BAKER RIVER PROJECT RELICENSE

Aquatic Resources Working Group

November 14, 2002

8:30 a.m. – 3:00 p.m.
U.S. Forest Service
Conference Room A/B (425-775-9702)
21905 64th Avenue West, Mountlake Terrace, WA

AGENDA

1. Review Agenda and Minutes	8:30 – 8:45
2. Review Relicense Schedule	8:45 – 9:00
3. Settlement Process-Developing 1st Draft PM&Es	9:00 – 10:30
Break	10:30 – 10:45
4. Report from Fish Passage Technical Working Group	10:45 – 11:00
5. Report from Instream Flow Technical Working Group (A09) & A09b, A09c	11:00 – 12:00
Lunch (meeting snacks or bring your own)	12:00 – 12:30
6. Review Study Plans/Requests: A01a, A02, A05, A26a, A26b, A37, A38	12:30 – 1:45
7. Action Items	1:45 - 2:00
8. Update from Solution Team Meeting	2:00 - 2:15
9. Additional Issues	2:15 - 2:30
10. Set Agenda for December 12th (USFS Mountlake Terrace)	2:30 - 2:40
11. Evaluate Meeting	2:40 – 3:00

September 12, 2002

Driving Directions to US Forest Service Office:

1) Driving North from Seattle (or South from Everett) on I-5, take the 220th St. SW exit (exit 179).
2) Turn west (right if from southbound I-5, left if from northbound I-5) onto 220th St. SW.
3) Drive west about a block and turn right onto 64th Ave W.
4) The office building is about ¼ block down the street on the right side of the road.

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November 14, 2002
8:30 a.m.- 3: 00 p.m.
USFS Building, Mountlake Terrace, WA

MEETING NOTES

Aquatics Working Group Mission: *"To identify issues and develop solutions and recommendations addressing fish and aquatic resource interests related to the Baker River Project and its operations, leading to a settlement agreement."*

Fish Team Leader: Arnie Aspelund, 425-462-3442, arnie.aspelund@pse.com

PRESENT: Arnie Aspelund, Nick Verretto, Cary Feldmann, and Doug Bruland (PSE), Arn Thoreen (Skagit Fisheries Enhancement Group), Sue Madsen, Mike Gagner, and Phil Hilgert (R2), Bill Reinard (Wildcat Steelhead Club), Steve Fransen (NOAA Fisheries), Gary Sprague (WDFW), Brady Green (USFS), Dick Raisler (Fidalgo Fly Fishers), Stan Walsh (Skagit System Cooperative), Bob Wright (DOE), Bruce Freet (Environmental Agreements), Lyn Wiltse Facilitator and Mary Jean Bullock (PDSA Consulting, Inc.).

FUTURE DATES AND LOCATIONS (2nd Thursday of each month):
December 12, January 9, February 13, March 13 from 8:30-3:00 at USFS Office in Mountlake Terrace.

Note: Below are 2003 meeting dates where the USFS Office in Mountlake Terrace is NOT available :
4/10, 5/08, 7/10, 9/11

November 14 Agenda
8:30 – 3:00 p.m. at USFS Building in Mountlake Terrace

1. Review Agenda and Minutes
2. Review Relicensing Schedule
3. Settlement Process – Developing 1st Draft PM&Es

4. Fish Passage Technical Working Group Report
5. Instream Flows Update (A9, A9b, A9c)
6. Studies: A02, A05, A20, A24, A26a, A37, A38
7. Action Items
8. Update from Solution Team
9. Other issues
10. Set Agenda for December 12th (USFS Mountlake Terrace)
11. Evaluate Meeting

NEW ACTION ITEMS

- ALL: Review new list of PMEs and see that your interests are represented. Let Arnie know before December meeting.
- Lloyd: Check with FERC re: Army Corps of Engineers flood control authority and the law that provides that authority.
- Arnie/Cary: Send revised version of newly formatted PME list to members to review (before Thanksgiving)
- Arnie: Send out Terrestrial and Recreation Working Groups early PME attempts (Titles, actions, etc.) for aquatics members to review as examples.
- Nick: Coordinate conference call of the Baker Committee to address Little Park Creek smolt trap operations.
- Nick: Set up meeting by mid-January with Gene, Mark, Brady and Phil to coordinate Biological Assessment (for bald eagle and bull trout) with A38.
- Mark – Got Emily juvenile density for multiple age classes in the Sauk- Completed?

