

**FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
March 10, 2011
Merwin Hydro Control Center, Ariel, WA**

ACC Participants Present (14)

Adam Haspiel, USDA Forest Service
 Dave Hu, USDA Forest Service (Teleconference)
 Eli Asher, Lower Columbia Fish Recovery Board
 Diana Gritten-MacDonald, Cowlitz PUD
 Shannon Wills, Cowlitz Indian Tribe (Teleconference)
 LouEllyn Jones, USFWS
 Eric Kinne, WDFW
 Pat Frazier, WDFW
 Frank Shrier, PacifiCorp Energy
 Nathan Higa, PacifiCorp Energy
 Sabrina Hickerson, PacifiCorp Energy
 Todd Olson, PacifiCorp Energy
 Jeremiah Doyle, PacifiCorp Energy
 Erik Lesko, PacifiCorp Energy

Calendar:

April 14, 2011	ACC Meeting	Merwin Hydro
May 12, 2011	ACC Meeting	Merwin Hydro

Assignments from March 10, 2011 meeting:	Status:
Review ACC/TCC Annual Report – Comments are due March 31 st .	Pending
Aquatic Fund Final Proposals – Comments are due March 17, 2011.	Pending

Opening, Review of Agenda and Meeting Notes

Frank Shrier (PacifiCorp Energy) called the meeting to order at 9:10 a.m., reviewed the agenda for the day and requested any changes or additions. No changes or additions were recommended.

Shrier requested comments and/or changes to the ACC Draft 1/13/11 meeting notes. Shannon Wills (Cowlitz Indian Tribe) requested that a statement be added to the notes indicating that, when making decisions, the ACC considers what is most beneficial to the fish. Sabrina Hickerson (PacifiCorp Energy) will add this statement and post the notes to the PacifiCorp website. Pending the addition of this statement, the meeting notes are approved.

9:16 AM – Nathan Higa arrived

Aquatic Fund

Todd Olson (PacifiCorp Energy) noted that the Utilities support each proposal, but there are a few concerns that will hopefully be addressed as the projects move forward. The selection for funding process needs to be completed in early April as per the licenses. We need to report our selections to FERC by April 15th.

Eli Asher (LCFRB) provided the following comments:

- The Forest Service's applications did not appear to address pre-proposal comments provided by the ACC, and the applications generally did not contain adequate information on existing or proposed habitat conditions at the project sites. The lack of information provided led to problems with evaluating the projects. He felt it would be helpful to have the final proposal before the February ACC presentations so that ACC members could ask project sponsors questions about the final applications.
The LCFRB will submit written comments on the proposals prior to the March 17 deadline, but Asher provided some preliminary comments for discussion at the meeting.
- The Muddy River Side Channel Restoration: The LCFRB is neutral on this proposal. It looks like familiar treatment with little information on existing and proposed habitat conditions at the site.

9:30 AM – Pat Frazier arrived

- Muddy River Mainstem Channel Restoration: The LCFRB does not support this proposal as it is laid out currently. This project does not appear to address the stated problem of channel stability.
- The Cowlitz Indian Tribe's Eagle Island Habitat Enhancement: The LCFRB supports this proposal. The Utility was concerned about boat traffic, but a brief discussion and review of the plans revealed that the large wood structures will be placed in the side channel and not in the main channel where the majority of the boat traffic would occur.
- Lewis River Side Channel Near Muddy River Instream Habitat Restoration: The LCFRB supports this proposal. It answered questions about side-channel stability, does no harm and provides better habitat.

LouEllyn Jones (USFWS) stated that she had no comments on the proposals at this time.

Eric Kinne (WDFW) stated that his team will get together on Wednesday, March 16, 2011, and will be able to provide comments on the final proposal by the due date, March 17, 2011.

Olson suggested the ACC have a conference call the last week of March or first week of April to review the proposals and make project decisions. This would allow sufficient time to prepare documentation for the FERC submittal. He advised that PacifiCorp

Energy will compile a matrix with everyone's comments to send out for review prior to the call. Please send responses back to Hickerson by the due date of March 17, 2011.

Crab Creek Acclimation Pond Plan

Shrier introduced the topic of the Crab Creek acclimation pond plan, first going over the background of the issue. He advised that the ACC is looking at alternatives for Crab Creek since the idea of taking water out of Crab Creek is not feasible and the Forest Service is against the idea. The ACC has dropped the idea of a ponding structure at Crab Creek because of problems with the water supply. This leaves two options: net pen structure or direct release.

A single net pen design that was shared last ACC meeting is rather large and would need a crane with crane pad to be installed and would be very unmanageable. McMillan engineering firm is handling the design (see [Attachment A](#)). At the ACC's request, McMillan has come up with a design of several smaller net pens, based on the concept that they can fit parts on a flatbed truck, be light enough to drop in river with a boom truck, and still have enough pens available to hold 33,000 spring Chinook (a total of 17 net pens).

9:38 AM – Dave Hu joined teleconference

There are a number of difficulties that arise with this proposed design: How do we feed the fish, care for them and check on them? Additionally, how do we set the pens and anchor them properly?

Shrier advised the group that a decision was needed today because PacifiCorp cannot finish design of Clear Creek and potentially Muddy River sites because those designs are dependent on the Crab Creek approach. This is only one step in the process of completing the Acclimation Pond project which, in addition to the design process, PacifiCorp will need to obtain all the appropriate permitting, approval by FERC, water rights, NEPA process and construction before December 26, 2012.

