. There is also currently 38’ of hole in the reservoirs – 19’ Yale, 17’ Swift and 2’ for additional storm storage capacity.

H&S/ATS Update
Lesko informed the ACC attendees that PacifiCorp is submitting the Draft H&S Plan to DJ Warren next week. DJ Warren will have a minimum of 60 days to complete their Comprehensive Review. The ATS will then incorporate recommendations from the Comprehensive Review and then distribute the revised draft plan to the ACC for a 60-day review and comment period. The ATS will incorporate comments and submit the plan to the FERC pending approval from the Services.

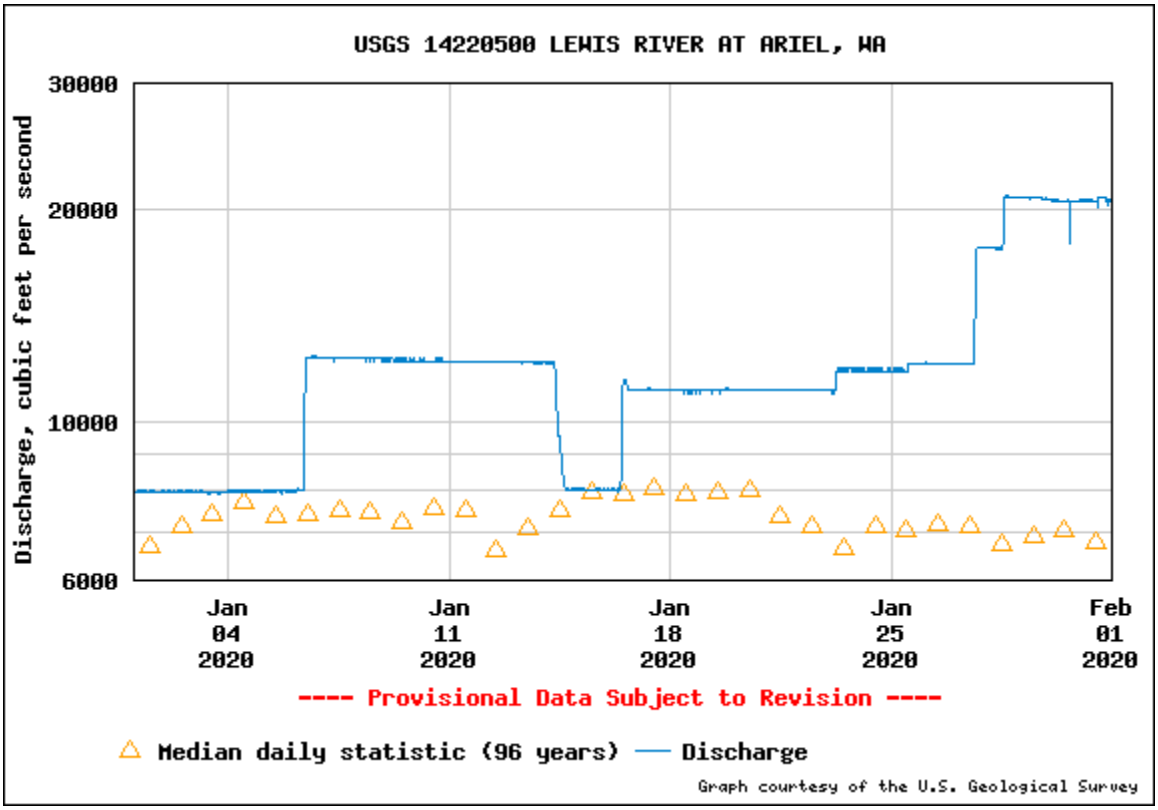
A site visit was conducted last week with PacifiCorp and WDFW staff to determine the feasibility of installing one of the lower river screw traps in an alternate location. The location (Lower Golf Course site) which is directly across from the Golf Course Boat Ramp was found to be feasible for installing a single 8 foot trap. PacifiCorp will work with its Contractor and possibly WDFW to install the trap in the new location for the 2020 trapping season. In addition, there will still be one trap at the existing (Upper) Golf Course site.

Merwin Fish Collection Facility and General Operations (Attachment D)
During the month of January, a total of 410 fish were captured at the Merwin Dam Adult Fish Collection Facility (MFCF). The majority of these fish were winter steelhead (95.1%).

The Merwin Dam Fish Collection Facility ran continuously from January 1st-January 27th, when it was taken out of operation due to the extended high flow spill event at Merwin Dam. This spill event created water levels that exceed the upper limit for safe operation of the fish lift and conveyance system. The Merwin trap will soon be placed back into service as water levels are returning to safe operating levels. Because the majority of fish that were being collected were of hatchery origin, PacifiCorp implemented a 5 day per week fish transport schedule starting on December 28th, and continued that schedule through the month of January. Under this schedule, the crowder and fish lift remain in operation 7 days per week, with fish sorting and transport taking place Monday through Friday. Flow downstream of Merwin Dam fluctuated between 7,950-12,200 cfs between January 1st-27th. Flow then increased to approximately 20,500 cfs, where it remained for the remainder of the month. (Table 1).

Karchesky (PacifiCorp) provided a brief update on the status of the Merwin Trap. He reminded ACC members that operation of the Merwin Trap lift and conveyance system was suspended on January 30, 2020 due to high flows at Merwin Dam (>20,000 cfs). This was a preventative measure and for safety. *Note: The trap was returned to service on February 14, 2020 after minor damage caused by the high water was repaired.*

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



Upstream Transport (Attachment D)

Three (3) Blank Wire Tag (BWT) winter steelhead were captured by the end of December 2019 and were transported upstream as part of the 2020 run year. An additional fourteen (14) BWT's were taken upstream in January 2020 for a total of 17 BWT winter steelhead transported as part of the 2020 run year. Two (2) winter steelhead of natural origin (NOR) containing PIT tags from the upper basin were also collected and transported upstream, for a combined total of 19 adult winter steelhead transported upstream of Swift Dam (Table 2). In addition to the steelhead, eleven coho and four cutthroat have been collected and transported upstream of Swift Dam in 2020.

Table 2. Total number of adult winter steelhead transported upstream of Swift Dam by run-year.

Run Year	Male	Female	Total adult winter steelhead taken upstream of Swift Dam
2012	141	48	**189**
2013	440	301	**741**

2014	452	581	**1,033**
2015	746	477	**1,223**
2016	378	376	**754**
2017	331	261	**592**
2018	682	535	**1,227**
2019	527	486	**1,013**
2020	10	9	**19**

Swift Floating Surface Collector (Attachment D)
The Swift Reservoir Floating Surface Collector (FSC) did not operate during the month of January. The FSC was turned off on December 19, 2019 so that the trestle stairs could be replaced, and modifications could be made to the starboard side smolt flume. Due to the construction schedule for these projects, the FSC will likely remain out of service until late February.

Karchesky (PacifiCorp) provided a brief update on the Swift FSC, and reminded ACC members that the Swift FSC was currently off due to a number of construction projects scheduled in January and February 2020. Karchesky mentioned that PacifiCorp would continue to keep the ACC informed as these projects move forward. All construction actives are planned to be complete by March, 1, 2020.

Other
Jim Byrne (Trout Unlimited) communicated to the ACC attendees that the ACC is not tracking assignments well and wants improvement. The ACC will have further discussion regarding needed edits to the ACC/TCC structure and ground rules document relative to improved decision and assignment tracking.

Aquatic Fund Review Schedule
Four (4) full proposals are due were received by the due date of February 3, 2020. PacifiCorp posted the proposals to its website and circulated to the ACC on February 4, 2020. Evaluation Criteria documents are due to PacifiCorp by close of business on or before Friday, March 6, 2020.

Agenda items for March 12, 2020
- Review February 13, 2020 Meeting Notes
- Lewis River Aquatics Fund; PROJECT SELECTION
- ACC Structure and Ground Rules; Review edits
- NOR WWSTD Decision
- In Lieu Update - Discussion about ACC Approval of in-lieu plans
- Study/Work Product Update

Adjourn 2:10pm

Next Scheduled Meeting:

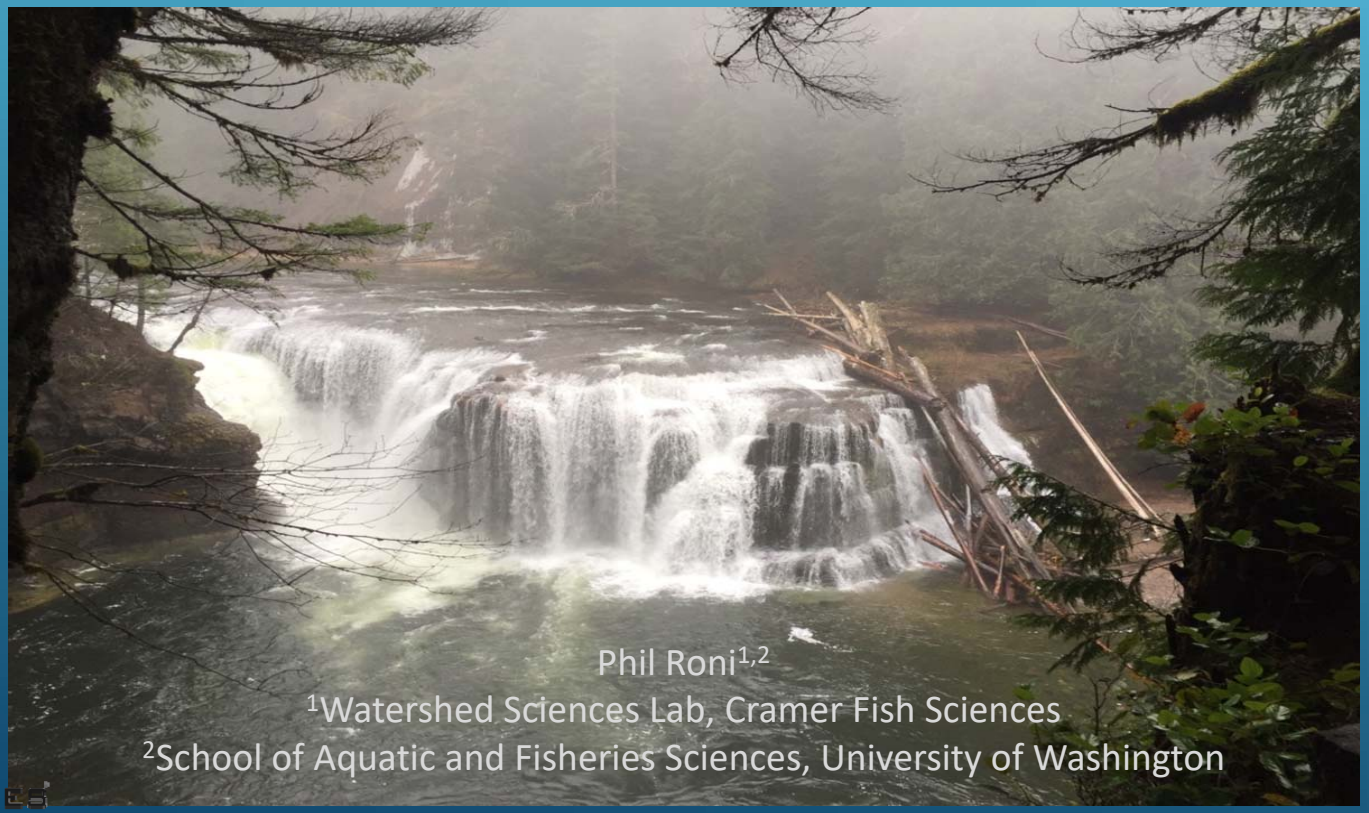
March 12, 2020
Merwin Hydro Control Center
9:30 a.m. – 2:00 p.m.

