

## 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:

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Portland, OR 97232  
[Erik.lesko@pacificorp.com](mailto: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  
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#### 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](http://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).

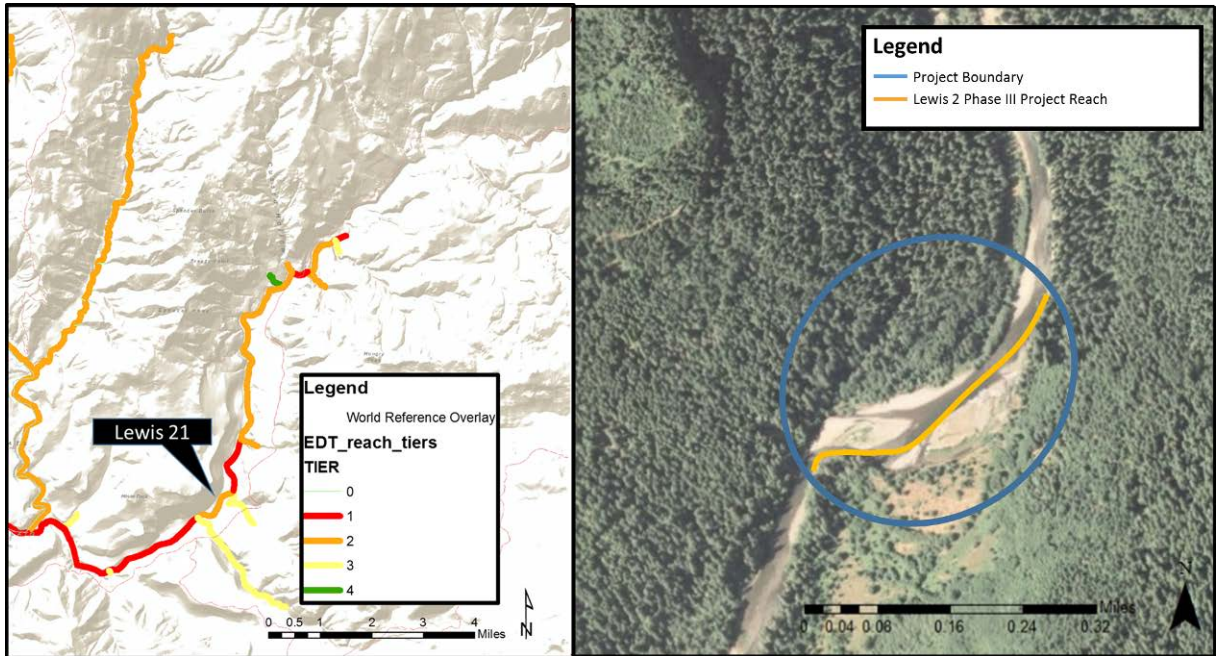


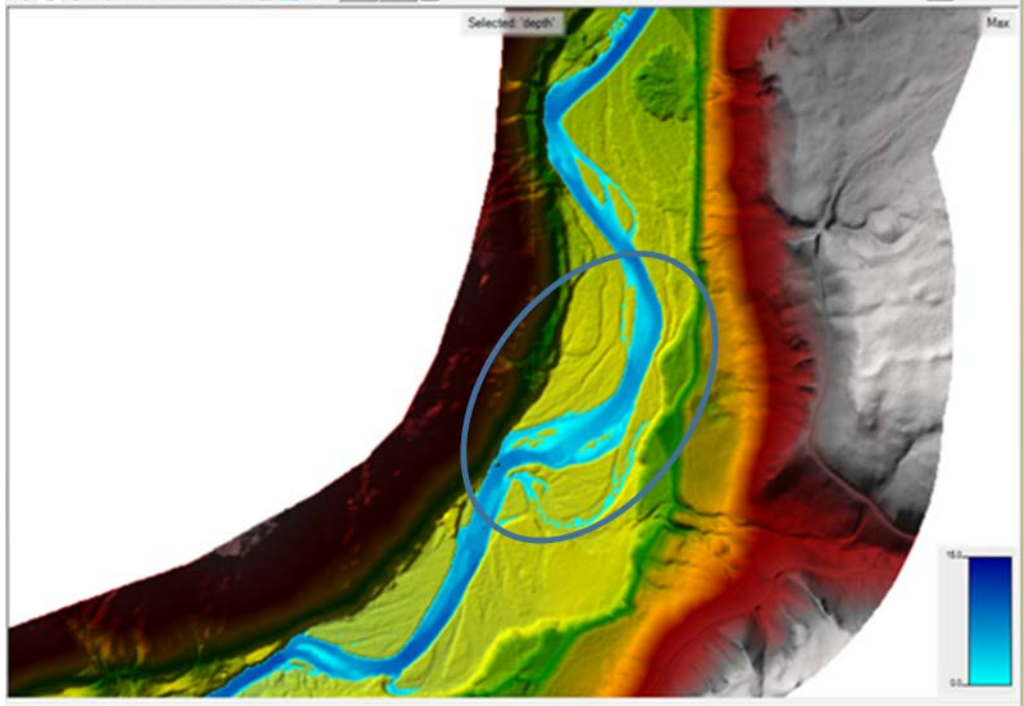
Figure 1. Lewis River Phase III proposed project location, North Fork Lewis River, Skamania County, Washington (Lat/Long: 46.081089, -121.925852).

