

MEETING MINUTES
Downstream 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: Kim Lane

Meeting Date: March 5, 2002

Location: WestCoast SeaTac Hotel, Seattle

Attendees:

Arnie Aspelund, PSE	Jim Stow, USFWS
Mort McMillen, MWH	Nick Verretto, PSE
Steve Fransen, NMFS	Ken Bates, WDFW
Wayne Porter, PSE	Ed Meyer, NMFS
Kim Lane, PSE	Stan Walsh, SSC

Purpose: The purpose of the meeting was to continue development of conceptual design alternatives required for evaluation of downstream and upstream fish passage facilities in the course of relicensing the Baker River Hydroelectric Project.

Future meeting dates:

April 2, Tuesday 9 a.m. - 3 p.m. - downstream and upstream design at Sea-Tac

May 7, Tuesday 9am- Noon at LB Field, 1pm –7pm design meeting at Baker Lodge, overnight

May 8, Wednesday, 7am – 1pm, Upper Baker site visit, studies observation

June 4, Tuesday 9 a.m. - 3 p.m. – passage design at Sea-Tac

July 9, Tuesday 9 a.m. – 3 p.m. – passage design at Sea-Tac

ITEM	DESCRIPTION	ACTION BY
Technical Memo Distribution	Memos distributed Upstream and FL1 Downstream with MIS screens <ul style="list-style-type: none">Upstream Passage Conceptual Design Option SummaryUpstream Passage Ladder AnalysisAlternative Filter Analysis–U1.1–Ladders at LB & UB, fluctuatingAlternative Filter Analysis U1.2 – Ladders at LB & UB, fixed poolAlternative Filter Analysis U1.3 – Barrier Dam to U.B. Ladder,	

	<p>fluctuating pool</p> <ul style="list-style-type: none"> • Alternative U3.3 – Trap & Tram from Barrier Dam to Baker Lake • Draft No. 1.0, Lock and Elevator Summary • Alternative Filter Analysis – Lower Baker A.1 • Alternative Filter Analysis A.1-conventional screen, fluctuating • Alternative Filter Analysis A.2-MIS screen, full flow, fluctuating • Alternative Filter Analysis A.3 – MIS screen, 60 % flow • Alternative Filter Analysis A.4-MIS screen 20% flow • Alternative Filter Analysis FL.1 – Conventional, full flow • Alternative FL.3 – Reservoir Fish Attraction Barge, 20% flow • Draft Study Plan for Near-field Smolt Migration Study • Draft Study Plan for Far-field Smolt Migration Study • Draft Study Plan for Pit Tag Migration Study • Draft Study Plan for Steelhead Kelt Radio-Telemetry Study • Studies release and logistics schedules • Hydro/ops summary related to studies • Figures 1 – 4 on Alternative FL.3 	
Discussion on Facilitation	<p>Agreed that facilitation or mediation will be required at meetings depending upon the subject matter of the meeting. The need for facilitation will be decided by the group upon review of the upcoming meeting's agenda. If the meeting is to consist of technical presentations then facilitation should not be required. Also, facilitators may vary depending on availability and who is used for overall Baker licensing, but the group will judge performance of any facilitator.</p>	
Biological Studies reviewed	<p>Data distributed: Schedule for releases, pool elevations, and study plans for each study</p> <p>Biological Studies Summary</p> <p>Nick reviewed the study plan, which is based upon a forecasted 120% inflow water year. Generation will start off then be on, with on assuming a minimum of 2100 CFAs of flow through each turbine. Overall concept for far-field is raising pool then lowering pool for far-field. Pool elevations start at elev. 685' on April 29th.</p> <p>Jim brought up issue of how long fish will be monitored. When monitoring period is done, and anticipated tag life is over, then comparison of those fish for that specific treatment will be terminated, however the fish will be followed until the end of the tag life.</p> <p>Discussion on how variables will be separated in the study came up, specifically if it is expected that pool elevation will be a significant factor. MaryLou clarified that the recent evaluation of historical data revealed that the significant correlation was photoperiod, and there was no relationship to pool elevation. Correlation was for all species combined, and without separation of recent vs. later years.</p> <p>MaryLou reviewed near-field acoustic study. For near-field, studies will start with Coho since they are harder than Sockeye. Distribution of hydrophone arrays reviewed. For far-field, will use radio telemetry and start with release at Little Park Creek. Plan to release in high pool and then in low pool to determine if there is any effect of this variable. During transition week there will be no tagging releases so as to separate these studies.</p>	<p>1) Weekly conference calls regarding study status will start on Monday, May 6th, then are scheduled for May 13th, 20th, Tuesday 28th, June 3rd and June 10th. Time for all calls will be 1:00PM</p> <p>2) Site visit – view juvenile facilities, adult trap, and spawning beaches, and release: May 8th PSE will provide lodging at the Baker Lodge for those who wish to spend the night in</p>

