

**Lewis River Hydroelectric Projects Settlement Agreement
Aquatic Coordination Committee (ACC)
Meeting Agenda**

Date & Time: Thursday, October 11, 2018
9:00 a.m. – 12:00 p.m.

Place: Merwin Hydro Control Center
105 Merwin Village Court
Ariel, WA 98603

Contacts: Erik Lesko: (503) 412-8401

Time	Discussion Item
9:00 a.m.	Welcome <ul style="list-style-type: none"> ➤ Review Agenda and ACC 9/13/18 Meeting Notes ➤ Comment & Accept Agenda and 9/13/18 Meeting Notes
9:10 a.m.	Public Comment Opportunity
9:20 a.m.	Aquatic Fund; Discuss & approve pre-proposal <ul style="list-style-type: none"> ➤ Lewis River 21, Phase III
10:15 a.m.	Break
10:30 a.m.	Update of Floating Surface Collector (update on facilities adjustments)
11:00 a.m.	Spring Chinook Distribution in the Upper Lewis River
11:30 a.m.	Study/Work Product Updates <ul style="list-style-type: none"> ○ H&S Subgroup Update ○ Hatchery Broodstock Discussion ○ Future Fish Passage In Lieu Decision Update ○ Merwin Upstream Passage – Status ○ Swift Floating Surface Collector – Status ○ Acclimation Pond Removal – Status
11:45 a.m.	<ul style="list-style-type: none"> ➤ Next Meeting's Agenda ➤ Public Comment Opportunity Note: all meeting notes and the meeting schedule can be located at: http://www.pacificorp.com/es/hydro/hl/lr.html#
12:00 p.m.	Adjourn

**PLEASE BRING YOUR LUNCH IN THE EVENT
THE MEETING EXTENDS BEYOND NOON**

Join by Phone
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Conference ID: 2625672

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
October 11, 2018
Merwin Hydro Control Center

ACC Representatives Present (11)

Kim McCune, PacifiCorp
 Chris Karchesky, PacifiCorp
 Erik Lesko, PacifiCorp
 Mark Ferraiolo, PacifiCorp
 Tom Wadsworth, WDFW
 Peggy Miller, WDFW
 Aaron Roberts, WDFW
 Steve West, LCFRB
 Ruth Tracy, USDA Forest Service
 Eli Asher, Cowlitz Indian Tribe
 Amanda Froberg, Cowlitz PUD

Calendar:

November 8, 2018	ACC Meeting	Merwin HCC
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Assignments from October 11, 2018	Status
None	

Assignments from July 12, 2018	Status
Karchesky - A decision is requested from the ACC on how to proceed with winter steelhead Adult Trap Efficiency (ATE) at Merwin Dam no later than December 13, 2018.	

Parking Lot Items	Status
Begin review of aquatic fund document edits no later than May 2019. The 2018 edits are attached to the September 13, 2018 ACC Meeting notes. Wordsmith item 4&5 of Attachment D, Evaluation Criteria.	

Opening, Review of Agenda and Meeting Notes

Erik Lesko (PacifiCorp) called the meeting to order at 9:05am and also reviewed the agenda. No additions to the agenda were requested.

Lesko also reviewed the September 13, 2018 meeting notes. The meeting notes were approved with clarifying changes at 9:20 a.m.

Public Comment

None

Aquatic Fund; Discuss & approve pre-proposal – Lewis River 21 Phase III

The following ACC Representatives submitted an Evaluation Form and/or comments for the Lewis River 21 Phase III pre-proposal (See **Attachment A**), received by the Utilities by the due date of September 28, 2018. The pre-proposal can also be viewed on the Lewis River website at the following link:

http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/li/acc/LR21_PhaseIII_PreProposal_Final.pdf

Representative	Proceed to full proposal
PacifiCorp & Cowlitz PUD	YES
WDFW	YES
USFS	YES
Cowlitz Tribe	YES
Trout Unlimited	NO
RCO	The RCO goes along with whatever the ACC decides on this matter.

The ACC agreed that an additional 7-day review period is appropriate for those ACC representatives not in attendance. All those who wish to weigh in on the decision to move forward to full proposal may do so to the attention of Kim McCune by close of business Friday, October 19, 2018. Assuming no objections are received PacifiCorp will provide all comments and questions to the applicant no later than November 2, 2018.

Break 10:05am

Reconvene 10:15am

Update of Floating Surface Collector (FSC); facilities adjustments

Chris Karchesky (PacifiCorp) provided the ACC with a status report for the Swift FSC. Karchesky reviewed the structural changes made since the Swift FSC was brought on-line in December 2012. Most notably was the addition of the 600’ guide net installed at the entrance of the FSC in spring 2016. Before the net was installed, it appeared from behavioral data using radio and acoustic telemetry that out-migrates were having a difficult time finding the entrance of the FSC. Once the guide-net was installed, it appeared that most fish entering the forebay were now concentrating at the entrance of the FSC, but not going in. (This information was presented in the 2017 acoustic telemetry evaluation of out-migrant collection efficiencies located in Appendix B – Lewis River Fish Passage Program 2017 Annual Report). Karchesky provided an excerpt from the report (Figure 17 below) that showed the area in which all tagged fish concentrated just outside the Net Transition Structure (NTS) during the study.

Layout of Swift Reservoir FSC

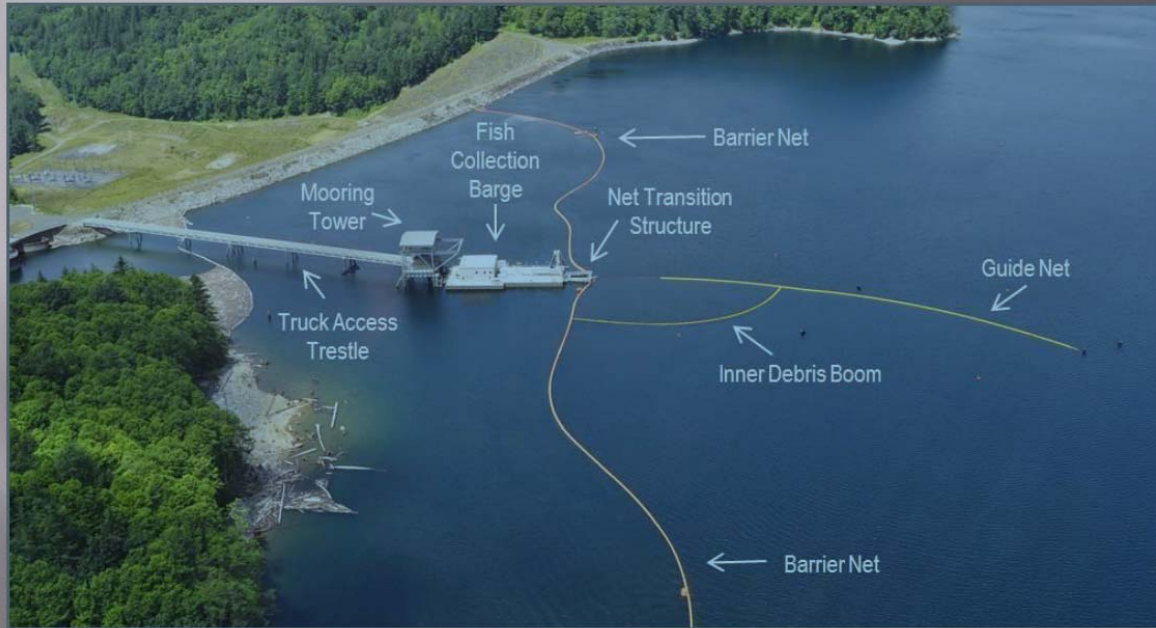
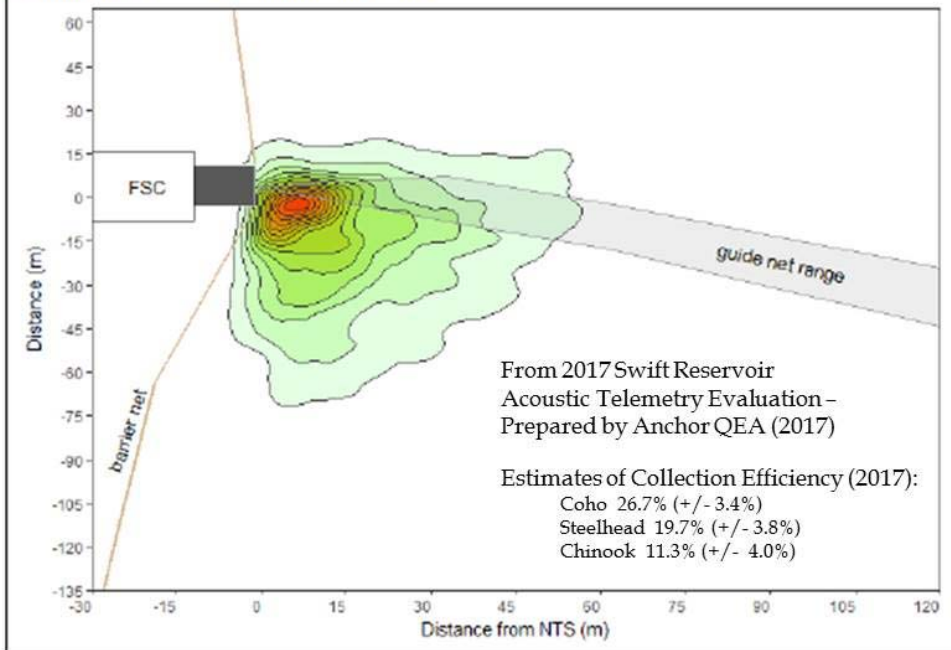


Figure 13
Density of Detected Positions, All Species



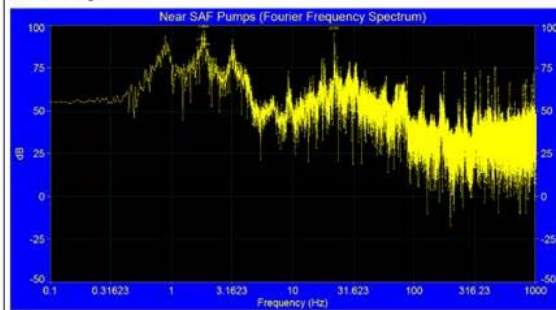
Karchesky reviewed the possible factors outlined in the report as potentially affecting fish from entering the NTS and ultimately affecting collection efficiencies. These factors included:

- Physical Factors
 - Acoustic Noise
 - Hydraulics
 - Light
- Biological Factors
 - Predators

Karchesky described that following the 2017 collection efficiency evaluation, PacifiCorp evaluated the acoustic noise in and around the Swift FSC. From this evaluation, it was apparent that the Swift FSC was “acoustically noisy” from the standpoint of low vibrations in frequency that fish could detect. These vibrations were isolated to the facilities Sort Area Flow (SAF) Pumps. In December 2017, PacifiCorp modified how these pumps operated to reduce that amount of low frequency vibration and acoustic noise omitted. Karchesky provided excerpts of the 2017 report showing the spikes in low frequency vibration present before the pumps were modified (left) and the more constant vibration after the operational change (right). Karchesky indicated that it was these spikes that have been show to trigger fish avoidance behavior.

