PUGET SOUND ENERGY

Final Meeting Notes

March 12, 2013 / 9 a.m. – 3:00 p.m./ PSE Burlington, Lync, Call

Baker River Project License Implementation

Aquatic Resources Group

Team Leader: Arnie Aspelund (PSE), arnie.aspelund@pse.com

PRESENT
Arnie Aspelund, Paul Wetherbee, Doug Bruland, Nathanael Overman, Jory Oppenheimer, Jacob Venard, Caitlin Faulkner, Nick Verretto, and Tom Flynn (PSE); Jeff McMeekin and Irena Netik by phone (PSE); Pat Cagney, Dan Johnson, and Hannah Hadley (USACE); Steve Stout, Jed Varney, Brett Barkdull, Kevin Kurras, and Brock Applegate by phone, (WDFW); Bob Helton (Citizen); Kara Symonds (Skagit Co.); Stan Walsh (SRSC); Jon-Paul Shannahan (Upper Skagit Tribe); Steve Fransen (NMFS); Tracy Drury (Anchor QEA); Jeremy Gilman (USFS); Ashley Rawhouser by phone (NPS); Lyn Wiltse and Jamie Riche (facilitators, PDSA).

DECISIONS – none today

2013 ARG DATES: Meet in-person quarterly, PSE Burlington: June 11, and Sept. 10.

ACTION ITEMS
- Tom: See about providing electronic copy of the plans for the "graded cap" on the hillside near the hatchery.
- Co-Mgrs Send Tom the new biological study proposal ASAP.
- Doug Coordinate an annual meeting between Co-Managers and Techs to improve coordination and clarify intentions (late May or early June).
- Arnie Meet with Co-Managers to discuss the process for releasing nutrient enhancement funds.
- Arnie Check with PSE tech folks to see if the Lync system can be improved.
- Arnie Make suggested edit to the ARG meeting norms and send out to all along with these notes.

PREVIOUS - STILL RELEVANT - ACTION ITEMS
- Steve Send draft FSC evaluation plan to Arnie to distribute to all (for discussion at June 11 ARG meeting).
- Arnie/Tom: Discuss internally release site options, e.g., Jed's suggestions, then follow-up with the Co-Managers (check in, June '13).
- Co-Mgrs Determine drop location for spawning beach "IHN hot" morts.
- Co-Mgrs Send a draft Fish Production Plan to Arnie ASAP, as per FPFP.
- All Review / update the ARG representation list for your organization (ongoing, as needed)

SAFETY MOMENT
Arnie oriented the group to the facility's emergency exits and first aid stations. Stan pointed out that there is a new stop sign at the train crossing near this building's driveway. Paul shared a recent experience about driving while under stress; the moral of the story being to keep your focus on driving when behind the wheel.

UDATE ON PREVIOUS ACTION ITEMS
There was a lengthy list of action items from the January meeting, most of which were completed (WhoHoo!) and will be reviewed during their respective agenda items in this meeting. Steve's action item about the draft FSC evaluation plan and Arnie/Tom's action item about release site options will be covered at the June ARG meeting.

HOT TOPICS, BRCC, & LICENSE PROCESS UPDATES
The fourth Wednesdays will continue to be reserved for BRCC conference calls as needed. In-person meetings are scheduled semi-annually (spring and fall). Tom shared an overview of the BRCC update that went out via email last week. The next in-person BRCC meeting is scheduled for May 21 in Burlington.

No hot topics today. Arnie reports that the LB FSC has been operating and collecting fish since March 1. There was celebration across the land! Paul shared the excitement happening behind the scenes within PSE Hydro … between the Baker License and the Snoqualmie License, there have been major (successful) milestones in recent weeks. He thanked everyone for working together in a collaborative spirit.

ARG Norms: Arnie used the latest BRCC norms (approved at the last BRCC meeting), to update the ARG norms. Lyn walked the group through the updated document, which describes official meeting procedures, operating norms, decision-making processes, and the group's agreements related to meeting conduct. We made a slight edit regarding the use of flip charts for the meeting notes suggesting this be done on as as-needed basis only.

Arnie took the opportunity to orient the group to the PSE website and walked them through the protocol for accessing the Baker-related documents.