	<p>Ken – will there be a confusion to far-field fish during release during transition between generation on and off? It is assumed that there will be no velocity changes detectable in far-field. Assume that this will primarily affect near-field fish that will be in the reservoir at that time.</p> <p>MaryLou wants the keep study parameters clear, this is why it is not a normal operation scenario. Jim was concerned that shutting off generation will create eddies that will move around the reservoir, which can confuse the fish? MaryLou asked how far back this effect would occur? MaryLou openly considered measuring such backcurrents/eddies, but the velocities would be so low that conventional equipment could not detect.</p> <p>PIT Tag Study was reviewed. For far-field, fish taken from upper Baker Trap. For near-field, a nested study, fish taken from Upper Baker Trap released 1 mile from and near log boon, to provide an idea of the travel time from various locations to the collector. For each far or near-field, have a release of 20 fish in front of the gulper to determine the time the fish spend circulating in the collection area. Ed Meyer asked about use of the double coil detector. MaryLou indicated that the manufacturer claims the detector to have a 99% accuracy of detecting tagged fish.</p> <p>Kelt Study, no changes. Kelts have now been collected and are being held at Upper Baker hatchery. Some are now dropping their eggs, and if they have not dropped they will be stripped prior to release.</p> <p>Steve Fransen – pushing start date back, stated he was concerned that the Kelt die of starvation, or be seriously affected by lack of nutrition by the release date. Doug is collecting twice the number of fish. Kelts can be feed while being held others have done this, and Doug is requested to look into feeding the fish.</p> <p>At start of each week (on Monday, at 1:00pm) have a conference call with anyone who wishes to check on status of the studies MaryLou will contact field crew and relay status. Anticipate that the subject of the call would be just general status of the study and if it is proceeding as planned. Telephone number distributed.</p>	<p>order to continue the Baker Passage meeting the next day (Previously scheduled meetings at SeaTac are canceled those days)</p> <p>3) Mention to Doug Bruland to consider feeding or careful monitoring of the kelts now being held.</p>
<p>Downstream Surface Collector and MIS Screens</p>	<p>Design Review and Presentation</p> <p>Alternative FL3 reviewed. This is designed using pumps. Have not reviewed use of gravity yet. Sequentially pulling water out as water moves down through screen. Need to keep transport velocity up, hence the floor rises. Design velocity is 4 fps. Study data from existing gulper will let us know how fish are attracted to such a flow. Structure is floated. velocity is controlled with pumps. Pumps can be tied together or separated into separate wells. There may be an aversion for fish entering a high velocity flow field right at entry into screen.</p> <p>Comments</p>	<p>Mort asks that comments on distributed TM's be received week</p>

	<p>Screen velocities: Ed recommended considering velocity acceleration from 2fps to 4fps from the entrance to the ramp and secondary area. Consider shutting off front pumps to control velocity at entry to screen. Approach and entrance conditions will have to minimize environmental changes requiring behavioral modification to avoid rejection.</p> <p>Stability Questions arose regarding stability of floating structure. It is possible to set pumps so they come on and off as water level rises or decreases. Some stability is achieved by virtue of structure size.</p> <p>Use of weirs to control flow: Ed recommended MWH consider controlling flow through the screens with weirs which will go into a common wet well with common pumps. However there could be a stability problem without a feedback loop to control the water level.</p> <p>Debris on screens could affect water level.</p> <p>With a weir system, suggested multiple pumps at end. Or could put weirs where pumps are. However must be concerned about thrust of the pump output since they are so large.</p> <p>Steve asked if it would be possible to tie pumps into penstock, such as Mayfield? Mort will examine this concept.</p> <p>Site Plan: Mort present the site plan view of this option, which provided size of structure (at Lower Baker). If this structure was located next to baffle then its size would block almost all of baffle.</p> <p>Mort reviewed pumps, and depth of collection wells, which would require more study. However, if going deeper, then structure would need to be longer.</p> <p>Cleaning issues: Ed recommended that we do away with brushes and go deeper, at least in first section. Main concern is how to clean. Mayfield maintains constant depth throughout slot, so brushes can go down throughout the whole structure. Also, brush systems are complicated, may wish to consider backwashing, however this is a problem with the pump system. Right now tend to clean daily with large cleanings as required. May find more debris with the finer screens that will tend to clog screens that now are passed through.</p> <p>Nick suggested adjustable depth. Wayne recommended that we also consider redundant pump that could be used as a backwash system.</p> <p>Kelts: Can possibly have Kelt rejection from too narrow a slot at the end of the screen. Need to consider.</p> <p>ACTION: Revise TM based on comments received</p>	
--	--	--