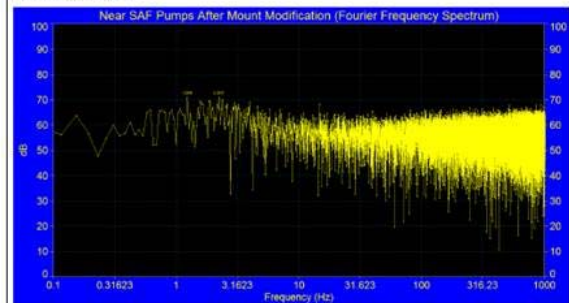
Sorting Area Flow Pumps – Noise Reduction (December 2017)

Figure 3
Frequency Versus Amplitude for One 50-Second Interval When Sorting Area Flow Pumps Were Running



Notes:
X-axis: Frequency (hertz [Hz])
Y-axis: Amplitude (decibels [dB])

Figure 5
Frequency Versus Amplitude Near the Sorting Area Flow Pumps While Running, After Mount Modification



Notes:
X-axis: Frequency (hertz [Hz])
Y-axis: Amplitude (decibels [dB])

Before
(Low frequency
vibration present)



After
(Low frequency vibration
no longer present)

From 2017 Swift Reservoir Acoustic
Telemetry Evaluation – Prepared by
Anchor QEA (2017)



Karchesky then presented the 2018 estimates of collection efficiency (through July 2018) and following the noise reduction efforts:

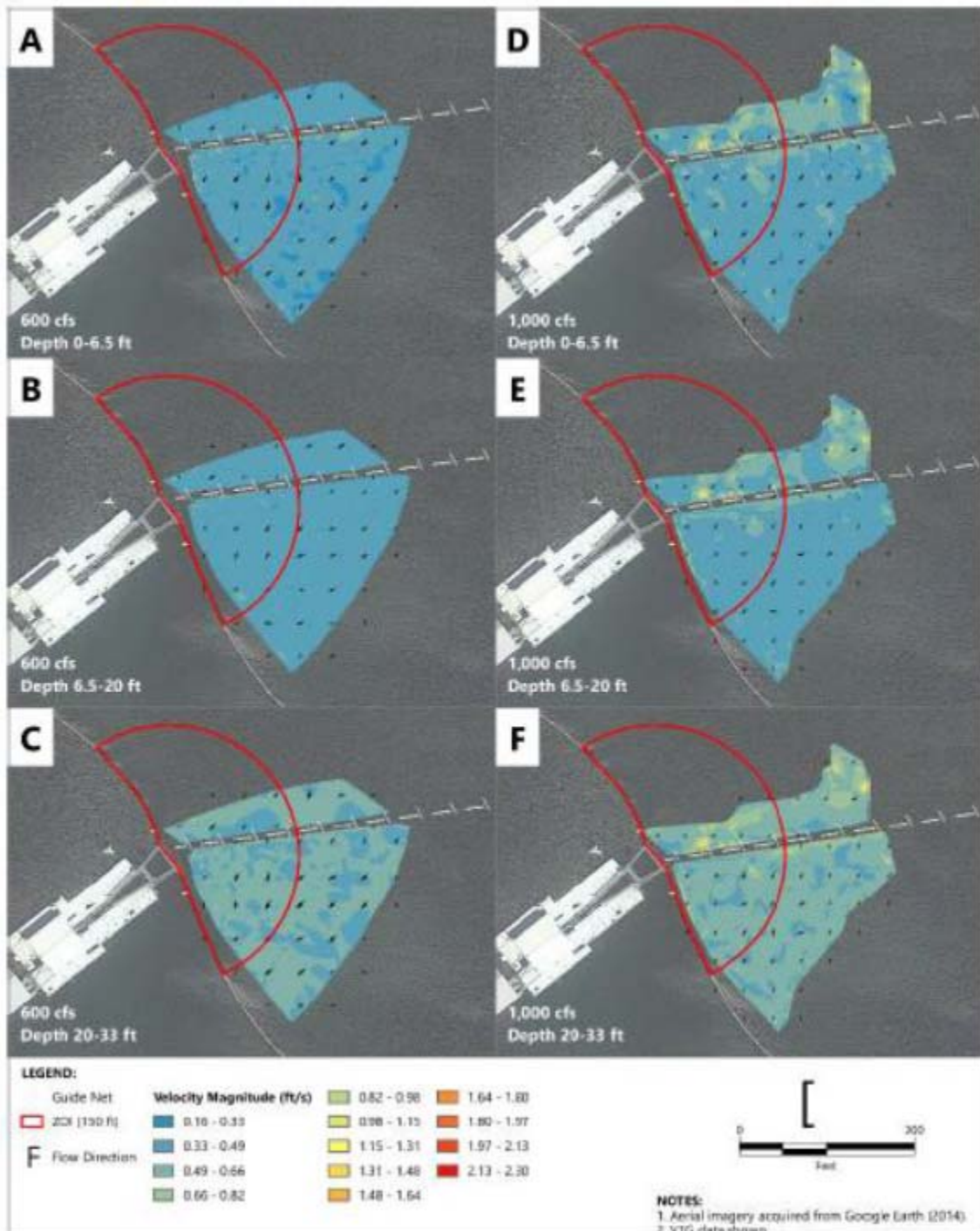
2018 (..so far)	Released	Recaptured	CE	95% CI
Coho	484	175	36%	+/- 4%
Steelhead	227	135	49%	+/- 6%
Chinook	396	94	24%	+/- 4%

Karchesky clarified that these are running estimates based on number of released (head of Swift Reservoir) vs. recaptured (at FSC) of PIT Tags, and have not been corrected for reservoir survival and detection at Zone of Influence. Also, they do not account of any fish collected later in fall 2018. Still compare to estimates of collection efficiency prior to the noise reduction project, Karchesky said they looked promising. Estimates of CE appeared to have increased for all three transport species, but all were still below the target value of 98%.

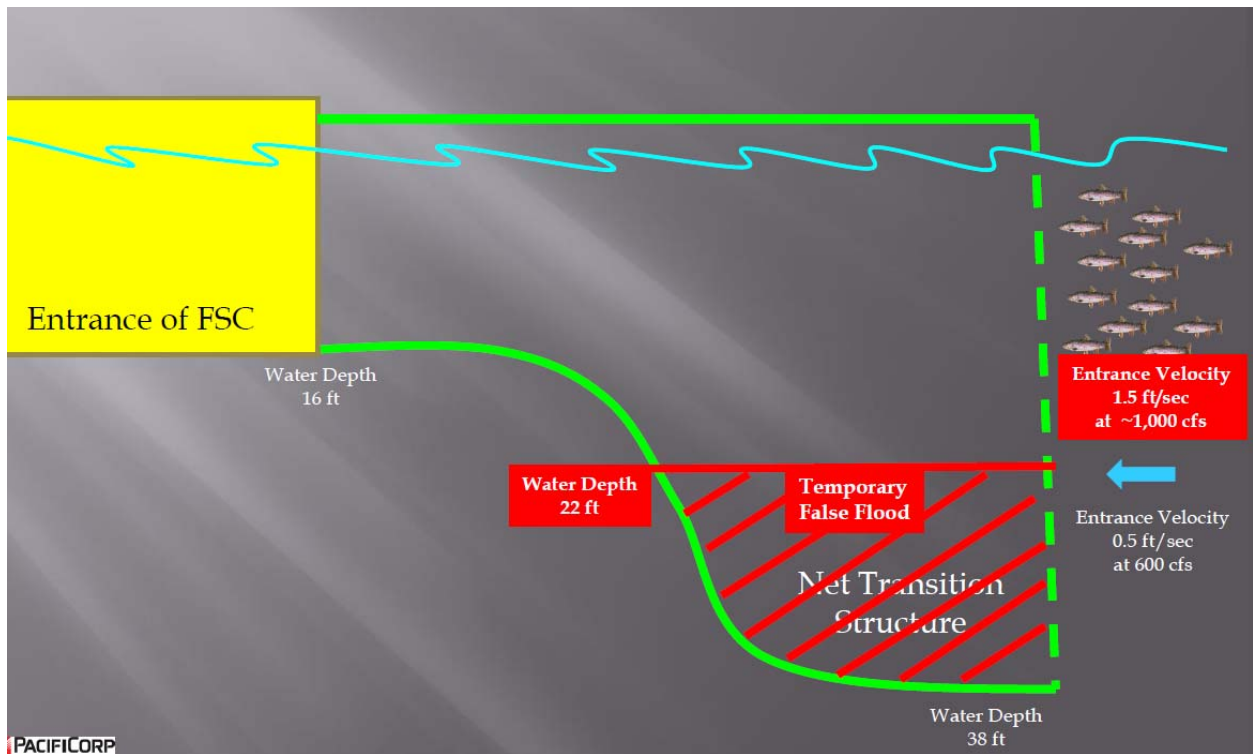
Karchesky then discussed recent work PacifiCorp had completed measuring the entrance velocities immediately outside the Swift FSC and verifying the current zone of influence. Based on this work (completed in December 2017) it was found that current velocities were relatively slow (< 0.5 ft/sec) and were consistent with design intent. Karchesky reminded the ACC it was originally thought that juvenile spring Chinook would require a deeper entrance than out-migrating coho or steelhead. Consequently the entrance of the FSC (Net Transition Structure - NTS) was designed with an entrance of 38 ft, which resulted in the slower approach velocity. However, recent acoustic work (2017) found that all three species generally migrate in upper 25 ft of the water column in the forebay of Swift Reservoir. Karchesky also indicated that recent work verifying water velocity and flow trajectories outside the NTS show little to no discernable attraction flow in front of the FSC at 600 or 1,000 cfs (Figure 16 of the report provided below).

