BAKER RIVER FISH PASSAGE FACILITIES DESIGN
FISH PASSAGE TECHNICAL COMMITTEE
BAKER RIVER PROJECT, FERC NO. 2150

West Coast Sea-Tac Hotel
18220 Pacific Hwy. S.
Seattle, WA 98188

9:00 a.m. - 3:00 p.m.
August 1, 2001

AGENDA

9:00 - 9:10	Edit Agenda
9:10 - 9:20	Review Meeting Minutes & Action Items
9:20 - 9:35	Baffle Modification Summary
9:35 - 10:30	Review 2001 Surface Flow Migration Study
10:30 - 10:40	Break
10:40 - 11:30	Review Proposed 2002 Surface Flow Migration Study
11:30 - 11:50	Lunch - provided
11:50 - 12:10	Summary of On-going Data Collection Activities, Needs
12:10 - 1:00	Review M-W Upstream Facilities Conceptual Alternatives
1:00 - 2:45	Brainstorm Upstream Facilities Needs & Conceptual Designs
2:45 - 3:00	Evaluation, Set Agenda & Dates for Next Meetings


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DRAFT MEETING MINUTES
Fish Passage Technical Working Group

Mission Statement: To develop an efficient fish passage design for the Baker River Project.

Project: Baker River Project
FERC No. 2150

Written By: Nick Verretto

Meeting Date: August 1, 2001

Location: West Coast Sea-Tac Hotel, Seattle

Attendees:

Arnie Aspelund, PSE	Don Schluter, Trout Unl. (by phone)
Doug Bruland, PSE	Fred Seavey, USFWS
Paul DeVries, R_2 Consult.	Clint Smith, M-W
Cary Feldmann, PSE	Gary Sprague, WDFW
Steve Fransen, NMFS	Jim Stow, USFWS
Karen Kloempken, WDFW	Nick Verretto, PSE
Mort McMillen, M-W	Stan Walsh, SSC
Ed Meyer, NMFS	

Purpose: The purpose of the meeting was to discuss study results of 2001 Upper Baker juvenile fish passage tests using the modified intake fish baffle, plan for the 2002 surface flow migration study, and initiate conceptual design development for replacement of upstream fish passage facilities at the Baker River Hydroelectric Project.

Future meeting dates: September 5, 2001, and November 1, 2001, 9:00 to 3:00, at the West Coast Sea-Tac Hotel.

Agenda:
1. Review minutes & agenda
2. Action items & parking lot review
3. Baffle modification summary
4. Review 2001 surface flow migration study
5. Discuss proposed 2002 surface flow migration study
6. Summary of on-going data collection activities, needs
7. Review M-W upstream passage facilities conceptual alternatives
8. Brainstorm upstream facilities needs & conceptual designs
9. Meeting evaluation, set agenda and dates for next meeting

Review Minutes:
The minutes were accepted as written. Gary requested that meeting minutes be distributed at least 1 week prior to upcoming meetings for review and schedule prioritization.

New Action Items:

- Clint - Develop Gantt chart or road map/timeline of upstream and downstream facilities design
- Clint - Develop upstream passage matrix with full range of options for discussion at September 1 meeting (e.g., alternatives schematic from Cowlitz Falls and Lewis River)
- Paul – Complete 2001 study analysis and report, and further develop 2002 study
- Arnie – Provide historical adult passage numbers that support conceptual design criteria
- Nick – Discuss passage studies with Stan and coordinate development meeting with consultant and tagging contractors
- Nick – Coordinate forebay velocity profiles data collection with Ed Meyer and David Hericks of Pacific International Engineering.
- Nick – Coordinate reservoir migration studies discussions with Stan Walsh and consultants, then follow up with tagging/marking contractor discussions.
- Nick – Coordinate hydroacoustics and temperature profile studies discussions with Stan Walsh and consultants and contractors

"Old" Action Items:

- Fred - bring Skagit Chinook length-frequency data
- Fred - look at statistical variation from year to year in the gulper mark and recovery data
- Kevin Brink - analyze how fluctuation limits affect spill (# events, amounts, seasons, duration, flow-days by month), to facilitate discussions regarding limits to drawdown range and effects on screening designs; Kevin will report at a future meeting

