

FINAL - Meeting Summary Notes
Lewis River License Implementation
Engineering Subgroup
April 12, 2006
WDFW/WDOE Office, Vancouver, WA

Subgroup Participants Present: (7)

Sean Flak, PacifiCorp
Will Shallenberger, PacifiCorp
Frank Shrier, PacifiCorp
Eric Kinne, WDFW
Bryan Nordlund, NOAA Fisheries
Monty Nigus, Black & Veatch
Dana Postlewait, R2 Resource Consultants

Handouts (Distributed at the meeting):

- Agenda.
- Draft – Meeting Summary Notes, March 7, 2006 Engineering Subgroup Meeting
- Merwin Fish Sorting Facility Scope Definition Document (Discussion Draft for Engineering Subgroup Meeting), 3/6/2006.
- Merwin Fish Trap Safety Improvements (60% design drawings).

Meeting Materials Available from PacifiCorp's Web Site:

- Swift Downstream Fish Passage Evaluation PowerPoint Presentation: LR SA 4.4.1 Modular Surface Collector Engineering Subgroup – available at the following link <http://www.pacificorp.com/Article/Article61767.html>

ADMINISTRATIVE

Welcome of attendees and review agenda.

Introductions: No new introductions this meeting.

FERC License Schedule Update: Frank Shrier provided the latest license schedule update. The “issuance of license” date is now anticipated sometime in July, 2006. Frank suggested the group should plan for a mid- to late-July, 2006 issuance date.

Review of Last Meeting's Action Items: See status summary table below. Additional discussion is provided below the table.

Report on Previous Assignments (from March 7th meeting, and pending from February 7th meeting):	STATUS:
PacifiCorp (Flak): confirm at what spill flows the bridge is typically closed to access the proposed sorting facility site.	Complete – see Item #1 below.
PacifiCorp (Shrier): Coordinate with Pat Phillips to do W-SH testing with Unit #1 off with 10 to 15 re-used radio tags. This work will help to provide a complete data set for W-SH, as the original test were not able to be conducted with Unit #1 off.	Complete – see Item #2.
PacifiCorp/R2/B&V: Provide agenda item for future ACC/subgroup meeting to discuss development of an efficiency standard for the Merwin Trap improvements.	Pending. Some discussion last meeting, Frank and Bryan will coordinate with their teams to further advance this agenda item at future mtgs.
PacifiCorp (Shrier/property group): Clarify that work proposed for upper release channel, other work proposed in the bypass reach is compatible with DNR, as they own some of the property. Goal is to notify DNR folks early enough to work out any property issues in time for permitting and future construction.	Complete – see Item #3.
PacifiCorp/B&V (Shallenberger/Shrier/Nigus): Show construction access and future maintenance access on the permit drawings for upper release / bypass reach work. Bring this to future subgroup meeting for discussion (or distribute prior to meeting). Goal for WDFW is to preserve to the extent possible established riparian zones within the construction area.	Pending – future action item to be addressed with permit drawings.
<p>Spawning channel design coordination:</p> <ul style="list-style-type: none"> - PacifiCorp/B&V will coordinate the design of the spawning channel with Pat Klavas (WDFW). - Pat will coordinate with WDOE, and will provide PacifiCorp with guidance on spawning gravel specification (washed vs. well graded, and recommended gradation to meet goals). - Curt will provide a review of the gravel disposition, placement of fill, etc. for channel work, once the draft drawings (permit drawings) are prepared. <p>Goal will be to prevent filling of wetlands, sensitive areas, etc., including access (construction and future maintenance), disposal areas, etc.</p>	Pending – see item #4.
PacifiCorp (Shallenberger): Provide update to group on Downstream Passage project at Swift.	Complete – agenda item this meeting.
PacifiCorp (Shrier): Review and report to subgroup on what is needed to develop the Adult Trap Efficiency (ATE) standards. Outline a process by the next meeting that seems feasible (potentially based on Cramer’s model).	Complete – agenda item this meeting.