REVIEW RELICENSE SCHEDULE

Arnie reported that the schedule is in the process of being revised, based on the ESA and Water Quality Certification meetings that flanked the Solution Team meeting last month. He will send it out for our review when it is complete.

SETTLEMENT PROCESS - PMEs

Cary walked us through a re-grouping of potential PMEs that he and Arnie put together in response to concerns expressed by several members that our list was unwieldy and at too high a level to be as meaningful as it might be. Folks seemed to appreciate the reformatting attempt.

Next Steps:

- Arnie will send out a revised list after performing a careful review to see that all potential PMEs from the spreadsheet were included. This will mean fleshing out the detail considerably. Working Group members will review this new list to see that their interests are represented and send Arnie any additional feedback prior to the December meeting.

FISH PASSAGE TECHNICAL WORKING GROUP REPORT:

The Group hopes to finalize a conceptual design for Upstream passage by year-end.

The next meeting will be December 10. They will meet on December 13 to discuss biological implications of Studies. It looks like Study results may not help narrow options.

The meeting in January will be to finalize an alternative development process for Downstream passage options.

REPORT FROM INSTREAM FLOWS TECHNICAL WORKING GROUP
See A9 in matrix below.

STUDY REQUEST SUBMITTALS/STUDY PLAN DEVELOPMENT

Study # Title	Notes/Next Steps
A01.A Reservoir Tributary Habitat Surveys	A draft single report that incorporates the results of A-01a, A-01b and A-26b will be completed by year-end (2002). ACTIVE
A01.B Reservoir Tributary Biological Surveys	A draft single report that incorporates the results of A-01a, A-01b and A-26b will be completed by year-end (2002). ACTIVE
A01.C Reservoir Tributary Delta Surveys	A draft single report that incorporates the results of A-01a, A-01b and A-26b will be completed by year-end (2002). ACTIVE
A02 LB River Habitat Mapping	Results of completed habitat mapping surveys will be combined with biological surveys into a single report. Nick reported that they did some snorkeling, hook and line, and trapping October 16 and 17. They saw only one cutthroat, and some sculpin. Visibility was adequate (3-5 ft.). This verified the 1st survey they did where we saw very few fish and no char.
A03 Reservoir Fish Population Characteristics	Links to A19 and A26a.
A04 LB/Skagit River Flow, Gaging	Links to A9. ACTIVE
A05 Water Quality Sampling	The teamlet met November 8 to review the status of water quality sampling leading toward the 401 Water quality Certification. They are looking at total dissolved gas, temperature, turbidity, etc. They also agreed to expand the number of sample sites from 8 to 9. The challenge is getting sufficient background data to allow them to relate water quality conditions to the Project. Some operating scenarios may be contributing to the turbidity immediately below the dam. We will also be looking at reservoir levels and their contribution to water quality.
A06 UB Passage Design Baffle Modification	Complete.
A07 Lower Baker Forebay Bathymetry	Complete.
A08 UB Passage System Evaluation	Complete.

A09A Skagit River Flow and Habitat Assessment	R-2 recorded all substrate, bank and cover elevations in the last three weeks (late October to mid November '02). They are waiting to take high flow measurements. We are hoping this will happen in the near future. They would wait for a descending limb of a high water event.
A09B Salmonid Redd Selection and Maintenance in the Middle Skagit in Response to River Fluctuation from Hydropower Peaking	In order to gage fish behavior during pulsing, R-2 will be laying rebar to mark redd locations and then observe how fish behave relative to the varial zone created by the pulse (PSE released 2-3 hour pulses on daily basis as per the IPP). In December, Phil would like to analyze fish response to a longer pulse, such as six hours. R-2 will look to see if fish show any signs of site fidelity in the varial zone. They will continue to look at this when PSE resumes a regular operating schedule.
A09C Distribution, Timing and Depth of Salmonid Redds	They have been identifying distributions and collecting measurements the last few weeks (early November '02). Adam will present findings at our December meeting. • 605 Chinook redd measurements were recorded • 487 Chum redd measurements (measuring mass more than individuals) have been recorded to date. Phil proposes we switch back to plane surveys now. Since our clear weather and clear water conditions will be limited through the winter, our ability to get good measurements will also be limited.. Concern was expressed about making sure the survey includes the Hamilton-downstream stretch. Phil reported we already have that information for chinook and will try to also get that for chum.
A09D Distribution, Timing of Salmonid Fry	Not discussed at 11/14/02 meeting. We just got the NMFS collection permit (August 2002). ACTIVE
A10 Baker River Delta Habitat Assessment-Char	Complete. Note: USFW is concerned with impacts to char and indirectly to bald eagles through chum and also to cutthroat.
A11 Nutrient Addition	Tie to A26.
A12 Instream Flows for Bio-diversity	Split between R-A21 & R-A09.
A13A Water Quality Impacts of Human Uses of the Reservoir and Adjacent Shorelines.	Removed from list of studies this group will address, reported by Brady in September. Gretta reported the USFS will pursue this in the recreation working group.
A13B Water Quality Impacts on Aquatic	Removed from list of studies we will address.