Pat Frazier (WDFW) emphasized the need for acclimation at Crab Creek which is based on imprinting fish to spawn in the upper mainstem Lewis River. Direct release would be an option, but the likelihood of fish effectively imprinting to that release location is very low based on WDFW's past experience.

After much discussion, it was determined by the group that net pens are not a viable option. Discussion continued to find another, more feasible option.

Shrier showed a picture on the video screen taken from the bridge over the Lewis River mainstem with Crab Creek emptying into it from the right looking upstream. He pointed out a gravel bar near the shore that created a natural pool that could potentially be excavated into a deeper pool. With proper reinforcements (e.g. netting, rock, and other materials), this could potentially hold the juvenile fish and act as a natural acclimation pond.

Shrier's idea was discussed at length. Primary concerns were as follows:

- The pool would likely not last through heavy winter rains and spring run-off. It would need to be redone every year. However the HPA permitting would only need to be done once every five years.
- How would you keep the fish inside the pool? Or would it be acceptable for them to be naturally released in this way?

Shannon Wills (Cowlitz Indian Tribe) suggested talking to the Yakama Nation because they have had more experience with this.

Marking and pit tagging the fish unique to each acclimation site would allow the effectiveness of each concept to be evaluated as they are captured at the downstream trap.

The group discussed possible ways of building the pond including root wads to create scouring and adding boulders to help the river naturally maintain the pond and provide cover for the fish.

Shrier advised that the permitting would be mostly the same no matter what option the group decides to go with.

Direct release would be a second alternative to fall back on if the pool does not work.

Diana MacDonald (Cowlitz PUD) stated that Shrier's plan was the best option and moved to make a decision. Following MacDonald's comments, the group reached a consensus that a natural pond where the Crab Creek empties into the Lewis River is the best alternative. Shrier agreed to provide a summary of the plan and forward it to Wills for her review and to share with the Yakama Nation. Shrier would meanwhile move forward with investigating the specifics of the option, including permitting (see [Attachment B](#)).

Upper Release Flows and Constructed Channel Flows

After a full year, the ACC is required by the SA to revisit the flow regime and engage the Washington Department of Ecology (DOE) to decide whether to keep the current flows or to change the regime.

Please review the current regime as this will be the topic of conversation next month.

Currently there is a straight 14 cfs coming out of the constructed channel. Upper release has a seasonal flow, currently 76 cfs, which holds for a while longer and then gradually drops off to simulate natural hydrology.

Study Updates

Release Pond – PacifiCorp has received permission from the current land owner to conduct the remaining reconnaissance. The lay of the land is great, really flat and high enough off of the normal flood plain. There is easy access to pump water and to return it to the river. In many ways, this is better than the last site and the process is moving right along.

McMillan has produced another final version of the release pond design and this is what PacifiCorp intends to send to FERC (See [Attachment C](#)). The design has already been sent out to the ACC for review. Nathan Higa (PacifiCorp Energy) reviewed the design with the group and pointed out the differences from the previous versions.

LouEllyn Jones (USFWS) asked about how the release pond will fit in the big picture of the license and the SA. Shrier advised her that as the downstream collectors at each project are built the fish will be brought to this release pond. There is an article in the SA that states if some other entity wants to come in and provide a bypass system to convey the fish to the lower river then the Utilities would be open to that change. Cowlitz Tribe proposed this during settlement negotiations instead of hauling the fish, in which case the release pond would become unnecessary.

Comments on the release pond are due March 24th. Please send comments to both Frank Shrier and Nathan Higa of PacifiCorp Energy.

Speelyai Hatchery – Erik Lesko (PacifiCorp Energy) sent out conceptual and design plans and drawings for the

- (1) Speelyai intake;
- (2) Speelyai Pond 14; and
- (3) Lewis River Hatchery Downstream Intake.

These designs were sent to the ACC for a SA-required 30-day review on February 11, 2011 (Please see [Attachment D](#)). The only comments received were from WDFW.

Pond 16 at the Lewis River Hatchery – Currently the project manager for Pond 16 is in the process of procuring a contractor. The project is scheduled to be completed by August 1, 2011. However, if this deadline is not met the Company is looking into using Pond 15 as a contingency.

Speelyai Hatchery – Kokanee weir is scheduled for completion this year.

Hatchery Supplementation Plan – PacifiCorp is collecting in-river broodstock for the wild steelhead now. The Merwin trap is being checked regularly for wild steelhead. According to the collection curve we should have seven or eight being held at the hatchery. Currently we only have two with two others awaiting assignment.

Radio tracking studies for coho juveniles will begin in late April and will involve fixed receiving stations from Lewis River hatchery to the mouth. The will provide emigration rates of hatchery coho released into the river. Sample size will be 50.

Juvenile seining is scheduled to begin next week depending on river flows.

Merwin Upstream Schedule – At the March ACC meeting, the group agreed to delay the interim Merwin trap shutdown for pump installation until September. Alternatives need to be found to collect more coho in that time frame. The best alternative agreed to by NMFS, WDFW and PacifiCorp would be to dredge the entrance to the Lewis River fish ladder. This dredging has not been done since 1997. The last alternative would be to seine coho off of the spawning ground.

This project is still on schedule, assuming permits are received by April 4th.

Swift Downstream Collector – Construction is mobilizing next week which is right on schedule. The contractor will begin by putting in the pylons that support the trestle that supports the downstream collector. Components are being manufactured and built in segments. Over 40 pieces are being made and will be shipped to the locations and assembled onsite at Swift Camp. A home moving outfit will transfer the assembled collector into the water in the spring or summer of 2012 and then the entire collector will be floated down to the dam and attached to the trestle. The final construction will be completed in the water at the dam.