PacifiCorp (Shrier/Flak): Work out details of a minor amendment to the SA to address interim safety improvements to the fish trap. Frank will talk to Holly.	Pending – future item.
PacifiCorp (Flak/Adams): Revise text in draft letter regarding redundancy of electrical systems for fish trap safety improvement alarms.	Pending – target to be completed by next meeting.
PacifiCorp and WDFW: Internally consider options on how best to surplus fish at the Merwin Trap (alive or killed). Once each organization’s preference is developed, Shrier and Kinne to meet prior to next meeting, to work out details, and ripple affects on the design (number of tanks, trucks, etc.).	Complete – agenda item this meeting.
PacifiCorp/R2 (Flak, Postlewait): Draft letter recommending number of tanks and rough configuration of the facility based on last several meetings and technical memo attachments (contingent on finalization of goals developed in the above item).	Pending – next draft expected for the next meeting.
R2 (Postlewait): Once above two items are done, provide final edits to Attachment 14 showing number of tanks and sizes.	Pending – future item
R2 (Postlewait): Prepare draft calc showing size needed for recovery pond, for discussion at next meeting.	Pending – future item

Additional Comments on Last Meeting’s Action List:

1. Sean Flak reported that there is no formal threshold at this time where the bridge is formally closed due to spill flows. However, experience with the site would indicate that the bridge is generally closed due to heavy mist and wind from the spill at flows of approximately 18,000 to 20,000 cfs. The group agreed to assume the bridge would be closed to access at flows above 20,000 cfs. Sean will report back at future meetings if there is a more formal value to report on this item. The 20,000 cfs threshold is well above the 5% exceedance flow.
2. Frank Shrier and Pat Phillips have tagged 4 fish to date. There are not many fish entering the trap, but they have more tags ready and are waiting on more fish to arrive. Goal is still to tag a total of 10 to 15 W-SH.
3. Will Shallenberger reported that PacifiCorp’s property personnel have contacted DNR, and that the proposed use is consistent with the current property agreement. The DNR will review any proposal as part of the permitting package as a routine matter – no problems are anticipated at this time.
4. The spawning channel design is on hold until PacifiCorp hears from WDOE with further details on flows and desired gravel / spawning channel specifications.

Other Administrative Items:

1. Bryan Nordlund reported to the group a discussion of the proposed Electro-Anesthesia (EA) system that NMFS is currently addressing in-house. NMFS biologists have expressed a concern that the EA system is untested for the proposed use of sorting wild fish, and that there was only documentation currently available to indicate that eggs and adults were not physically damaged (Quilcene Hatchery study, observations at Bonneville Hatchery). There are no studies that demonstrate the ability of adult fish exposed to EA energy to migrate and successfully spawn. There are currently two or three other projects in the region that are dealing with the same needs of increased sorting capability for restoration or reconnection of habitat programs, so this is a regional concern that NMFS must address.

NMFS does not have a formal position on this concern yet, and understands that there are limited options to facilitate stress-free hand sorting of adult fish, where the fish are to be released for possible human consumption. The only other potentially viable anesthetic alternative is a clove oil based product that we discussed earlier in the design process. The clove oil does not yet have FDA approval.

Bryan told Frank to expect a future discussion of this topic at an ACC meeting, and that NMFS may want to add a spawning success type study to verify that the use of the EA system will not affect the ability of adult fish to migrate and successfully spawn in the wild, and that NMFS desires involvement in this type of study design. Frank replied that studies are already planned as part of the SA to monitor the success of the reintroduction program, so this desire would not provide any additional requirements to the studies currently being planned, which are subject to NMFS review and input. The group also discussed the ease of which a clove oil type anesthetic bath could be accommodated into the facility design, should a retrofit be necessary in the future. The EA tank could be plumbed to accept a liquid anesthetic drip line, mixers could be added if necessary to dilute the chemical, and a flange and space for a possible waste anesthetic collection tank for waste product holding or potential treatment could be provided. The group felt comfortable that his issue is not expected to slow down the design process.

Comments and Finalization of March 7th Meeting Notes: These notes were just distributed at the meeting, and distributed by email on 4/12/06. Participants are encouraged to review the meeting notes, and provide comments prior to the next meeting to Kimberly McCune via email: (Kimberly.McCune@PacifiCorp.com).