Habitat	Tabled for now. Awaiting results of A14a.
A14A Reservoir Shoreline Erosion	Not discussed at 11/14/02 meeting. Jenny (AESI) reported that the aim of this study is to document existing erosion and deposition features along Baker and Shannon shorelines. They are also working on how to estimate annual bank retreat (acreage lost for high and severe areas). Hoping to complete this work by December. Members were asked to provide input to Jenny on the mapping (i.e., on Draft Report submitted 10/17/02 to the working group). ACTIVE
A15 UB Delta Scour	Not discussed at 11/14/02 meeting. Currently doing field work to support this study. Put in eight transects and 5 scour monitors, and surveyed thalweg profiles in the Delta Left and Delta Right distributary channels. Lost all the scour monitors in the first week. Data gathered this year will be useful for isolating the effects in the drawdown zone since flows have remained steady this fall.
A16 Lower Baker River Alluvial Fan Assessment	Sue discussed the proposed approach with Devin Smith of the SSC. Sue and Devin will also be meeting with the ACOE (re: Little Baker project) next week to discuss linkages between the two studies and coordinating work efforts. Next step will be development of a study plan.
A17 Tributaries Surveys Upstream of Barriers	Study request pending from USFS. This is related to A36. Brady is in the process of re-working it.
A18 Baker River Survey Upstream of 1 km.	Merged into A01a and A01b. ACTIVE.
A19 Review Limnological Information	This study has been combined with A26.
A20 Large Woody Debris Management	Mike Gagner (R2) presented an overview of objectives and individual tasks associated with this study along with some of the preliminary results that are already available for some of the tasks. The goal is to complete LWD models 1 and 2 and have draft report out for working group review prior to December meeting, 2002. The study is looking at input to the Baker Project Area using 3 methods: • Air photo analysis (1940-1999 photographs) • Regional data from comparable systems • Develop LWD budget based on remote sensing and literature values This study will also describe the biological role of LWD in stream and reservoir systems. In evaluating historic changes in LWD input,

	storage and management, they found that in 1969 PSE hired a contractor to clear out all the LWD that had accumulated in Lake Shannon. This clearing was extremely thorough and reduced LWD levels down from 20K m3 to around 1K m3 in 1972. LWD budget concept: Mass balance of LWD is a consequence of input, output, storage, and depletion. Mike observed that LWD appears to currently be playing a relatively "small" role in the Baker reservoir systems as most of it has been cleared away and there appears to be a "limited" annual input. Most of the LWD is deposited at or above full pool elevation. Steve suggested Mike also look at the benefits and limitations of passing LWD downstream. Sue said we will be able to come up with a very rough estimate of what future LWD would come out of the Baker relative to the Skagit (based on some ratio basin size and stream network density). Arn suggested Mike touch base with Mike McHenry of the Lower K'lallum tribe re: some data he has re: LWD and the Elwa. ACTIVE
A21 Skagit Wild & Scenic River Values	This is being addressed by A9 and A24.
A22 Baker Lake Trout Impacts Evaluation	No longer necessary due to change in management direction in favor of cancellation of non-native trout stocking in the reservoirs. Removed from list of studies we will consider.
A23 Baker River Wild & Scenic River Values	This is being addressed through A15.
A24 Hydrologic and Geomorphic Analysis	Sue gave a presentation on the status of this study so far. With regard to sediment transport, the questions are: • What is the annual sediment yield to the Baker Basin? • Where is sediment transported to Lake Shannon and Baker Lake deposited? • What proportion of the Skagit sediment load would the Baker Basin contribute without the influence of the project? Sue reported that she came up with some estimate of total average sediment yield in terms of tons per square mile. She found that the glacial systems had higher sediment than non-glacial systems. She kept the elevated sediment input she found in Thunder Creek separate from the other glacial systems since