LOWER BAKER UNIT #4 COMMISSIONING UPDATE
Jory updated the group about the upcoming load rejection testing required for the commissioning of Lower Baker Powerhouse Unit 4. Steve Fransen had asked PSE to use R2's flow routing model to assess the test's likely effects on downstream Skagit River stages. PSE conducted the modeling as requested and presented the results of that modeling work to Steve on Feb. 27. The modeling results show that, without mitigation, there would be a likely decrease of 9 to 13 inches at Transect 1. Given the significance of the unmitigated impact, PSE proposed spilling at the dam to compensate for the flow reduction during the load rejection tests. The goal is to time the spill so that the spilled water will offset the flow reduction caused by the tests. Steve reviewed the proposed mitigation and indicated that this mitigation was acceptable. PSE shared this information with the other Co-Managers and plans to move forward.

Steve noted his appreciation for PSE's willingness to go to this level of effort and reiterated his belief that the planned mitigation should result in negligible water level changes at transect 1.

HATCHERY OPERATIONS UPDATE
Plans to address the slide near the hatchery: Tom shared an update on the efforts to deal with the hillside stability issues near the hatchery. PSE engineers have developed a design which starts by digging a channel where the spring is now daylighting. The goal is to protect this water supply by getting the spring back underground and feeding directly into the pipes that are currently in the riprap. They would then install a filtering cap over the exposed water. They would also take down the log debris and hillside trees that are creating an ongoing risk for additional slides. PSE believes this plan will effectively address the root causes of the problem.

One of the challenges in doing this work is the narrow window available for this work (about three weeks in late May and early June). Doug agreed that there is a tight timeline, but pointed out that there is already a road into the area, which will help the work move quickly.

Kevin expressed confidence that the plan of attaching 2" hoses to the fire hydrant for water supply during construction will provide a sufficient flow to take care of the fry on-site during the construction. Jed was pleased that this approach will remain as a back-up plan for future water interruptions.

Jon-Paul asked how this cap will work when the next slide happens. Tom explained that the filtering cap will start with a lower layer of large boulders and work its way up to finer and finer layers of gravel as it continues up to ground level. Once the work is complete, the spring will run under this graded cap, so future slides will flow over the top of it and should not affect the hatchery's water supply. There will be a need for ongoing work to keep the riprap and trees maintained.

Jed noted that this solution may lead the Co-Managers to take that request for a well (as a back-up water supply) off the table, but there will need to be additional discussion amongst the Co-Managers. They requested an opportunity to review the plans in greater detail once those are available. Jon-Paul also asked for an update on the stability of the hillside.

Disposition of fish remaining in the stress relief ponds: Arnie reported that the stress relief ponds have been temporarily housing the fish that were removed from the hatchery. The Co-managers met and instructed PSE to retain 60k Coho in one raceway, 7,500 IHN positive Sockeye in another, and use the third raceway for downstream out-migrants from Upper and Lower Baker FSCs'.

The coho will become too large for their raceway around the end of this month, which is before the ideal mid-April release date expressed by the co-managers. Jed expressed strong opposition to putting any of the coho back into the hatchery, given the facility's efforts to manage IHN. Steve suggested putting some portion of the coho into the river early if there aren't good housing options elsewhere. He noted that the river system's improved conditions make this a viable option. Kevin agreed, and suggested that the "excess" (beyond Raceway capacity) fish could be taken out by net. The Co-Managers agreed, and left the timing and quantity decision up to Kevin.

Doug noted that the stress relief ponds weren't designed as rearing vessels; they are functional, but not ideal. The challenges are compounded by being on a back-up water supply. Hatchery crews are working diligently to keep the raceways clean and habitable, but Doug wanted the group to know that there isn't an early-warning system or a back-up pumping system quickly available if one of the pumps fails.

The Co-Managers told PSE that the sockeye could be released as early as March 15 (this Friday) at Kevin's discretion, thus freeing that raceway for out-migrants.

HATCHERY FISH INVENTORY

Kevin shared that they are testing the artificial incubation group for IHN; results will be available next week.

AI : Kevin reported, 3.4 million eyed sockeye eggs from the AI program, which half of the fry will go into Baker Lake, half of the fry into Lake Shannon. 130,000 fry will be kept in reserve for the 20K program. He anticipates (~ 2 million) will get released into Lake Shannon in two releases coming up.

Spawning Beach #4: Kevin installed blocks to prevent fry from leaving spawning beaches so fry could be collected from each section for IHN sampling. Unfortunately, the blocks didn't work, so he couldn't sample the sections separately. He took one sample from the beach last week, and it is not showing any IHN. He thinks that the early switch back to headworks water seems to be enough to have averted a worst-case scenario. All of these fish will be planted into Baker Lake. (164,000 planted so far.). Kevin estimates 2.2 million fry will come from the spawning beach.

Doug walked the group through the hatchery fish inventory and coho incubation worksheet. Plans for the raceways were covered earlier in the discussion of the disposition of fish remaining in the stress relief ponds. Once the sockeye are released this Friday, two ponds will be available for out-migrants.