SWIFT DOWNSTREAM FISH PASSAGE

Will Shallenberger is PacifiCorp's lead engineer, responsible for implementing the Swift Downstream Fish Passage work per (SA) 4.4.1. Will provided the group with a formal kick-off and overview of the Swift Downstream Passage requirements with a PowerPoint presentation (a copy of the presentation is available for downloading from PacifiCorp's web site, as reported earlier in these notes, and the web link was emailed to engineering Subgroup members on 4/12/06). The presentation covered the following topics:

- Swift Project Familiarization: Will stepped through project characteristics, design parameters, drawings, maps, aerial photos, existing project photos, and construction era photographs of the site.
- Biology Studies: Frank Shrier presented a comprehensive summary of biological studies performed relevant for the downstream fish passage design work to date. Links to the published studies referenced are provided in the PowerPoint presentation.
- Relicensing Collection Concepts (AQU5): Will presented a summary of the downstream passage concepts studied and discussed during the relicensing effort, and subsequent negotiations to draft the SA language.
- Settlement Agreement Provisions: Will and Frank summarized and clarified SA provisions specified for the Swift project.
- Alternatives Study: Will provided a summary of a planning effort conducted by PacifiCorp, Black & Veatch and R2 Resource Consultants. An overview of potential fish collection facilities, PMF issues, and PacifiCorp's thoughts on how to proceed is covered in the presentation. PacifiCorp's initial thoughts are to pursue a floating surface collector (FSC), with a V-screen configuration similar to what is being developed for Puget Sound Energy's Baker Hydroproject. The facility will need to accommodate a 100-foot reservoir fluctuation, and year-round operation. The powerhouse has an existing capacity of about 9,120 cfs, and the design will plan for a future capacity with powerhouse upgrades of 11,250 cfs. A dam crest raise of approximately 8 feet is anticipated to address the PMF concerns.

Discussion: Bryan Nordlund offered his initial thoughts on the following points during and after the presentation, with group discussion on each item.

- Bryan asked about the sediment situation within the Swift reservoir, and whether the sediment wedge at the upper end of the reservoir would be likely to impact the dam area during the license period. Frank and Will reported that a wedge is present at the upper end of the reservoir about a mile long, but since the reservoir is 12.7 miles long it will not impact the dam area. PacifiCorp also conducted a study following the eruption of Mt. St. Helens that concluded the mudflows released during the blast would have only filled in 1% of the reservoir storage.
- A V-shaped screen configuration on a FSC would be preferred over an inclined plate screen, due to the ability to better tune the hydraulics. The converging flow of a V-screen allows finer adjustment of baffles and acceleration characteristics.
- There would be value in considering variable speed pumps to allow testing and tuning of a prototype facility.
- Consider providing redundant pumps to allow facility operation with a pump failure scenario.
- Fish sorting needs for the facility will need further definition. Frank and Will stated that they anticipate:
 - Sorting adults from juveniles
 - Subsample juveniles and some tagging
 - Not needing to enumerate all fish

- Further definition of the sorting and fish handling/transport needs will be developed as this project gets going, in association with the subgroup and ACC.
- The location of a FSC, and an evaluation of its collection performance will be a first step in the program development. Fish transfer and FSC moorage issues will also be a key to the design.
- Small prototypes for such a facility would have limited if any value at this site. Bryan's initial thoughts based on experience with other surface collector type facilities are that a larger scale production facility that has operational flexibility to tune flows, velocities, acceleration, etc., would likely be a better approach for the Swift project.
- Characterization of the reservoir flow patterns may be helpful near the dam, but it is unclear at this time given the varying flow conditions and reservoir elevations on how far to go with a velocity measurement or hydraulic modeling effort. Flow measurements and mapping, or a 2-D type hydrodynamic model (suggested talking with Duncan Hay) may be sufficient for design assistance. More discussion will be needed on this topic as the project gets underway.
- Bryan generally does not like nets as part of a permanent fish collection facility. This site presents challenges with operations for nets, given the large reservoir fluctuation, spillway location, and debris loading. If a collector could be developed that achieves the collection goals without a guide net system, it would be better for everyone. More discussion necessary.
- An understanding of the fish studies conducted to date, coupled with well designed system development and possible future studies, will be key to the design effort.

Will indicated that the downstream collector development effort will begin in the next month or two.

SWIFT CANAL UPPER FLOW RELEASE PROJECT

Will reported that design on this item is basically on-hold until WDOE provides additional definition of the desired flows and spawning channel goals for the facility. PacifiCorp will coordinate closely with WDFW personnel as earlier requested as this project moves forward. WDFW will help work with WDOE to define spawning gravel goals and gradation specifications to meet the project goals.

