

Lewis River Acclimation Pond Plan

Prepared by:

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1.0 Introduction

The Lewis River Settlement Agreement (SA) calls for PacifiCorp and Cowlitz County PUD to establish juvenile salmonid acclimation sites in the upper Lewis River watershed to aid in the reintroduction of anadromous fish. The purpose of the ponds was to allow naïve hatchery juvenile fish to acclimate and imprint on upper basin Lewis tributaries and mainstem so that, when they returned as adults, they would be driven to return to the upper Lewis river rather than the hatchery. The thought was also that the adults would be more likely to enter the Merwin trap on their way upstream. The SA did not specify number of sites or number of fish. Rather those decisions were “to be determined by the Licensees in Consultation with the Yakama Nation and the ACC.”

In the siting and selection process, three sites were approved by the ACC and the Yakama Nation with one acclimation facility at each site (Figure 1). An alternative site was selected at Eagle Cliffs to be used if one of the other sites failed. The three primary sites selected were Muddy River, Clear Creek and Crab Creek. All three sites are located on U.S. Forest Service (USFS) lands and, as such, actions identified as part of this plan required a National Environmental Policy Act (NEPA) analysis and USFS special-use permitting.

The acclimation pond construction for the Muddy and Clear Creek sites was completed in fall 2013. Crab Creek was completed in fall 2015.

In December 2015, a series of storms created high flows that exceeded 90,000 cfs total inflow to the reservoirs. This high flow event damaged all three pond sites to the extent that they are inoperable and require extensive reconstruction or demolition. The USFS informed PacifiCorp (via email on June 16, 2016) and the ACC that they will require PacifiCorp to remove the Muddy River facilities and restore the site. The Clear Creek and Crab Creek sites were viewed by the ACC in summer 2016, but no decision was made to either restore or remove these projects. The ACC again visited the two sites in June 2017..

The ACC has provided direction on the Clear Creek and Crab Creek facilities as of August 10, 2017 with members agreeing to remove the two remaining facilities as long as PacifiCorp and Cowlitz PUD provide a detailed plan for removal of the facilities and a detailed study plan for evaluating the juvenile acclimation program use of a direct release of the fish from transport truck to the designated water body. Detailed removal plans for the Muddy River facility have been developed and approved by the USFS. Permitting is in process. Upon, through normal ACC course of action this plan is approved, the Utilities will prepare more detailed decommissioning plans for Clear Creek and Crab Creek sites for ACC approval, then initiate formal permitting process with jurisdictional authorities.

The following provides facility information for each acclimation site. In general the decommissioning of Clear Creek and Crab Creek facilities will follow the plan for the Muddy River site.

Muddy River Acclimation Site

The Muddy River acclimation pond was completed in 2013 with four main components:

- 1) Intake and wet well;
- 2) 900 ft. underground conveyance pipe;

- 3) Mid-box inflow control; and,
- 4) Outlet box and release structure.

Figures 2-5 show some of the components following construction and what they look like after the 2015 high flow event. Plans have been developed for removal and they are under review by USFS staff and management.

The Muddy River Acclimation Pond Decommissioning Project (Project) will entail the following:

- Mobilize, establish staging areas, and install erosion and sediment control best management practices (BMPs). Install temporary access ramp from existing parking lot down to Project alignment (slightly “upstream” of the current location of the mid-box).
- Install temporary access ramp (as necessary) from upper bank of Muddy River down to the concrete wet well. Remove the wet well and restore the channel area from which it was removed;
- Partially or entirely remove the infiltration gallery, followed by channel grading/restoration. The construction contractor will not be instructed to dig throughout the channel if infiltration gallery pipes are not easily accessible;
- In-water isolation and fish salvage, if warranted, to facilitate the removal of in-water elements;
- Remove the underground piping that transports river water from the wet well to the mid-box of the acclimation pond;
- Grade and restore the pipe removal alignment to pre-Project contours (resembling an old channel scar). In conjunction with grading, place existing boulders and several pieces of imported large wood throughout the pipe removal alignment to provide channel roughness and habitat value. Several pieces of the large wood may have attached root wads.
- Dismantle and remove the mid-box and the outlet box. Grade areas to integrate with upstream and downstream gradients. Place boulders and large wood in disturbance areas, as needed, to prevent head-cutting. Leave acclimation pond as-is (per USFS request). Since the pond is an old, natural swale rather than a side channel, it is naturally isolated from the river except during very high flow events.
- Install woody plantings and apply seeding along disturbance footprint to complete site restoration.