	its sediment levels far exceeded the average and the other glacial sources were well within average ranges. She took the average values from the data she actually collected in the Basin and used that as a low-end sediment yield. She used numbers from the literature search as the high-end sediment yield. The total sediment delivered to Baker Lake from the tributaries was: • Weighted ave. of 512 tons/square mile • Suspended sediment of 445 tons/square mile (probably collecting on the old Baker River Channel) • Bedload of 67 tons/square mile (settles out at the edge) • Baker Lake trap efficiency is 90% (100% of bedload, 89% of suspended sediment) • Total sediment delivered to Lake Shannon: 11% of suspended sediment The total sediment delivered to Lake Shannon from the tributaries was: • Weighted ave. of 474 tons/square mile • Suspended sediment of 412 tons/square mile (probably collecting on the old Baker River Channel) • Bedload of 62 tons/square mile (settles out at the edge) • 11% of Suspended load from Baker Lake Lake Shannon trap efficiency is 78% (100% of bedload, 75% of suspended sediment) Total sediment delivered to Skagit: suspended sediment equal to 25% Future Inputs Without Project Influence: The total sediment delivered to natural Baker Lake from mainstem and tributaries was: • Weighted ave. of 582 tons/square mile • Suspended sediment of 515 tons/square mile (probably collecting on the old Baker River Channel) • Bedload of 77 tons/sq. mile (settles out at edge) Baker Lake trap efficiency is 75% (100% of bedload and 77% of suspended load) Total sediment outgoing to Upper Baker Dam

	subbasin: suspended sediment equal to 29% Total sediment delivered to Skagit River: 100% of sediment delivered by tribs downstream of natural Baker Lake and 29% of suspended from historic Baker Lake subbasin. Baker Contributions to Skagit River: Without Project: • Total Baker drainage area = 297 square miles • Effective Baker R. contributing area = 179 sq mi and proportion of total Skagit River basin at Mt. Vernon = 6%. Baker Contributions to Skagit River: Alternative analysis: • Contributing area (w/o Baker or Upper Skagit) = 1,621 sq. mile • Annual unit sediment yield = 494 tons/square mile • Estimated inputs from Upper Skagit w/o project = 500 to 1,000 tons/square mile • Modeled Baker inputs = 4 to 9% of total
A25 Unnatural Predation	This wasn't discussed at the November 14 meeting. Work on this will start in mid January. The primary focus will be predation at collection and release points.
A26A Reservoir Limnology-Production Potential	Nick reported that they have narrowed the consultant selection down to three. The teamlet will meet after this meeting to make the final selection. They should be able to turn the data around by the end of February 2003. This will be in enough time for the next field season.
A26B Tributary Production Potential	Emily will complete the report by year-end (2002). This report will include findings for A01a and A01b. She may give us a presentation on findings at our December meeting.
A27 Middle Skagit Incubation Flows	Addressed in A9.
A28 Fish Passage-Reservoir Management	Now addressed in Fish Passage Studies A30 to A34. ACTIVE
A29 Estimate Sockeye Production from Different Incubation Sources	We are still awaiting comments on the Study Request. Nick will meet with Stan to discuss.
R-A30 Near-Field Smolt Behavior	Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway- results will be reported at the Fish

	Passage meeting in December.
R-A31 Fish Passage-Far Field Smolt Migration	Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway- results are being reviewed by the group.
R-A32 Fish Passage-Kelt Radio telemetry	Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway- results are being reviewed by the group.
R-A33 Fish Passage-PIT Tag Migration	Coordinated through Fish Passage Tech. Group. 2002 Field effort completed, data analysis underway- results are being reviewed by the group.
R-A34 Fish Passage-Downstream Run-Timing Correlation	Completed. Coordinated through Fish Passage Tech. Group.
R-A35 Fish Passage-Upstream Run-Timing	Completed. Coordinated through Fish Passage Tech. Group.
R-A36 Native & Wild Inland Fish Population Assessments	Not discussed at 11/14 meeting. The main focus of this study is to compile existing data and do some genetic sampling to determine the genetic makeup of Rainbow trout in Baker Lake. This study would address a conservation issue (protection/support of native species) as well as recreation. There is an opportunity to piggyback onto the genetic research being conducted by Seattle City Light for rainbow stocks elsewhere in the Skagit basin. Mark is the keeper of those samples and is willing to hold them until we have obtained our samples so they could be run together. Many expressed concern that we would be able to get the 100 samples requested to conduct the genetic profile. After considerable discussion, we agreed to have Mark continue to flesh out the details of this in the form of a study plan. Might we consider a phased approach? All agreed that, where possible, we would take advantage of collection efforts in other studies. We will discuss this further at our December meeting to determine next steps.
R-A37 Without Project Alternative (evaluation of Aquatic & Riparian Habitat)	In order to make predictions regarding future conditions of the Basin in the without project alternative we need to make some assumptions regarding how the project might be removed. Phil reported on a scenario to remove the dams that would be the most realistic way: You would start by removing Upper Baker dam (by tunneling around and once you get control of the water, take it out). The risk would be catastrophic sediment flush.