As stated in the action item table, PacifiCorp did make contact with WDNR regarding property use for this site, and compliance with their existing land use permit. DNR indicated that they do not anticipate any concerns, and will review their needs further during the routine permitting review process.

MERWIN FISH TRACKING STUDY AND TRAP EFFICIENCY STANDARDS

Frank Shrier presented a quick update of the ongoing fish tracking studies. He is working with Pat Phillips to tag and track additional winter steelhead. Their goal is to tag 10 to 15 fish, but fish are slow in returning this period. The report will be completed in July as previously planned with all species. Initial data will be provided when ready, likely late May or June.

Regarding the development of Trap Efficiency Standards, Frank has commissioned Steve Cramer to further develop his life-cycle population model to help with this effort. Cramer is running the model with various adult and downstream trap efficiencies in order to report on the sensitivity of the facility performance on the ability to successfully meet the self-sustaining run program goals. His model uses a 100-year life cycle, with EDT input factors including harvest, ocean survival components, etc. The original runs used a 95% capture efficiency. Input values for the sensitivity analysis will use 80%, 60%, and 40% values for adult capture. Smolt capture efficiency will also be bracketed similarly for the downstream collector at Swift.

Bryan asked how the model will deal with habitat preparation, and to estimate a period of time to allow fish to prepare spawning beds and fully use the available habitat. In other words, does the model account for reduced use of habitat during the initial reintroduction years. Frank reported that he doesn't think this is much of an issue for this program, as releases of adult Spring Chinook and Coho resulted in successful spawning. Spawning surveys were not performed, but schools of juvenile coho and chinook were found following the test releases of adults. He believes the bottleneck will more likely be the juvenile and adult collection efficiencies. As such, the model uses a starting point of adult releases and works from there. More information will be provided on the model runs and resulting sensitivity analysis for the fish passage facilities at future meetings.

FACILITY DESIGN CRITERIA. SA 4.2 MERWIN TRAP, AND SA 4.3 MERWIN UPSTREAM COLLECTION & TRANSPORT FACILITY.

Dana Postlewait gave a status summary for the Design Criteria Documents. As planned, the documents have not been modified since the last meeting to give group members time to review the recommendations and to deal with the surplus fish protocol development.

Frank reported that PacifiCorp and WDFW have met, and have concluded that all surplus activities will take place at the Lewis River Hatchery (LRH). This means that fish collected at the Merwin Trap destined for surplus will be transported live to the LRH, and no other provisions for spawning (truck access, kill station, fluid collection tanks, etc.) will be needed at the Merwin Trap or Merwin Sorting Facilities. Implications for the trap and sorting facilities will be limited to providing enough/large enough truck loading tanks and trucking capacity to move these surplus fish live to the LRH.

Additional surplus protocols and sorting processes will need to be developed as part of the hatchery improvement project, currently underway with PacifiCorp, WDFW and R2.

Eric Kinne reported that brood would be collected throughout the day at the Merwin Trap, and he believed a 5th truck loading tank would be necessary at the Merwin Trap. If surplus fish cause the system capacity to be limited, the group considered the option to shunt surplus fish back to the river at the dam. Anticipated system constraints will likely be on the weekends, where staff levels are reduced and surplus buyers aren't likely to travel to the hatchery. Routing fish back to the river is not desirable, but will be considered in the design development. The design must also accommodate the ~2 year interim period when all sorting will be performed at the LRH (prior to completion of the Merwin Trap sorting facilities).

Action items for this topic include:

- R2/B&V to examine the incremental cost of a 5th tank at the trap, and to report back to the group.
- R2/B&V will update the criteria documents to examine necessary number of tanks given updated loading.
- R2/B&V to re-draw Frank's truck loading diagram, with the updated numbers and tank needs.
- R2/B&V provide a surplus fish protocol memorandum that describes how the surplus fish will be handled at the trap and hatchery.