Report on Completed Action Items:

- Upper Baker intake baffle modification project completed, with exception of actuator assemblies installation scheduled for Fall 2001
- 2001 Upper Baker surface flow attraction study completed by Paul DeVries and Doug Bruland

Parking Lot:

- Hydroacoustic data - Arnie
- Fish species run timing, emergence timing, length-frequency data – Doug, Nick
- Design strategy process
- Conceptual designs as they relate to costs
- Sediment studies

Baffle modification summary:

The Upper Baker intake fish baffle modification project was completed end of June 2001. Nick briefly described the schedule and Clint distributed design drawings and discussed the physical modifications. The intake fish baffle is a floating, half-circle sheathed truss structure open at the bottom. All generation flow enters through this opening at 100' depth. The half-circle baffle is composed six chords of aluminum trusses and paneling. The modification included installation of gate openings on all six chords from 10' – 30' depth, with a total cross-sectional area equal to that of the bottom opening.

Flow through the surface openings was calculated at between 40% - 50% of full flow, with little variation at different pool elevations. Flow measurements were not taken to verify the calculated flow distribution, but are planned. Nick will coordinate the effort with Ed Meyer and David Hericks of Pacific International Engineering. Hydroacoustic surveys, as well as velocity and temperature profiling will also be conducted once gate actuator assemblies are installed.

The possibility of closing off the bottom of the structure to divert all generation flow through the surface gates was discussed. It is not presently being considered due to the complexity, expense and potential operational risks.

Review 2001 surface flow migration study:
Paul DeVries of R2 Resource Consultants described preliminary study results of the surface flow mark-recapture pilot study, which was conducted immediately after completion of the baffle gates installation. The study plan called for a release of marked coho at four locations (far-field forebay, near-field forebay, at the gulper mouth, and in the fish trap – control group) under two operational scenarios (baffle gates open to allow surface attraction flow, and baffle gates closed). Eighteen sample groups were released, with 2000 fish per sample. Releases were conducted under the surface flow scenario during the first week of the two-week study. The second week was also conducted with the surface gates open due to problems with the gate lifting mechanisms.

Gill ATPase testing (of a subsample of each group) by Dick Ewing in Oregon indicated that all release groups were well past the peak of their migration stage. This may help to explain the test group recovery rate of only 35% - 40%, compared to 50% - 60% of groups released early at the upper end of the reservoir. It appears that the peak of the migration provides only a two-week window for testing, so the 2002 test will likely be conducted similar to the 2001 test, although much earlier to coincide peak migration condition.

The recapture rate of groups released directly in front of the gulper appeared to be as low as those released upstream from the entrance, even though reservoir passage and attraction components had been satisfied. There appeared to be no significant difference in recapture rates of groups released upstream of the gulper as well. There may be many causes of the apparent data scatter, all which will have to be addressed as potential problems in the 2002 study.

Steve mentioned that study groups at the Cowlitz Falls downstream passage facility exhibited a similar confounding behavior. The fish tend to race through the reservoir to the collector, approach and remain 3’ in front of the opening for 30 – 40 seconds, then move away. Gary and Cary said that the same response has been observed on the Columbia River. Fish move near, or even into, the collector entrance, then reject it, turn around and exit.

Steve suggested repeating the study next year under proper timing conditions, and superimposing radio tagging or tracking study information. Ed stated that the same type of study is conducted on the Columbia River over the entire season and under variable pool and generation conditions. Stan supported Steve’s suggestion (i.e., repeat the study with parallel tracking studies), and suggested conducting a flow-net study this year to confirm timing of the gate operating sequence and to support data analyses. He also requested use of Little Park Creek (wild) coho and reared release groups in both the surface flow study and any tagging/tracking study conducted in 2002. The addition of a release site at Little Park Creek should also be added to the study.