Meeting Handouts & Attachments:

- Meeting Notes from 12/12/19 & 1/9/20
- Agenda from 2/13/20
- **Attachment A** – Draft Lewis River Basin Implementation Monitoring Plan for the In Lieu Restoration Plan PowerPoint, Phil Roni – Cramer Fish Sciences
- **Attachment B** – NMFS Lewis River ADR Response to Disputants, dated February 7, 2020
- **Attachment C** – Sample Decision Documents as provided by WDFW
- **Attachment D** - Lewis River Fish Passage Report (January 2020)

Draft Lewis River Basin Implementation Monitoring Plan

for the In Lieu restoration Plan

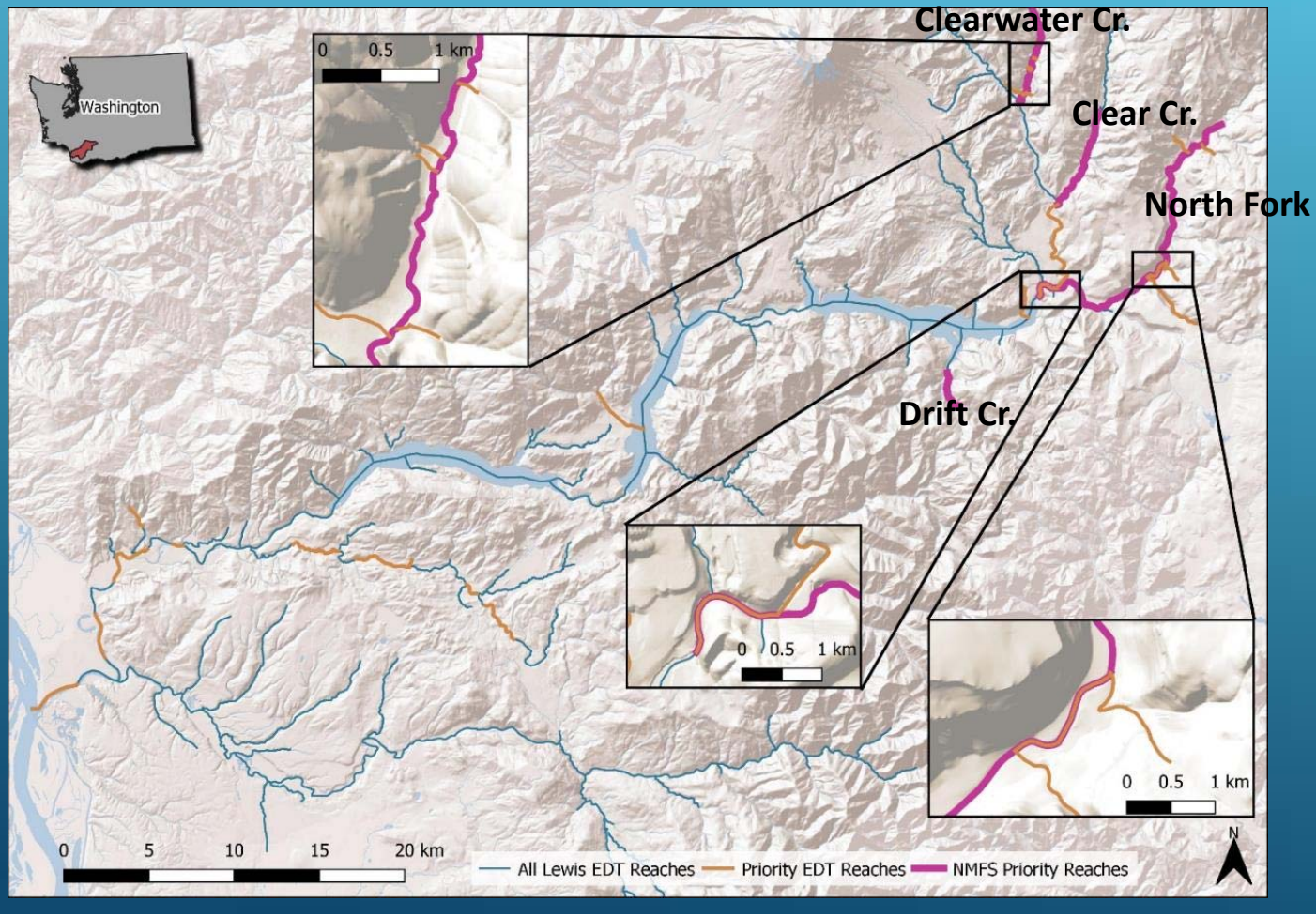


Phil Roni[1,2]
[1]Watershed Sciences Lab, Cramer Fish Sciences
[2]School of Aquatic and Fisheries Sciences, University of Washington

Goals of Monitoring Plan Presentation

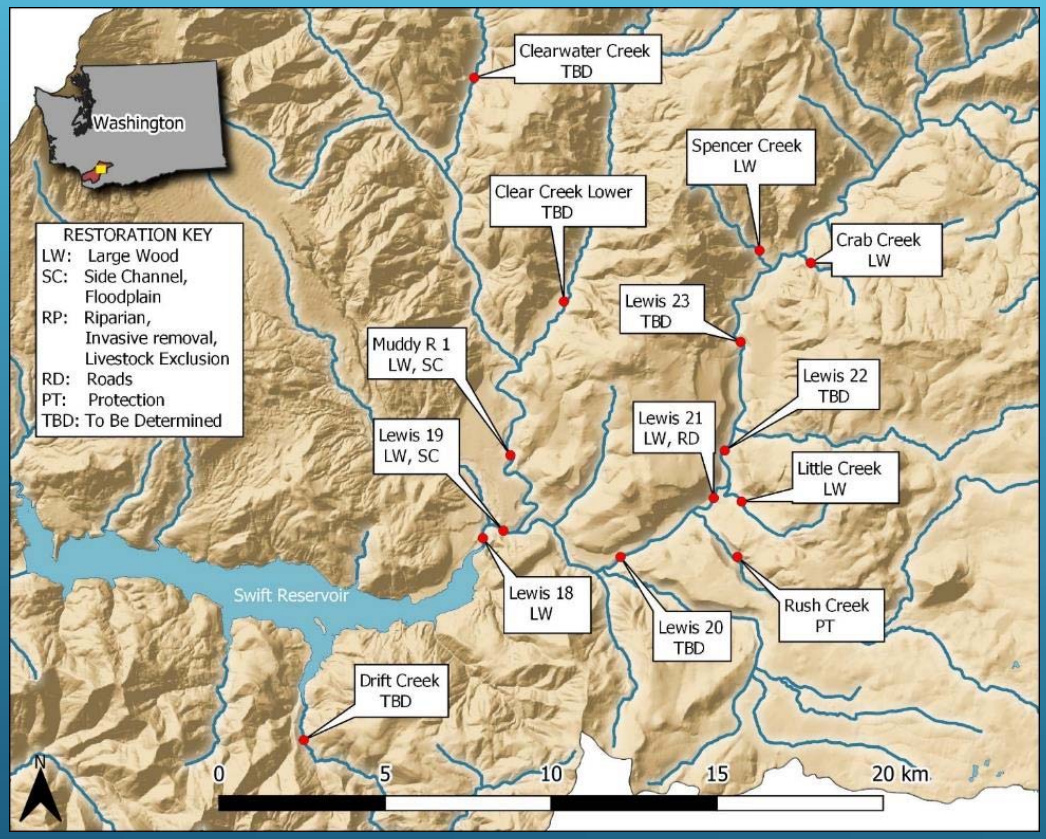
- Overview of the key components of plan
- Our approach for reach and population level monitoring
- Discuss challenges to design and implementation
- Get your input on optimal approach

In Lieu Habitat Restoration Plan



Initial Proposed Restoration Treatments

- Floodplain restoration to create and reconnect side channels
- Large wood (LW) placement to increase pools, complexity, & cover
- Riparian planting to increase* shade and organic material
- Road removal or restoration to* reduce instream sediment



*not initially identified above Swift

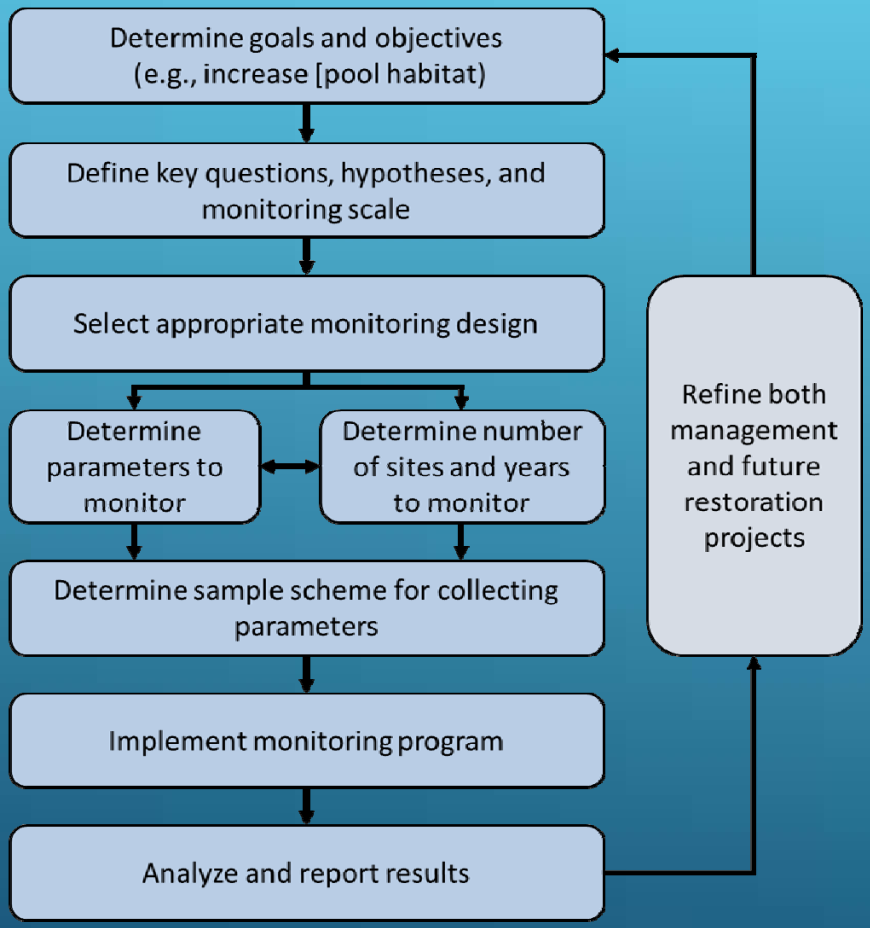
Implementation Monitoring

Monitoring types	Objectives	Examples
Implementation (compliance)	**Determines if project was implemented as planned**	**Did contractor place number and size of logs as described in plan?**
Effectiveness	**Determines if actions had desired effects on watershed, physical processes, or habitat**	**Did pool area increase?**
Validation	**Evaluates whether the hypothesized cause and effect relationships between restoration action and response (physical or biological) were correct**	**Did change in pool area lead to desired change in fish or biota abundance?**

* Status and trend monitoring can also provide useful information on project effectiveness

Outline – Monitoring Plan

- Goals
- Questions
- Design(s)
- Parameters
- Implementation
- Reporting
- Next steps



Roni and Beechie 2013

Goals – In Lieu Plan

- Increase adult Chinook salmon, coho salmon, and winter steelhead abundance in the North Fork of the Lewis River (Support Settlement Agreement Outcome Goal)

"Achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimum viable populations."