Doug noted that the PIT-tagged coho (about 8k) will be ready for spring releases into Baker Lake and Lake Shannon for 2013 biological studies.

GI UPDATE

Dan Johnson updated the group on US Army Corps of Engineers' work on the General Investigation (GI). Since the last update (June 2012), Dan shared that the USACE vertical team agreed to focus on three options: the Joe Leary bypass or overland flow, the Swinomish bypass or overland flow, as well as a more system-wide targeted levy set-back approach. Modeling work is underway, Dan expects the analysis for each model to be completed in two-week intervals over the next two months. They are targeting the end of June 2013 to have a plan tentatively selected. Public comment would likely be scheduled in early October. Agency technical reviews would be continuing concurrently. The next milestone would then be the final decision process, likely in February of 2014. It is unclear whether the federal budget sequester may impact this timeline; at this point, they are moving forward as if the money will be available. Assuming so, the project could be completed by early summer 2015.

Stan asked whether additional storage at Baker is included in the options being considered. Dan noted that additional storage is an optional consideration that can be paired with any of the three options. He noted that USACE is leaning toward adopting the FERC Article 107 features intact to the extent possible.

Stan asked how fish impacts, specifically potential impacts to the sockey production, are factored into the decision process. There was some discussion about the studies that are planned. Dan asked the group to be intentional about clarifying the questions the ARG wants considered. Hannah noted that there will not be time for the Corps to design and implement new studies. She noted that there have been extensive studies conducted throughout the Baker relicense process and confirmed that they will be reviewing those as well.

SPAWNING BEACHES 1-3 DECOMMISSIONING UPDATE

Caitlin shared that there has been a lot of progress since the last ARG meeting. The in-water work has been scheduled for July 16 ~ Aug. 20. PSE worked with the USFWS, NOAA, WDFW and USFS to provide clarification on the fish and avian work window. PSE met with the USFS to confirm the plan to move forward with "option 5," which is the design this group has approved. Permitting is well underway; all permits are on track to be submitted this month. PSE and USFS came to agreement on the issue of the spur road that Jon-Paul raised at the last meeting. PSE will stop their decommissioning at the point where their road connects up with the spur road, thus leaving the spur road as a back-up access into the site.

Tracy Drury (Anchor Design) walked the group through a high level overview of the current decommissioning plan, using a site map to point out the various features of the completed project. He noted the intention to leave the site ready for natural processes, including beaver modifications, to take over.

Jacob is the lead on the Large Woody Debris plan; if folks have questions or input, please contact him.

LB FSC CONSTRUCTION PROGRESS AND COMMISSIONING

Nick reported that the new Lower Baker FSC began operations the evening of Feb. 28 and was collecting fish as of March 1. He shared photos of the LB FSC installation and subsequent punchlist work. Nick's goal is to have all of the punch list items completed by mid-April, prior to the peak outmigration. Some of these include control panel and IT, and phone installations. The debris removal system has been delivered and will be installed in early April. The boat barrier will be in place by early July. The bottom line is that the system is working well and all systems will be ready for the peak outmigration.

FSC UB SUB-SAMPLING PLAN UPDATE

Nick reviewed the Upper Baker FSC subsampling protocol, which was developed with and agreed by the co-managers, and updated Feb. 15, 2013. He noted the three important aspects of the plan: fish distribution/holding, entrance flow (pumps operation), and subsampling period/method. He showed a

spreadsheet of the data from the first five years' returns at the UB FSC, indicating daily and cumulative numbers of coho, sockeye, and "other" fish. The spreadsheet and associated plots indicate likely peak periods and daily peak numbers, and was used to determine distribution, entrance flow and subsampling method.

Fish will be sent to one raceway most of the season, and be distributed to two and then four raceways as the peak outmigration occurs to avoid overloading issues. The goal is to distribute fish safely while minimizing the number of transfer cycles. Entrance flow periods of 500 and 1,000 cfs are set to provide the best collection conditions for sockeye during their peak migration period (i.e., the interval corresponding to between 1.4-94.2% capture for sockeye; studies indicated no preference by coho).

The subsampling method was described as occurring when the daily collection exceeds a single transport load (i.e., ~6,000 fish). Sampling will be conducted once when the daily collection is anticipated to be less than 40,000 fish, and twice when exceeding 40,000 fish. Single samples will be conducted as late in the day as possible, and double samples will be conducted late morning and late afternoon to avoid introducing excessive species composition error (coho and sockeye migrate into the collector at different times of the day). Sampling will be conducted form raceway #1. Overall numbers will be based on biological staff estimates of directly transported loads, and verification of biologists' estimates will be confirmed again 2013. The protocol will be reviewed and modified annually in consultation with the co-managers.