No handouts were provided at the meeting, due to the preliminary stage of data analysis. Paul will provide the draft final 2001 study report for the next design meeting, and develop the

Discuss proposed 2002 surface flow migration study:
Next year's study will likely be conducted over a two-week period, with gate position open during the first week and closed during the second week. Some questions which may be incorporated into the study plan, or addressed in other studies, include: use of both reared and wild coho release groups; uniformity, timing and duration of ATPase levels of reared versus wild coho; and acoustic tagging or radio tagging to determine behavior and migration path. Use of radio tags may present problems if the historical battery life of 30 – 45 days has not been improved. Stan recommended looking into potential availability of tags that cycle on only when receiving a signal.

Fred suggested recovering fish at the forebay trap as a source of mark-release groups to confirm that study fish are migration-ready. Others countered that this introduces the potential for conditioned response.

Summary of on-going data collection activities, needs:
Doug presented a list of temperature sampling sites, and briefly described the data collection at each. The need for additional information to support design development was discussed. Fred suggested that, contrary to the direction of the design team at the last meeting, the delay of design development pending on-going data acquisition may prove to be counter-productive. The risk of studies producing little valuable information, yet with the consequent design delay, could push facilities replacement into the unacceptably distant future. Jim also suggested that the group pursue development of the three most likely options, with final determination pending information additions. A critical appraisal of all presently viable options could reduce the number to three, which might then provide some direction toward information acquisition needs.

Review M-W upstream passage facilities conceptual alternatives:
Clint distributed and discussed the upstream fish passage facilities sections of Montgomery-Watson's Fish Facility Modernization Study of August 1999.

The absence of volitional passage facilities in the document was raised as a primary area of concern. The fact that the document does not fully consider all available options for fish passage was also the source of some criticism. Nick stated that the report was not intended as the sole list of options which PSE would consider, but a starting point for initiation of discussion. The administrative record for consideration of all options, as well as the justification for the rejection or selection of options for further development would have to be captured in the context of the design team's deliberations.

Don reiterated the need for volitional passage options considerations, especially of a fish ladder. A quick calculation by Ed of the length of a ladder necessary to accommodate 600' elevation gain was 1.5 miles. Stan stated that SSC was not looking for volitional passage at the Baker Project.

Gary mentioned that historical records show that the Project used to lose between 35 – 40% of upstream migrants prior to the installation of the present facility, although it is unclear whether

handling or trapping was a major cause of the mortality. Steve Stated that the discussion of volitional passage would have to occur to support the administrative record, and that the decision path will have to be clearly defined.

Don suggested looking at other systems for available options. Jim suggested that any passage system would also have to accommodate kelts and fall-backs, whether in upstream or downstream facilities. Steve agreed with this requirement.

The water supply inlet capacity was described as being increased to 120 cfs, with a screens approach velocity of 0.4 fps upstream of the weir. This would entail enlarging and reconstructing the existing intake on the left bank. Jim suggested the need to look at the footprint of a greatly enlarged facility, with channeling and sorting capabilities installed to allow movement without handling (i.e., entering the trap and manually sorting fish). Future management options need to be defined to allow facility determination to proceed. Run numbers and timing were questioned as they relate to the trap facilities options proposed in the study. Arnie will provide the numbers at the next meeting.

Brainstorm upstream facilities needs & conceptual designs:
Clint will provide a matrix for consideration and discussion of a full range of options at the next meeting. He will also bring information from the Cowlitz Falls Project design development, to see how others' experience might support the Baker River efforts. Some of the concepts that will have to be considered in the brainstorming session include: sorting methods, volitional passage, holding, enlarged facility, acclimation, water intake details, inlets, ladder, weirs, attraction, adult transport and constructability.

Meeting Evaluation
Well-Dones:
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Opportunities to Improve:
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Meeting Handouts:
- Agenda
- Team list
- 30 January 2001 meeting minutes
- Upper Baker intake baffle modification designs
- August 1999 Montgomery-Watson fish facilities modernization study – upstream facilities sections

Tentative Agenda for next meeting – September 5, 2001,
9 a.m. - 3 p.m., West Coast Sea-Tac Hotel
1. Review minutes & agenda
2. Action items & parking lot review
3. Review 2001 surface flow migration study
4. Discuss 2002 study needs
5. Upstream facilities conceptual design development

6. Meeting evaluation, set agenda and dates for next meeting

A future meeting was scheduled for November 1, 2001, 9 a.m. - 3 p.m., at the West Coast Sea-Tac Hotel.