

DRAFT - Meeting Summary Notes
Lewis River License Implementation
Engineering Subgroup
April 26, 2007
Fish Passage Meeting Notes

Subgroup Participants Present: (14)

Will Shallenberger, PacifiCorp
Sean Flak, PacifiCorp
Frank Shrier, PacifiCorp
Todd Olson, PacifiCorp
Curt Leigh, WDFW (via phone)
Eric Kinne, WDFW
Bryan Nordlund, NOAA Fisheries (NMFS)
Jim Stow, USF&WS
Ken Bates, Kozmo
Dana Postlewait, R2 Resource Consultants
Peter Christensen, R2 Resource Consultants
Suzanne Picard, R2 Resource Consultants
Brian Friesz, Black & Veatch
Monty Nigus, Black & Veatch

ADMINISTRATIVE

Welcome of attendees and review agenda. Frank Shrier updated the group on the status of the FERC license. There are no major developments. The NOAA Biological Opinion will hopefully be ready for submittal to FERC in about 3 weeks, after the legal review is complete. FERC will then take 90 to 120 days to process. The current target date for issuance of license is August 1st, 2007.

General Meeting Handouts:

Distributed via email on 4/24/2007 by Sean Flak:

- Meeting agenda for 04/26/2007 subgroup meeting

Distributed at meeting 04/26/2007 (paper copies):

- Meeting Agenda for 04/26/2007 meeting

NEXT MEETING

- The next meeting is scheduled for Thursday, May 31st, at the Merwin Hydro Facility (confirmed via email from Kim McCune on 4/30/07).

FUTURE MEETING DATES

As a reminder, future meeting dates are shown in the following list. There have been some changes in this schedule. The following list reflects the most recent information sent via email from Kim McCune on 4/30/07. All meetings will be at the Merwin Hydro facility from 9:00 am – 4:00 pm unless otherwise noted.

- Thursday, May 31st, 2007
- Tuesday, July 10th, 2007 – 10:00 AM to 4:00 PM (Lacey, WA)
- Wednesday, August 15th, 2007
- Wednesday, September 26th, 2007
- Wednesday, November 7, 2007
- Wednesday, December 19, 2007

MERWIN TRAP PROJECT

Handouts

Distributed at meeting 4/26/2007:

- None.

Distributed by Sean Flak via email on 4/26/2007:

- Figures: “PR2-2a.tif”, “PR2-3a.tif”, “Overall Site02.jpg”, “Overall Site03.jpg”, “Overall Site04.jpg”

Distributed by Sean Flak via email on 4/24/2007:

- Figures: “PR1 Rev 1 (with notes) 2007-02-13 scan.pdf”, “PR2-1A.tif”, “ALT PR2-V2 FIG Crowder (2).pdf”

Presentations

- None.

Review of Previous Meetings’ Merwin Action Items: See status summary table below.

No.	SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)	STATUS
M26	PacifiCorp (Flak) Provide Agencies with hard copies of PacifiCorp’s preferred alternative (PR1) for review and comment. Package is to include general layout drawings and flow distribution	Done, to be reviewed today.
M27	PacifiCorp/R2/BV (Flak/Postlewait/Nigus) Move forward on option PR1 designed for 600 cfs, showing diffuser details to allow various attraction flows.	Done, to be reviewed today.
M28	PacifiCorp/BV/R2 (Flak/Nigus/Postlewait) Look at the possibility of using a hydraulically-powered pump to supply attraction water to the fish trap.	In progress, still pending
M29	PacifiCorp (Shrier/Flak) Look at what early implementation testing could be done at the PR1 entrance to move through a phased approach most effectively.	Pending
M30	PacifiCorp/R2/BV (Flak/Postlewait/Nigus) Look at different diffuser configurations, including locating diffusers in pool 2 or other pools of the fish ladder to avoid excavation under the control room.	Done, to be reviewed today.
M31	PacifiCorp (Flak) Refine the overall trap development proposal and provide supporting information for a new trap development proposal.	Pending

Additional Comments on Last Meeting’s Merwin Notes:

None. Notes can be made final.

MERWIN TRAP AGENDA TOPICS

Fish Trap Concept Development Update

Corner Option

Development work on the Corner Option (Alt PR2) has taken place since the last meeting. Development is still ongoing and Sean Flak presented a summary of the work completed to date.