LB FSC PERFORMANCE STUDY

Jacob reminded the group of the performance components under review this year:

- Flow study re: out-migrants
- Smolt survival and condition study throughout the facility
- Fry survival and physical condition study (to be started once screen balancing is done)
- Predation estimates will be conducted weekly
- Sub-sampling: the original thinking was not to conduct sub-sampling at the LB FSC. Given the variation seen at the UB FSC, they are thinking about instituting sub-sampling on peak days if needed
- Note: There are no pit-tagged sockeye this year, so the marked recapture and the HPA non-migrant studies can't be done. But these assessments will be completed on coho, and those fish can be run through the HPA assessment.

Jacob noted that the study experts found significant sample variation in samples stored at "regular freezer" temperatures. PSE has a special negative-80 degree Panasonic freezer on order. It will be available in time for these studies.

New Sampling Request from the Co-Managers:

Stan gave Doug a head's up that the Co-Managers will be coming forward with an additional sampling proposal, likely to entail collecting, storing, and transporting 30 out-migrating sockeye per day at both Upper and Lower Baker. Doug asked for as much notice as possible, including the plan details and desired outcomes, so his crews can plan for the activity. Jon-Paul confirmed that the Co-Managers expect to have details finalized by next week. Doug asked them to think about how to manage the storage of Upper Baker samples since the freezer will be located on the Lower Baker FSC when it comes in.

As the group discussed the proposal, a variety of questions remained about the scope of the study and the potential impact to the operation of the facilities. Tom pointed out that we already very close to the start of the season and asked the co-managers to forward their proposal through him so he can help his team assess the impacts to operations.

SA 104 CONNECTIVITY PROGRAM UPDATE – FISH PASSAGE

Nathanael walked the group through his PowerPoint: "Baker River Basin, Fish Connectivity Implementation Plan, Native Char Consultation." He started by sharing his personal appreciation for being a part of a unique approach to managing fish connectivity for native char. He then reminded the group of the current char

management protocols and provided a photographic overview of the procedures and protocols for catch, sampling, transportation, and release.

He shared an overview of the results of last year's native char activities including results of snorkel surveys in the Upper Baker River and Sulphur Creek, and numbers of bull trout captured by angling and in PSE's fish collection facilities. Unique to Sulphur Creek this year were observations of large 8-10 lb bull trout, approximately 60 coho spawning in the lower reach of the creek, and the slide that occurred at the spring that flows into Sulphur Creek. Nathanael showed photos of the recent slide for comparison to the slides that occurred in 2006 and 2003. Most bull trout were observed above the spring, so Nathanael suggested that sediment from the slide was unlikely to have had significant impacts on char redds. He then shared a brief overview of the results of the snorkel surveys for which higher than normal counts were observed in both areas; 24 char were observed on 9 surveys in Sulphur Creek and 232 char were observed on 10 surveys in the Baker River.

He continued with results of fish caught during angling activities. A total of 83 char were caught during 140 angler-hours of effort. This included 36 caught in the upper end of Lake Shannon and 47 caught in Baker Lake from the FSC. Also included in the catch were 20 recaptured char that were transported according to protocols designed to manage bull trout based on their genetic origins. In Lake Shannon, no bull trout were caught at the Lower Baker gulper or during the tributary mouth angling. The tributary mouth angling will be discontinued in 2013.

Char tissue samples were submitted to WDFW for genetic analysis in June and November of 2012. Results indicated that almost all bull trout from the UFT were from out-of-basin populations. An expanded population baseline was available for the 2012 analysis that allowed greater differentiation among Skagit basin bull trout populations. Bull trout at the UFT assigned to populations from the Cascade River, Goodell Creek, Downey Creek, Illabot Creek and the Sauk River. In Lake Shannon, 16 char were Sulphur Creek origin, 12 were Upper Baker origin, and 1 was Cascade River origin. In contrast, approximately 80 percent of the char at the Upper Baker FSC were of Upper Baker origin.