Objectives – ILP Monitoring Program

- Determine whether restoration projects were built as intended and have met their design and physical habitat objectives, both at the project level and reach scale.

- Determine reach-scale response of juvenile salmonids to habitat restoration actions and population level response of smolts and adults to habitat improvement actions above Swift

- Determine if restoration has improved habitat conditions enough to produce increases in salmon and steelhead estimated by the EDT model

- Help inform decision about passage into Yale

Monitoring Questions

Implementation - Was each project implemented as originally designed and if not, why? (project scale)

Effectiveness - Did each project have the desired physical response within the target time frame, e.g., 3-5 years post-treatment? (project scale)

Effectiveness - Is the suite of projects implemented within a reach (~2 to 10 kilometers in length) leading to desired improvements in physical habitat (pool and side channel area) across response reaches? (reach scale)

Validation Monitoring

- Validation - Has the number of juvenile fish increased in restored vs. unrestored reaches in summer or winter? (Floodplain and LW projects – reach scale)

- Validation - Has restoration led to improvements in habitat to support juveniles and adults as predicted by EDT model? (reach scale)*

- Validation - Has habitat restoration significantly increased the numbers of smolts, successful spawners, and smolts/spawner in the Swift Basin? (population level)*

* Added in response to comments

Monitoring Approaches and Designs

Strength	Multiple before-after control-impact (mBACI)	Extensive post-treatment (EPT)	Intensively monitored watershed (IMW)	Hybrid
Can examine interannual variation in response?	Yes	No	Yes	Yes
Provides info on why some projects are more effective than others?	Yes	Yes	No	Yes
Results are broadly applicable?	Yes	Yes	No	Yes
Requires standardized data collection?	Yes	Yes	Yes	Yes
Length of monitoring (years)	5+	1-3	15+	3+
Cost (low, medium, or high)	H	M	H	M
Level (scale) of inference	Project & Program	Program	Program	Program

Roni et al. 2018

Project and Reach Scale Monitoring

Reach Scale – Designs and Replication

Restoration type	Question	Design	Scale	Years	Sites
Large wood	Implementation	BA	Project (site)	-1, 1	All (10+)
	Effectiveness	BACI	Reach	-1, 3, 5	All (10+)
	Validation (fish)	EPT	Reach	5	All (10+)
Floodplain	Implementation	BA	Project (site)	-1, 1	All (10+)
	Effectiveness	BACI	Reach	-1, 3, 5	All (10+)
	Validation (fish)	EPT	Reach	5	All (10+)
Road removal	Implementation	BA	Project (site)	-1, 1	All
	Effectiveness	BA	Reach	-2, -1, 3, 5, 10	All
Riparian planting	Implementation	BA	Project (site)	-1,1	All
	Effectiveness	BA	Reach	-1,3, 5, 7, 10	All

Reach Scale - Parameters and Protocols

Restoration Type	Survey type (protocol)	Parameters and metrics
Large wood placement	Large wood	Number, length, width, volume, location, function
	Channel morphology and topography	Habitat type (e.g., pool, riffle, glide, cascade), area, and volume, residual pool depth
	Snorkel surveys	Juvenile fish abundance by species (fish/m^2) (Summer and Winter)
Floodplain restoration	Large wood	Number, length, width, volume, location, function
	Channel morphology and topography	Habitat type, area, and volume, residual pool depth; MQI, change in DEM, geomorphic change, GUT; side channel length, area, number of junctions, ratio, wetted area at bankfull flow
	Snorkel surveys	Juvenile fish abundance by species (fish/m^2) (Summer and Winter)
Road removal	Channel Morphology/Long-profile	Residual pool depth, Long-profile habitat survey
	Sediment (egg boxes, bulk samples, pebble counts)	Percent fines bulks samples, depth to fines (V*), scour and fine sediment infiltration, sediment size
Riparian planting	Plant survival	Planting survival, growth, browse damage

Reach Scale – Selecting Controls and Treatments

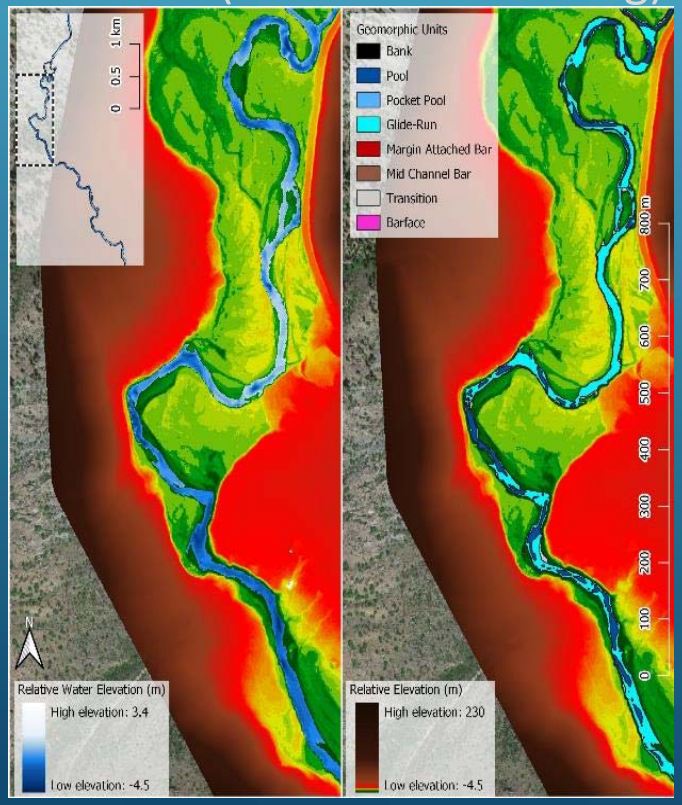
- Depends in part on final location of restored reaches so needs to be done as soon as restoration locations are confirmed

- Paired treatments and controls would be selected in each stream, valley segment, or reach

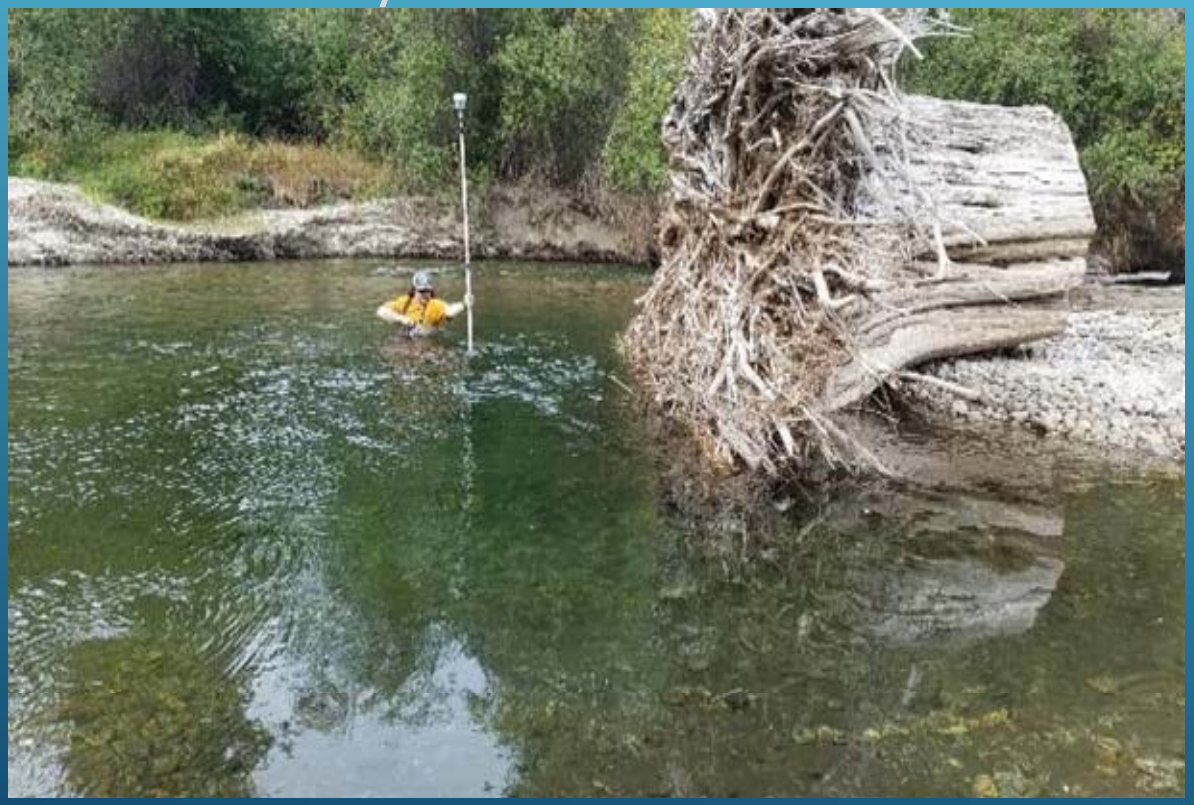
- Reaches need to be similar in reach type, confinement, land-use, habitat condition, flow etc.

Reach Scale Methods – Remote sensing + traditional methods

- Lidar (drone or fixed wing)