2011 Bull Trout Plan –The plan is out for comment, in the ACC/TCC report. A field coordination meeting will be held on March 17th and anyone may join. Contact Erik Lesko (PacifiCorp Energy) for more information.

Draft 2010 ACC/TCC Annual Report – Please review the Annual Report and provide comments by March 31st. Comment matrix will be compiled and if needed, discussed at the next meeting. The Draft Annual Report can be found on PacifiCorp’s website via the following pathway/hyperlink:

<http://www.pacificorp.com/es/hydro/hl/lr.html#> > License Implementation > Annual Reports > [2010 ACC/TCC Annual Report DRAFT FOR REVIEW](#)

Aquatic Fund Proposals – Comments are due March 17th. PacifiCorp will combine them and forward them onto the ACC participants. A conference call to discuss will take place in the afternoon of March 29th. Hickerson will send out a meeting notice.

Agenda items for April 14, 2011

- Review March 10, 2011 Meeting Notes
- Ethan Bell (Stillwater Sciences) - Stranding Study Presentation
- Upper Release and Constructed Channel Flows – Site visit
- Crab Creek Update
- Study/Work Product Updates

Public Comment

None

Next Scheduled Meetings

April 14, 2011	May 12, 2011
Merwin Hydro Control Center	Merwin Hydro Control Center
Ariel, WA	Ariel, WA
9:00am – Noon (optional site visit to bypass reach to follow)	9:00am – Noon

Meeting Adjourned at 12:00pm.

Meeting Handouts & Attachments

- Final 3/10/11 Meeting Agenda
- Final 2/9/11 Meeting Notes
- **Attachment A:** Memo from McMillen Regarding Crab Creek Acclimation Pond
- **Attachment B:** Email from Frank Shrier Regarding Crab Creek Acclimation Pond Alternatives
- **Attachment C:** Design plans for the Lewis River Release Pond
- **Attachment D:** Design plans for the Speelyai Hatchery Water Intake

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

Date & Time: Thursday, March 10, 2011
9:00 a.m. – 12:00 p.m.

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

Contacts: Lore Boles: (360) 225-4412
Frank Shrier: (503) 320-7423

Time	Discussion Item
9:00 a.m.	Welcome <ul style="list-style-type: none"> ➤ Preview Agenda ➤ Review and comments on 2/10/11 meeting notes ➤ Adopt 2/10/11 Meeting Notes
9:15 a.m.	➤ Aquatic Fund Project Proposal Discussion
10:00 a.m.	Break
10:30 a.m.	➤ Crab Creek Discussion (decision needed)
11:00 a.m.	➤ Upper Release and Constructed Channel Flows
11:15 a.m.	<ul style="list-style-type: none"> ➤ Study/Work Product Updates ➤ Release Ponds ➤ Hatchery Upgrades ➤ Hatchery and Supplementation Plan Subgroup ➤ Merwin Upstream Construction Schedule ➤ Swift Downstream Collector Status
11:30 a.m.	<ul style="list-style-type: none"> ➤ New topics/issues ➤ Next Meeting's Agenda ➤ Public Comment Opportunity <p>Note: all meeting notes and the meeting schedule can be located at: http://www.pacificorp.com/es/hydro/hl/lr.html#</p>
Noon	Adjourn

To attend a Voice Conference: Call 503-813-5600 (toll free #800-503-3360), follow the instructions provided and enter Mtg ID **110010** and password: **607810** when prompted.

New security procedure: Upon arrival at the Merwin Hydro Control Center the gate will be closed and you will be required to use the call-in box on the left side of the gate; please announce who you are and the reason for your visit.

FINAL Meeting Notes
Lewis River License Implementation
Aquatic Coordination Committee (ACC) Meeting
February 10, 2011
 Merwin HCC, Ariel, WA

ACC Participants Present (14)

Adam Haspiel, USDA Forest Service
 David Hu, USDA Forest Service
 Eli Asher, Fish Recovery Board
 Diana Gritten-MacDonald, Cowlitz PUD
 Shannon Wills, Cowlitz Indian Tribe
 Nathan Reynolds, Cowlitz Indian Tribe
 LouEllyn Jones, USFWS (teleconference)
 Pete Barber, Lower Columbia Fish Enhancement Group
 Michelle Day, NMFS (teleconference)
 Eric Kinne, WDFW (teleconference)
 Frank Shrier, PacifiCorp Energy
 Beth Bendickson, PacifiCorp Energy
 Jeremiah Doyle, PacifiCorp Energy
 Erik Lesko, PacifiCorp Energy

Calendar:

March 10, 2011	ACC Meeting	Merwin Hydro
April 14, 2011	ACC Meeting	Merwin Hydro

Assignments from February 10, 2011 Meeting:	Status:
Crab Creek - Frank Shrier will e-mail McMillen Engineering draft technical memo - <i>Crab Creek Net Pen Evaluation</i> to ACC.	Pending
Merwin Upstream Trap & Transport – Frank Shrier will schedule conference call with NMFS and WDFW to discuss.	Complete

Assignments from December 9, 2010 Meeting:	Status:
Acclimation Pond Plan – Shannon Wills will convey the importance of the Yakama Nation weighing in on this issue to Bob Rose this afternoon.	Complete

Opening, Review of Agenda and Meeting Notes

Frank Shrier (PacifiCorp Energy) called the meeting to order at 9:20 a.m., reviewed the agenda for the day and requested any changes/additions. No changes or additions were recommended.

Shrier requested comments and/or changes to the ACC Draft 1/13/11 meeting notes. No changes were requested. The meeting notes were approved.