Given the current low velocities at the entrance of the FSC combined with recent fish behavior information, Karchesky indicated that PacifiCorp is planning to install a temporary false floor inside the NTS to decrease the overall depth of the structure. By effectively reducing the area of the NTS, we will be able to increasing the water velocity outside the NTS and evaluate fish behavior and collection efficiency under higher water velocities. It is thought that by increasing the velocities immediately outside the NTS will extend the hydraulic signature of the FSC further out and thereby extending the zone of influence further into the forebay.

Figure 16
Acoustic Doppler Current Profiler Velocity Data Collection Results in Front of the Floating Surface Collector at Swift Reservoir



Note: Panels A through C show water velocity and direction at the 600 cfs operating condition in the 0- to 6.5-foot, 6.5- to 20-foot, and 20- to 33-foot depth bins. Panels D through F show the same depth bins at the 1,000 cfs operating condition.



Karchesky stated that in addition to installing a false floor to decrease the overall depth of the NTS from 38 ft to 22 ft, PacifiCorp is planning to make baffles adjust within the Swift FSC to allow for increased flow through the fish channel. This adjustment will increase flow from 600 cfs to just less than 1,000 cfs. Under these new conditions, attraction velocity immediately outside the FSC is estimated to increase from 0.5 ft/sec to about 1.5 ft/sec.

The schedule of adjustments is as follows:

- Install new fry tank traveling screen to improve debris handling inside sorting area (December 2018)
- Install NTS false floor (January 2019)
- Evaluate fish channel hydraulics and adjust baffles to accommodate flows > 600 cfs (February 2019)
- Monitor fish behavior and CE at Swift FSC with higher attraction velocities outside NTS (March – July 2019)

Spring Chinook Distribution in the Upper Lewis River

Lesko provided a PowerPoint with the use of Google Earth illustrating the following, see **Attachment B** or the Lewis River website at the following link:

http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Lewis_River/li/acc/10112018_distrib_ACC.pdf

- Coho Redd Distribution (2012 – 2017)
- Spring Chinook Redd Distribution – 2017
- Combined Redd distribution for both coho and spring Chinook

- Distribution differences between Clear Creek, Muddy River, mainstem North Fork Lewis (upstream of Swift Reservoir), Smith Creek, and Clearwater River,
- Sattelite image for December 1984 (4 1/2 years after Mt. Saint Helens eruption), and December 2016, 36 years after the eruption indicating changes in the landscape and riparian areas for streams affected by the eruption.

Study/Work Product Updates

H&S Subgroup

The Subgroup discussed how to structure the monthly meetings and agreed that H&S activities will continue to be discussed from 9AM to 12PM, however, there will be additional time added to the agenda when issues need to be discussed regarding Aquatic M&E activities. For example, the agenda would indicate that M&E issues will be discussed from 12 to 2 PM. This preserves the integrity of the H&S work and allows M&E discussion when needed. The purpose of discussing M&E activities will be to come up with recommendations for the ACC to approve. Currently the H&S subgroup is working on a take table for Rich Turner (NOAA). This table will provide the allowed take of listed species while conducting monitoring and evaluation work in the basin and in support of developing the HGMP's for each species.

Hatchery Broodstock

Aaron Roberts (WDFW) informed the ACC that we made brood for early coho so far; and that there were over 700 fish currently at Lewis River Hatchery. It is anticipated that these additional early coho will be taken upstream.

In Lieu Update

Lesko informed the ACC attendees that the Services requested a 14-day extension to October 23, 2018.

Acclimation Pond (Muddy)

Clear and Crab Creek Acclimation ponds are scheduled for removal in 2019. PacifiCorp is waiting for certain detail from the Forest Service relating to gabion baskets.

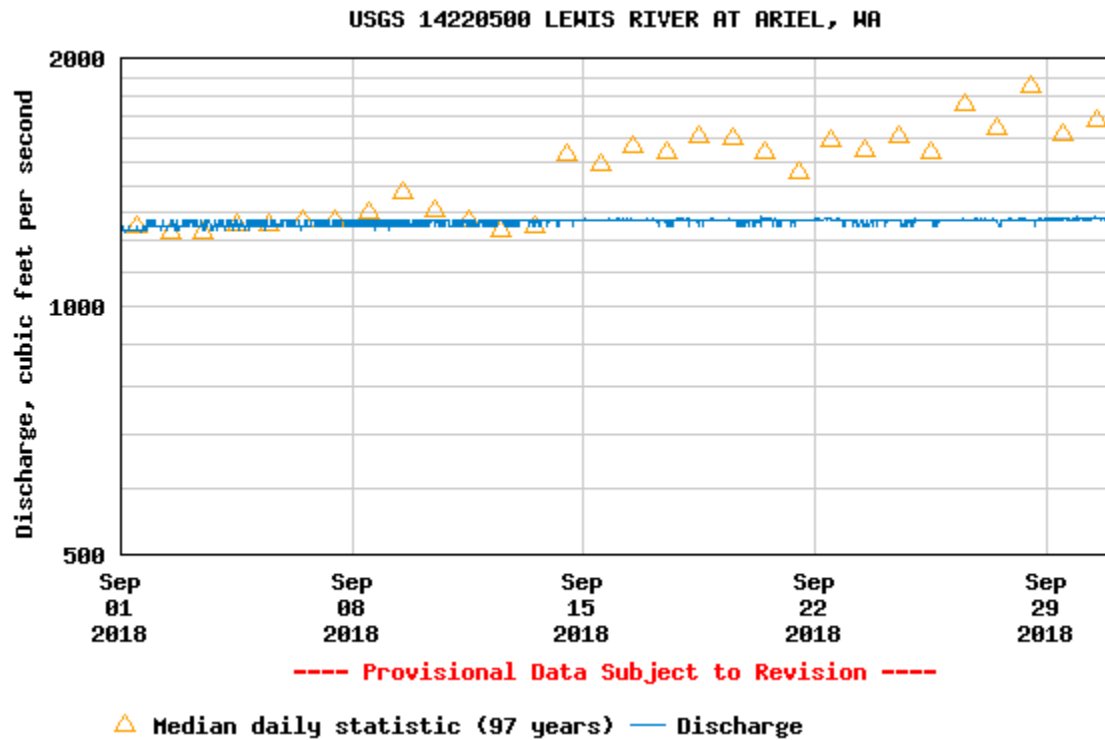
Merwin Fish Collection Facility and General Operations ([Attachment C](#))

During the month of September, a total of 2,067 fish were captured at the Merwin Dam Adult Fish Collection Facility. The majority of these fish were early coho (1,376 – 66%) of which 1,097 (80%) were early coho jacks. The spring Chinook run concluded in early September. A total of 2,106 spring Chinook returned to Merwin Trap in 2018.

No major outages occurred in September, the Merwin Dam Fish Collection Facility ran continuously during the month.

River flow below Merwin Dam remained near the minimum flow requirement of 1,200 cfs throughout the month.

Discharge, cubic feet per second



Upstream Transport ([Attachment C](#))

Nine Blank Wire Tag (BWT) winter steelhead were transported upstream above Swift Dam in December 2017. Two additional fish were transported earlier in the fall for a total of 11 BWT steelhead collected and transported in fall/winter 2017. An additional 1,216 BWT winter steelhead were transported upstream for a total of 1,227 fish transported as part of the 2018 run year. *No winter steelhead have been capture since June 11, 2018.*

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

A total of 700 adult spring Chinook have been transported upstream as part of the 2018 run. Of these fish, 329 were transported from the Merwin Dam Fish Collection Facility with an additional 371 fish being transported from the Lewis River Hatchery. Transported upstream were 177 females, 491 Males, and 32 jacks. By the end of June, all surplus adult spring Chinook previously being held at Lewis River Hatchery had been distributed into the upper basin or used as brood stock.

By the end of September, 319 adult early-run coho (189 male/130 female) had been transported upstream along with 252 wild jacks. Through the end of September a total of 22 returning pit tagged early coho have been observed at Merwin Trap. All of these returning pit tagged coho were tagged last spring 2018 at the Swift Floating Surface Collector before release into the Lewis River below Merwin Dam. Two of the returning pit tagged coho have been observed as adults while the rest have been jacks/jills.

Swift Floating Surface Collector (Attachment C)

The Swift Reservoir Floating Surface Collector was shut down for summer maintenance July 17, 2018. It will return to service in October 2018.

Other

Tom Wadsworth (WDFW) noted that the hatcheries ended up with more spring Chinook females than they thought resulting in a surplus egg take of about 800,000. WDFW has developed options for the additional eggs, including providing for a June release, but needs to consult with NOAA before discussing recommended option(s) with the ACC.

Three options:

- 1) Putting Fish in Lewis in June
- 2) Release in Lower Columbia or outside the Lewis River basin
- 3) Culling

Agenda items for November 8, 2018

- October 11, 2018 Meeting Notes
- Bull trout update; Tom Wadsworth (WDFW)
- ATE Report; 30-day review
- H&S Update; Subgroup
- In Lieu Update
- Study/Work Product Update

Adjourn 11:45am

Next Scheduled Meeting:

November 8, 2018
Possible Conference Call
9:00 a.m. - 12:00 p.m.

Meeting Handouts & Attachments:

- Meeting Notes from 9/13/18

- Agenda from 10/11/18
- **Attachment A** – Preproposal; Lewis River 21 Phase III, September 28, 2018
- **Attachment B** – Spring Chinook Distribution in the Upper Lewis River
- **Attachment C** - Lewis River Fish Passage Report (September 2018)

Attachment A

PRE-PROPOSAL FORM

Lewis River Aquatic Fund

Form Intent:

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

Pre-Proposal format:

Please complete the following form for each Pre-Proposal. Maps, design drawings and other supporting materials may be attached. The request is to be brief in response with a total completed form length of no more than 5 pages of text, excluding attached supporting materials.

The deadline for Pre-Proposal Form submission is **September 28, 2018**. Please submit materials to:

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

1. Applicant organization.

USDA Forest Service
Gifford Pinchot National Forest

2. Organization purpose

Resource management agency

3. Project manager (name, address, telephone, email, facsimile)

Greg Robertson
Fisheries Habitat Restoration Biologist
Mount Adams Ranger District
42218 NE Yale Bridge Road
Amboy, WA 98601
360-449-7833
gregrobertson@fs.fed.us

4. Project Title

Lewis River 21 Phase III

5. Summary of Project Pre-Proposal

Note: Please include description of how project addresses Lewis River Aquatic Fund priorities and identify any impacts to other resource areas (e.g. wildlife, recreation, etc.).