The Project decommissioning plan has been filed with all the appropriate agencies for permit applications.

Decommissioning Schedule for Muddy River Facility

This Project will be implemented from July 1, 2018 to September 30, 2018. All in-water work will be conducted from July 15, 2018 to mid-September 2018.

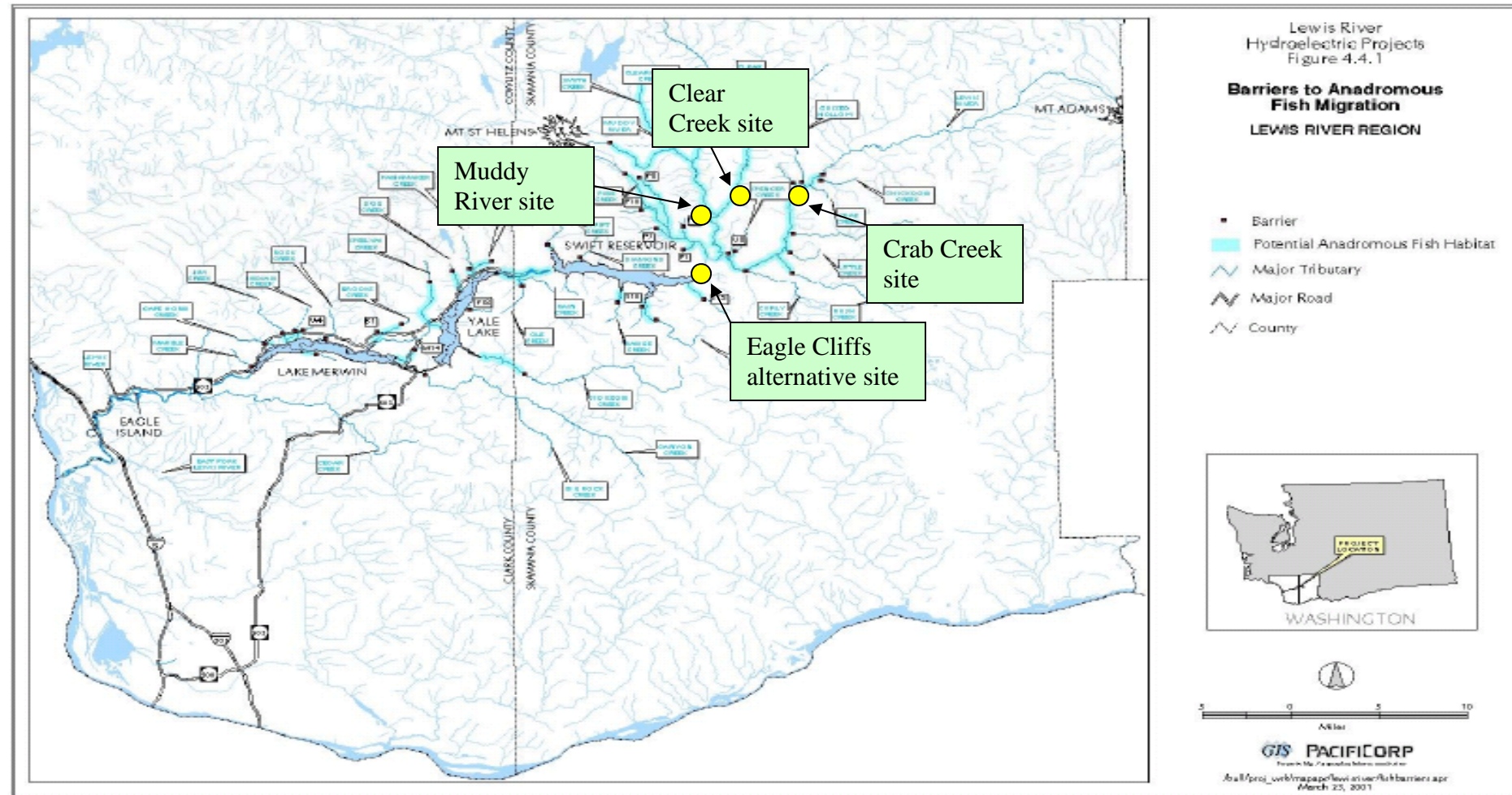


Figure 1: Map of the Lewis River basin showing all accessible habitat and anadromous fish barriers (small boxes) and the four possible acclimation site locations.