2011 Aquatic Fund Proposal Presentation, USDA Forest Service – Adam Haspiel

- Lewis River Side Channel Habitat Restoration (Attachment A)

Adam Haspiel presented a PowerPoint illustrating project location, detailing project description, target species and project length. Haspiel discussed in detail the methods for timber harvest, tree transport, and the plan to bury trees for key anchor points to create LWM clusters.

Haspiel also provided a typical structure drawing and a detailed project budget. Fund request is \$42,000.

2011 Aquatic Fund Proposal Presentation, USDA Forest Service – Adam Haspiel

- Muddy River Side Channels Habitat Restoration (Attachment A)

Haspiel continued his PowerPoint presentation for a second Forest Service project proposal and discussed project location, project description, target species and project length. Haspiel discussed salmon plans and methods for timber harvest, tree transport, and the plan to bury trees for key anchor points to create LWM clusters.

Haspiel also provided a typical structure drawing and a detailed project budget. Fund request is \$39,000.

2011 Aquatic Fund Proposal Presentation, USDA Forest Service – Adam Haspiel

- Muddy River Mainstem Habitat Restoration (Attachment A)

Haspiel continued his PowerPoint presentation for a third Forest Service project proposal and discussed project location, project description, target species and project length. Haspiel discussed in salmon plans and methods for timber harvest, tree transport, and the plan to bury trees for key anchor points to create LWM clusters

Haspiel also provided a typical structure drawing and a detailed project budget. Fund request is \$43,000.

2011 Aquatic Fund Proposal Presentation – Lower Columbia Fish Enhancement Group - Pete Barber

– North Fork Lewis River (RM 13.5) Side Channel Enhancement Project (Attachment B)

Pete Barber presented a PowerPoint illustrating project objectives which include increasing the abundance of off-channel and side-channel habitat, increasing LWD quantities, and stream bank, riparian, wetland, and flood plain vegetation restoration. Some of the expected outcomes include the creation of 50,000 square feet of side-channel habitat and restoration of fish passage into the perennial tributary.

Barber provided a detailed project budget and discussed Salmon Recovery Funding Board (SRFB) match requirements. Barber stated that the current SRFB required project

match is \$122,000, of which only \$8,000 has been acquired so far. Fund request options include 1) \$40-75K for sorting/transport of stockpiled gravel (3-6k cubic yards), and 2) \$48K LWD (match); SRFB to sort/truck gravels (if wanted).

2011 Aquatic Fund Proposal Presentation, Cowlitz Indian Tribe – Nathan Reynolds

- Eagle Island Habitat Enhancement, Sites B and C (Attachment C)

Nathan Reynolds presented a PowerPoint which provided the project setting, along with project purpose and need which included increasing large woody debris, increasing habitat complexity, enhancing riparian forest structure, and increasing quality and abundance of shallow water rearing habitat for juvenile salmonids. Reynolds provided illustrations of a cross section of a typical bar apex log jam and typical lateral scour pool jam. Funding request is \$85,000*

*If SERF Board (SRFB) does not grant the additional needed funding the ACC funds will be returned to PacifiCorp. SRFB makes decision in December 2011; however, project owners will have a good idea of probability by June/July 2011.

ACC Decisions Needed

Allow the 2011 Aquatic Fund Proposal Presentation by Lower Columbia Fish Enhancement Group to resubmit a revised proposal on February 11, 2011, as what was presented (gravel) was different than their pre-proposal (wood).

- WDFW – No
- Cowlitz Tribe – Yes
- NFMS – No
- Cowlitz PUD – No
- USDA-Forest Service – No
- USFWS – Neutral
- LCFRB – No
- PacifiCorp – No

The consensus for the future was it should be made clear that everyone submitting fund proposals needs to follow the rules. The group also discussed to need to always do what is best for the fish.

Acclimation Pond Plan

The group discussed Crab Creek site alternatives and the following are overall notes:

- Net pen option is high on the preferred list.
- PacifiCorp said McMillen Engineering did a site visit to determine where it would be best do this option and what the structure would look like. Cons: crane pad, bridge turbulence, wave action (potential for system wear/tear). Recommendation: net pen not a good idea - crane would have to be bigger, pen could be lost, potential logistical problems.

The group discussed alternatives:

- WDFW asked about a modular net pen
- NMFS encouraged by this, rather than going to the next alternative (direct release)
- USDA Forest Service – would like to maintain adaptive management style NEPA analysis and review alternatives
- PacifiCorp – There will be problems for those who raft or canoe/kayak the river plus there will be some visual impacts (such as anchor structures) that will remain year-round.

Merwin Upstream Trap and Transport Status

The contractors have set up the original plan for the interim trap shut down from July 15 to August 15. The plan is to close the trap and install two new pumps that will supply to the existing trap and work in the ladder area. With all the steps and procedures and not knowing when the final permits will arrive, the schedule will have to be pushed out. The County Permits (shoreline) are now projected to be received by April 4. They are asking for an interim trap closure for September 3 to October 6 and will open sooner if they can. Frank Shrier is requesting input on that. Most of the alternatives don't look good due to safety constraints (high flows, etc.). We won't be able to collect coho for a 4-week span.

Group discussion was as follows:

- NMFS said it's important to keep the schedule moving forward, but having said that - asked if there were other ways to keep to the original schedule, but minimize impacts.
- WDFW regarding spawning expressed concerns about doing it this fall and then next fall as well. We will lose the opportunity to remove hatchery coho from the spawning grounds.
- USDA Forest Service asked about a temporary trap. Can something be put in place?
- PacifiCorp replied that a temporary trap would be difficult and would require complicated infrastructure for a month (too costly).