*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.

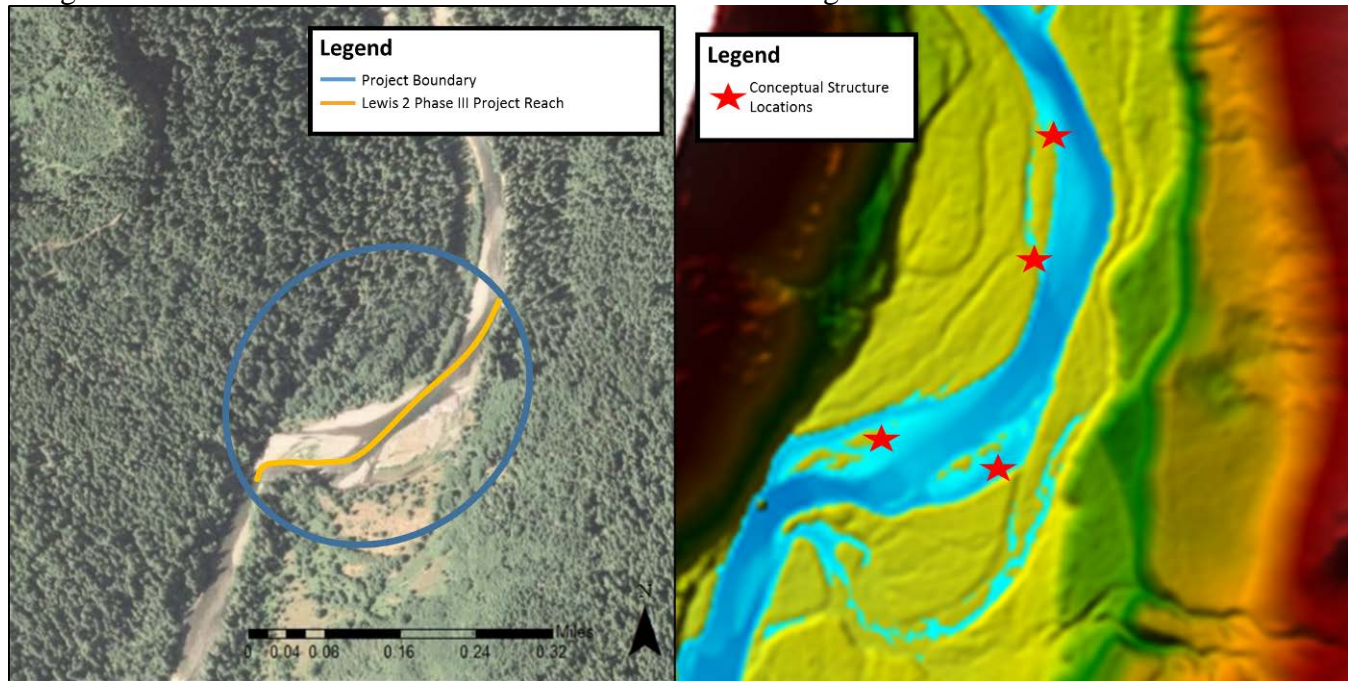
The Lewis River 21 Phase III project goal is to address stream channel habitat structure & bank stability and off channel & side channel habitat restoration needs and thereby improve egg incubation and summer rearing by improving three limiting factors; channel stability, habitat diversity and key habitat.

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.