FISH TRAP SAFETY IMPROVEMENTS

Sean Flak reviewed the status of the fish trap safety improvements in conjunction with the 60% design drawings that were handed out during the meeting. The 90% design effort is proceeding and nearing completion. PacifiCorp and WDFW have worked through comments on the draft design, with the following details discussed at the meeting:

- The handrail detail needs to specify no sharp edges, with all welds ground smooth.
- A 2nd rail at the higher elevation is not really needed, with the agreed to limitation of 5,500 cfs flow restriction when personnel are in the trap, as the water level can't reach the higher level of the proposed handrail. After some discussion, it was agreed that this rail could be eliminated.
- The clear spacing between the handrail and the wall was questioned. It appears that a space of 5 to 6 inches will be appropriate. WDFW will provide input to Sean on actual fish measurements, and recommendations for a clear space to be included in the final design drawings.
- Sean will provide a manufactures cut-sheet for the proposed light fixture to be provided in the trap.

SORTING FACILITY DESIGN

Sean provided the group with an update of the sorting facility siting issues. PacifiCorp is still evaluating their preferred site for the facility: either the proposed site on the left bank near the bridge, or along the right bank immediately upstream of the bridge. The right bank site may provide PacifiCorp with more operational flexibility, and room to perform dam/powerhouse operation & maintenance activities without impacts to, or being impacted by the fish sorting facility.

Items discussed related to locating the facility on the right bank included:

- Road realignment needs and WDFW access to the facility. PacifiCorp is evaluating options for access.
- Fish transport flume: the flume would need to be raised at the fish elevator, and an additional ~350 feet of flume/pipe would be needed to route fish from the fish elevator to the sorting facility. This could take an extra 35 seconds (to be verified if this design is carried forward) for the fish transfer process. This fish transport is not viewed as a fatal flaw for this site, but more details will need to be provided to the group if this site is

proposed. The elevator/flume transition is a unique detail that will also need further development (regardless of which site is used).

Items related to locating the facility on the left bank included:

- PacifiCorp may need additional site laydown area for large scheduled powerhouse maintenance activities, which may impact the truck loading site. PacifiCorp may need to limit truck loading pull-through capabilities every 4 to 5 years, such that trucks may need to back into the facility instead for several months during these large O&M periods. Further details will be provided for review as the site plan is developed.

Sean also passed out a planning document for the facility that B&V/R2 have provided for the group’s initial review (Merwin Fish Sorting Facility Scope Definition). This document is intended to be used as a guiding criteria tool that further defines all of the features, rooms, codes, civil, structural, mechanical, electrical systems needed for the facility. Monty Nigus and Dana Postlewait presented a quick review of the document, and requested comments for discussion at the next meeting.

NEXT STEPS AND OTHER ITEMS

The next design priorities will be:

- Develop the fish trap safety improvements to the 90% design level.
- Further development of the fish population model.
- Finalize criteria documentation.
- Further develop the facility programming and preliminary layout for the sorting facility.
- Development of design concepts for the fish trap entrance improvements at the powerhouse.

NEW ASSIGNMENTS (FROM MARCH 7TH MEETING):	STATUS:
R2/B&V (Postlewait/Nigus): Examine and report on cost of adding a 5th truck loading tank to the Merwin Trap.	Pending
R2/B&V (Postlewait/Nigus): Update criteria document items as described in notes.	Pending
WDFW (Kinne/Phillips): Provide recommendations to Sean for clear space between handrail and wall for the fish trap safety improvements.	Pending
PacifiCorp (Flak): Provide WDFW with catalog sheet for light fixture proposed for trap safety improvements.	Pending
Subgroup Members (everyone): Review and provide comments to the Merwin Fish Sorting Facility Scope Definition draft document.	Pending

FUTURE MEETING DATES

It was proposed and agreed that future meetings shall be scheduled at approximately 6-week intervals. Kimberly McCune has scheduled future meetings as follows:

- The next meeting is scheduled for 9:00 am - 4:00pm, May 17, at WDFW's Vancouver Office - Large conference room (2108 Grand Blvd, Vancouver, WA (360) 696-6211).
- Tuesday, June 27 - Merwin Hydro Facility
- Tuesday, August 8 - Merwin Hydro Facility
- Wednesday, September 20 - Merwin Hydro Facility
- Tuesday, October 31 - Merwin Hydro Facility
- Tuesday, December 12 - Merwin Hydro Facility

Meeting was adjourned at ~2:45 pm.