FINAL - Meeting Summary Notes
Lewis River License Implementation
Engineering Subgroup
July 16, 2008
Fish Passage Meeting Notes

Subgroup Participants Present: (9)

Will Shallenberger, PacifiCorp
Arnold Adams, PacifiCorp
Frank Shrier, PacifiCorp
Bryan Nordlund, NOAA Fisheries (NMFS)
Peter Christensen, R2 Resource Consultants
Dana Postlewait, R2 Resource Consultants
Suzanne Picard, R2 Resource Consultants
Ken Bates, Kozmo
Brian Friesz, Black & Veatch

ADMINISTRATIVE

Welcomed attendees and reviewed agenda. The FERC License was issued on June 26, 2008 with an effective date of June 1, 2008. The facility will therefore need to be operational by December 26, 2012 (4 ½ years after license issuance). Design schedule goals are therefore set at the following:

The 60% Design target is December 2008 (internal team goal not tied to license).
The 90% Design is due June 26 2009.
The final Design shall be completed by December 26, 2009.

The meeting Agenda does not include discussion of the Merwin Project.

General Meeting Handouts:

Distributed via email on 07/15/2008 by Kim McCune:

- Meeting agenda for 7/16/2008 subgroup meeting
- Copies of the draft 12/19/2007 subgroup meeting notes
- Copies of the draft 3/14/2008 subgroup meeting notes
- Copies of the draft 6/4/2008 subgroup meeting notes

Distributed at meeting 7/16/2008 (paper copies):

- Meeting agenda for 7/16/2008 subgroup meeting
- Copies of the draft 12/19/2007 subgroup meeting notes
- Copies of the draft 3/14/2008 subgroup meeting notes

- Copies of the draft 6/4/2008 subgroup meeting notes

FUTURE MEETING DATES

Future meeting dates were presented to the group for review, as follows:

- September 4, 2008
- October 15, 2008
- December 4, 2008

Kim McCune will schedule future meetings at 6-week intervals until mid-January. Subsequent meetings will be scheduled at 2-month intervals.

OTHER ADMINISTRATIVE ITEMS

- None.

o MERWIN TRAP PROJECT

Handouts

- Lewis River Fish Passage, Merwin Adult Fish Trap Tailrace Physical Hydraulic Model Study report, dated July 2008, from Northwest Hydraulic Consultants.

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
M81	R2 (Postlewait) – Coordinate review of sorting table revisions with Eric Kinne and Neil Turner	Pending, hold for 60% design phase
M92	PacifiCorp (McCune) attach the agency phased approach memo to the April 28th meeting notes.	Done 6/13/08
M93	Design Team – define reporting system to supplement the final design document production hat will document key decisions and discussions from the meeting notes regarding the model and design points.	Pending
M94	PacifiCorp (Shrier/Adams) – update phase approach memo for ongoing discussion.	Pending
M95	NMFS/USFWS (Nordlund/Stow) – review Merwin Trap ATE proposal and coordinate with agency representatives to respond to PacifiCorp's proposal.	Pending
M96	Adams – provide flow diagram depicting phases and adjustments	Pending

Additional Comments on Last Meeting's Merwin Notes:

Bryan stated that if we didn't hear from him by this Friday (July 18), that the notes can be made final.

MERWIN TRAP AGENDA TOPICS

There were no specific Agenda items for Merwin Trap for today's meeting. However, the group reviewed outstanding action items from previous meetings to finalize previous meetings' notes.

Dana Postlewait also provided a brief overview of the hydraulic model report that was handed out at the meeting. Note that the interactive files showing run videos, and PDF plots are

provided on two discs in a sleeve at the back of the report. Users should open the Excel file in the root directory of the disc, and navigate to all of the data files through hyperlinks provided in the Excel file.

No.	SUMMARY OF PENDING MERWIN ACTION ITEMS (remaining from previous Meetings)	STATUS
M81	R2 (Postlewait) – Coordinate review of sorting table revisions with Eric Kinne and Neil Turner	Pending, hold for 60% design phase
M92	PacifiCorp (McCune) attach the agency phased approach memo to the April 28th meeting notes.	Done 6/13/08
M93	Design Team – define reporting system to supplement the final design document production hat will document key decisions and discussions from the meeting notes regarding the model and design points.	Pending
M94	PacifiCorp (Shrier/Adams) – update phase approach memo for ongoing discussion.	Pending
M95	NMFS/USFWS (Nordlund/Stow) – review Merwin Trap ATE proposal and coordinate with agency representatives to respond to PacifiCorp's proposal.	Done for the ES – agencies are coordinating on this issue through the ACC.
M96	PacifiCorp (Olson) – provide flow diagram depicting phases and adjustments	Pending, this will coordinated with both the ES and the ACC.
No.	**SUMMARY OF NEW MERWIN ACTION ITEMS (from July 16th, 2008 Meeting)**	**STATUS**
	None.	

o SWIFT DOWNSTREAM PASSAGE PROJECT

Handouts

- General Arrangement Plan, Hydraulic Profile, and Transfer Area Layout drawings for the Floating Surface Collector (three 11x17 drawings).
- Fish Sampling Facilities – Schematic Diagram

Presentations

- Swift Reservoir Floating Surface Collector Design Update (PowerPoint presentation).