- With the current configuration, the corner option includes a full depth entrance, the ability to bypass two pools during high tailwater conditions, and enough diffuser area to provide 585 cfs of flow. This layout using the crowder to load the fish elevator was able to eliminate two ladder pools from Alt PR1 viewed at the last meeting.
- The current configuration shows the entrance pool angled into the tailwater, and leading directly into Pool 2. This angled entrance alignment was preferred by the group over the perpendicular alignment shown with Alt PR1.
- An 8' diameter pipe is shown to provide the desired attraction flow to the entrance pool. The pipe bifurcates before it reached the ladder to provide water to diffusers on both sides of the entrance pool. There is some concern that the shadow cast by this large pipe may deter fish from the entrance to the ladder. The design team will consider this issue and will develop ways to alleviate this concern by the next meeting. The general goal of limiting the number of changes fish must go through (lighting, temperature, etc.) will be considered as the design concept is refined further.
- The design team wishes to take advantage of siphon recovery with the pumped flow supply, so the pipe elevations and transitions are important details to consider.
- Care needs to be taken to prevent increasing the water temperature in the tailrace. Drawing water to supply the fish ladder and entrance pool from the lower strata of the reservoir will sufficiently address this concern. Frank Shrier noted that the temperature concerns primarily occur October following warm weather and lower flows.
- The entrance pool hydraulics would be improved if the pool were tapered along its length. The upstream end of the pool would be narrower than the downstream end of the pool (fish entrance).
- Additional layout and hydraulic analysis will be required in the future to assure that the hydraulic conditions within the vertical slot ladder will act as desired for successful fish passage. Ken Bates noted that vertical slot ladders are sensitive to known and proven dimensions, and that flow can become unstable. This will be a detail to address at the later design phases.

Pump Bay Option

Development of the Corner Entrance Option is further along than the Pump Bay option and the Pump Bay option will require further development. Sean Flak presented a summary of the work completed on this option to date to help solicit input from the group.

- The pump bay option, as developed, could potentially fit into any vacant pump bay on the powerhouse. However, from a fish attraction standpoint, it would be advantageous to choose a specific pump bay for modification as this would allow more room for water

supply pipelines and diffusers. Discussions at the last meeting centered on laying out this option such that a pump bay entrance could be located and possibly moved to any of the pump bays.

- With the current configuration, a new trap entrance in one of the pump bays would have a maximum fish attraction flow of 460 cfs . The flow is limited by usable diffuser area that will produce desirable hydraulic flow conditions.
- At low flow, the jets discharging from the turbines is moving at approximately 3-4 ft/s. At high turbine flow, the jets are discharging at approximately 10 ft/s.
- The group agreed that the most likely location for success of a single second trap entrance in the pump bays is between Units 2 and 3, or 3 and 4 based on Frank's description of the biological study results from the work performed last season. After the construction of the corner entrance, more biological studies could be used to determine the need and best location for a second entrance.
- In laying out the pump bay option, the team should leave room in the back of the existing fish transport channel from a selected pump bay trap entrance location to the fish elevator loading area. There may be some room available within the existing channel to help route the water supply pipeline within the existing fish transport channel. All or part of the 8' diameter water supply pipe could possibly be moved inside the dam (into the fish channel area) based on committing to a single second entrance. This will be explored as part of the ongoing water supply studies.
- Following discussion of the Pump Bay trap entrance layout, diffuser, and location options, the team agreed that designing provisions for a single pump bay alternative located further down along the face of the powerhouse would be sufficient to supplement the corner entrance option. The two Services agreed that only one additional trap entrance should be considered. The general concept of constructing a high flow entrance in the corner (Alt PR2), and then performing trap capture efficiency studies prior to locating and constructing any second entrance seems acceptable to the group at this time. A formal proposal for the sequencing of this approach will continue to be developed for future submittal to the subgroup.

Fish Crowder and Hopper Concept Review

Dana Postlewait briefed the group on the most recent fish crowder and hopper design developments.

- The current configuration shows a mechanical vee trap which can be opened and closed as needed. In the open position, the vee trap functions as an ordinary vee trap. In the closed position, the trap can be moved back and forth and used as a crowder. The team generally agrees that this is a good idea, and prefers this layout over the vertical lift alternative discussed at the last meeting.
- The cycle time with a single, large hopper is increased to 15 minutes due to the ability to provide a larger hopper. The group preferred the large, single hopper over the redundant dual baskets shown at the last meeting. Critical spare parts can be identified and provided rather than constructing two smaller, redundant lifts. PacifiCorp reported that historically there have been few if any outages of the existing fish elevator.