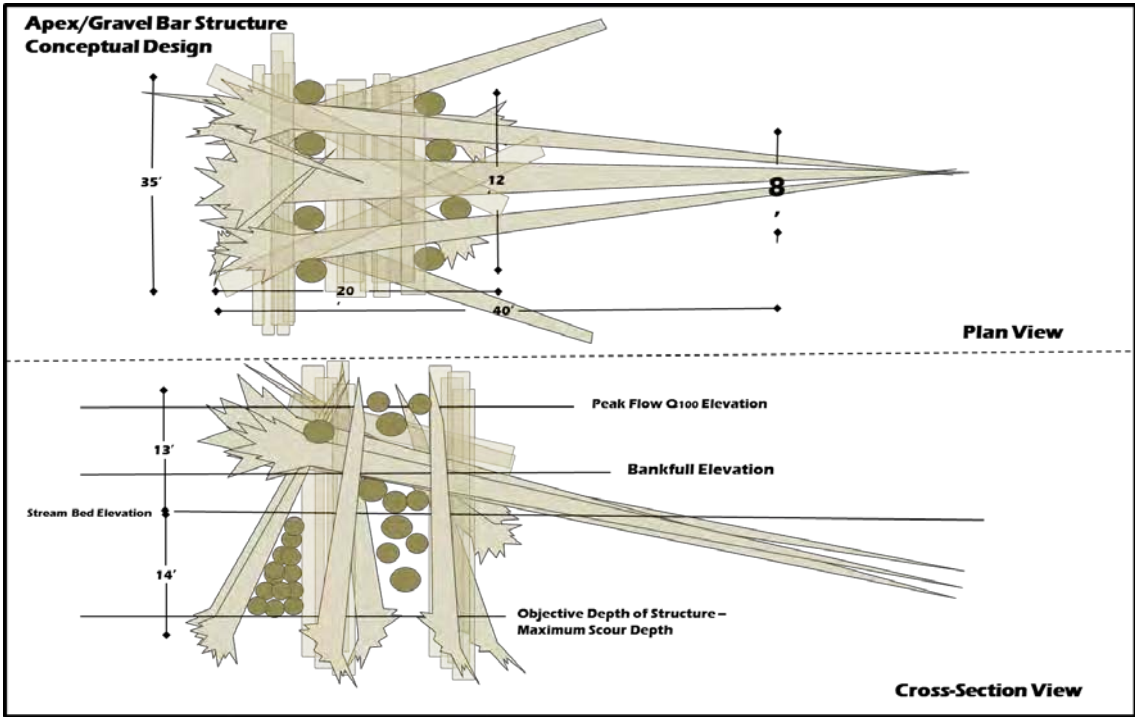


Figure 4. Conceptual apex/gravel bar structure showing proposed structure heights, widths, and scour depths.