Review of Previous Meetings' Swift Action Items: See status summary table below.

No.	SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)	STATUS
S39	PacifiCorp (Shallenberger) Distribute the results of the CFD model run with north-only discharge and wind effects to the subgroup members via email or a link to the PacifiCorp website.	This Action Item is being replaced by S42.
S40	NMFS/USFWS (Nordlund/Stow) Provide additional feedback on the first iteration on net alignments.	Done.
S41	WDFW/NMFS (Kinne/Nordlund) Provide input by June 18th on their approval of the proposed 4 lbs fish/cubic foot short term holding density for the Swift FSC holding tanks.	Complete 6/20/2008

Additional Comments on Last Meeting's Swift Notes:

None. Meeting notes from the December 19th, March 14th, and June 4th meetings can all be finalized unless Bryan sends comments by the end of this week (July 18).

SWIFT DOWNSTREAM AGENDA TOPICS

FSC Configuration Discussion

- Net Decision – PacifiCorp has directed the design team to assume that full-depth exclusionary nets will be installed with the Swift FSC. The full-depth exclusionary nets appear to represent less risk for PacifiCorp in the long run. The team is to move ahead on the design and evaluation of both full-depth exclusionary nets and partial-depth nets to determine if there are any feasibility problems with net installations. A full discussion on nets will be held in future meetings after several critical path items associated with the FSC are resolved.
- Optimized Screen Hydraulics

- A spreadsheet hydraulic model is being used to optimize and refine the screen channel dimensions and screen arrangement. A presentation of the model was provided later in the meeting.
- The floor depth has been decreased at the entrance of the FSC from a depth of 20 feet to a depth of 16 feet to improve the hydraulics in the primary screens and to provide better acceleration characteristics toward the secondary screens.
    - Raising the floor allows for more uniform construction of the belly tanks.
    - Raising the floor at the FSC entrance also reduces the floor slope in the secondary screen section.
- The pump sumps for the primary and secondary screens have been combined into one pump sump.
- The secondary screens now extend all the way to the floor and follow the contour of the floor.
- The weir ramp at the downstream end of the secondary screens is now screened.
- The outflow into the sorting area has been reduced from 7 cfs to 4 cfs.
- Each subsection of screens has individually-adjustable screen baffles consisting of one fixed and one movable perforated plate.

o Entrance Geometry
- With nets included in the design, the CES (Collection Enhancement Structure) will now be referred to as an NTS (Net Transition Structure).
- The entrance velocity of 0.5 ft/s seen at the CES has been maintained in the NTS design.
- The NTS design reflects the current 16-foot FSC entrance depth.
- The design team is using the same spreadsheet hydraulic model used to evaluate the screen channel layouts to evaluate different floor geometries inside the NTS.
- Ken noted that physical modeling data from the Baker FSC may be available to help in evaluating the different NTS geometries currently under consideration.

o Hydraulic Analysis
- Peter Christensen presented an overview of the Swift hydraulic spreadsheet model being used as the main hydraulic design tool. The model is adjustable to reflect a full range of FSC geometries, pump flows, baffle porosities, and loss coefficients.
- The model has been internally and externally peer-reviewed by R2 Resources and Northwest Hydraulic Consultants. It was QA/QC'd both on a theoretical level and a cell-by-cell mathematical level.
- The model is extensive and detailed with the goal of ensuring that adequate flexibility is designed into the FSC to avoid requiring a physical or CFD hydraulic model of the facility.
- For automated screen cleaning purposes, the differential across the screens will be measured in a few key locations.
- Copies of the spreadsheet model and supporting calculation package were offered for review. Bryan said he did not need to look at them,

- Bryan is comfortable with the model and will field any specific questions to Peter outside of this meeting.

o Removed Plenums
  - The 30% design included pump plenums to allow for routing pumped outflow to different sides of the FSC. The plenums have been removed and the design simplified because this functionality will no longer be necessary for the following reasons:
    - The exclusionary nets decrease the need to manipulate outflow for fish attraction.
    - If necessary, vanes can be added to the pump outflows to redirect flow.
  - Raising the FSC to the maintenance position will also be significantly simpler without the pump plenums since the space previously used by the plenums is now available for full-height flotation cells. This represents a significant operational advantage.

o Exclusionary Net Concept
  - The team will discuss nets in detail at a subsequent subgroup meeting. Discussions today are limited to a general overview.
  - If exclusionary nets are ultimately chosen, the nets will extend to the reservoir floor.
  - The current concept includes impermeable sections along the top 15 feet of the nets, on both sides and below the NTS entrance, and at both end sections where the nets are anchored to the shore.
  - The CFD model is currently being updated to reflect the addition of exclusionary nets and the ability to model spill flows.
  - The impermeable, anchored end sections of the nets are currently shown at approximately perpendicular angles to the shore and dam. Bryan suggested that we consider turning these sections, especially the one on the south bank, at an angle of about 45-degrees to the shore to better lead fish out into the reservoir. The CFD model will provide insight into this configuration and the team will further discuss optimizing these angles at a future meeting, pending the completion of the CFD model update.