PacifiCorp asked this question: Do we slide the closure to September 3, or see if there is anything to keep the current window. It's not an option to push to next year with all the current programs in place.

LCFRB – asked about mobilization work to which PacifiCorp replied that it's already factored in. The contractor will not risk his reputation by missing deadlines they commit to. PacifiCorp is holding fast to the December 2012 completion date.

The group consensus is, "It is what it is; keep moving forward. We don't need descriptions of any other alternatives." However, Day requested an additional conversation between NMFS, WDFW and PacifiCorp. Shrier committed to set something up as soon as possible.

Study Updates

Erik Lesko and Frank Shrier (PacifiCorp Energy) provided the following study updates:

Hatchery Upgrades –

Speelyai Hatchery –

Hatchery & Supplementation Plan - PacifiCorp Energy noted that four steelhead are in the hatchery awaiting genetic assignment.

Swift Downstream Collector - Work is scheduled to begin in March 2011. Activities planned for 2011 include: mobilization to project area, construct barge shell (this is moved to dam in the summer of 2012), and construct trestle. Project is on schedule.

Release Ponds Status

Approval has been received from the land owner to do the survey work. FERC has extended the deadline for final design to the end of March 2011.

New Topics

- None

Agenda items for March 10, 2011

- Review February 10, 2011 Meeting Notes
- Aquatic Project Proposal Discussion Meeting
- Upper Release and Constructed Channel Flows
- Crab Creek Update discussion
- Study/Work Product Updates

Public Comment

None

Next Scheduled Meetings

March 10, 2011	April 14, 2011
Merwin Hydro Control Center	Merwin Hydro Control Center
Ariel, WA	Ariel, WA
9:00am – Noon	9:00am – Noon

Meeting Adjourned at 12:30pm.

Handouts/Summary Attachments

- Final Agenda 02/10/11
- Final ACC Meeting Notes 01/13/11
- Attachment A – USFS Aquatic Fund Proposal Presentation
- Attachment B – LCFEG Aquatic Fund Proposal Presentation
- Attachment C – Cowlitz Tribe Aquatic Fund Proposal Presentation

McMILLEN, LLC

To:	Nathan Higa PacifiCorp Energy	Project:	Lewis River Acclimation Ponds
From:	Derek Nelson, PE	Cc:	Frank Shrier, PacifiCorp Morton McMillen, McMillen LLC
Date:	March 7, 2011	Job No:	1039.06
Subject:	Crab Creek Small Net Pen(s) Evaluation		

1.0 INTRODUCTION

1.1 Purpose

The purpose of this technical memorandum (TM) is to discuss the feasibility of utilizing a small net pen or similar type structure to acclimate juvenile Chinook to the upper Lewis River system near the confluence of Crab Creek. This is a smaller version of the net pen discussed in TM 005. This alternative was proposed by the Aquatics Coordination Committee (ACC) in lieu of the large net pen and crane loading pad.

2.0 BACKGROUND

The Lewis River Settlement Agreement (SA) calls for PacifiCorp Energy (PacifiCorp) and Cowlitz PUD to establish juvenile salmonid acclimation sites in the upper Lewis River watershed to aid in the reintroduction of anadromous fish to the upper Lewis River watershed. Details regarding the actual SA language and directions taken from the ACC are included in the Lewis River Acclimation Pond site plan. Completion of the final plan is dependent on an engineering evaluation and conceptual design of the individual pond facilities.

The following SA Section details the Acclimation Pond requirements:

8.8 Juvenile Acclimation Sites.

8.8.1 Above Swift No. 1 Dam. Beginning upon completion of the Swift Downstream Facility, the Licensees shall place juvenile salmonid acclimation sites in areas reasonably accessible to fish hauling trucks and in practical areas in the upper watershed above Swift No. 1 Dam, as determined by the Licensees in Consultation with the Yakama Nation and the ACC. The acclimation sites shall consist of fish containment areas that allow juvenile fish to acclimate in natural or semi-natural waterways and allow necessary pre-release juvenile fish management; such sites will not consist of or include concrete-lined ponds or waterways, but may include other concrete structures necessary for facility functionality and structural integrity during the supplementation program.

The SA (Section 8.4.3) also calls for the juvenile and adult supplementation of three species: spring Chinook, winter steelhead and Type S Coho. In 2006, discussions occurred during the monthly ACC meetings regarding location of the acclimation sites and whether or not juveniles of all three introduced species should be placed in the acclimation ponds. During the June 8, 2006 ACC meeting held at the Washington Department of Fish and Wildlife (WDFW) office in Vancouver, Washington, the attending parties agreed to use a target of 100,000 spring Chinook at three sites for the juvenile supplementation program as a starting point and that it was not necessary to supplement juvenile Coho and steelhead (see attached final meeting notes). The general agreement in the decision

process was that Coho and steelhead adults will be able to seed the watershed without additional juveniles although the option remains open to supplement with juveniles if needed. Therefore, the acclimation ponds will be sited, designed, and managed solely for the juvenile spring Chinook supplementation program. Supplementation numbers may increase or decrease from the initial 100,000 Chinook annually depending on the success of the program. A Hatchery Genetic Management Plan (HGMP) has been developed by WDFW that specifically addresses the fish culture methods and protocols for the spring Chinook supplementation program.