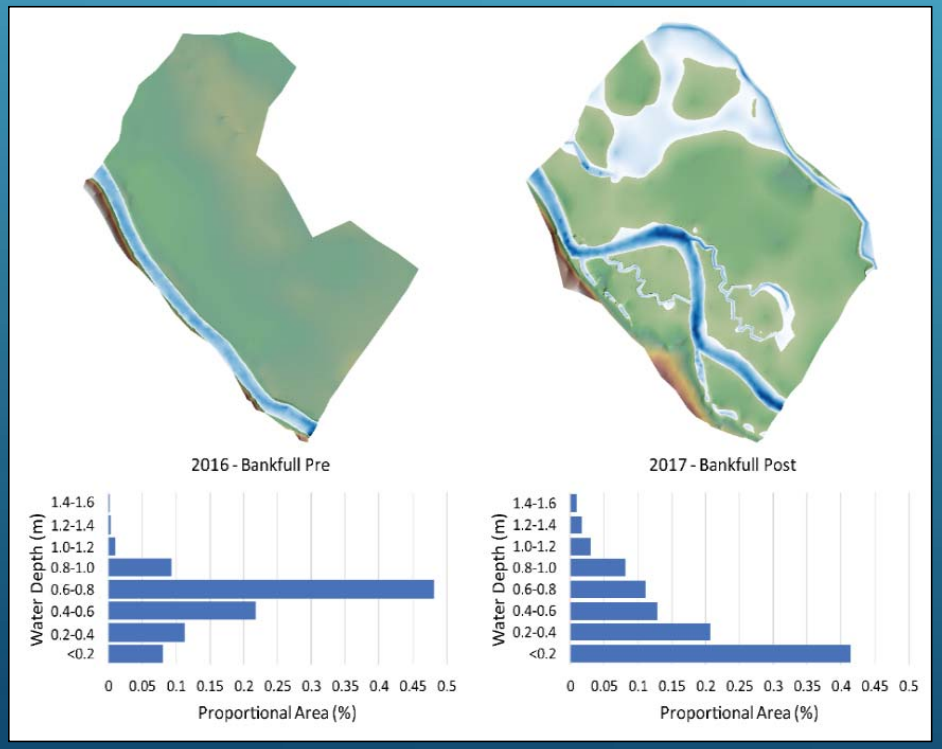


- Field surveys

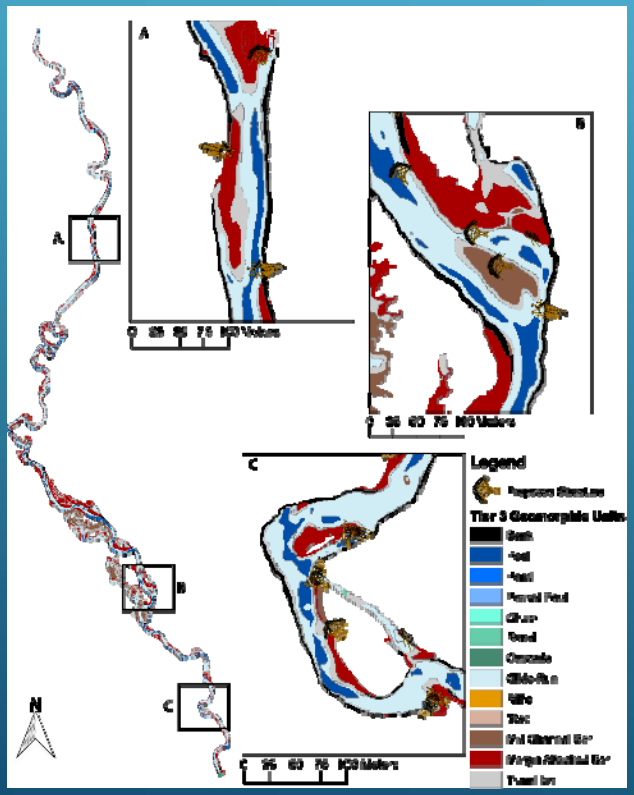


Example - Examining Topographic Data

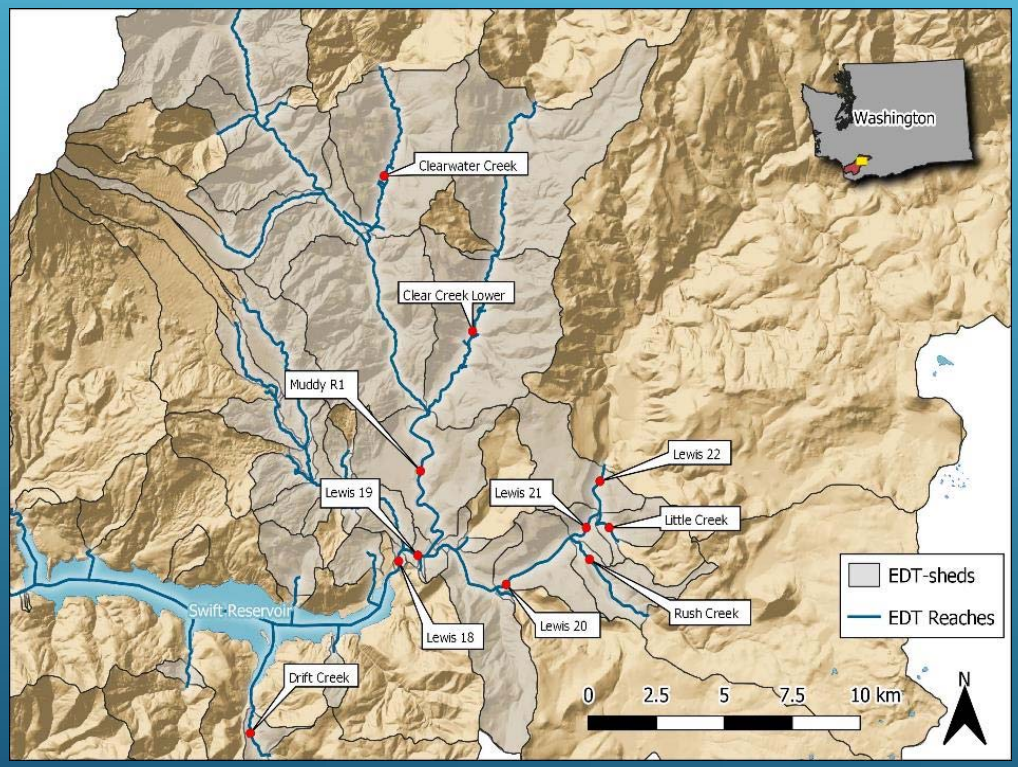
- Geomorphic Change Tool



- Geomorphic Unit Tool



Population Level Monitoring



Population Level Monitoring Options

- Before-after control-impact (BACI) monitoring of parr, smolt, and adult salmon and steelhead
  - No suitable control, not feasible
- Before and after (BA) monitoring of parr, smolt, and adult salmon and steelhead
  - Potential long time frame
  - Reduced time frame if use smolts per spawner
- Rerun EDT before and after
  - Need updated information for restored reaches
- Genetic monitoring
  - BA monitoring of effective breeders/smolts per breeder

Fish Released Above Swift

	Adults			Juveniles
Year	Coho	Chinook	Steelhead	Chinook
2012	0	0	0	15,440
2013	7,035	579	741	98,896
2014	9,179	0	1,033	65,012
2015	3,754	0	1,223	157,666
2016	7,346	0	772	29,900
2017	6,813	1,110	592	53,470
2018	7,060	700	1,225	

* Note these are largely hatchery fish with little production

Smolt Data Swift Floating Surface Collector

	Floating Surface Collector Smolts			FSC Efficiency		
Year	Coho	Chinook	Steelhead	Coho	Chinook	Steelhead
2013	15,074	1,431	166	--	--	--
2014	7,659	2,164	539	29%	--	25%
2015	25,555	5,305	1,282	12%	--	19%
2016	48,333	3,114	2,095	31%	--	24%
2017	14,924	5,523	1,724	27%	11%	20%
2018	36,039	4,250	7,869	40%	24%	49%

Population Level – Design and Replication

Approach/Question	Design	Scale	Description
Smolts and Adults	BA	Basin/Population	Use data from FSC to look at smolts, adults and smolts per adult before and after restoration.
EDT	BA	Reach	Rerun EDT immediately before restoration and after restoration in reaches where restoration occurs to estimate increased smolts, spawners, and smolts per spawner
Genetic mark-recapture	BA	Basin/Population	Collect genetic (fin clips, swabs) from subset of adults passed upstream and juveniles collected at FSC to determine number of successful breeders and smolts per breeder.

Estimated Sample Sizes to Detect Population Response

(years of post-treatment monitoring)

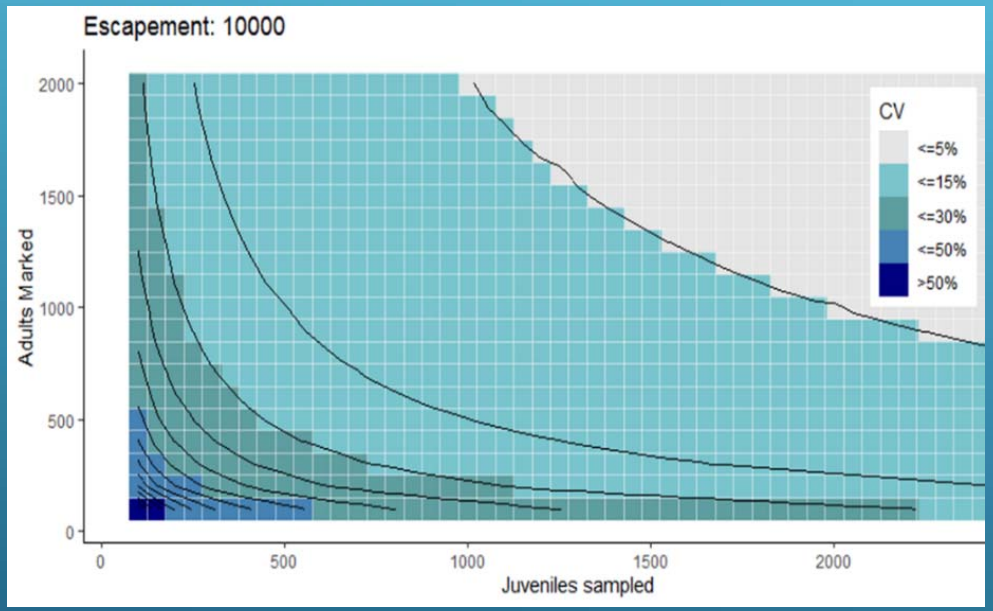
Data set	Species	Power (1 –β)	Effect size	Years(n) α = 0.05	Years(n) α = 0.10
Adults	Coho	0.8	25%	**14**	**10**
Adults	Coho	0.8	50%	**5**	**3***
Adults	Coho	0.8	100%	**2***	**2***
FSC smolts	Coho	0.8	25%	**43**	**31**
FSC smolts	Coho	0.8	50%	**12**	**9**
FSC smolts	Coho	0.8	100%	**4***	**3***
Smolts per spawner (no jacks)	Coho	0.8	25%	**9**	**6**
Smolts per spawner (no jacks)	Coho	0.8	50%	**3***	**3***
Smolts per spawner (no jacks)	Coho	0.8	100%	**2***	**2***

* Given generation time 3 to 5 years should be minimum post-treatment

Genetic Mark Recapture

(Rawding et al. 2014; Steele et al. 2019)

- Sub-sample adults & smolts
- Parentage/relatedness
- Determine number of
  - Breeders (successful spawners)
  - Smolts per breeder
  - Before and after restoration
- Number of advantages
  - Info on successful spawners
  - More accurate estimate of smolts per spawner
  - Informs supplementation program



Data Analysis and Reporting

- Reach-scale habitat (BA/BACI)
  - Mixed effects BACI model
- Reach-scale fish (EPT)
  - ANOVA/paired t-test
  - Correlation analysis
- Population level fish
  - ANOVA/t-test
  - Difference in trends (linear regression)
- Annual reports
  - Executive summary
  - Background
  - Methods
  - Results
  - Discussion
  - Adaptive management recommendations
  - References

Next Steps

- Finish Lewis River In Lieu Plan (ILP)(Post FERC Orders)
  - Select location and type of restoration treatments (finish ILP)
  - Monitoring design in part dependent on specifics of ILP
- Finalize design based on specifics of ILP
- Refine field methods and sampling methods
- Begin collecting baseline/pre-project data

Questions for Discussion

- What would be suitable reference watersheds/populations to account for broader-scale changes? (Climate, changing ocean, harvest)

- What additional refinements to current M&E Program might be needed?

Additional Slides

Monitoring Questions for Roads and Riparian

- **Road removal or restoration projects**
  - Implementation - Was each project implemented as originally designed and if not, why?
  - Effectiveness - Have fine sediment levels, fine sediment infiltration, residual pool depth, and scour improved in downstream response reaches 3-5 years after road removal?
- **Riparian planting projects**
  - Implementation - Is the number, location, and species of plantings consistent with the proposal and planting plan? If not, why?
  - Effectiveness - What is the planting survival rate in years 3 and 5?
  - Effectiveness - Has riparian cover, structure, and shade improved since project implementation?