The Aquatics Fund Subgroup to the ACC has completed a Lewis River Aquatic Fund Priority Reaches (Priority Reaches) document which provides priority rankings for stream reaches within the Lewis River watershed. The Priority Reaches document is aligned with the LCFRB Interactive map which is found on their website at www.lowercolumbiasalmonrecovery.org/mappage. The interactive maps provide a wealth of information that should help project proponents in selecting areas to focus their habitat improvement efforts. For consideration of funding the proponent must demonstrate that they have reviewed both the Priority Reaches and the LCFRB Interactive map and selected appropriate projects/reaches from those two tools. Additionally, proponent must show how proposed project is consistent with fund objectives and priorities. Projects proposed in reaches other than those identified in the Priority Reaches document or high priority reaches in the LCFRB habitat strategy (Tier 1 and Tier 2) are unlikely to advance to the full proposal stage without clear explanation of why they still support Lewis River Aquatic Fund goals.

The Lewis River 21 Phase III project goal is to address stream channel habitat structure and off channel & side channel habitat restoration needs to improve egg incubation and summer rearing by improving three limiting factors; channel stability, habitat diversity and key habitat.

The project will construct 4 log complexes at four side channel locations and excavate the entrances to allow perennial flow. In order to affect the side channels within the floodplain of the upper most Lewis River Reach 21, log complexes will be placed within the lowest most section of Lewis River Reach 22.

The objectives are to 1) stabilize and increase off channel habitat and increase side channel complexity, 2) increase floodplain connectivity, 3) increase available spawning gravel and 4) increase pool depths at the log structure sites.

The LCFRB Plan (2010) summarized the limiting factors for Upper Lewis salmonid species, Spring Chinook, Coho, and Winter Steelhead life stages (LCFRB). The most critical life stage was egg incubation and the second most critical life stage was 0-age summer rearing for all three species. For Spring Chinook egg incubation, channel stability and sediment were primary limiting factors, and key habitat a secondary limiting factor. Competition (hatchery) and habitat diversity were primary limiting factors, and food, predation and key habitat secondary limiting factors for Spring Chinook 0-age summer rearing.

Ronni and Timm (2016) reviewed existing habitat and environmental assessment data for spring Chinook, Coho and Winter Steelhead and conducted a limiting factor analysis to identify limiting habitat and life stages. Similar to the LCFRB Plan, summer rearing habitat was identified to be limited in stream systems above Swift Dam. Ronni and Timm emphasized estimating suitable rearing habitat in the reservoir, and changing the depth criteria by one or two meters had a large influence in determining if spawning habitat would be limiting. Sediment load in Lewis 21 reach was the factor affecting summer rearing for all three species. For Lewis River 21, large wood placement was recommended along with road restoration to improve summer and winter rearing.

D. J. Warren & Associates, Inc. (2016) used the EDT model to generate habitat limiting factors (defined on

page 11) and reach restoration analysis. The EDT model determined habitat factors that limited salmon and steelhead production based on the differences in habitat inputs between current and historical conditions. Using this methodology, limiting factors for spring Chinook were key habitat for Lewis 21 and habitat diversity and channel stability for Lewis 22.

6. Project location (include location map, River/Stream and Lat/Long coordinates if available).

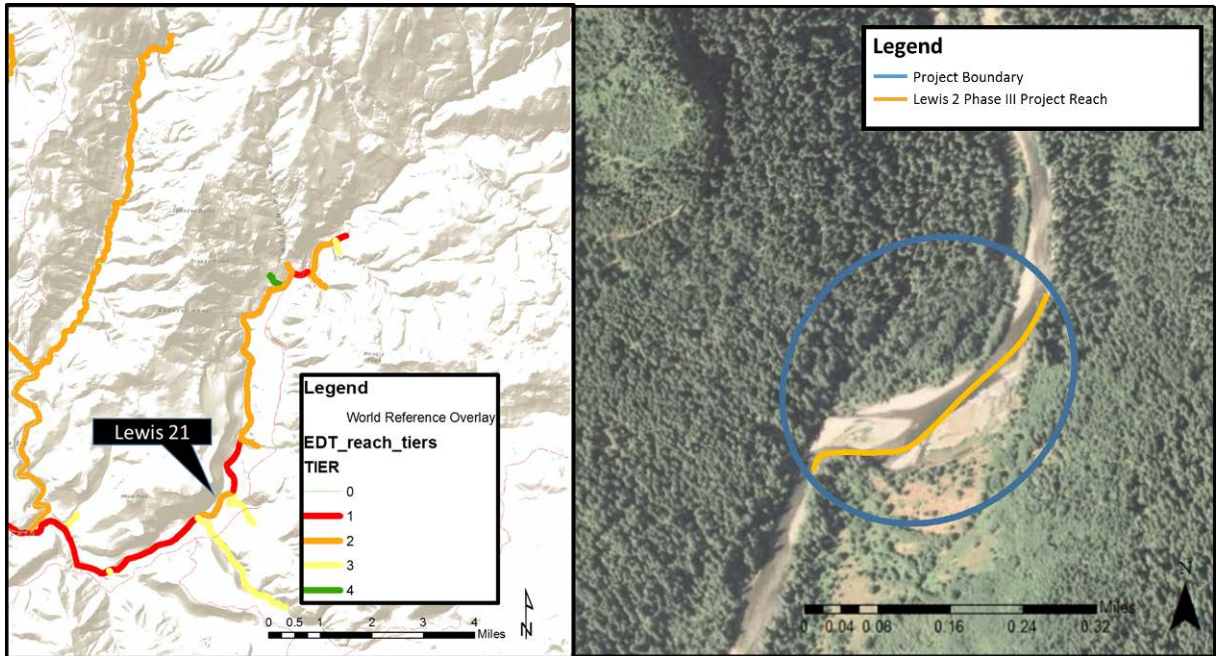


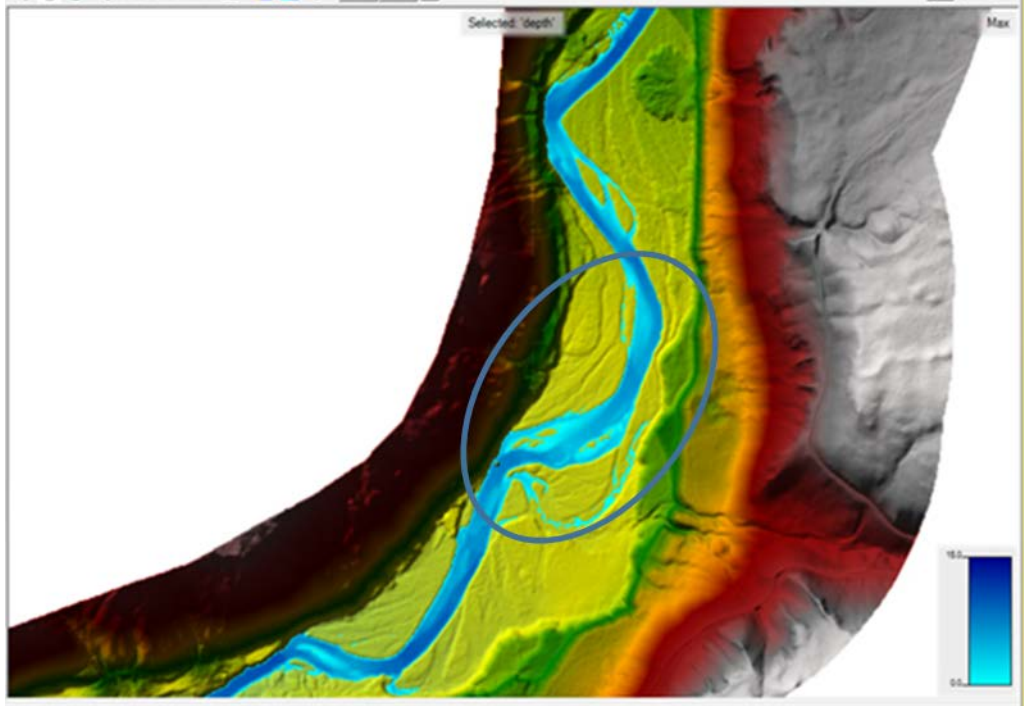
Figure 1. Lewis River Phase III proposed project location, North Fork Lewis River, Skamania County, Washington (Lat/Long: 46.081089, -121.925852).

Note: Map must include project area boundaries, watershed context (i.e. project area within the NF Lewis basin), scale bar, and north arrow.

7. Expected products and results (Please attach drawings). Provide 1) a brief description of the site and the site problems contributing to limiting factors, 2) Specific goals and objectives for addressing the problems and 3) conceptual project design with a description of the design and plan view drawing on scaled site plans including an indication of bankfull width and approximate dimensions of proposed project elements, and a brief description of short term and long term benefits.

The Lewis River 21 Phase III site is a moderately confined reach with a relatively low gradient (<1%) with the river being mostly contained within the river banks at bankfull flows (Figure 2). Residual pool depths are shallow (<3') for a large river and contributes to the observed high bankfull width to depth ratios. The average bankfull width of the project area is approximately three hundred and eighty feet. Recently deposited large wood complexes from the 2015 high flow event have improved channel conditions along the outside meander of

the project area. However, the large wood is highly mobile, lacking embedded key pieces that would offer long



term stability.

Figure 2. Preliminary 2D HEC-Ras model of bankfull flow in proposed Lewis River 21 Phase III project area (blue circle).

The Lewis River 21 Phase III project area site problems are unstable off channel habitat and banks, shallow pool depths, limited floodplain connectivity, and low levels of suitable spawning gravels. All of these problems contribute to primary limiting factors of poor channel stability, fine sediment routing, and key habitat elements from the lack of large wood causing relatively homogeneous water depths throughout the project reach.

The Lewis River 21 Phase III project goal is to address stream channel habitat structure & bank stability and off channel & side channel habitat restoration needs and thereby improve egg incubation and summer rearing by improving three limiting factors; channel stability, habitat diversity and key habitat.

The project objectives to address the problems are:

- Construct four log complex structures at naturally occurring large wood depositional areas that are at the entrances to disconnected side channels at bankfull flows,
- Stabilize and increase off channel habitat by adding apex log jam and increasing complexity with large wood to improve rearing habitat,
- Increase floodplain connectivity with four log complex structures at four locations to displace water onto the adjacent floodplain,
- Increase available spawning gravel and increase pool depths with apex bar and bank structures by sorting and retaining gravels in two pool tail crests and creating constriction flow scour in two pools.