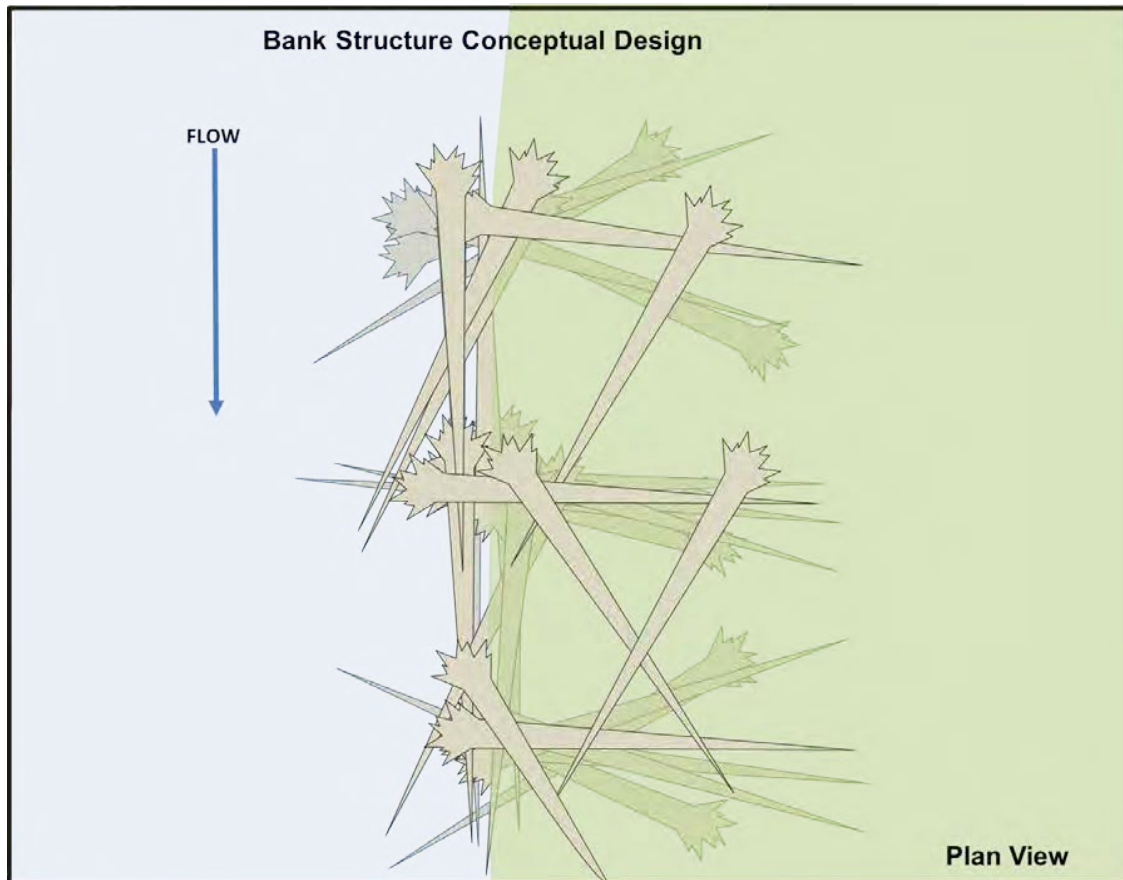


Figure 5. Conceptual design of proposed bank structure base layer framework.

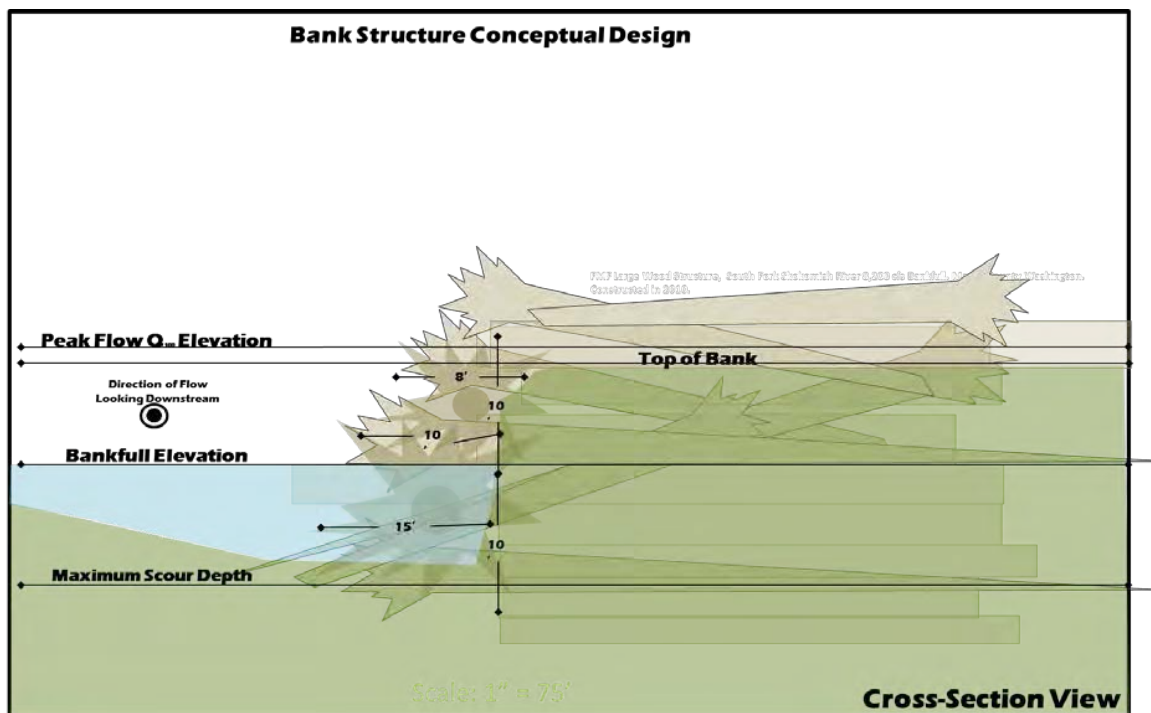


Figure 6. Conceptual bank structure showing proposed structure height and projection.

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.**

<b>Partner</b>	<b>Contribution</b>	<b>Funds</b>
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.