Only minor changes were made to the Fish Connectivity Implementation Plan (FCIP) for 2013. Changes included reduced handling of sub-adult and juvenile bull trout collected at the UFT, modifications to the PIT tagging procedures, updating the contacts, and omitting the Lake Shannon tributary mouth angling from the schedule as noted above. Activities planned for 2013 include continued collection and transport of char from Baker Project facilities and from angling in Lake Shannon and Baker Lake, snorkel surveys in Sulphur Creek and the Upper Baker River, genetic analysis of char samples submitted to WDFW, and the Article 104 annual report will be available for review in August

UPSTREAM TRAP POST-CONSTRUCTION EVALUATION

Nathanael shared that PSE met with Ed Meyer and Stan Walsh in January to discuss the Post-Construction Evaluation Plan for the Upstream Fish Trap. During the meeting they reviewed the results of an initial evaluation of the trap conducted in 2010 by R2. Results indicated that the trap was operating as designed and there were no indications of major issues related to entry into the trap. With the new Powerhouse Unit #4 coming online, they will repeat the evaluation to analyze sockeye and coho runs experiencing the new flow regime at the trap.

UPSTREAM FISH TRAP - JUVENILE CAPTURE UPDATE

The primary design function of the UFT is to capture adult fish. However juvenile fish also enter the trap. These smaller fish are recorded in the comments column of the daily UFT spreadsheet emailed to the co-managers. Nathanael went back through the spreadsheets from 2012 to identify how many smaller fish are coming into the trap. He noted that one solution being considered is to raise the entrance weir several inches to dissuade juveniles from entering. During the upcoming maintenance outage, Nathanael and Nick are planning to inspect the trap to look for additional issues or potential solutions that may become apparent during the drawdown.

SA 108 GRAVEL UPDATE
Jacob shared that 2012 was the first year of monitoring gravel. The annual report with additional details will be available later this month. He shared a high-level overview of what folks will find in that report.

The License calls for ten years of monitoring. The plan includes annual cross-section surveys (three sections at each of three sites), annual Wolman pebble counts (100 at each of the three sites), and subsurface/surface armor ratio studies in 2013, 2015, 2017 and every 10 years thereafter. He projected a map showing the study locations and briefly reviewed the methodology for each type of study.

If there is found to be reduced gravel recruitment at levels that reach agreed triggers, the management plan calls for gravel augmentation up to 12,500 tons per year to support the geomorphic function of the lower baker river alluvial fan and affected downstream areas. Jacob pointed out the triggers that would indicate that augmentation is appropriate.

SA 109 LARGE WOODY DEBRIS UPDATE
Jacob reported that 2013 will be the first year of actively recruiting LWD, so he noted that they will treat this as a test year to consider best practices and see how efficient they can be. They will be collecting from the far NE portion of Baker Lake down to the seaplane launch area. LWD will be stored behind booms in water until the lake level drops, and then will be transported to the storage area.

SA 110 SHORELINE EROSION UPDATE
Jacob reported that they have been working with USFS on a project to stabilize the bank near the Swift Creek Campground. An initial plan has been found to be undesirable given the nearby recreation, so the design is under revision at this time. The USFS has asked PSE to take the lead on design, construction, and administration of the project. That may not be feasible under county shoreline permitting rules, so USFS may need to step back into the lead role.

SA 505 AQUATIC RIPARIAN HABITAT UPDATE
Jacob reported that the ARG/TRIG team approved three more projects in the 2012-13 round of grant proposals. PSE is already moving forward with scoping and funding those projects.

UPCOMING PLANS AND REPORTS
Nearly all the aquatic-related plans have been through the ARG at this point and most have been approved by FERC. 2012 annual reports will start coming out this month.

DRAFT JUNE 11, 2013 AGENDA ITEMS
- Routine ARG updates
- Draft FSC evaluation plan (follow-up from Steve's January action item)
- Alternate release sites (follow-up from Arnie's / Tom's January action item)
- 2013 season update
- Fry production
- USACE GI Update (20 min.)
- Confirm process for nutrient enhancement funds (if not already addressed off-line)

MEETING EVALUATION
Worked Well:
- Got done early!
- Thank you, Steve, Stan, PSE for working out the water level issue related to the load rejection tests
- Thank you, PSE & USFS for finding a solution for back-up access on the spur road near the beaches
- Facilitators' levity appreciated

Do Differently:

- Lync system is slower and more finicky than Web-Ex. Access was frustrating for off-site folks.
- Now that we are meeting less frequently, please incorporate some dedicated networking time into these meetings. Suggest adding 10 minutes to the mid-morning break and increasing the lunch break to 45 minutes to allow for additional 'off-line' conversations.
- In the interest of overall efficiency, it would be helpful if agencies with multiple delegates, like WDFW, coordinate amongst themselves off-line so that the agency 'speaks with one voice' in the meetings.
- More caffeinated coffee … assuming similar attendance next time: two containers of regular coffee and one of decaf.