Recent Papers Used to Inform Monitoring Plan

Received: 29 November 2018 | Revised: 26 April 2019 | Accepted: 5 May 2019
DOI: 10.1002/wat2.1355

WIREs WATER WILEY

ADVANCED REVIEW

Monitoring the effectiveness of floodplain habitat restoration: A review of methods and recommendations for future monitoring

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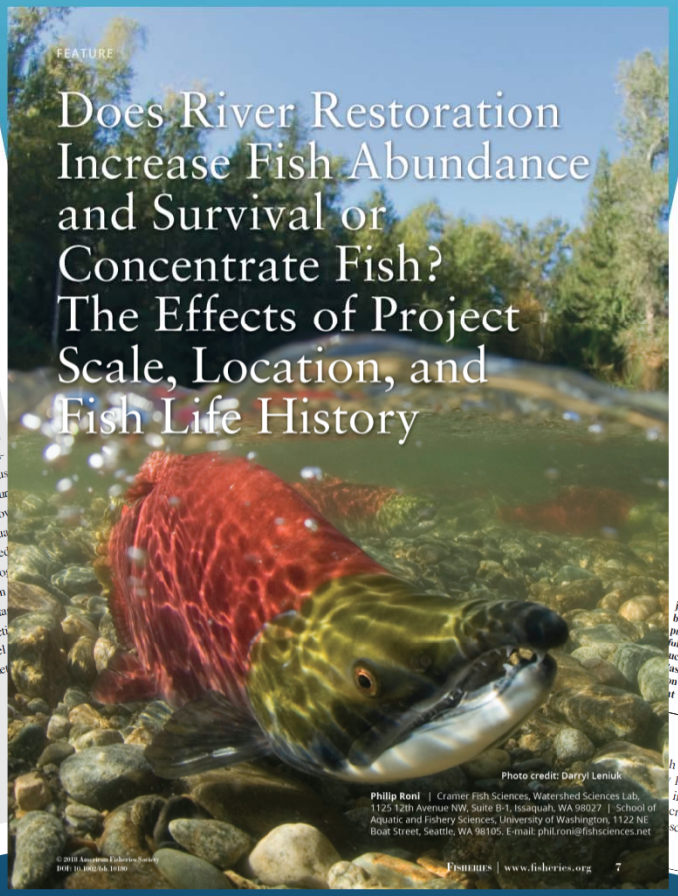
Funding information
U.S. Department of Energy

Abstract

Floodplains are some of the most ecologically important and human-impacted habitats throughout the world. Large efforts are underway in North America, Europe, Australia, and elsewhere to restore floodplain habitats, not only to increase fish and aquatic biota but to restore ecological diversity. As the scale, number, and complexity of floodplain restoration projects has increased, so has the need for rigorous monitoring and evaluation to demonstrate effectiveness and guide future floodplain restoration efforts. Moreover, technological advances in remote sensing, genetics, and fish marking have been evolving rapidly and there is need to update guidance on the best methods for monitoring physical and biological response to floodplain restoration. A comprehensive review of the restoration literature located 180 papers that specifically examined the effectiveness of various floodplain restoration techniques. The various methods that were historically and currently used to evaluate the physical (channel and floodplain morphology, sediment, flow, water quality [temperature and nutrients]) and biological (fish, invertebrates, and aquatic and riparian plants) effectiveness of floodplain restoration were reviewed and used to provide recommendations for future monitoring. For each major physical and biological monitoring method, we discuss their importance, how they have historically been used to evaluate floodplain restoration, newer methodologies, and limitations or advantages of different methodologies and approaches. We then discuss monitoring the effectiveness of small (<2 km in main channel length) and large (>2 km of main channel length) floodplain projects, with recommendations for various study designs, parameters, and monitoring methodologies.

This article is categorized under:
Water and Life > Conservation, Management, and Awareness
Water and Life > Methods

KEYWORDS
floodplains, monitoring, restoration



FEATURE

Does River Restoration Increase Fish Abundance and Survival or Concentrate Fish? The Effects of Project Scale, Location, and Fish Life History

Photo credit: Darryl Leniuk

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ARTICLE

A Review of Approaches for Monitoring the Effectiveness of Regional River Habitat Restoration Programs

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Abstract

Large regional programs to restore riverine habitat for fish and aquatic organisms have become common throughout North America, Europe, and elsewhere. Evaluating the effectiveness of projects implemented under these programs—sometimes called programmatic monitoring and evaluation—has proven challenging, and little guidance exists on programmatic monitoring and evaluation approaches and their effectiveness. In this paper, we review different approaches for evaluating the effectiveness of river restoration projects implemented across a region. These programmatic monitoring and evaluation approaches include case studies, meta-analyses, multiple before–after control–impact (mBACI), extensive posttreatment (EPT), intensively monitored watersheds (IMWs), and hybrid programmatic approaches that use a combination of different experimental designs. For each approach, we discuss the pros and cons as well as provide examples. The most appropriate approach depends in part on the questions that the programmatic monitoring and evaluation strives to address, the spatial and temporal scale at which detection of a response is expected, and the scale of inference. Case studies and mBACI approaches can answer questions about individual projects but have several limitations in terms of cost, timely results, and feasibility. A meta-analysis, which can provide broadly applicable results, is dependent upon a large number of case studies being completed. The EPT approach can provide relatively quick and easy-to-interpret results, but it requires a large population of completed projects and careful selection of controls. The IMW approach has been broadly applied in western North America but has had limited success and appears to be tractable only in small catchments where restoration and monitoring can be well controlled. Based on results from recent efforts in the USA and Europe, the most feasible programmatic monitoring and evaluation approach in terms of cost, implementability, and production of timely results appears to be a hybrid approach that uses a combination of the EPT and mBACI approaches.

h of river restoration efforts nationally and underway in the Columbia River, Puget Sound, Great has resulted in many large river restoration Lakes, south Florida Everglades, upper Mississippi River, implement hundreds of individual restora- and Chesapeake Bay (Vigmostad et al. 2005). These procross a region. In the United States, for grams collectively have resulted in billions of dollars being scale regional restoration programs are spent on river restoration, resulting in hundreds of

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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February 7, 2020

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To the disputing parties:

Per your request, this letter serves as the response of the National Marine Fisheries Service (NMFS) to the issues raised by the disputants with respect to preliminary decision letters dated April 11, 2019, and establishes next steps. The U.S. Fish and Wildlife Service (USFWS) is responding in a separate letter.

Disputed Issues

The disputed issues were established in two letters received in June 2019 and in the attached notes from the September 30, 2019, Alternative Dispute Resolution (ADR) meeting (notes attached).

As to the disputed issues, the information presented in the letters or at the ADR meeting was part of the record before NMFS prior to issuing the preliminary decision on April 11, 2019. The new information presented at the September 30, 2019, meeting has not compelled NMFS to change direction on the April 11, 2019, preliminary decision.

As we stated at the September 30, 2019, meeting, the information used to support the preliminary decision is documented in the April 11, 2019, letter.

Next Steps

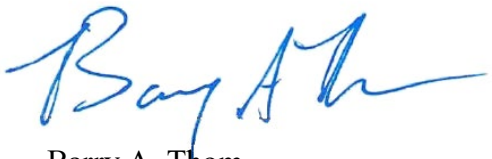
1) If disputing parties' desire, convene a second ADR meeting in April of 2020. Please contact Chris Fontecchio and Jennifer Quan by March 1, 2020, if you would like to get this scheduled. If no further interest is indicated by then, NMFS will consider the informal ADR process to have been completed.

2) Per our April 11, 2019, letter, NMFS is considering potential revisions to the Settlement Agreement (SA) concerning passage into Yale Lake, which is currently scheduled to occur in 2021. As established in our April 11, 2019, letter, we will rely on Aquatic Coordinating Committee (ACC) engagement and approval of the Licensee's proposed restoration and monitoring plans.

3) Under any subsequent proceeding, we anticipate proposing modified Federal Power Act Section 18 fishway prescriptions that would be consistent with our April 11, 2019, letter. We also anticipate the Federal Energy Regulatory Commission (FERC) re-initiating consultation with NMFS and USFWS under Section 7 of the Endangered Species Act (ESA) on the proposed License Amendment.

If you have additional questions or comments please contact Chris Fontecchio (206) 526-6153 or Jennifer Quan (360) 753-6054.

Sincerely,



Barry A. Thom
Regional Administrator

Enclosure

September 19, 2019 – Lewis River Dams Dispute Resolution Meeting

Finalized Notes

Attending:

NMFS – Kim Kratz, Jennifer Quan, Bonnie Shorin, Chris Fontecchio (GC)

USFWS –Tim Romanski, Brad Thompson, Frank Wilson (DOI solicitor), Michael Schoessler (DOI solicitor)

BLM – Dave Johnson,

Cowlitz Tribe – Emma Hand (Att'y –via phone), John Marsh, Taylor Aalvik, Alicia Derry, Eli Asher,

PacifiCorp, –Jim Lynch (Atty), Tim Hobbs (Att'y via phone), John Sample, Todd Olson, Ken Gish (Atty), Mark Sturtevant,

Community Representative, Darlene Johnson

Washington Att'y General's Office/WDFW - Bill Frymire, Lauren Kirigin.

WDFW –Kessina Lee, Dan Rawding, Peggy Miller, Bryce Glacer, Nicole Czarnowski, Josua Holowatz

Cowlitz PUD - Amanda Froberg, Jim Kincaid (Atty),

Cowlitz County Public Works - Sara Kalal

LCFRB – Steve Manlow, Amelia Johnson,

Trout Unlimited – Chandra Ferrai, Jim Byrne

Native Fish Society – Jennifer Fairbrother,

Gifford Pinchot –Ruth Tracy

American Rivers – Jonathon Stumpf

Yakama Nation Fisheries – Bill Sharp

Agenda Overview

Jim Lynch – described proposed agenda offered by PacifiCorp, advised of LCFRB's proposed agenda. Provided loose framework that combines both. States the position that WDFW is not officially a disputing party due to late filing of notice of dispute.

Kessina Lee/WDFW – offers a friendly amendment to the agenda that additional groups may have introductory remarks.

Introductory Remarks

Jennifer Quan/NMFS – appreciates ground rules of professionalism among the parties present. Advises we are here to listen, find points of commonality, and clarify the position that is in our letter. We are not here to make decisions today.

Brad Thompson/USFWS – confirms that this is a listening and clarification meeting, and the desire to facilitate the conversation of today.

PacifiCorp/Mark Sturtevant – Mr. Sturtevant read a prepared opening statement. A copy of this prepared statement is included as an addendum to these notes.

Cowlitz Tribe/Taylor Aalvik - this meeting recalls the FERC license settlement agreement negotiation process, with many parties to achieve the settlement agreement. Fish passage provisions of the settlement remain important to the Tribe. The utilities' 'enjoyment' of the river as a resource w/o compensation to the original users of the river has left the Tribe culturally and economically disadvantaged - the settlement agreement to provide passage is important because it affords the tribe to regain a small piece of this lost history and resource. The new information does not confirm that passage is 'inappropriate' but rather the opposite. The Tribe will challenge this preliminary decision. The Tribe's previous support of the license for PacifiCorp was premised on the provision of continuous passage throughout the basin. Each dam should have passage, and it is a responsibility of both PacifiCorp and the Services to restore fish to access their historical habitat. The current political end-run to get around this obligation is unfortunate.

Steve Manlow/LCFRB – Among the disputing parties there is more commonality than difference, we appreciate the opportunity to speak. Our role as LCFRB is to coordinate the actions of the many recovery partners. The Services' preliminary decision is not in alignment with the recovery goals of the many recovery participants, nor with the recovery plan adopted by NMFS.