Conceptual project designs to achieve these goals and objectives are to form four large wood structures (Figure 3) within 1600 feet (0.3 miles) of river channel using 400 pieces of large wood from a USFS harvest unit and/or 15-20 whole trees from the adjacent riparian area. Large wood would also be added to the lower energy side channels to promote and maintain pool scour, high and low flow juvenile refugia, and spawning gravel sorting for spring Chinook (primary), coho (contributing) and steelhead (contributing). Wood added to the side

channels will be anchored or buried to be stable at the 50 year recurrence interval of ~22,000 cubic feet per second (cfs) which was calculated for the project reach from the 2015 high flow event. A 2 year (Q_2) recurrence bankfull interval discharge of ~7,900 cfs was also calculated. These recurrence interval flows will guide final designs for streambed scour and final structure dimensions using a 2D HEC-Ras model.

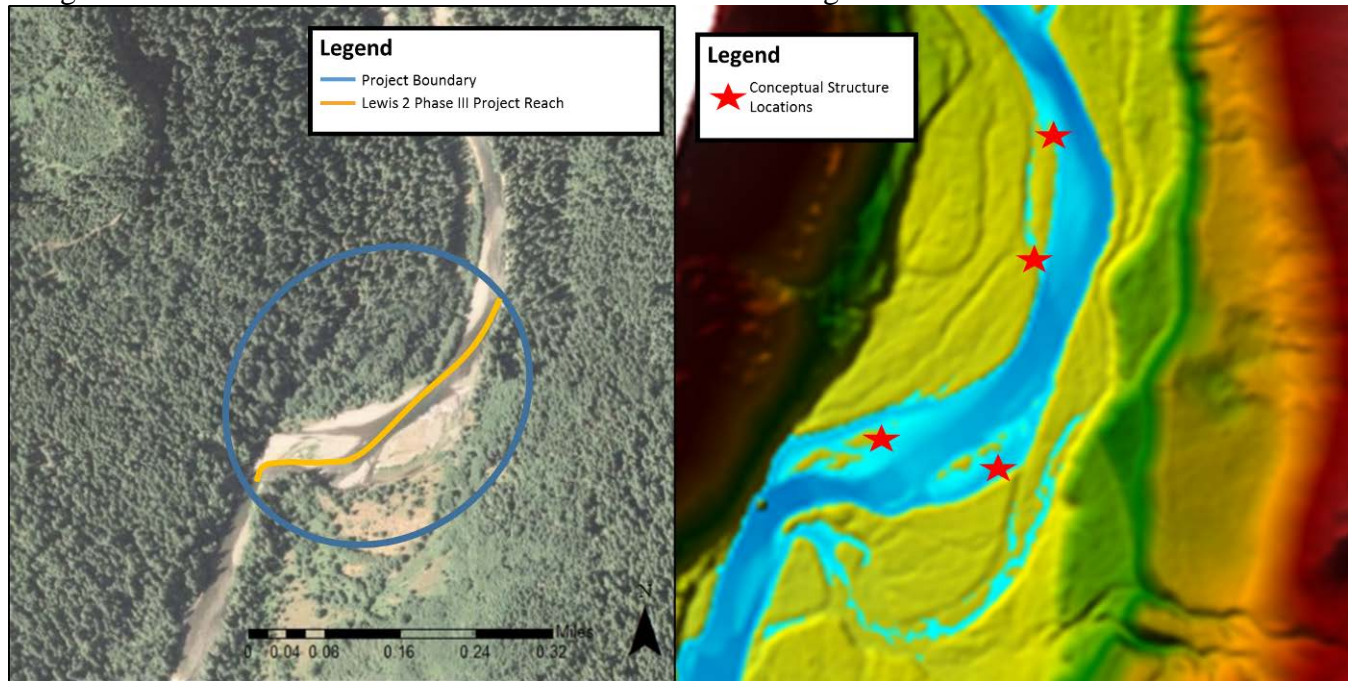


Figure 3. Conceptual log complex structure locations within the Lewis River 21 Phase III project area.

Log complex structures will be built to exceed the elevation of the southern terrace bank which is approximately 10 feet above the channel bed (Figures 4, 5 and 6). The additional two feet of structure height is designed to exceed the highest floodplain surface elevation of the eroding terrace and approximately seven feet higher than the lower floodplain surface elevation to the north. Final structure dimensions will be determined using a 2D HEC-Ras model.

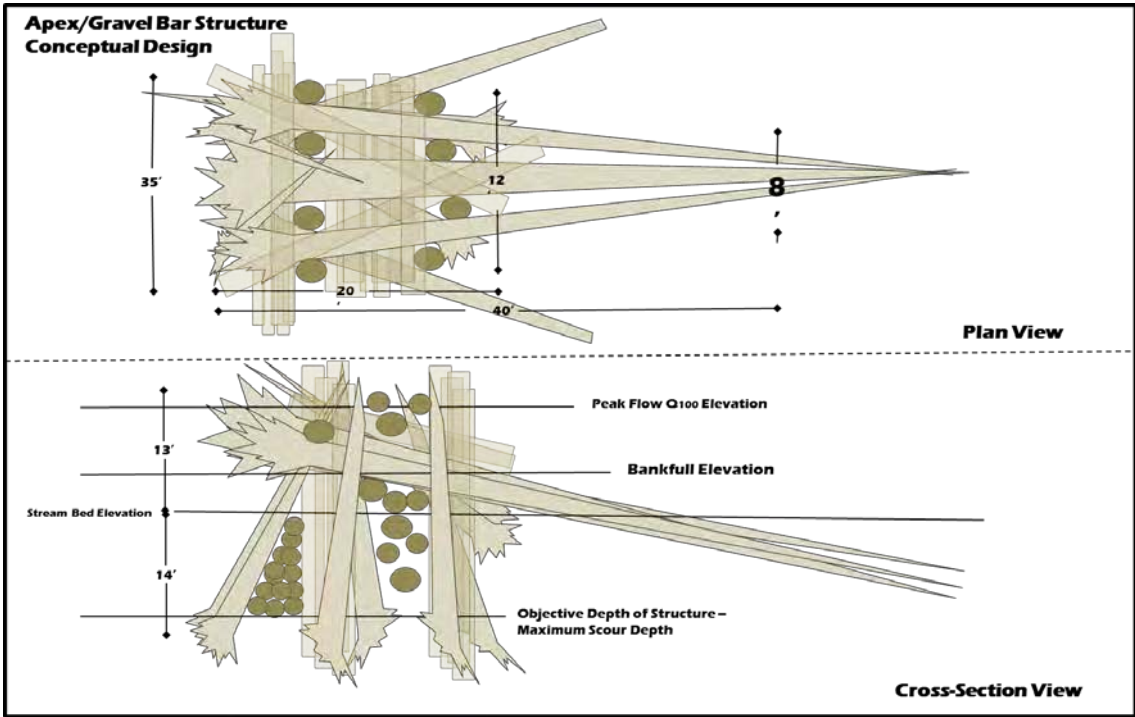


Figure 4. Conceptual apex/gravel bar structure showing proposed structure heights, widths, and scour depths.

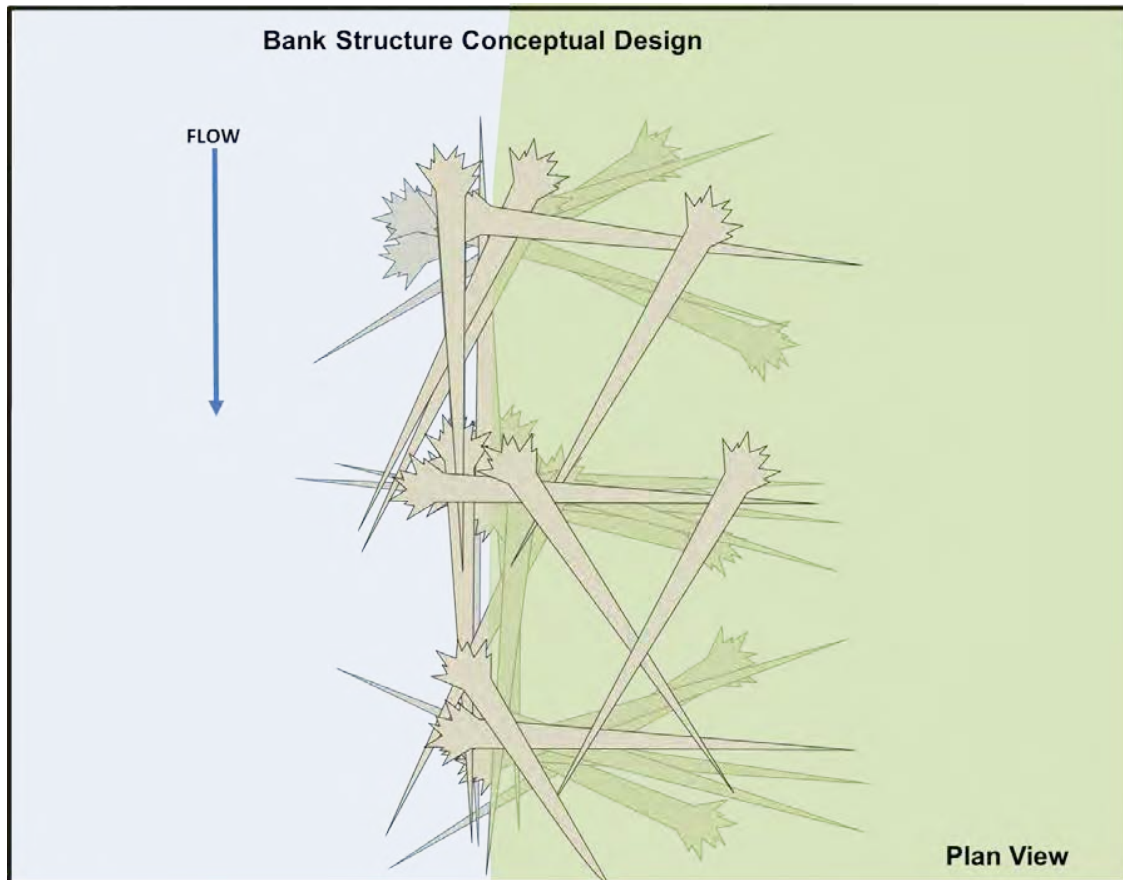


Figure 5. Conceptual design of proposed bank structure base layer framework.