	Lower Baker dam would need to stay up initially because it would act as a giant sediment trap. Lower Baker dam is sufficient to contain the entire bed load that would be released if the Upper Dam were removed. You could drop the water level at UB to minimum operating pool. Re-colonization of the inundation zone at Upper Baker would begin after you take out Upper Baker (probably would take 4-5 years for UB and 10 years for LB). The assumptions around this approach will be shared by the Terrestrial Working Group.
R-A38 Bull Trout Population Assessment & Risk Analysis	Brady reported that he and Gene are working with Mark on re-working this Study Plan. Phil reported that FERC has asked PSE to prepare a Biological Assessment on how the proposed chinook measures in the IPP affect bull trout and bald eagles. This Biological Assessment is due by December 6. We'll get an update at our December meeting. Phil and Nick will meet by mid-January with Gene, Mark, Brady to coordinate Biological Assessment and A38.

REPORT ON OLD ACTION ITEMS

- Sue – Got 1913 topographical map to Jenny
- Greta – Got Carrie Paulson map to Sue
- All – Got comments to Arnie regarding A14a -draft erosion mapping & photo documentation by Oct.31
- All – Got Nick feedback on A25 by end of the day Oct.31
- Greta – Got Emily density info on Little Park Creek (collected by USFS & SSC)
- Phil – Checked with Pete Castle regarding chopping the tails off fish carcasses

SOLUTION TEAM UPDATE

Lyn reported that FERC representatives attended the October Solution Team meeting and Dee and Bruce presented the broad categories being considered by the various Working Groups for PMEs. The Solution Team asked the Economics/Operations Working Group to draft a statement that all working groups could use as an assumption re: flood control for PMEs.

ADDITIONAL ISSUES?

Little Park Creek Smolt Trap (see action items above).

MEETING HANDOUTS (bolded handouts will be posted on website)

- Draft Protection, Mitigation and Enhancement Measures Scoping – Baker Relicense Aquatic Resources Working Group 2. Aquatic Resources

- **Form for participants to submit for PME Measures for Baker River Hydroelectric Project No. 2150 and an instruction paper to assist the participant**
- A-20 Large Woody Debris (Unpublished work, copyright 2002, Puget Sound Energy, Inc.)
- A-24 Hydrology and Geomorphology Preliminary Results: Sediment Transport (Unpublished work, copyright 2002, Puget Sound Energy, Inc.)
- Pamphlet on Mudding on Baker Lake (In partnership with USFS and PSE.)
- A Proposal to continue Little Park Creek coho smolt trap operation

PARKING LOT

- State agency presentations re: mandates (agency direction)
- Create a master list of possible studies across all working groups and share with all
- Access to the Baker River Project hourly operational model (Charles Howard)
- Participate in Lower Skagit Work Group for native char
- Create Overall "Study Plan" for Studies that will drive the Relicensing Process
- Address Trap & Haul – other species
- Do we continue to collect Little Park Creek density info? Funding?

EVALUATION OF MEETING

Well-Dones

- Great presentation
- Wonderful food!
- PME consolidation was a Giant Step forward
- Discussion on A37 (Without Project Alternative)

Opportunities to Improve

- Feels like we ran over (even though we got out one minute early)
- Missing Skagit County representative

What's Hot?

- Flood Control
- IPP - BA (bull trout and bald eagle)

Tentative December 12 Agenda

8:30 – 3:00 p.m. at USFS Building in Mountlake Terrace

1. Review Agenda and Minutes
2. Review Relicensing Schedule
3. Settlement Process - PMEs
4. Fish Passage Technical Working Group Report
5. Instream Flows Update (A9)
6. Studies: A17…(others to TBD)
7. Action Items
8. Update from Solution Team Meeting
9. Additional Issues?
10. Set agenda for January 9, 2003 meeting
11. Evaluate meeting