WDFW/Kessina Lee - WDFW is responsible for the conservation and management of Washington State's fish and wildlife. On behalf of the citizens of Washington, our agency is statutorily charged to preserve, protect, perpetuate, and manage fish and wildlife, promoting conservation while providing fishing, hunting, fish and wildlife viewing, and other outdoor recreational opportunities compatible with healthy, diverse, and sustainable fish and wildlife populations. As part of this mission, WDFW monitors fish and wildlife populations and harvest across Southwest Washington, including the Lewis River Watershed, to make science-based decisions that balance conservation and fishing opportunity. WDFW has been part of a strong partnership with the the Services and Fish Recovery Board in salmon, steelhead, and bull trout recovery. We have worked with partners in the development of the Lower Columbia Salmon and Steelhead Recovery plan by the Recovery Board, served on the Willamette/Lower Columbia Technical Recovery Team using a science-based approach to develop recovery goals for salmon and steelhead populations, and are the primary data providers for salmon and steelhead population status and trend information used in tracking recovery, and in NMFS' 5-year status reviews for the Southwest Washington and Lower Columbia River ESU/DPS.

Specifically in the Lewis Watershed, WDFW with our partners, including PacifiCorps and others, have monitored Chinook salmon populations since the 1960's, steelhead since the 1980's, bull trout and Chum salmon since the 1990's, and Coho salmon since 2010. In addition, we have also monitored juvenile salmon, steelhead, and bull trout abundance since the 1990's, which includes the EF Lewis River and Cedar Creek. The combination of adult and juvenile monitoring allows us to estimate the observed freshwater capacity and productivity, which is the basis for estimating fish responses to habitat restoration. In addition, WDFW is a regional expert on the Ecosystem Diagnosis and Treatment (EDT) model, which we used in conjunction with Mobrand Biometrics to evaluate fish passage and habitat restoration in the Lewis and in LCFRB recovery plan domain.

WDFW joined NMFS and US Fish and Wildlife Service and others, in the 2004 Settlement Agreement concerning the relicensing of Lewis River Hydroelectric. The Settlement Agreement provides for upstream and downstream passage of salmon and steelhead at all Lewis River Hydroelectric Projects. The parties agreed that "new information" regarding passage could be presented to the Services, and if the Services decide that the "new information" renders passage inappropriate, PacifiCorp and Cowlitz Utility would provide a habitat restoration fund in lieu of passage.

WDFW participated in the Settlement Agreement to ensure that fish and wildlife losses were fully mitigated by the hydroelectric projects, to re-establish healthy salmon and steelhead populations in the upper Lewis River that are currently ESA-listed, and to reduce extinction risk to ESA-listed bull trout through restoration actions including providing connectivity between the isolated populations in Swift and Yale Reservoirs.

To meet our conservation obligations and fishery opportunity goals for the citizens of Washington, WDFW has and will continue to participate in the Licensee's implementation of fish mitigation and protection measures through the Settlement Agreement, the ACC, and the Licensees' new project licenses. Recently, WDFW has participated in discussions and made recommendations regarding the preliminary decisions by the Services and the Licensees regarding fish passage and habitat restoration.

We are here today because we have concerns with the preliminary recommendations. The crux of what you will hear from us today is that the Settlement Agreement called for adult and juvenile passage at all Lewis River Projects as the default position, and we don't believe passage has been rendered inappropriate by any new information. We share concerns about the recommendations with the other disputing parties here today—the Cowlitz Indian Tribe, Trout Unlimited, American Rivers, Native Fish Society, and the Lower Columbia Fish Recovery Board. We will defer to the LCFRB to speak to the implications for recovery in the basin, and to Trout Unlimited to address bull trout passage, but we want to clarify that we do share those concerns.

Jim Byrne/Trout Unlimited – full passage is required for connectivity, spatial structure, genetic diversity, and lifehistory diversity for the various species. USFWS had recognized this in the 2015 bull trout recovery plan.

American Rivers/ Johnathon Stone – Our mission is to protect and restore rivers, including in the Columbia River Basin. We are in support of the previous speakers' positions that full fish passage is necessary, and disagree with the utility and the Services that costs should be a factor in decision making.

Native Fish Society/Jennifer Fairbrother – we are a science based organization, advocating the recovery of wild fish, and we agree with the need for full passage. We do not advocate for the type of passage, but stress that it is biologically necessary, and we are concerned that best available science is not being used at this time. Recovery should support a viable ecosystem, one that supports the needs of Tribal communities.

Discussion

Steve Manlow – We are concerned that the preliminary decision delays passage into Yale. In providing context on the recovery plan requirements, approved by NMFS, the plan is clear on passage as necessary, particularly for Lower Columbia Spring Chinook, a component population necessary for ESU-scale recovery. As there are only three spring Chinook populations across the region, the viability of the North Fork Lewis population is critical for ESU-scale recovery. Their

currently limited distribution must be improved to meet recovery goals. Hydro impacts are a key driver in the 4-H analysis. 240 miles of habitat are currently inaccessible due to the hydro dams. Establishing both upstream and downstream access is required in the recovery plan, with volitional passage being essential unless science proves other types of passage are adequate. This is the underpinning to improving the 4 viability parameters.

Eli Asher/Cowlitz Tribe – The settlement never considered balancing the benefits of in lieu against the benefits of passage. The preliminary decision is based on an incorrect standard, that balances the two approaches, rather than a biological underpinning showing that passage is inappropriate, which has not been demonstrated.

WDFW/Kessina Lee – The Settlement Agreement called for adult and juvenile passage at all Lewis River Projects as the default position. On April 12, 2019, the Services issued preliminary recommendations which included elimination of Merwin downstream and Yale upstream passage, instead providing in-lieu habitat restoration funding directed into the area above Swift Reservoir. The Services deferred a decision on Yale downstream passage from 2021 to 2031 and Swift upstream passage facilities from 2025 to 2035. The delay was requested by the Services to ensure the observed population level response was the same as the hypothesized population level response from the EDT model. In other words, the Services wanted to verify PacifiCorps hypothesis that habitat restoration in-lieu of fish passage is more beneficial to salmon and steelhead abundance. The Settlement Agreement states that full fish passage is the default unless the Services' analyses of new information demonstrate that passage is inappropriate. We are not aware of any information that deems fish passage inappropriate. The Settlement agreement indicates that cost to the Utilities should not be considered in a decision regarding fish passage. The 50-year license was granted in part because of the agreed-upon investments by the Utilities to offset project impacts through fish passage. The Revised Code of Washington (RCW) is the compilation of all Washington State laws (enacted by the Legislature, and signed by the Governor, or enacted via the initiative process). RCW 77.57.030, addresses fishways required in dams, obstructions and penalties, and remedies for failure. This highlights Washington State's default position that adult fish passage is required at dams. The biological basis for the law recognizes that access to habitat above dams is essential to maintain migratory fish populations including salmon.

Jim Byrne/Trout Unlimited – the 4.1.9.C definition of new information has 4 elements which the Services have not satisfied. No data has been provided by the services to indicate why passage is inappropriate, and the recovery plans of USFWS and NMFS both indicate that passage is required. The preliminary decision does not seem supported by adequate science, and contradicts the available science.

Eli Asher/Cowlitz Tribe- points to the new information documents relative to the information required by the settlement agreement. Studies on tributary habitat and reservoir rearing are not significantly different from the science established at the settlement agreement, so the new studies do not change the original science. All three reservoirs add capacity for productive habitat in the original studies but this not refuted by the later information. Listed juveniles are currently rearing in Yale and Merwin w/o downstream passage. The predation study suggests pikeminnow is actually fewer than were supposed at the time the original agreement for passage was made - the new information actually supports passage, therefore. Redd superimposition does not appear to be a terrible problem in upstream spawning areas, so the new science does not support the decision that passage is inappropriate. The services did not rely on science in its preliminary decision.

My job is habitat restoration. I cannot tell you that habitat restoration is adequately successful. Intensive monitoring project has been going for 15 years, and it does not prove that habitat restoration is sufficient for recovery of populations, due to many factors. Abundance changes can occur locally, but nothing indicates that it is adequate for robust recovery. Relative to the billion dollars that LCFRB has dispersed for recovery since the listings, the amount of money to be spent on in lieu, the PacifiCorp's expense, is 1) a drop in the bucket, and 2) relies on a largely unproven approach. The published literature does not support the services' preliminary decision. It his highly speculative, and does not make passage inappropriate.

WDFW/Kessina Lee - key factor in the recovery of ESA listed populations is population connectivity. NMFS refers to this as spatial structure, and uses this factor in determining extinction risk and evaluating status in their 5-year review.

NMFS defines spatial structure as the "characteristics of a fish population's geographic distribution. Current spatial structure depends upon the presence of fish, not merely the potential for fish to occupy an area." NMFS indicated "The spatial structure should be geographically distributed in such a way as to minimize the probability of a significant portion of the structure being lost because of a single catastrophic event, either anthropogenic or natural."

This is particularly relevant to the Services preliminary decision because the 1980 eruption of Mt. St. Helen's led to the destruction of significant spawning and rearing habitat in the Muddy Watershed, and would severely limit anadromous production above Swift. Limited habitat coupled with very poor ocean survival (such as we see with increased sea surface temperatures, and anomalies such as the blob) would lead to a very low spatial structure and very high extinction risk. The establishment of subpopulations below Swift would lead to improved spatial structure and reduced extinction risk when Mt. St. Helen's erupts again.

Ecosystem function is the interaction between life and the conditions of the environment. Recovery plans recognize the importance of ecosystem function. The NF Lewis ecosystem above Merwin Dam evolved in the presence of anadromous fish. While reintroduction benefits anadromous fish, it provides benefits to all aquatic life and wildlife. The Services preliminary

recommendation to limit passage will negatively impact ecosystem function and the resulting biodiversity. This is a concern for WDFW due to our responsibility to manage and conserve the State's fish and wildlife populations.

NMFS asserts that ESA recovery plans for salmon and steelhead should be based on the array of state, regional, tribal, local, and private conservation efforts, and based their recovery plan on the information, analyses, and strategies developed in the LCFRB recovery plan. Washington recognized six major categories of manageable threats—tributary habitat, estuary habitat, hydropower, harvest, hatcheries, and predation. Washington quantified the impacts of each of these major threat categories on population status, along with a reduction in each impact that would be consistent with achieving population target status. WDFW is a signatory and partner in the LCFRB recovery plan, which is the framework for the NMFS recovery plan. We have committed to threat reductions in harvest and hatcheries identified in recovery plan and its supplement (Conservation and Sustainable Fisheries Plan) and have made substantial progress in these areas.

Lack of access (passage) at hydro facilities is the primary limiting factor identified for Coho, spring Chinook, and winter steelhead NF Lewis populations in the NMFS recovery plan. The NMFS recovery plan strategy summary called for reestablishing Coho, spring Chinook, and winter steelhead naturally spawning populations above tributary dams on the North Fork Lewis River by providing passage at dams with a 50% or greater hydro threat reduction for NF Lewis winter steelhead and NF Lewis spring Chinook. Given likely change to that decrease in threat reduction by not including fish passage at all sites in the NF Lewis, threat reduction in other areas are likely needed to increase the probability of reaching the NMFS recovery targets. NMFS recognized that "ESA recovery plans are guidance and planning documents only; identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements." However, it is disconcerting that the threat reductions agreed to in the LCFRB recovery plan and supported by NMFS in their recovery plan may not be achieved based on NMFS' preliminary recommendation on NF Lewis passage.