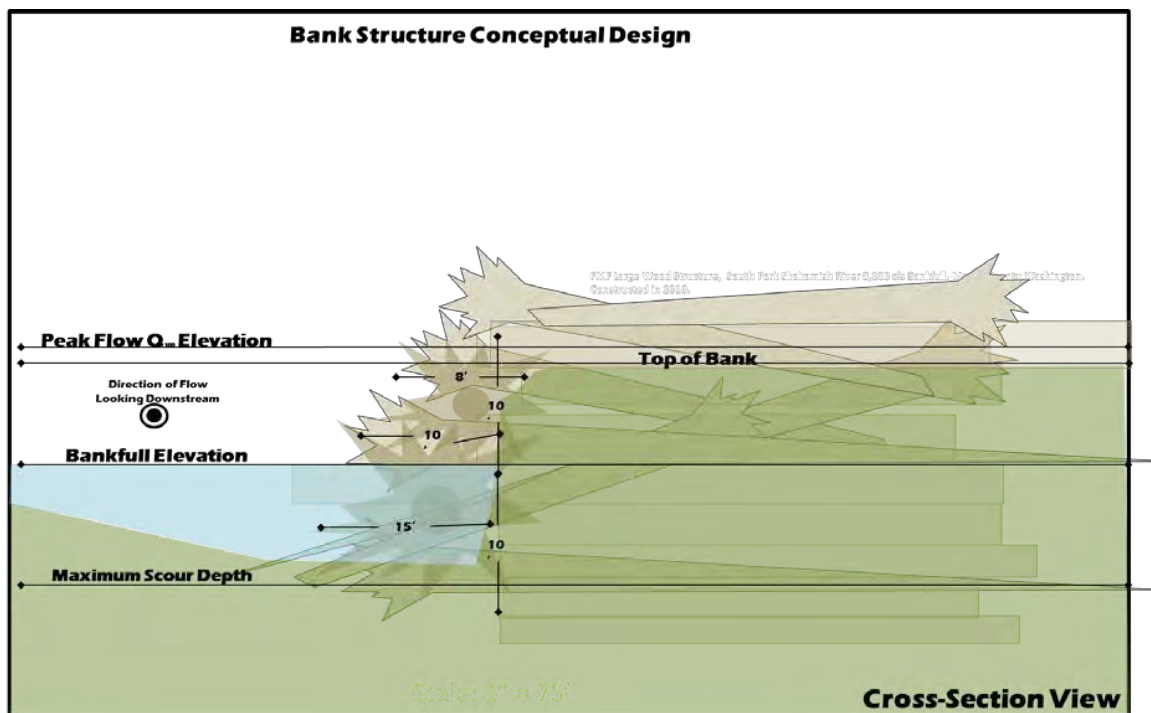


Figure 6. Conceptual bank structure showing proposed structure height and projection.

Material will consist of naturally recruited wood on the gravel bar, full length Douglas fir logs with root wads attached (12-14" DBH) from a harvest unit, and either cedar or Douglas fir (less than or equal to 36" DBH) from the immediate riparian area or from the PacifiCorp Swift Reservoir.

The short term benefits will be creation of high flow juvenile refuge in the side channel, floodplain, and large wood structure habitats. Several existing high flow channels in the lower elevation floodplain area on the north side of the channel will be reactivated at lower flows than existing channel conditions permit and will result in the inundation of approximately twenty three acres of floodplain habitat adjacent to the project reach.

Long term benefits will include deeper pools maintained by high flow scour and increased spawning gravel habitat. The adjacent floodplain to the north will also provide additional off channel habitat and refugia at high flows.

8. Benefits of proposed Project to Focal Reintroduction Species with Emphasis on Spring Chinook.

Providing holding cover, and diversity in mainstem and side channel key habitats.
Providing refugia during winter flows for juvenile salmonids.
Providing rearing opportunities for juvenile salmonids during summer months.
Providing increased spawning gravel retention where flow depths are adequate (>0.8') for Spring Chinook spawning and spawning opportunities for other adult salmonids in side channel and margin habitat (coho and steelhead).

9. Project partners and roles.

The Mount St. Helens Institute (MSHI) will contribute to pre and post monitoring of the project area and the large wood structures. Data from the monitoring will be summarized in an annual report for two years post implementation.

10. Attach signed landowner(s) acknowledgment form(s), if applicable (**Attachment C**).

11. Community involvement (to date and planned).

The Forest Service maintains active community involvement by scheduling regular events with legislators, scientists, members, and key individuals for continual program and project development along with cultivating strong ties with agencies, academia, and local citizen groups. Monitoring activities will include partnering with the Mt. St. Helens Institute (MSHI) and their urban youth outreach programs.

12. Procedure for monitoring and reporting on results.

Baseline monitoring will occur prior to project implementation and include a longitudinal profile, cross-sections, pebble counts, photo-documentation.

Similarly, post project monitoring will occur immediately after project implementation and will continue two consecutive years. The MSHI will provide two interns for this portion of the work and will be supervised by Forest Service personnel. They will perform most aspects of the data collection and analysis with supervision and training from the Forest Service. Written monitoring reports will be delivered for the two years of post-project data collection. The MSHI will provide a preliminary monitoring report with Forest Service completing the final submitted report.

13. Project schedule (anticipated start date, major milestones, completion date).
 2019 – Attain large wood from unit and transport to site starting July 16 due to the limited operating period for avoiding northern spotted owl disturbance. Structure placement as work window allows until August 15.
 2020 – Complete structure placement completed from July 16-August 15.
 2021 – Monitoring July/August
 2022 – Monitoring July/August

14. Funding requested (estimated cost for project design, permitting (including necessary resource surveys), construction, signage, monitoring and administrative/insurance. Insurance limits to be determined based upon PacifiCorp’s evaluation of the project risks.

The Lewis River 21 Phase III project is requesting \$227,000 from the ACC.

15. Type and source of other contributions (Identify cash (C) and/or in-kind (IK), and status, pending (P) or confirmed (Co)).

Table 1. Other financial contributions than ACC funds of to the Lewis 21 Phase III pre-proposal project.

Partner	Contribution	Funds
Forest Service	Project development, Contracting, Permitting, Monitoring	\$32,000 IK
Materials from USFS	Trees with rootwads from harvest unit and onsite tipping	\$190,000 IK
Mt. St. Helens Institute	Monitoring	\$5,000 IK

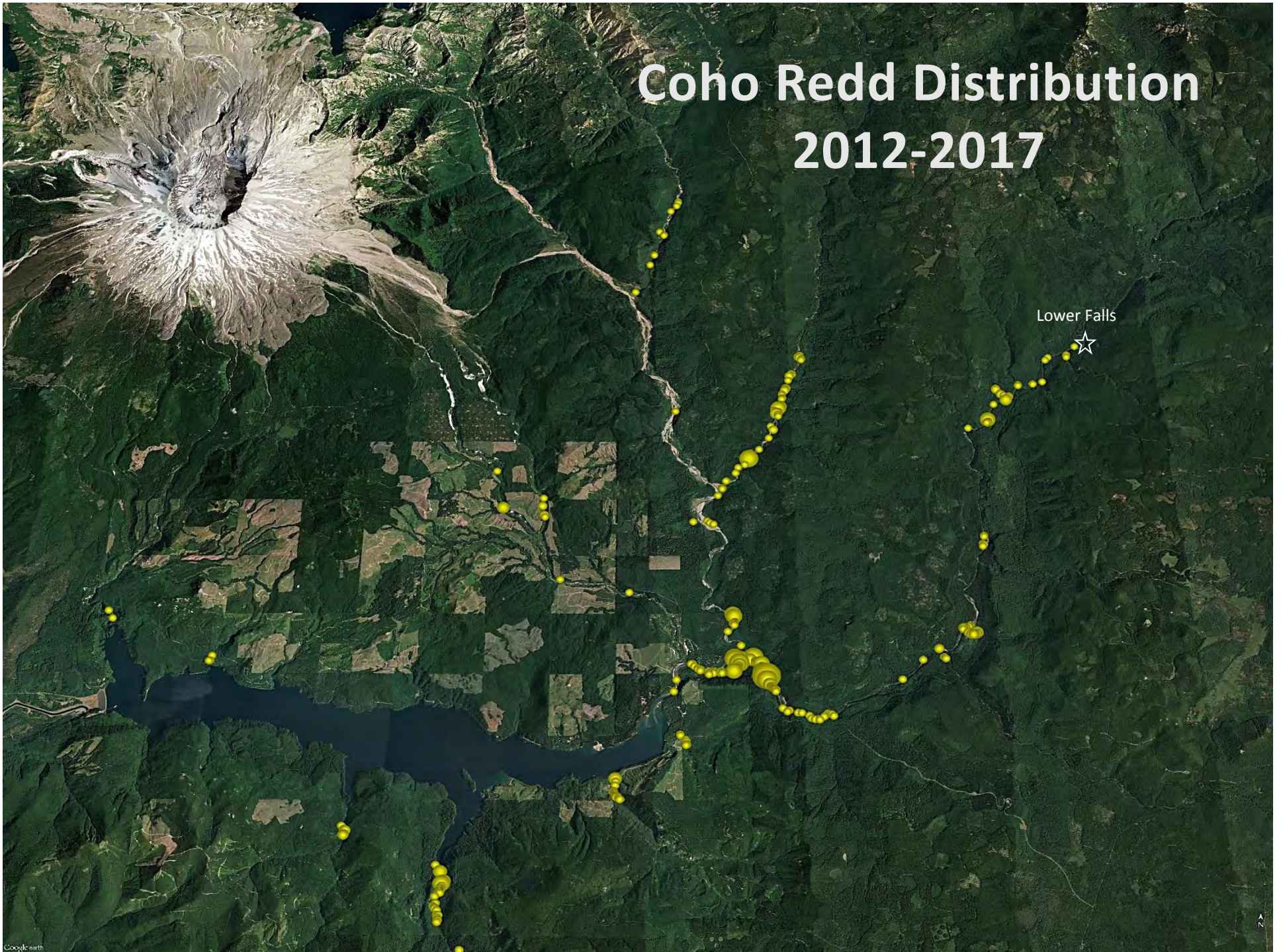
16. If you have technical assistance needs for this project, please briefly describe such needs.

No technical assistance is needed for this project. As required by the ACC group decision on funding projects in either the mainstem Muddy or N.F. Lewis Rivers, a peer review by the U.S. Forest Service Regional Aquatic Technical (RATS) team will be provided in the full proposal, if the pre-proposal project is approved. The RATS team provides technical support for restoration activities within the entire Forest Service Pacific Northwest Region of the Forest Service which encompasses Oregon and Washington states.