- There is plenty of floor space within the existing hopper loading area and highest pool for floor diffusers.
- The area above the crowder is open, and area is available to provide a suspended deck above the crowder for access, inspection and maintenance.
- A video camera is one consideration to help monitor the number of fish entering and holding in the ladder/trap loading areas.

Sorting Facility Discussion

Sean Flak presented the group with a 3D rendering of the Lewis River Fish Hatchery Pond 15 sorting facility for discussion, as some of these features will be similar for the Merwin facility.

- The Lewis River design uses small fish transport tanks which are lifted from the upper level deck onto the bed of a truck using a hoist. This concept may be a viable alternative to the steep flumes currently shown in the Merwin design. Jim Stow and Bryan Nordlund both liked the idea since it reduces fish stress.
- If the flumes are replaced with the small tanks and a hoist, then it may be beneficial to replace the 400 gallon fish taxi with a flatbed truck and two smaller 250 gallon fish transport tanks.
- The discharges on the transport tanks would be best located on the back of the tanks to allow fish release via a pipe to the receiving water.

No.	SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)	STATUS
M28	PacifiCorp/BV/R2 (Flak/Nigus/Postlewait) Look at the possibility of using a hydraulically-powered pump to supply attraction water to the fish trap.	Pending
M29	PacifiCorp (Shrier/Flak) Look at what early implementation testing could be done at the PR1 entrance to move through a phased approach most effectively.	Pending
M31	PacifiCorp (Flak) Refine the overall trap development proposal and provide supporting information for a new trap development proposal.	Pending
	NEW ACTION ITEMS (from April 26th Meeting)	Status
M32	BV/R2 (Nigus/Postlewait) Develop ways to reduce the shadow cast by the 8' water supply pipe over the entrance of the fish ladder.	Pending
M33	BV/R2 (Nigus/Postlewait) Continue development of diffuser configurations in the entrance pool, and possibly pool 2 of the fish ladder.	Pending
M34	BV/R2 (Nigus/Postlewait) Look at Energy Dissipation in the fish ladder turning pools. Consider shrinking pools 4 and 5. Check stability of the jets through the vertical slots, especially in the turning pools.	Pending

M35	BV/R2 (Nigus/Postlewait) Prepare a table showing loading cycle times for presentation at the next meeting.	Pending
M36	BV/R2 (Nigus/Postlewait) Develop more detail on how the hopper will unload into the flume and transition pipe. The sidewalls should be at least 5 feet high and the pipe should be covered with a net to prevent fish from jumping out.	Pending
M37	PacifiCorp (Flak) Revise and distribute a new milestone design schedule by the next subgroup meeting.	Pending

(Break for lunch at 12:30PM)

(Monty Nigus leaves)

SWIFT DOWNSTREAM PASSAGE PROJECT

Swift Downstream Passage Handouts

- Lewis River Fish Passage Swift Downstream Collection Preliminary Engineering 30% Design Report, dated April 26th, 2007.

Presentations

- None.

SUMMARY OF PENDING SWIFT ACTION ITEMS (Remaining from Previous Meetings):		STATUS:
S26	PacifiCorp/NOAA (Shrier/Day) Frank to discuss with Michelle what the ultimate destination of fry caught in the FSC should be.	To be decided later, remove from Action Item list.
S27	WDFW (Kinne) Eric to forward email on catchable size fish and required grating gaps to group.	Pending
S31	All (Subgroup) Provide comments and feedback on CFD model result to Lisa Larson to help guide future model runs.	Done.

Additional Comments on Last Meeting's Action Items List

- S26-Michelle Day has stated that the NMFS policy will be that the capability to transport fry must be available, but they do not yet know where they will want them transferred to.
- S27-Eric Kinne said that he will forward the information on the size of the stocked rainbow trout.
- S31-Comments on the CFD modeling, if any, will be incorporated into the overall comments on the 30% design report.