In lieu of adult and juvenile passage at all Lewis River Projects, the Services proposed restoration above Swift Reservoir and a 10 year monitoring program to determine if the predicted EDT population level response would be realized. The EDT model was originally developed to organize empirical data and professional opinion of habitat conditions that would lead to the development of a credible plan to restore and protect salmonid habitat and populations.

The result of an EDT analysis is a testable hypothesis on the predicted performance/response of a salmon population in a watershed based on current, historic, or desired future habitat conditions. The most common use of the EDT model has been for prioritizing reaches for restoration and sensitivity analyses have indicated that when the model is used for reach

prioritization it appears to be fairly robust to the choice of model parameters. In contrast, the predicted salmon population response was very sensitive to model inputs (i.e. habitat ratings) and small changes in these parameters can lead to very different predictions of salmon performance. Thus, the predicted salmon population response from the EDT model should be viewed as a hypothesis that needs to be tested. This is especially true for the upper Lewis River, where there is uncertainty in the effectiveness in the restoration actions to achieve the desired future habitat condition, and the predicted salmon population response to the modeled future habitat condition. In addition, the EDT model provides a point or single estimate of predicted fish response, and does not include uncertainty in that response such as a 95% confidence interval. In summary, there is great uncertainty in achieving the EDT predicted fish response to restoration.

Given the uncertainty of the PacifiCorp hypothesis that restoration is more effective than passage, the Services recommended a 10-year period to test this hypothesis before decisions are made regarding downstream passage at Yale and upstream passage at Swift. This delay results in foregone opportunity in salmon, steelhead and bull trout recovery, and ecosystem benefits to fish and wildlife, and recreational opportunity.

Steve Manlow/LCFRB – Looking at species persistence/extinction risk, we see high risk in relatively short timeframes, and achieving viability is not promoted by the services' preliminary decision. The TRT guidance points to greater connectivity and spatial structure, avoiding risk of catastrophic events, increasing genetic diversity as needs for recovery. These VSP parameters are not advanced by the preliminary decision, and in fact the decision weakens the resiliency of the species. Historic distribution needs to be re-established to achieve recovery. Restoring access to existing high quality habitat is the most effective method, much more effective than refurbishing degraded habitats.

Eli Asher/Cowlitz Tribe – The idea that we can restore habitats to high function in 10 years is absurd. It cannot happen in our lifetimes. The reasons are many, and based on the legacy of earlier land use decisions. Some habitat is infeasible to restore. The cost estimates on the restoration provided by the utility is wildly optimistic, and based on restoration experiences that were opportunistic, and are not relevant to the complexity and comprehensiveness that PacifiCorp suggests. Our review of the utility's strategic plan suggests outcomes that ignore several important habitat conditions that EDT typically considers; eg, the addition of large wood is not based on a feasible sourcing of wood, despite location in the Gifford Pinchot. While benefits of passage are immediate, the restoration has delayed benefit, as NMFS has acknowledged.

Bryce Glaser/WDFW – The Lewis River Science technical workgroup process started a few years ago in about 2016 and produced a summary report in 2017, that I should note. It was a subgroup of the ACC formed to provide input to the Services and was facilitated by PacifiCorp.

It was intended to look through a biological lens and assumed the requirements in the settlement agreement on passage would be met. For example, those related to trap collection efficiency. It was to be used by the services as one piece of information to inform their decision, but also called for additional future policy and cultural discussions. The group didn't focus on impacts to bull trout until after the biological benefits of the various alternatives were evaluated. It was our understanding that there would be future, ongoing discussions on the policy and cultural issues to help inform the services. Many of those topics are being discussed here today. There was not consensus by the workgroup on which scenario was best, and each organization submitted a summary of their position. These are attached to the report. The technical review was only to be one piece in the puzzle, in framing how we achieve recovery objectives. The additional pieces of the puzzle still need to be addressed, and discussion needs to continue. The technical workgroup's product was not to be the sole foundation of any decision.

Kessina Lee/WDFW – reiterating Bryce's point, the process is out of step with where the parties are.

Steve Manlow/LCFRB – Our dispute letter makes clear the 25 year implementation of recovery is pinned on the hydro measures, aka, establishing passage, to increase population productivity by 500% for Spring Chinook. In an all H plan, hydro has the most significant impact, and was supposed to have 50% redress on a timeframe that will now be likely unachievable if the preliminary decision is carried forward. Equitable demand in recovery burden is based on the commensurate amount of impact. The parties and partners assume this equity, and it can unravel the partnership and the equitable sharing of recovery burden concept when one party fails to hold up their responsibility. This type of ripple effect must also be considered. The decision to delay is not supported, and the services' decision being inconsistent with the recovery plan increases risk and the burden on the other Hs. Does the preliminary decision fully recognize the needs for recovery, especially of spring chinook?

Eli Asher/Cowlitz Tribe – speaking of risk and uncertainty, the preliminary decision is extremely risky. The utlity's proposal is in perfect alignment with the agency's decision, but the prudent path would be to retain passage at Merwin. Speaking for myself, I acknowledge that this is a difficult time to be a scientist in the administration. Expediency is valued over science, but sharpies should be used to sign the right document, and that is not what happened here.

Kessina Lee/WDFW – The path of highest certainty to recovery is passage, not the potential that fish might occupy future restored habitat. We think that recovery goals will not be achieved with a 10 year delay, while environmental conditions are worsening with climate change. There should be a provision that passage at Merwin should be required and passage at Yale should be immediate.

Jim Byrne/Trout Unlimited – Whoosh salmon cannon and other new technologies have come online since the 2004 settlement agreement. Collection at Swift is improving. I think that some of these were not reviewed by PacifCorp, and should be factored in the final decision.

Cowlitz Tribe/Taylor Aalvik - I don't see any substantive difference between the discussions now and the conversations we had that built the settlement agreement, but I do have questions about the ethics that underlie the current decisions of some of the parties. This is a big issue with wide geographic impacts, if the utilities can get away with this reversal on commitments in the course of FERC relicensing.

Lunch Break – allowing time for all parties to caucus.

Clarifying Questions and Answers

Jen Quan/NMFS – a clarifying question: Has WDFW and LCFRB changed its position on passage on Merwin?

Kessina Lee/WDFW – we are not prioritizing passage at Merwin, but passage is appropriate.

Steve Manlow/LCFRB – agreed – as we've taken a harder look at recovery needs, particularly in the context of climate change, VSP parameters, and potential catastrophic events, we think that passage at Merwin would provide more robust recovery.

Bryce Glaser/WDFW – we prioritized passage at Yale, but we do not think that passage at Merwin is inappropriate. Yale was prioritized for biological reasons, but that does not mean we opposed passage at Merwin.

Brad Thompson/USFWS – no clarifying questions.

Chris Fontecchio/NMFS GC – makes a proposal that parties need to clarify the correct process steps of the settlement agreement and the licensing sequence. Recommends that the parties' attorneys convene to work out a common understanding of the procedures going forward from today's meeting.

Bill Frymire/WDFW AG – Does your proposal incorporate how today's comments will be incorporated? Because the parties here believe the comments address the adequacy of the foundation of the preliminary decision.

Chris Fontecchio/NMFS GC – I think the group needs to convene to resolve those uncertainties.

Bill Frymire/WDFW AG – A discussion is fine, but if revisiting the preliminary decision is not on the table, or a potential path, then we need to know that soon.
Kim Kratz/NMFS – this process we are in right now is part of the implementation of the agency's preliminary decision. Currently we have a preliminary decision and a path forward that we are on.

Taylor Alvik/Cowlitz Tribe – is that then a preliminary decision or a final decision? Note: this is in connection to an understanding at the meeting that the Services stated that they are "implementing" the Pre-decision on fish passage.

Chris Fontecchio/NMFS AG – my opinion is that this is standard federal decision making, and the final decision will be based on the preliminary decision and all of the input that is provided in response to that preliminary decision.

Kessina Lee/WDFW – To clarify - what is proposed is to settle the process. The substance is not being decided in that context.

Eli Asher/Cowlitz Tribe – I am skeptical about deciding here that we turn the process over to a group of attorneys at this time.

Bill Frymire/WDFW AG – let's let that proposal sit, and at this time see if there are any other questions that want to be raised by the parties, and then determine if we need to talk more.

Kessina Lee/WDFW – there's value in establishing the process, but where and when do the substantive issues get incorporated?

Frank Wilson DOI Solicitor/USFWS - Figuring out the process can answer the question of where the substance gets correctly introduced. If we don't set a process, then the substantive concerns may not ever get well addressed.

Jim Lynch/PacifiCorp Atty – What do you disputant parties think the resolution looks like? We are interested in resolving the dispute if we can. Let's go around the room and suggest what that looks like to the various parties.

Caucus taken by disputing parties

What could resolution look like?

Steve Manlow/LCFRB – we collectively are not ready to say what resolution looks like. We appreciate that having all the groups represented to set out the process steps is valuable, but remain concerned that eventually the substantive issues be addressed. It is also important that parties that do not have legal counsel also be able to continue their participation in this process as it moves forward.

Taylor Aalvik/Cowlitz Tribe – Similar to Steve Manlow, we want to see a response to the issues raised today.

Steve Manlow/LCFRB – we want to see a response to the issues raised today.

Jim Lynch – we don't oppose Chris Fontechhio's proposal. We do need to be mindful of time. It was difficult to schedule this meeting, should we try to set a followup meeting?

Several Parties – YES, a follow-up meeting is desirable, and will be more productive if the Services's response to today's issues have been provided first.

Jennifer Quan – Not all issues raised today fit within the dispute resolution process. The substantive issues can be discussed as scientists and biologists, and can be rolled into the steps in reaching our final decision, but it is important to have reasonable expectations on what we can address.

Kessina Lee/WDFW – the value of the conversation and timely meetings includes coming back together to discuss the responses by the Services to the issues we are raising today.

Bryce Glaser/WDFW– we understood that there would be other opportunities for input prior to the final decision. We think these discussions are the chance to address concerns that were not evaluated prior to the preliminary decision.

Peggy Miller/WDFW - The initial meetings of the ACC technical subgroup included discussion about the need for cultural and policy concerns, not just biological.

Kessina Lee/WDFW - Yes, what is the forum to have those additional concerns addressed, now that it seems the train has left the station?

Jim Lynch/PacifiCorp – We propose a follow on meeting in approximately 2 weeks, in order to stay timely with the requirement to handle disputes within 30 days of the dispute being raised. Also, do we need a neutral third party at the next meeting, even though we didn't have one today?

Kessina Lee/WDFW – Who is the appropriate facilitator? Is it the Services? We should also avoid arbitrary deadlines.

Jim Lynch/PacifiCorp – the Settlement was not clear so the utility assumed the role to ensure we all kept moving forward.

Bryce Glaser/WDFW– we need to see the notes from today, we need to have time to let the services respond to today's issues – how much time is reasonable before we meet again? Is 2 weeks too soon?

Kessina Lee/WDFW – yes, and does a 2 week timeline include allowing the subgroup that is engaging to outline process sequence?

Caucus taken by Services

Jen Quan/NMFS– We believe we need 5 weeks before another meeting to allow the process group to outline its product, to allow the meeting notes to go out and corrections be noted, and to touch base with our senior leadership to identify how or if we can move forward with the substantive issues.

Chris Fontecchio/NMFS GC – I think the process group itself needs 2 weeks, in order to identify who will participate, and then schedule the meeting.

Bonnie Shorin/NMFS – please provide copies of your written statements if you want me to incorporate them into the minutes. Jim Please add me to the email distribution list.