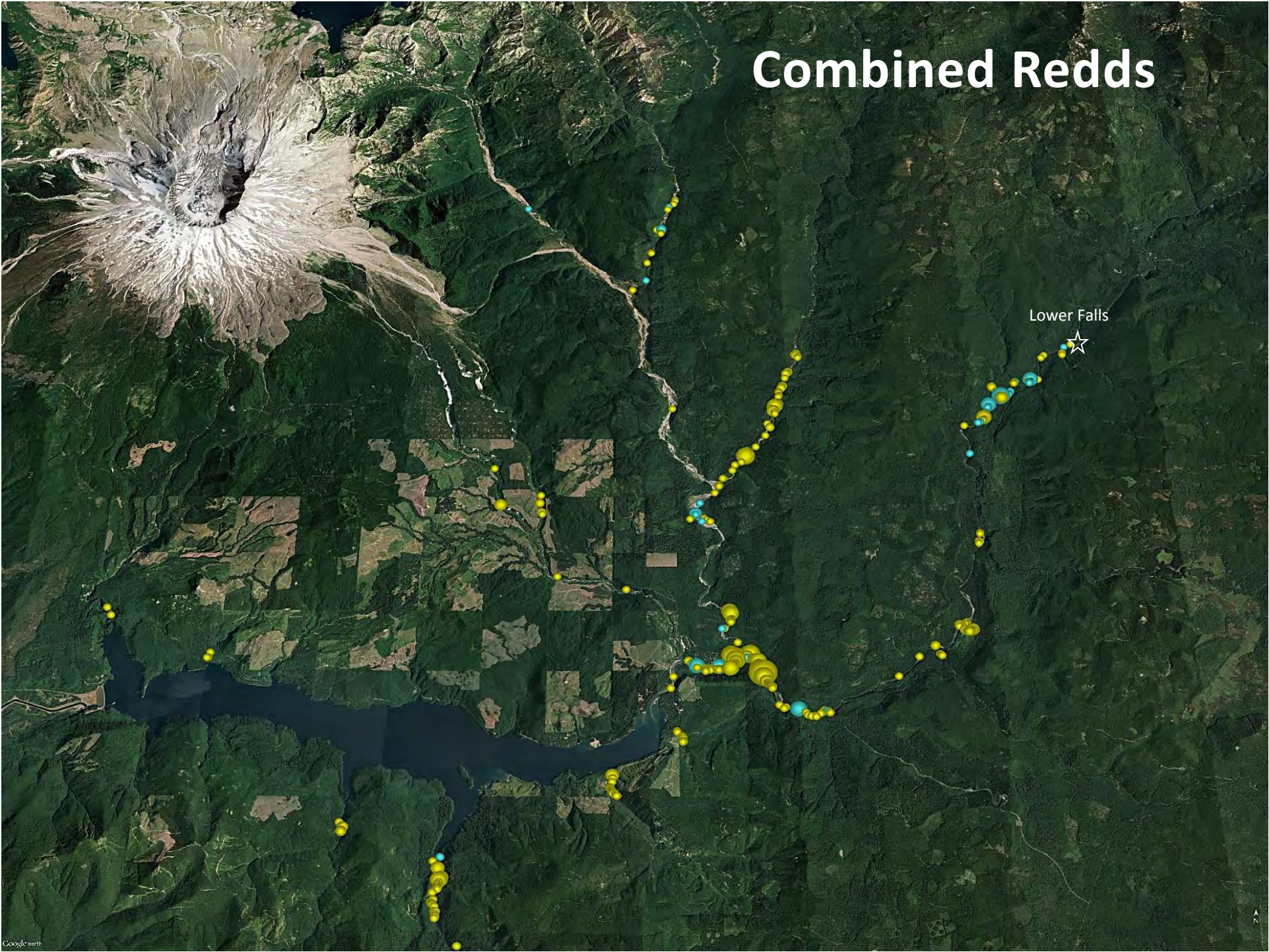
17. If any boating hazards/public safety are an issue please note if any signage requirements.

Boating hazards/public safety from this project are not expected.