Muddy River Acclimation Site (infiltration gallery) - 2016



Infiltration site - 2013

Figure 2. Muddy River wet well after the 2015 flow event and the infiltration site prior to 2015.



Note Trees

Muddy River Acclimation Site (looking up river) - 2016



Finished wet well site – fall 2013

**Figure 3. Newly formed river channel with wet well and the wet well site prior to the flood.
Note: wet well is under the wood platform.**



Muddy River rearing channel - 2017



Muddy River rearing channel - 2013

Figure 4. Muddy River rearing channel in 2017 and the channel following construction completion in 2013 and before iron leached into the water.



Muddy River outlet – 2017



Muddy River outlet after completion in – 2013

Figure 5. Muddy River rearing channel outlet in 2017 and right after construction in 2013.

Clear Creek Acclimation Site

The Clear Creek acclimation pond facility was completed in 2013 and consisted of three major components:

- 1) Intake box;
- 2) Rearing channel; and,
- 3) Outlet box.

The facility was used once when it was functional in 2014. Approximately 15,000 spring Chinook smolts were placed in the channel and the remaining 18,000 were placed in the mainstem Clear Creek. The ponded fish were held for just a few days when the operator decided to open the inlet box to allow more flow into the channel since the fish were so active and exhibiting strong smolt behaviors. Within a day, all the fish exited through the intake so the rearing operations were terminated. In 2015, the acclimation rearing time was moved to October to coincide with release timing changes at the Lewis River Hatchery. However, 2015 was a very dry and warm fall where all streams were exhibiting lower than average flows. When it came time to plant acclimation fish in the pond, there was not enough water entering the rearing channel due to low Clear Creek flow. Accordingly the pond site was not used and fish were directly released into Clear Creek.

Figures 6-8 show before and after photos of the Clear Creek facilities. The December 2015 high flow event breached and essentially flowed around the sides of the intake and outlet flow boxes and deposited gravel in the excavated channel. Stumps and habitat logs used for cover in the rearing channel along with wood that recruited from the mainstem Clear Creek, piled up against the outlet box. Restoring the facility would involve re-excavating the rearing channel to design depth and re-structuring the river banks on each side of the intake and outlet box. Due to the uncertainty of Clear Creek flow which could either not provide enough water during rearing time or provide too much water and render the facility inoperable again, PacifiCorp proposes to remove the inlet and outlet boxes, repair/restore the river banks on each end of the rearing channel and leave the channel as is to function as a side channel at certain times when Clear Creek water level stage is high enough to water the channel.



Clear Creek Intake box in June 2017



Clear Creek Intake box at completion in 2013

Figure 6. Clear Creek acclimation pond intake in June 2017 and at completion in 2013 following the high water event in December 2015.



Clear Creek outlet – 2017



Clear Creek outlet - 2013

Figure 7. Clear Creek outlet box in June 2017 and at the fall 2013 completion.



Clear Creek rearing channel - 2017



Clear Creek rearing channel - 2013

Figure 8. Clear Creek rearing channel in June 2017 and at the fall 2013 completion.

Decommissioning Schedule for Clear Creek Facility

Following an acceptance of this plan for decommissioning the Clear Creek Acclimation Pond, PacifiCorp will initiate the permitting process and will likely complete the work in summer 2019.

Crab Creek Acclimation Site

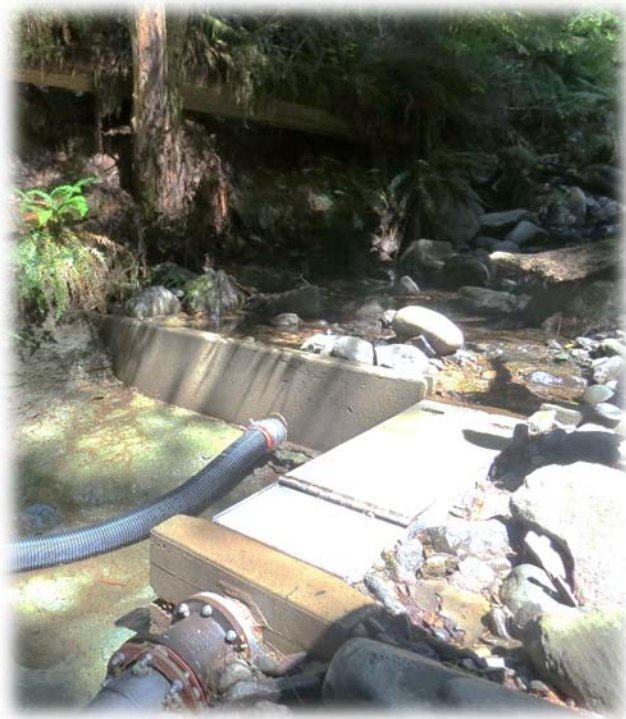
The Crab Creek acclimation pond facility was completed in fall of 2015 and consisted of three major components:

- 1) Intake diversion dam and conveyance pipe to distribution chamber;
- 2) Conveyance pipe from distribution chamber to portable pond; and,
- 3) Portable pond structure and outlet pipe.

The Crab Creek acclimation pond facility was completed in fall 2015. The original intent was to withdraw a portion of the water (less than 50%) from Crab Creek in the spring through a screened diversion, convey it down the slope through a pipe to the portable rearing pond, and eventually release the fish through an outlet pipe into the mainstem Lewis River.

The facility has never been used for fish rearing since PacifiCorp and the ACC moved the release time from May to October and USFS staff needed to reevaluate water use in the fall rather than the spring. Since then, the USFS has calculated there would not be enough water for the Crab Creek pond until late October in a normal year. This would shorten the rearing time since the fish would need to be out of the pond and the portable tank dewatered, dismantled, and stored before the first freeze (about the end of October). The high flow in December 2015 did two things to the facility, 1) - it filled in the diversion dam with large rock and cobble making it difficult to control water supply to the distribution chamber and, 2) - it scoured the creek bed downstream of the diversion down to bedrock rendering the site impassable to upstream fish migration. Due to the difficulties doing any sort of construction at this site and the uncertainty of flows, PacifiCorp is proposing to remove the small diversion dam, remove the distribution chamber and conveyance pipe, remove piping buried in the flattened gravel pond site and abandon the project.

Figure 9 shows before and after photos of the Crab Creek diversion.



Crab Creek diversion and screen in June 2016



Crab Creek diversion and screen in fall 2015

Figure 9. Condition of the facility in 2016 and the newly completed Crab Creek diversion and screen in 2015.

Decommissioning Schedule for Crab Creek Facility

Following an acceptance of this plan for decommissioning the Crab Creek Acclimation Pond, PacifiCorp will initiate the permitting process and will likely complete the work in summer 2019.

Next Steps

In response to unforeseen acclimation pond site conditions, facility damage and restoration effort, PacifiCorp will decommission and remove the Muddy River, Clear Creek and Crab Creek acclimation facilities. Facility removal and site remediation will be completed upon receipt of necessary permits and approvals. PacifiCorp will also develop and implement a study to evaluate the performance of the acclimation fish to determine the viability of a direct release program.

Acclimation Fish Program

Per the SA, the acclimation program is to end 15 years from the start of the program (2013 for Muddy and Clear Creek and 2015 for Crab Creek). If needed, the ACC can elect to extend the program at the end of the 15-year period. To maintain the intent of the program, PacifiCorp proposes to continue the release of up to 100,000 acclimation spring Chinook per year into the upper North Fork Lewis River basin. Releases will remain at the three acclimation sites or other sites with river access at the discretion of the ACC. However fish releases will be made directly from the transport truck to the main river channels. The option to construct acclimation sites in the future will remain. In addition, other acclimation techniques that have proven successful will be considered for adding into the evaluation program as new information becomes available and after the first 3 to 5 years of the adult return period. Timing of release and number of fish released at each site will also be at discretion of the ACC.

PacifiCorp will also prepare a detailed study plan for the acclimation program which will include the following objectives:

- 1) Identify the initial release sites and numbers with input from the ACC;
- 2) Evaluate distribution of juveniles after release into the upper watershed;
- 3) Evaluate the duration of time juveniles rear in the upper watershed prior to migrating downstream;
- 4) Determine the outmigration timing to the Swift FSC for each release group and use the information to approximate juvenile survival from release to arrival at the FSC (sample fish from each group will be PIT tagged; and,
- 5) Determine adult return numbers by release group which will yield the smolt to adult statistic;