The Crab Creek acclimation system is located on the Gifford-Pinchot National Forest (GPNF) and was originally designed to deliver 1.2 cubic feet per second (cfs) from Crab Creek to three acclimation tanks for 33,000 juvenile Chinook as illustrated in the 60 percent Acclimation Pond Submittal. A flow and temperature study was provided by PacifiCorp on the Crab Creek flows. The study determined that delivering 1.2 cfs to the acclimation tanks during the acclimation period of May through June could potentially completely dewater Crab Creek. A fish survey of Crab Creek found that salmonids as well as amphibians are utilizing Crab Creek. Completely dewatering Crab Creek for the acclimation ponds was determined to not be a feasible alternative.

TM 005 discussed an ACC proposed alternative utilizing a large net pen placed in the mainstem Lewis River just downstream of Crab Creek. The alternative would require the construction of a crane pad to place and remove the large net pen. This alternative was not preferred and an evaluation of a smaller net pen or set of small pens was requested.

PacifiCorp directed McMillen, LLC to explore the feasibility of placing a smaller net pen structure into the Lewis River near the downstream side of the bridge at Crab Creek. The period of acclimation will be for six weeks immediately following Labor Day. Figure 1 illustrates a potential location and anchor points for the smaller net pens. Figure 2 illustrates depicts a 4-foot-wide by 3-foot-tall by 12-foot-long net pen. The attached photographs depict the Lewis River site at lower flows comparable to the acclimation period flows.

3.0 DISCUSSION

To determine the feasibility of installing a smaller net pen or several smaller net pens into the Lewis River, several design components were evaluated. The major components are:

- Geotechnical Analysis;
- River Sections/Bathymetry;
- Anchoring;
- Net Pen(s) Construction and Materials ;
- Installation; and
- Operations and Maintenance.

Each component is discussed in the following sections.

3.1 Geotechnical Analysis

Similar to TM 005, site specific detailed geotechnical investigation will be required to determine the soil and bedrock properties. Exploratory borings located near the potential anchor locations will be drilled to bedrock. Track mounted boring equipment will be utilized to minimize the disturbance to the area. Boring will require coordination and permits with the GPNF. The investigation will provide critical design criteria to determine the size and depth of buried anchors required to maintain the net pens in the proper position in the river channel. The number of anchors required will depend on the number of pens that would be installed.

3.2 River Sections/Bathymetry

The location of the net pens, illustrated in Figure 1, is in a pool approximately 50 to 100 feet downstream of the bridge. This area of the river requires up to ten survey cross sections and/or bathymetry to determine substrate elevations and an ideal location for the net pens. In addition, flow and velocity measurements will be taken during the survey at the cross sections. A one dimensional model can be developed with this data to illustrate the hydraulics at different flows. The information gathered will determine the forces of the flow directly on each individual net pen. The net pens will be designed to remain submerged for the duration of the acclimation period. The impacts of the flow on the net pen system will be analyzed and incorporated into the structural design of the net pen(s) and the design of the anchor system to prevent damage to the net pen(s).

3.3 Anchoring

The anchoring system is critical for maintaining the net pen(s) in the correct location and orientation to the river flow. For this analysis, it is assumed that anchor points will not be located on or affect the existing GPNF bridge. The anchor system consists of installing permanent rock or soil anchors upstream of the existing bridge on both banks. The anchors will extend 10 to 20 feet into the ground depending on the properties of the soil and rock. The anchors will be installed by drilling a hole into the soil or rock with a track mounted drill. A rod will then be grouted into the hole. The net pen(s) will be attached to the anchor rods with a coated stainless steel wire cable. The number of pens that will be attached to two anchors upstream will depend upon the pull out strength of the anchor rods. Additional anchors could be installed for additional net pens required. Anchors on the downstream side of the pens may be required depending on the affect of the flow analysis on the pens referred to in Section 3.2. Figure 1 illustrates potential anchor points for both upstream and downstream locations.

3.4 Net Pen(s) Construction and Materials

The net pen(s) are anticipated to be a fabricated aluminum tubing frame with aluminum square weave wire mesh with ¼ inch square openings. Each pen dimensions is 3-feet-tall by 4-feet-wide by 12-feet-long and weighs approximately 1,125 pounds. The structure will be welded with a loading hatch on top and a release gate at the downstream end. A solid aluminum plate nose cone will divert debris around the pen. The nose cone will also aid in utilizing the river flow to provide positive downward pressure on the pen into the substrate. Additional “fins” could be added to provide positive downward pressure on the pen depending on the flow analysis. The net pens are illustrated in Figure 2. The design criteria for the large net pen were 33,000 fish in 2500 cubic feet rearing volume equating to 13.2 fish/cubic foot provided by WDFW. Utilizing this criterion, each small net pen has a volume of 144 cubic feet of rearing volume for 1900 fish.

3.5 Installation

Installation and removal of the net pen(s) will require a utility truck with a minimum 1 ton boom and hoist. The pen(s) will be transported to and from the site on a flat bed truck or a flat bed trailer. The utility truck will unload the pen directly from the truck or trailer and lower the pen over the downstream side of the bridge to the river. An optional area for loading and unloading is depicted in Photo 3 below. Personnel will be required to attach the anchor cables to the pen. The personnel will then aid in maneuvering the pen into the correct location within the river. The anchor cables will be adjusted and fixed to maintain the net pen position. Dependent on the number of net pens required and the anchor strength, the pens may be able to be cabled together. Figure 1 illustrates one method for cabling the pens together and preventing damage to the pens.

3.6 Operations and Maintenance

Once the pens have been installed, fish will be released from the transport truck through a hose into the top hatch of the pens. The hatch will be closed and secured. The pen will require daily inspection and cleaning during acclimation to prevent obstruction of the screen due to leaves and debris. At the end of the acclimation period, the fish will be released through the port located at the rear of the net pen. The fish will be allowed time to vacate the pen. Personnel will be required to enter the river to aid in removal of the pen(s). Winches and the utility truck will be required to pull the net pen(s) upstream to the bridge and then up onto the trailer or flatbed truck for transport to storage.