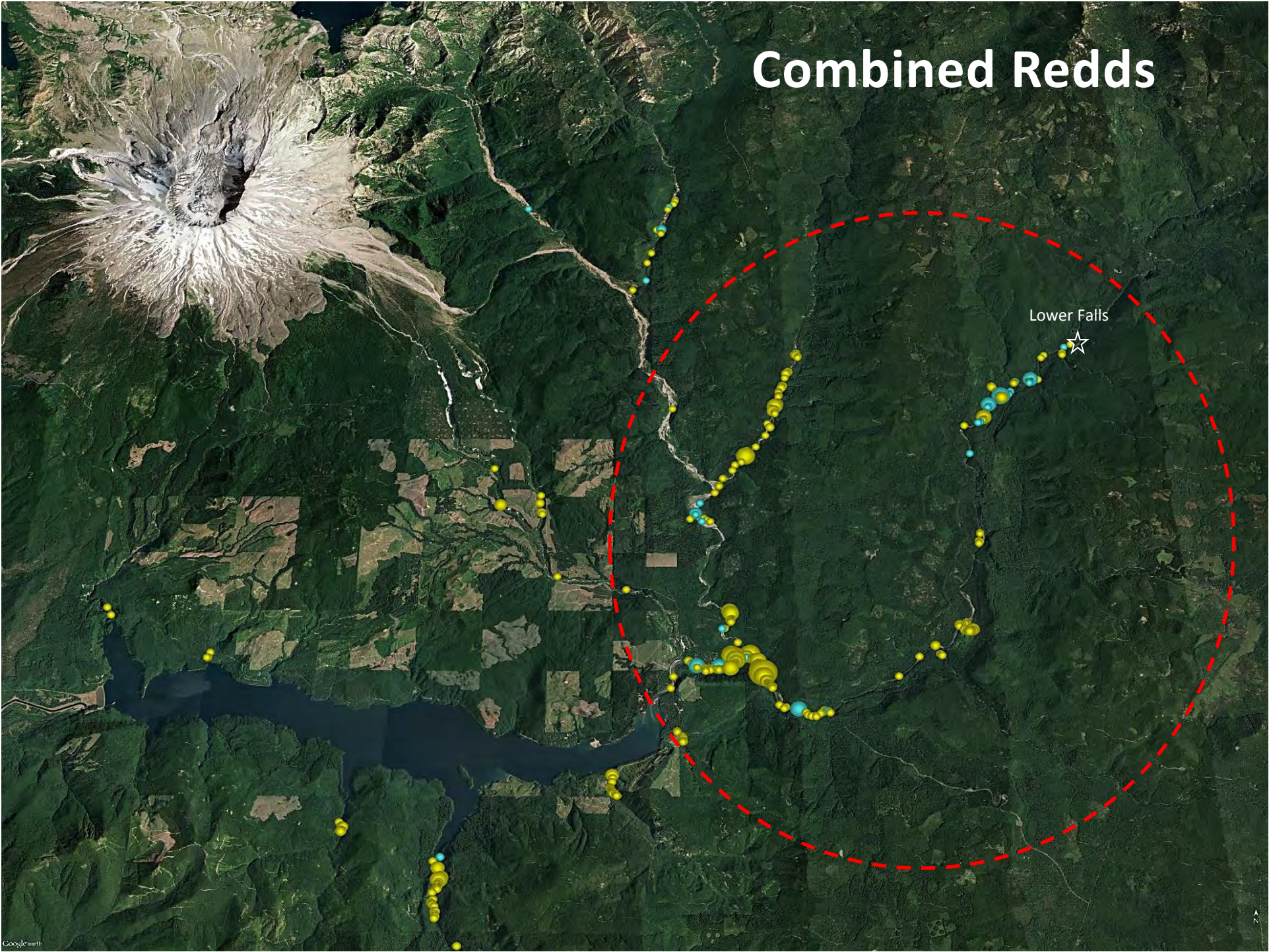
Coho Redd Distribution 2012-2017



Combined Redds

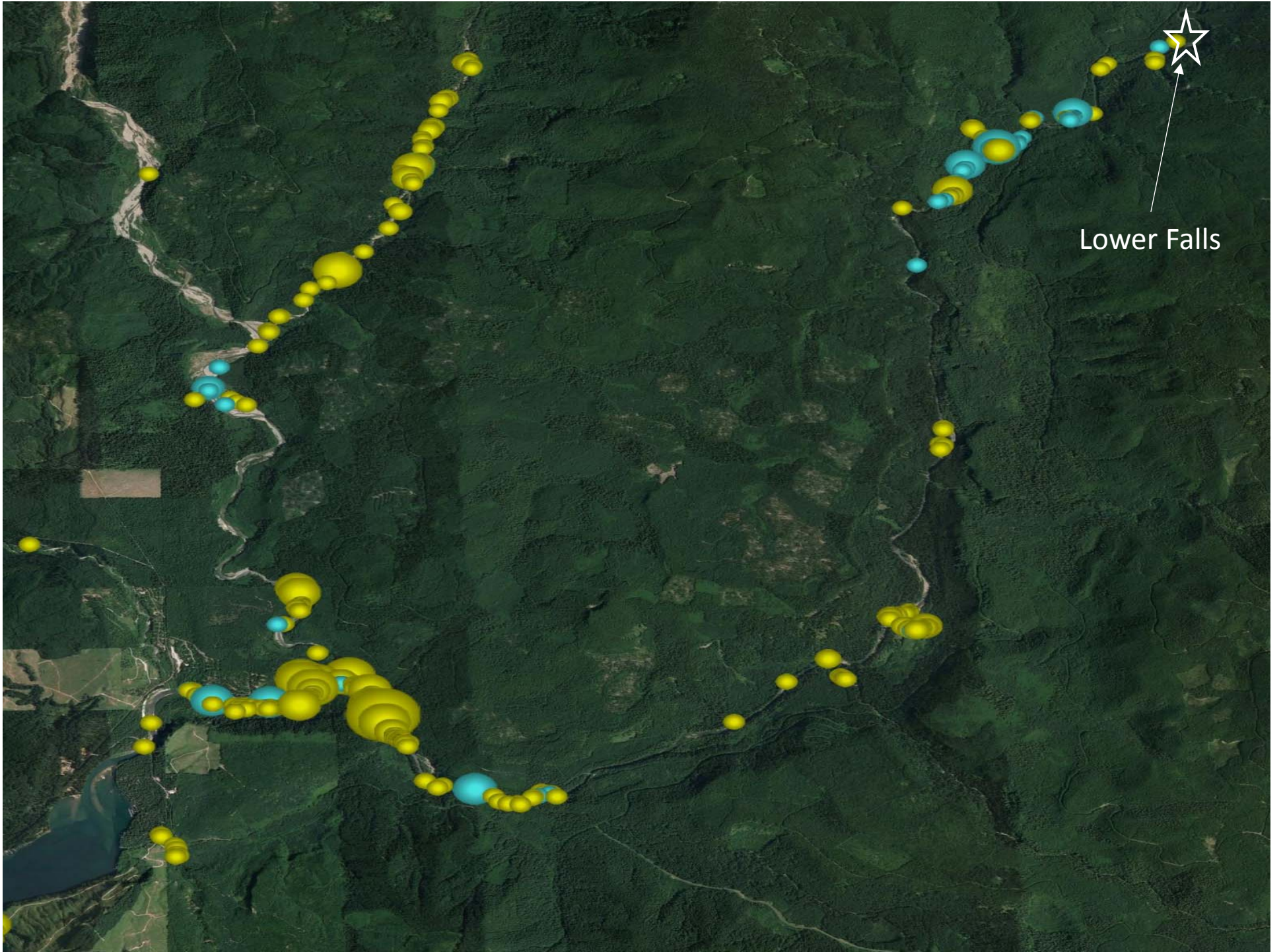


Combined Redds

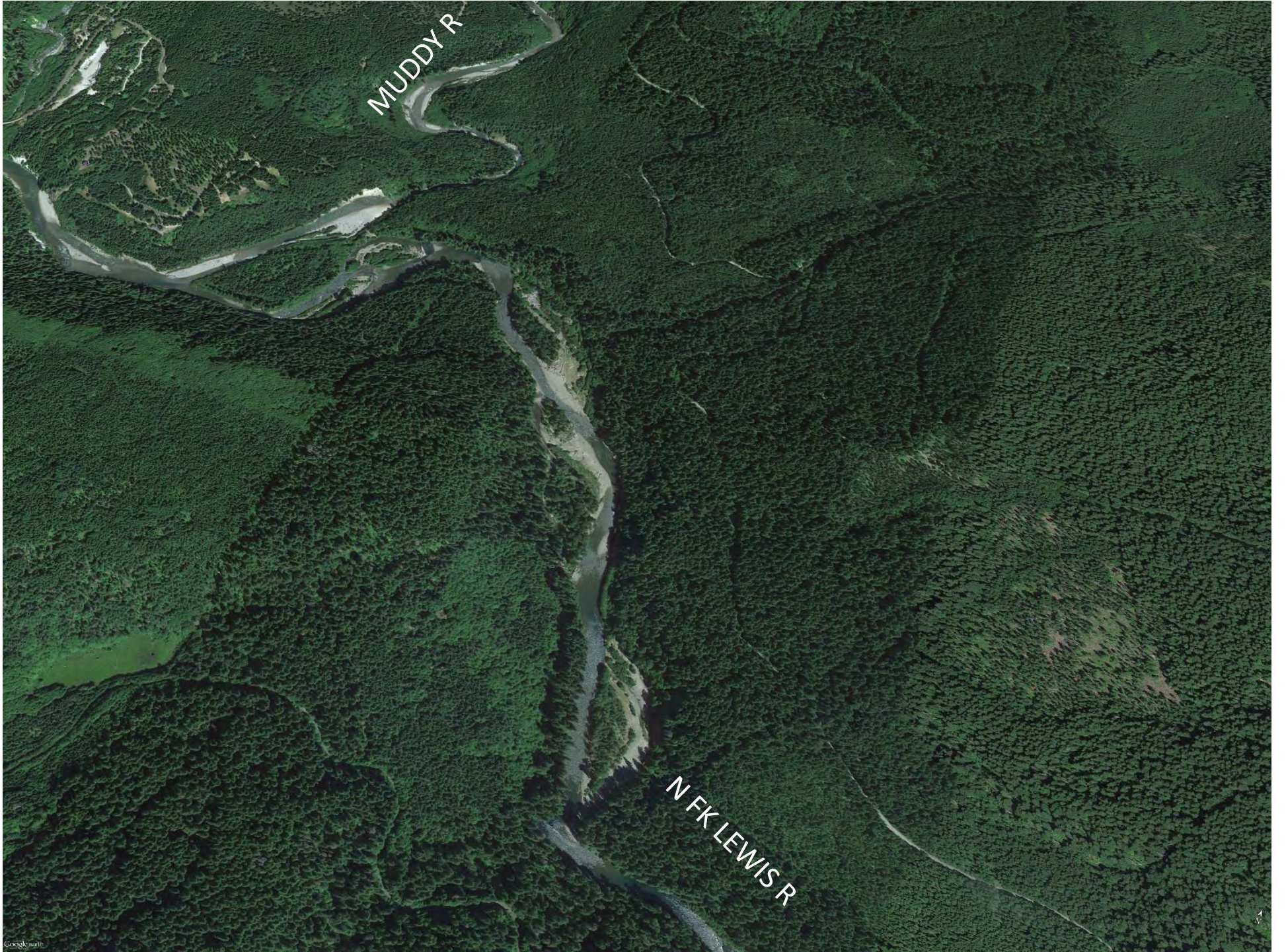


Lower Falls





Lower Falls



MUDDY R

N FK LEWIS R

CLEAR CR

MUDDY R





SMITH CR

BEAN CR.

MUDDY R

CLEARWATER R

SMITH CR



December 1984

★ Lower Falls



December 2016
32 years later

★ Lower Falls



Lewis River Fish Passage Report

September 2018

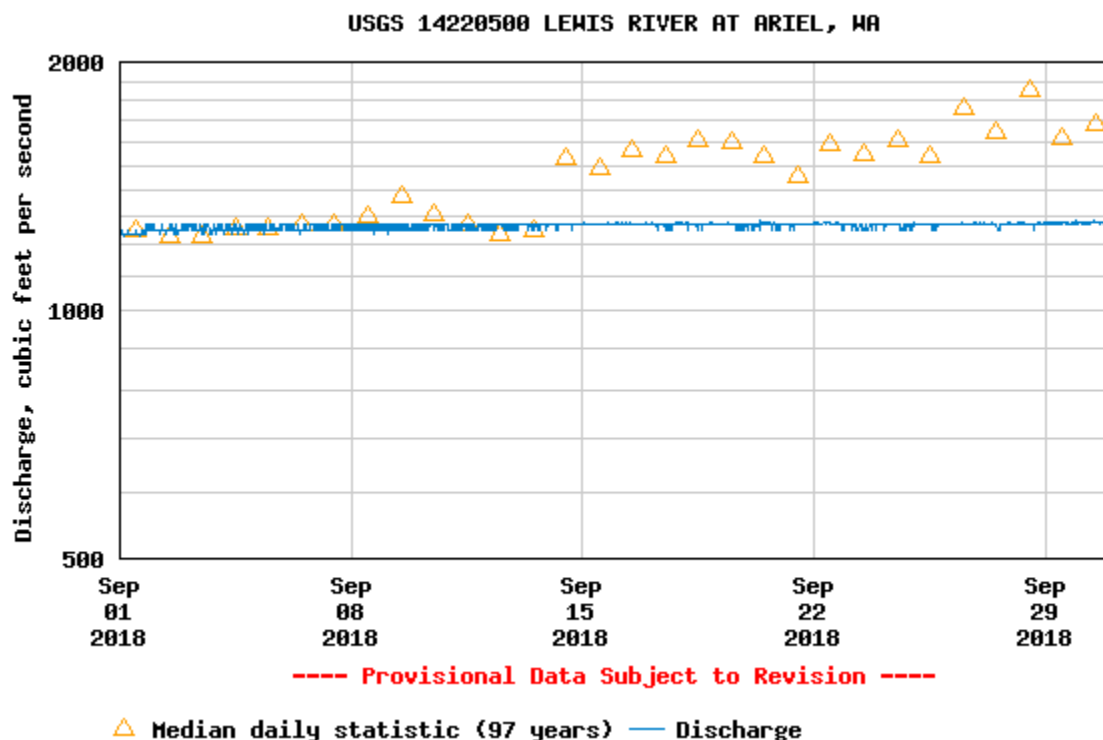
Merwin Fish Collection Facility and General Operations

During the month of September, a total of 2,067 fish were captured at the Merwin Dam Adult Fish Collection Facility. The majority of these fish were early coho (1,376 – 66%) of which 1,097 (80%) were early coho jacks. The spring Chinook run concluded in early September. A total of 2,106 spring Chinook returned to Merwin Trap in 2018.

No major outages occurred in September, the Merwin Dam Fish Collection Facility ran continuously during the month.

River flow below Merwin Dam remained near the minimum flow requirement of 1,200 cfs throughout the month.

Discharge, cubic feet per second



Upstream Transport

Nine Blank Wire Tag (BWT) winter steelhead were transported upstream above Swift Dam in December 2017. Two additional fish were transported earlier in the fall for a total of 11 BWT steelhead collected and transported in fall/winter 2017. An additional 1,216 BWT winter steelhead

were transported upstream for a total of 1,227 fish transported as part of the 2018 run year. *No winter steelhead have been capture since June 11, 2018.*

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

A total of 700 adult spring Chinook have been transported upstream as part of the 2018 run. Of these fish, 329 were transported from the Merwin Dam Fish Collection Facility with an additional 371 fish being transported from the Lewis River Hatchery. Transported upstream were 177 females, 491 Males, and 32 jacks. By the end of June, all surplus adult spring Chinook previously being held at Lewis River Hatchery had been distributed into the upper basin or used as brood stock.

By the end of September, 319 adult early-run coho (189 male/130 female) had been transported upstream along with 252 wild jacks. Through the end of September a total of 22 returning pit tagged early coho have been observed at Merwin Trap. All of these returning pit tagged coho were tagged last spring 2018 at the Swift Floating Surface Collector before release into the Lewis River below Merwin Dam. Two of the returning pit tagged coho have been observed as adults while the rest have been jacks/jills.

Floating Surface Collector (FSC)

The Swift Reservoir Floating Surface Collector was shut down for summer maintenance on July 17, 2018. It will return to service in October 2018.

Fish Facility Report
Swift Floating Surface Collector
September 2018

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			
01																0
02																0
03																0
04																0
05																0
06																0
07																0
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27																0
28																0
29																0
30																0

Monthly	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	850	3627	34437	31	464	4069	7	15	7855	10	3	824	17	6	2078	54295