o Sorting, Holding, and Transfer
  - The goal of the modifications in this area since the 30% design is to simplify and optimize the system to minimize the handling that fish are exposed to and reduce the operational complexity.
  - A single fry flume is shown exiting the fry separator on the starboard side only.
  - A single smolt flume is shown exiting the smolt separator on the port side only.
  - Flexible-tube switch gates will be used as opposed to flume switch gates. These are currently used at Little Goose and are easier on fish and provide better debris management.
  - The length of the sorting and holding areas has decreased as a result of the following:

        - The removal of the plenums from the design allowed for widening the area available for the sorting area.
        - The short-term fish holding density has increased to 4 lbs of fish/cubic foot of holding volume, allowing for a reduction in smolt holding volume.
        - Field visits and investigation of the Cowlitz Falls fry and smolt separators has led to a shortening of the smolt and fry separators shown at 30% design.
    - A full-height flotation cell at the stern has been added for failsafe buoyancy.
    - A single 1,800 gallon hopper for fish transport off the FSC will be used for all of the fish holding tanks. The holding tanks are connected to the hopper by two common crowding pools. As before, each holding tank holds the number of fish that can be held in a single fish truck. Advantages include:
        - Additional emergency holding volume since fish can temporally be held in a crowding pool thus freeing up one of the holding pools
        - Ease of operation
    - The Vaki fish counters previously shown have been changed to AquaScan fish counters. Will said that he had researched AquaScan fish counters and was impressed. R2 will provide Bryan with links to the product information.
    - Frank noted that the License agreement requires that fry are to be held separately from smolts. There will be a fry separator and separate holding tank for fry.
- Sampling
    - The sampling area was not defined in the 30% report. The design team has been working with the M&E team over the last two months to help define the M&E needs, visited the Cowlitz Falls fish sampling facility and interviewed John Serl, WDFW's manager at the site, and has begun defining individual components necessary to meet the M&E goals.
    - One logistical issue is that per the Settlement Agreement, the M&E plan doesn't need to be finalized for over a year. Therefore, the design team is working with the M&E team to anticipate facility needs, and plan space and equipment to meet these needs. A meeting with the M&E team discussing sampling facility requirements will be held in early August to finish up this task, and this issue will not hold up the schedule for the design team.
    - The team stepped through the schematic sampling diagram. The diagram shows subsampling 10% of all fry and smolt and two separate sampling table stations to accommodate up to four people to handle peak fish numbers.
    - The plan also calls for two small holding/recovery tanks that can be transported off the FSC separately from the main hopper for the purposes of focused tagging studies separate from the general transport of fish downstream.
    - The current sampling design ideas are loosely based on the successful sampling facilities at Cowlitz Falls. An additional example of successful sampling can be found at the Bonneville Juvenile Evaluation Facilities.
    - The next steps will include presenting sketches and calculations of the anticipated sampling facilities and work areas to the M&E team, to assure the design will

meet the M&E team needs. Following concurrence on the program needs, the design team will move into the 60% design phase of the sampling facility area, to be located on the upper deck, for review at a subsequent meeting.

- Licensing Concerns
  - Bryan noted that when FERC issued the License they added a clause requiring that every design adjustment or modification go through the license amendment process. The goal of the settlement language was that modifications would require an amendment but that adjustments would be small enough to not require that process. The amendment process is lengthy and may hold up progress on adjustments. Bryan suggested that a possible solution to this problem is to include all possible adjustments in the final design and then file for amendments in the event that these adjustments are not required. PacifiCorp agreed to take this idea under advisement and will discuss further with the ACC.

No.	**SUMMARY OF PENDING SWIFT ACTION ITEMS (remaining from previous Meetings)**	**STATUS**
	None.	
No.	**SUMMARY OF NEW SWIFT ACTION ITEMS (from July 16th, 2008 Meeting)**	**STATUS**
S42	PacifiCorp (Shallenberger/Friesz) Distribute index and copies of all CFD runs on a CD and via a link to the PacifiCorp website. Additional CFD model runs will be completed soon and will be included.	Pending.
S43	R2 (Christensen) Work up velocity and acceleration profiles for the two different NTS geometries currently up for consideration and provide them to Bryan Nordlund for review.	Done 7/17/08
S44	Kozmo (Bates) Provide whatever physical modeling data is available from the Baker FSC physical model to assist in evaluating the NTS geometry.	Pending.
S45	R2 (Christensen) Provide links to AquaScan fish counter product information to the subgroup team.	Done 7/17/08
S46	R2/PacifiCorp (Postlewait/Christensen/Picard/Shrier) Meet with the M&E team to discuss sampling facility requirements in early August.	Pending.