Kessina Lee/WDFW – to clarify, the lawyerly process will frame the process that allows the substance to be addressed?

Jen Quan/ NMFS – Two separate processes to occur in the 5 weeks from now. One to lay out the full process steps, and one to determine the capacity/ability of the Services to address substance.

Jim Lynch/PacifiCorp – we will not schedule a second large meeting until we get the second answer from the Services.

Kessina Lee/WDFW – thanks to the utilities for making today's meeting possible.

Jim Lynch/PacifiCorp – the meeting is adjourned.

On April 11 and 12 of this year, the National Marine Fisheries Service and the United States Fish and Wildlife Service issued preliminary determinations under Section 4.1.9 of the Lewis River Relicensing Settlement Agreement regarding the construction of fish passage facilities at the Lewis River Hydropower Projects. After reviewing new information provided by the Utilities, the Services made preliminary determinations that resulted in four primary outcomes:

1. PacifiCorp should forego construction of the Merwin Downstream Facility (required by Section 4.6 of the Settlement Agreement) and the Yale Upstream Facility (required by Section 4.7);

2. PacifiCorp should establish the In Lieu Fund to support habitat restoration efforts consistent with the requirements of Section 7.6 of the Settlement Agreement;

3. NMFS will defer a decision whether to construct the Yale Downstream Facility (required by Section 4.5 of the Agreement) and the Swift Upstream Facility (required by Section 4.8) until 2031 and 2035, respectively, so that performance of in lieu habitat restoration could be considered in that future decision; and

4. PacifiCorp should construct the Yale Upstream Bull Trout Passage Facility, the Yale Downstream Bull Trout Passage Facility, and the Swift Upstream Bull Trout Passage Facility, according to Section 4.10 of the Settlement Agreement.

Importantly, the Services' fish passage determinations are preliminary in nature and cannot be implemented without amending the Projects' FERC licenses and undertaking related consultation processes. The Utilities are in the process of preparing the documents necessary to amend the Projects' licenses and complete the required consultations. In addition, the Utilities are preparing documents, including strategic plans, designs, and monitoring programs, that will be necessary to implement the Services' decisions when finalized. The Utilities have provided drafts of these documents to ACC (Aquatics Coordination Committee) members for comment as required by the Settlement Agreement.

Despite the fact that the Services' determinations remain preliminary in nature, several parties filed notices of dispute under the Settlement Agreement and that's why we're here today. These disputes, however, are premature until the Services make a final determination on fish passage. When the determinations are final, the parties will have reserved their right to challenge at that time. Regardless, we are here today to listen and further understand the disputes raised, and will consider these discussions as the Utilities develop plans to implement the Services' preliminary determinations.

For the Utilities our "North Star" is the Reintroduction Outcome Goal that we all agreed to in the Settlement Agreement. Section 3.1 of the Settlement Agreement states this goal is "to achieve genetically viable, self-sustaining, naturally reproducing, harvestable populations above Merwin Dam greater than minimal viable populations."

We believe that the Services' preliminary decisions achieve this goal, are well-supported by the best available scientific information, and reflect a reasonable consideration of costs and benefits. The New Information was developed over years of study at a cost of millions of dollars to rate payers. Moreover, the New Information was developed through a multi-year, collaborative study process with the ACC. All settlement parties were provided an opportunity to participate in the development of this New Information. The New Information represents the best available science and the Services' preliminary Fish Passage Determinations are consistent with that science.

The Utilities must act prudently on behalf of our ratepayers when spending ratepayer resources on mitigation and capital facility improvements. It is important to note that the Utilities do not benefit financially from the Services' fish passage decisions; rather, the costs of these measures are passed through to ratepayers in the form of higher or lower electrical rates. As a result, we support mitigation measures for our projects that are based on the best available scientific information, support the Reintroduction Outcome Goal, and minimize financial impacts to our rate payers.

The Utilities remain committed to full implementation of the Settlement Agreement. We must also comply with our FERC license, including schedules for submissions of plans and documents that are approved by FERC. We look forward to our continued work together under the Settlement Agreement.

Cowlitz River Project

Issue Paper No. xx- [topic]

Draft [Date]

1 Issue / Problem Statement

[introduction paragraph]

This discussion will address the following species/runs:

- Upper
- Lower

2 FERC Requirement

[Articles] are included to provide background

2.1 x

2.2 xx

2.3 xxx

2.4 xxxx

3 FTC Interpretation of FERC Requirement

The subcommittees will document their interpretation the Settlement or License requirement for FTC concurrence. If there are different interpretations, these should be identified in the working drafts for discussion.

4 Current Implementation Status or Situation

5 Approach to Resolve Issue

6 FTC Recommendations

Cowlitz Fish Technical Committee **2017-XX**
Decision Document

Project Name	
Date Proposal Submitted	
Date of Requested Decision	
Completed By	

FTC Decision and Justification

Proposed Decision or Consideration

Background

Coordination Need

Summary of Potential Impacts

Lewis River Fish Passage Report

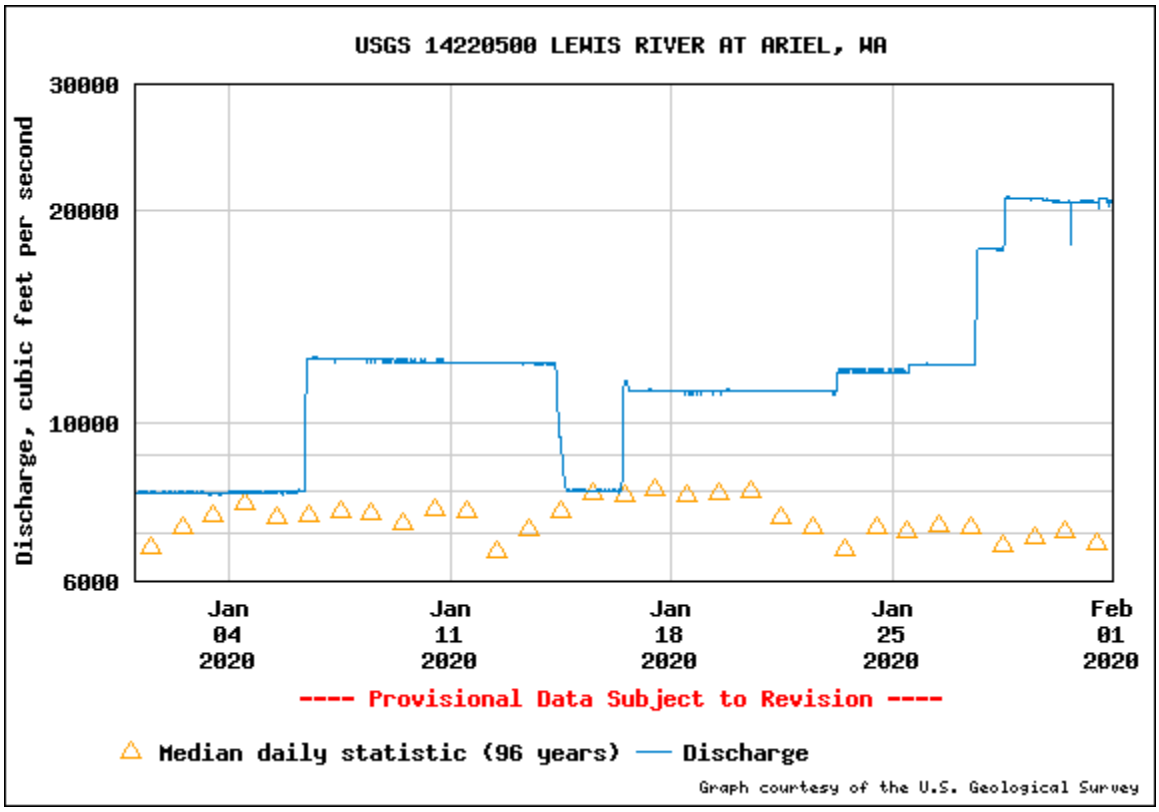
January 2020

Merwin Fish Collection Facility and General Operations

During the month of January, a total of 410 fish were captured at the Merwin Dam Adult Fish Collection Facility (MFCF). The majority of these fish were winter steelhead (95.1 %).

The Merwin Dam Fish Collection Facility ran continuously from January 1st-January 27th, when it was taken out of operation due to an extended spill event at Merwin Dam. This spill event created water levels that exceed the upper limit for safe operation of the fish lift and conveyance system. The Merwin trap will be placed back into service once water levels return to safe operating levels. Because the majority of fish that were being collected were of hatchery origin, PacifiCorp implemented a 5 day per week fish transport schedule starting on December 28th, and continued that schedule through the month of January. Under this schedule, the crowder and fish lift remain in operation 7 days per week, with fish sorting and transport taking place Monday through Friday. Flow below Merwin Dam fluctuated between 7,950-12,200 cfs between January 1st-27th. Flow then increased to approximately 20,500 cfs, where it remained for the remainder of the month. (Table 1).

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



Upstream Transport

Three (3) Blank Wire Tag (BWT) winter steelhead were captured by the end of December 2019 and were transported upstream as part of the 2020 run year. An additional fourteen (14) BWT's were taken upstream in January 2020 for a total of 17 BWT winter steelhead transported as part of the 2020 run year. Two (2) winter steelhead of natural origin (NOR) containing PIT tags from the upper basin were also collected and transported upstream, for a combined total of 19 adult winter steelhead transported upstream of Swift Dam (Table 2). In addition to the steelhead, eleven coho and four cutthroat have been collected and transported upstream of Swift Dam in 2020.

Table 2. Total number of adult winter steelhead transported upstream of Swift Dam by run-year.

Run Year	Male	Female	Total adult winter steelhead taken upstream of Swift Dam
2012	141	48	**189**
2013	440	301	**741**
2014	452	581	**1,033**
2015	746	477	**1,223**
2016	378	376	**754**
2017	331	261	**592**
2018	682	535	**1,227**
2019	527	486	**1,013**
2020	10	9	**19**

Floating Surface Collector (FSC)

The Swift Reservoir Floating Surface Collector (FSC) did not operate during the month of January. The FSC was turned off on December 19th, 2019 so that the trestle stairs could be replaced, and modifications could be made to the starboard side smolt flume. Due to the construction schedule for these projects, the FSC will likely remain out of service until late February.

Fish Facility Report
Merwin Adult Trap
January 2020

Reporting Date	Spring Chinook (1)									Early Coho												Late Coho												S. Steelhead						W. Steelhead								Fall Chinook									Sockeye		Chum		Pink		Cutthroat	Rainbow (< 20 inches)	Bull Trout	Daily Total
	AD-Clip			Wild			Recap			AD-Clip			CWT			Wild			Recap			AD-Clip			CWT			Wild			Recap			Fresh		Recap		Wild		AD-Clip		BWT		Recap		Wild		AD-Clip			Wild			Recap												
	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	JK	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	JK	M	F	JK	M	F	JK	M	F	M	F	M	F				
1-Jan																																								6	3																									9
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Monthly	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**3**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**234**	**131**	**6**	**8**	**0**	**0**	**5**	**6**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**410**
Annual	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**3**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**234**	**131**	**6**	**8**	**0**	**0**	**5**	**6**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**410**

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

Fish Facility Report

Swift Floating Surface Collector

January 2020

	Coho			Chinook			Steelhead				Cutthroat			Bull	Planted	
Day	fry	parr	smolt	fry	parr	smolt	fry	parr	smolt	kelt	fry	<13 in	> 13 in	Trout	Rainbow	Total
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
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28																
29																
30																
31																
Monthly	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**