4.0 CONCLUSION

The feasibility of the net pen(s) is dependent on several factors. The controlling factors are the depth of the pool located downstream of the bridge, anchor type and location, and ability to install and remove the net pen(s). The detailed survey and geotechnical investigation could provide critical data to aid in determining the feasibility of the net pen option.



Photo 1. February 7, 2011: Location of Pool from Bridge

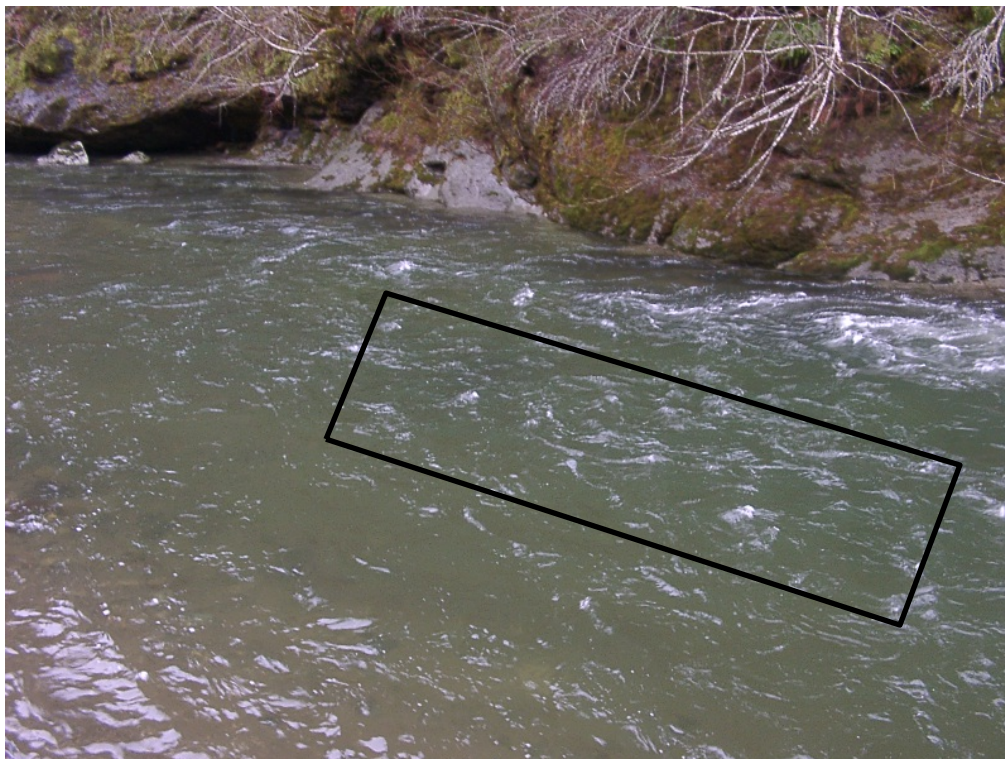


Photo 2. February 7, 2011: Location of Pool from Gabion Wall



Photo 3. February 7, 2011: Optional Installation/Removal Location



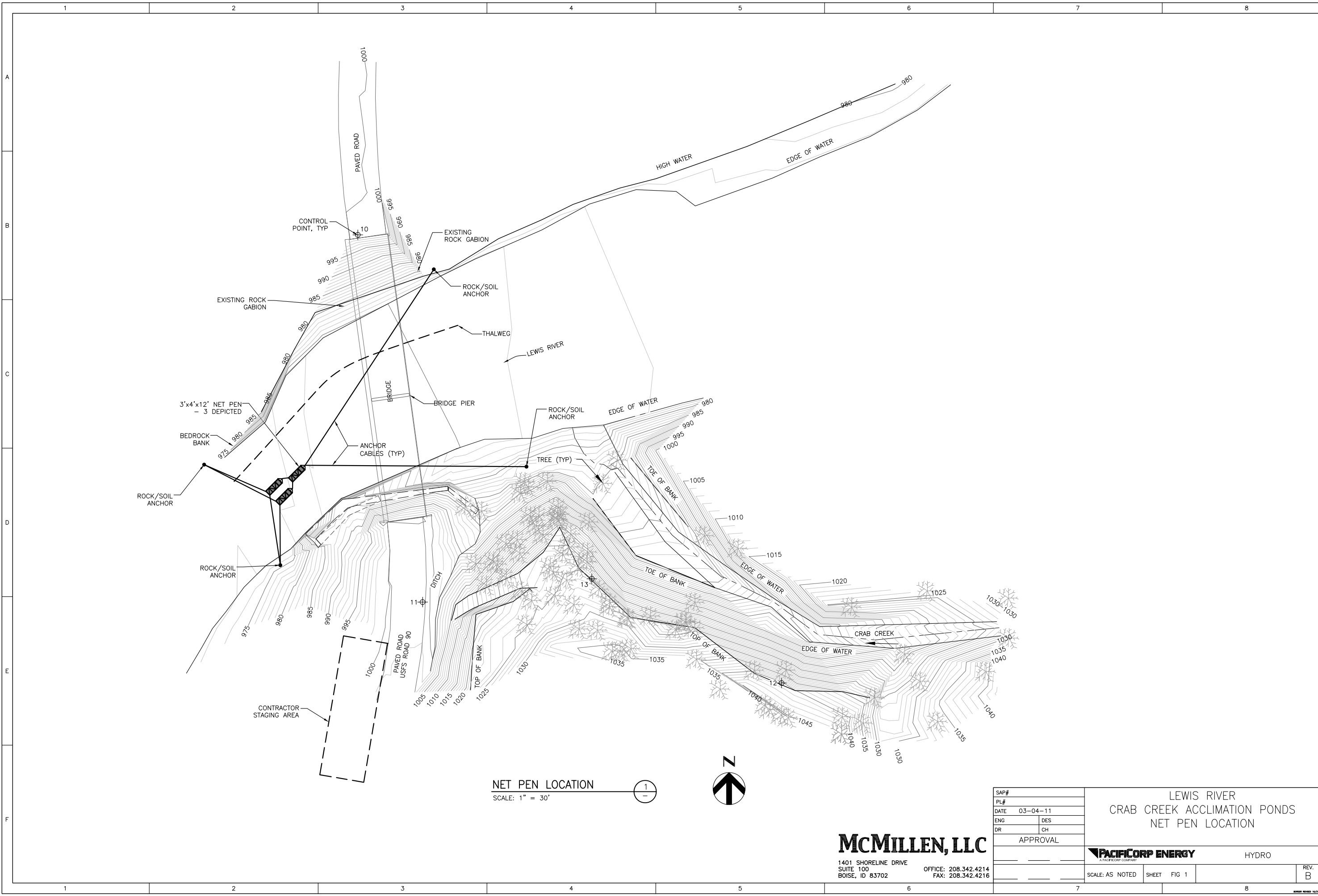
Photo 4. February 7, 2011: Bridge Pier and River Riffle Under Bridge