SWIFT DOWNSTREAM AGENDA TOPICS

30% Design Package

Will Shallenberger distributed the 30% Design Submittal package to the Subgroup. The design package includes:

- A 15-page report outlining the design process to date.
- Copies of all of the CFD model results run to date.
- Drawings of the FSC
- Drawings of the Trestle
- A Facility Design Criteria Document

The following comments pertain to the design report:

- The 30% submittal is required as part of the settlement agreement.
- There is a 45-day review period for feedback from the Agencies. This review period will effectively start when the ACC is notified that the report is available.
- The most important feedback for the design team is comments relevant to the layout and hydraulics inside the FSC, the design criteria, the approach to sorting and transferring fish, and the CFD reservoir model approach and results.
- The marine railway option was eliminated in favor of the trestle option. Consequently, the report does not include any detail on the marine railway option.
- Geotechnical borings for the trestle options will begin this summer.
- This report will be available to members of the ACC committee upon request.
- Bryan Nordlund will pay special attention to the use of the terms “adjustment” and “modification”, as they pertain to the Settlement Agreement.
- Comments will be accepted in any written form. No formal letters are necessary, emails will suffice.
- Will Shallenberger will meet with personnel at the FERC Dam Safety office in Portland to brief them on the design’s progress to date.

Sorting Update

- Peter Christensen presented the current layout for the sorting flumes (included in the 30% design package) and the approach to separating fry and smolt for subsampling. He noted that the layout of the sampling facilities is not included as part of the 30% design, but that it will be located on the FSC, most likely at the upper deck elevation on the top of the FSC.
- The smolt and fry holding tanks are sized for holding the number of smolt that can safely be transported in a 1,800-gallon transport truck. They are about three times larger than the truck volume because they are based on the holding density criteria, not transport density criteria, meaning that the fish can be held in these tanks for longer periods of time (days) than they can in a truck.
- Peter, Dana, and Ken visited the Cowlitz Falls fry and smolt separator on Monday, April 23rd, 2007. The visit was very informative and brought up the following points:
 - More detail needs to be developed on the outlet from the fry/smolt separators. One possibility is to split the feeder pipe to directionally wash the fish to one side or the other. Also, it may be a good idea to tip the floor screen to help wash fish one way or the other. The tipping screen mechanism could be connected to gates on either side, automatically opening the gate on the low side of the tipped screen and closing the gate on the high side of the tipped screen.
 - The fry/smolt separator at Cowlitz Falls was designed with considerable flexibility. The fry separator portion can be rotated such that it can be operated as a wet or dry separator, but experience has shown that it functions best as a dry

separator, making several of the water supply lines there unnecessary. Although the smolt separator was designed to be a wet separator only, the separator bars can be rotated to optimize the slope of the bars. Experience has shown that a near horizontal to slightly uphill slope on the bars is optimal, and they no longer rotate the separator at all. As with the fry separator there is excess flow capacity designed into the smolt separator that is never used. Based on the information learned during the site visit, and discussions with the Cowlitz Falls staff, it is believed that the fry/smolt separator facility for the Swift FSC can be shortened and simplified from the layout shown in the 30% design report (which is essentially shown as identical to the existing Cowlitz Falls facility).

- Cowlitz Falls recently did some repainting and it appears that their adult fish shy away from the new lighter-colored paint more so than they did from the previous, darker paint.
 - The fry and smolt flumes at Cowlitz Falls have a flow of approximately 3.5 cfs. The current Swift design only shows 1.0 cfs. This may need to be increased.
 - The water in the transport and dewatering channel between the collector and the separator at Cowlitz Falls was moving at approximately 8-11 ft/s. Dana, Peter, and Ken measured flow and water surface elevations at several different conditions during their visit to the facility. Knowledge was gained concerning dewatering rates and head drop across screens in high-velocity flow channels that will be useful in designing the secondary screen channel and capture conditions in the FSC.
- The team shall consider emergency operations of the fish holding and handling facilities as a result of events such as loss of power, problems with the hopper hoisting equipment, inability of trucks to access the site, etc.

PENDING ACTION ITEMS FOR SWIFT

The following table provides a summary of all pending action items for the Swift Project.

No.	SUMMARY OF PENDING ACTION ITEMS FOR SWIFT (remaining from previous meetings)	STATUS
S27	WDFW (Kinne) Eric to forward email on catchable size fish and required grating gaps to group.	Pending
No.	SUMMARY OF NEW ACTION ITEMS (from April 26th, 2007 meeting)	STATUS
S32	WDFW/USF&WS/NMFS (Leigh, Kinne, Stow, Nordlund) Provide comments on the 30% Design Report to PacifiCorp within the 45-day review period ending June 15 th (note: this date was set following distribution of the report to the ACC after the subgroup meeting).	Pending

Meeting adjourned at 2:30PM.