	<p>Suggested that we wait until get biological studies to determine width/depth of screens.</p> <p>Are examining the same concept for Upper Baker. Advance Upper Baker barge</p>	
MIS (High Speed) Screens	<p>TM was not handed out but Mort commented on his concerns, which he is considering with this alternative. Currently examining two locations for intake tower, amount of generation may affect need for a barrier net, so looking at moving upstream so barrier net can be kept. At Upper Baker, because of intake baffle, need to consider flow balancing problems. Balancing is a problem because a pipe throughout the barrier net and one going through the MIS screens, may result in the majority of flow going through lower one and not much through upper pipe and associated screens. Have 20-35% of flow going through upper baffle, with screens this may go down to less than 5%. Also looking at full high-speed screen but have problem matching with generation.</p> <p>Howard Hansen may provide a good list of high-speed screens.</p> <p>Eicher screen should be added on, Puntledge, Elwha, etc. can provide information on this.</p>	
Fatal Flaw Documentation	<p>Upstream technical memos distributed replace those previously issued. Lower Baker A.1 reviewed. This is a full-scale conventional screen that would be jacked up and down as reservoir moved up and down.</p> <p>This adjustable screen did not seem realistic, and that fixed would be more reasonable. Mechanical complexity would be problem, screens adjustment a problem and this has never been done before.</p> <p>Consider a floating screen within a box? Ed Meyer Yes, this is being considered in other options. Mort asked that group review the TMs and agreed that this level of information would be enough to document, and TM contains Nick requested that date at which decision was made be included in sheet Also a matrix is being developed to track the latest revision of any technical memo. Include a column in this matrix that states current status of that TM.</p>	<p>1. A list of alternatives and their status, exists on Downstream "Fatal Flaw" Summary.</p> <p>2. PSE and MWH to meet to develop new tracking document sheets.</p>
Upstream - Last Meeting Action Items	Nick reviewed.	All complete but will keep group informed as fish truck design/procurement moves along
Upstream Passage	Mort reviewed TM's. New alternative is TM6, for U2.3, which is existing trap system with tram to Upper Baker Lake. TM 7 reviews Lock and Elevator alternative.	Group should have all Upstream TM's at this time.
Upstream Passage TM status	Mort reviewed fatally flawed TM U3.3. Alternatives U1.1, U1.2, U1.3, U2.1, U2.2, U3.1, and U3.2 are still being examined.	

Discussion of Tram Alternative	<p>Have temperature and O2 issues with fish in hopper because cycle time is 1 hour and 20 minutes; also perhaps delayed stress, so this could be an issue. May also have aesthetics issues.</p> <p>This alternative rejected due to biological impacts</p> <p>Also, would need to transfer fish off tram, or sort at trap to get them to spawning beach, so this results in additional handling of fish.</p> <p>Complexity of alternative makes it impractical, and should note that all these complexities add up to rejection.</p>	<p>This alternative was rejected for further consideration due to several compounding issues and does not pass Filter No 1.</p>
Discussion of Fatal Flaw Process	<p>Ed suggested that we list alternatives such that a priority list be developed and it not fatally flawed, then either filtered out due to compounding issues with that alternative. Steve noted that many of settlement agreements are not specific and lack clarity.</p>	<p>The term "Fatal Flaw" needs to be reserved for only a few select alternatives, as many may not be preferable, but also may not be "Fatally Flawed". Another term for this evaluation category will be developed.</p>
Tramway, Fish Locks and Elevators	<p>Mort completed a review of these facilities throughout the country. (Reference TM 7.0) Purpose of review was to determine if any of these alternatives would be feasible at the Baker Project. Some of these facilities are not in use, or only work with upstream and not downstream. All locks in US are less than 100 feet high, although Oren Dame in Scotland does have a 200 foot lock. Coast are successful, but are these considered feasible alternatives, and need to look at transportation requirements. Also, the scale of what would be required at Baker is must larger than any existing facilities, although the tramway at Round Butte was 400 feet long.</p> <p>Also have a grain tram that could handle 6800 lbs. per car, and 14,000,000 lb. per day. However, if fish are trammed to Lower Baker and then to Upper Baker would have a loss value assigned to each transport facility, with a truck have only on loss factor. Also would have fish placed into Lower Baker and then need to be captured again at Upper Baker.</p> <p>U3.1 and U3.2 are also considered feasible at this time but will require additional examination.</p> <p>Jim Stow would like to have management objectives be considered.</p>	
Meeting Summary	<p>In conclusion, at next meeting MWH will develop details of high-speed screens and Gulper systems and incorporate comments on Conventional Screens that were made today. Hopefully alternatives that show a high degree of feasibility can be short-listed due to biological, operational and other concerns.</p>	<p>Next meeting is on April 2nd.</p>

	By April or May we will have alternatives refined to point where we can wait for results from biological studies, and then using this information start elimination of certain alternatives and refinement of remaining alternatives to select the preferred alternative. Study data will be available September or October.	
Facilitation	Group decided it was not required at the next meeting.	
End of Meeting		

April 2nd Proposed Meeting Agenda

1. Review Notes and Agenda
2. Action Items
3. Review Correlation of Historical Data
4. Destination Matrix
5. Fish Truck Status
6. Review of Alternatives as appropriate
7. Review Assignments
8. Set next meeting agenda