Photo 5. August 19, 2010: Bridge Pier and River Riffle Under Bridge



Photo 6. August 19, 2010: Looking Downstream from Bridge



REFERENCE DRAWINGS							
DRAWING No.							
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SAP#		LEWIS RIVER CRAB CREEK ACCLIMATION PONDS NET PEN LOCATION	HYDRO
PL#			
DATE	03-04-11		
ENG	DES		
DR	CH		
APPROVAL			
SCALE:	AS NOTED	SHEET	FIG 1
REV.	B		

McMILLEN, LLC
 1401 SHORELINE DRIVE
 SUITE 100
 BOISE, ID 83702
 OFFICE: 208.342.4214
 FAX: 208.342.4216

From: [Shrier, Frank](#)
To: [David Hu](#); [Phoebe J Patterson](#);
cc: [Mike Bonoff](#); [Weatherly, Briana](#); [Wendy Wente](#); [Olson, Todd](#);
[Hickerson, Sabrina](#);
Subject: FW: Crab Creek alternative
Date: Friday, March 11, 2011 7:44:16 AM
Attachments: [image002.png](#)
[image005.png](#)

David/Phoebe:

Yesterday the ACC accepted the action below for the Crab Creek site. As far as PacifiCorp is concerned we intend to just evaluate this option in the NEPA analysis (plus the effects associated with a direct plant of additional adults and additional smolts into the mainstem) along with the existing proposal for Clear Creek and Muddy River sites. Clear Cr. will also be evaluated for an expansion to hold more than the 33,000 smolts up to about 50,000 smolts. Note below I summarized the action for the two tribal representatives and NMFS.

From: Shrier, Frank
Sent: Thursday, March 10, 2011 3:49 PM
To: Shannon Wills; Michelle.Day@noaa.gov
Cc: Olson, Todd; Hickerson, Sabrina; Higa, Nathan
Subject: Crab Creek alternative

Hi Shannon,

I'm emailing to provide a summary of the Crab Creek discussion today and to ask you to discuss this with the Yakamas. Sorry, the email I sent during the meeting bounced back because it was too many megabytes. Michelle, I'm including you since you missed the discussion. The group consensus today is this:

1)construct an instream pond using the stream bottom depression that exists at the mouth of Crab Creek (Figure 1). This is a side pool to the Lewis River that receives flow from Crab Creek and hyporheic flow from the mainstem Lewis River.



Figure 1. Existing instream pond at Crab Creek. Note Crab Creek is just a trickle at the time this was taken (Oct. 7, 2010).

This action would involve deepening and widening the existing “pond” such that Lewis River water would infiltrate the gravel at the top end of the pond and flow out the downstream end. Crab Creek water would also enter this ponded area. A net would be placed at the bottom outlet to hold fish for two to six weeks. The pond would be sized to hold 15,000 spring Chinook pre-smolts at about 25 fish per pound. The proposal is to place these fish immediately following Labor Day and release them no later than October 15th. The fish will be monitored and fed on a regular schedule. Like all the Acclimation fish, these will have an external mark and ten percent of them will also have a PIT tag for evaluation purposes. The balance of the 33,000 fish that were meant to acclimate here will be acclimated in expanded rearing space at the Clear Creek Acclimation site. Some structure will be added to this pond that will include large boulders, root wads and other instream structures made from native materials. These structures will serve dual purposes to promote retention of the pond area and to provide cover for the acclimation fish. It is recognized- up front- that this will require some work each year to maintain the “pool”.

Depending on the evaluation of this proposed acclimation site, rearing will either continue at this site for at least 15 years. If evaluation proves this site to be unsuccessful, then this site could receive additional supplementation through direct release of additional pre-smolts and/or release of adult fish into the mainstem Lewis River at or near this site.

As a third alternative, placement of an acclimation site upstream of the Falls complex will be explored.



Figure 2. Proposed site with Spring flows. Crab Creek enters the Lewis River from the right.

