

## *Baker River Project License Implementation*

### **Aquatic Resources Group**

**Team Leader:** Arnie Aspelund (PSE), [arnie.aspelund@pse.com](mailto:arnie.aspelund@pse.com)

#### **PRESENT**

Arnie Aspelund, Tom Flynn, Nick Verretto, Doug Bruland, Jory Oppenheimer, Jacob Venard, Lynda Kupfer, Roque Bamba, Shane Richards, and Caitlin Faulkner (PSE); Brock Applegate by phone, Brett Barkdull, Steve Stout, and Kevin Kurras (WDFW); Bob Helton and Dundas Winn (Citizens); Jeff McGowan and Mike See (Skagit Co.); Stan Walsh (SRSC); Ashley Rawhouser (NPS); Jeremy Gilman (USFS); Steve Fransen (NMFS); Craig Olson (NWIFC); Jon-Paul Shannahan (Upper Skagit Indian Tribe); Lyn Wiltse and Jamie Riche (facilitators, PDSA Consulting).

**DECISION:** “Does the ARG approve the proposed SA 106 Flow Implementation Plan (FIP) compliance reporting of maximum daily pool level changes as listed below?”

“Daily changes in Upper Baker reservoir elevations will be monitored on the basis of measured elevation changes over a ~~rolling~~ 24-hour period. Excursion reporting will be triggered when the maximum daily pool level change exceeds one foot per day.”

**DECISION MADE:** “Does the ARG approve the proposed SA 106 Flow Implementation Plan (FIP) compliance reporting of maximum daily pool level changes as listed?” The Consensus answer was *YES*.

**2014 ARG DATES:** Meet quarterly, PSE Burlington: March 4 (date changed), Jun. 10, and Sept. 9.

#### **ACTION ITEMS**

- Lyn Research flu vaccine durability, update ARG (According to the CDD: Antibody to seasonal inactivated influenza vaccine declines in the months following vaccination. However, antibody level at a point several months after vaccination does not necessarily correlate with clinical vaccine effectiveness. In other words, Craig was correct.)
- Jacob Clean up the proposed reporting schedule, clarifying dates, etc. and send to ARG.
- Arnie Send ARG the table showing the schedule of upcoming plans and reports.

#### **ACTION ITEMS FROM THE 1/7/14 FISH PASSAGE OPERATIONS CONSULTATION**

- Nick Develop a plot overlaying fry stocking numbers with annual out-migrant collection numbers.
- Nick Distribute the 2013 LB FSC Biological Evaluation Results PowerPoint presentation.
- Nick Coordinate (soon) a LB FSC screens site visit/inspection with Ed Meyer of NMFS.
- Nick Resend to meeting attendees all files related to UB/LB release timing, subsampling, entrance flow, and run timing. (Done.)
- All If you have an interest in release timing, review the information Nick sent and contact him to discuss any suggested modifications (e.g., entrance flow, sub sampling or release timing).
- Co-Mgrs Review & modify the draft Downstream Fish Passage Protocol, and provide the updated version to PSE prior to the start of the emigration season (March 1).

#### **PREVIOUS and/or ONGOING ACTION ITEMS**

- Doug Continue coordinating with co-managers and fish techs
- Co-Mgrs Send a draft Fish Production Plan to Arnie ASAP, as per FPPF (update below-Sept. '14).

- All      Review / update the ARG representation list for your organization (ongoing, as needed).

### **Update on Action Item: Fish Production Plan**

PSE reiterated its request for a Fish Production Plan from the co-managers. Co-managers have been giving PSE instructions on an ad-hoc basis, but a comprehensive fish production plan would help PSE plan ahead and budget appropriately. Co-managers appreciate PSE's interest in a plan, and shared that their work has been complicated by the number of parties involved, learning the new hatchery, and the need to get policy-level input. Co-managers believe they can get a draft to PSE by this September.

### **SAFETY MOMENT**

With new attendees in the room, Arnie oriented folks to the emergency exits and safety equipment on site. Ashley shared that he got his flu shot after learning about this being a big flu year at last week's fish passage meeting. He learned that it takes about two weeks for the shot to take full effect.

### **HOT TOPICS, BRCC, & LICENSE PROCESS UPDATES**

Tom Flynn shared an overview of the most recent BRCC update and invited folks to attend the annual Skagit Bald Eagle Festival this weekend; PSE staffs a booth at the event. The fourth Wednesdays will continue to be reserved for BRCC conference calls as needed. In-person meetings are scheduled semi-annually (spring and fall). The next in-person BRCC meeting is scheduled for April 23 in Burlington.

No hot topics today.

### **PROPOSED CHANGE TO THE ANNUAL REPORTING SCHEDULE**

At the last BRCC meeting, PSE proposed streamlining the annual reporting cycle. The BRCC responded favorably to the idea and asked that each resource group also review the proposal. Jacob walked the ARG through the current calendar of monitoring and annual reports, noting that PSE would like to adjust the reporting schedule to reduce redundancies, minimize the lag time, and streamline work for everyone. He shared a couple possible alternate reporting schedules for the group to consider. The proposed schedules eliminate the second round of review for annual reports, align the reporting seasons with the calendar year, give all the reports the same review / comment window, and expand that review window to 60 days to give folks more time since there is just the single review. Since the BRCC meeting, PSE developed a second alternative that aligns the reporting schedule as noted above but retains a second review opportunity. Jacob showed the ARG both versions and asked for feedback.

There was support for the proposal that aligns the schedules and eliminates the second review period. Steve reiterated the comments he shared at the BRCC meeting that simplifying the process would be good for everyone and reduces the potential for confusion. Brock is comfortable with the adjustment as long as the total review time remains the same (ex: a single 60-day review in lieu of two 30-day reviews). He would prefer as much review time as possible, so he would prefer a 90-day review period if possible. As no one else requested the longer review period, Brock indicated that he could support the 60 day review period.

Linda asked about the timeline for implementing the newly-agreed-to schedule. Jacob noted that the BRCC has asked all resource groups to review and consider the proposal; if everyone is comfortable with this adjustment, he will work with FERC to determine next steps for implementing this change. He expects to be ready to move forward this June. We can always suggest further changes to the schedule in the future after we see how well this one works.

### **BAKER LAKE POOL LEVEL CHANGE**

Jory reviewed PSE's request to modify the Baker Lake maximum daily pool level change limits. Currently, there aren't any restrictions on Baker Lake daily pool level changes. Over the last 4 years the maximum daily pool level change during the recreation season (May 23 - Sept 9) was about 2.5 feet. Once Aquatics Table 1 takes effect, the maximum change allowed during the recreation season will be 0.5 foot per day, measured on a rolling 24-hour basis. USFS was the agency that originally proposed the 0.5-foot constraint.

Last July, PSE proposed revising the maximum daily pool level constraint to 1.5 feet/day. No comments were received from the ARG, however the USFS, expressed concerns with the proposed change. PSE then met with the USFS in October 2013 and agreed on the following revised proposal: PSE will plan operations (day-ahead and weekends) to meet the 0.5 foot/day constraint, but use a trigger of 1 foot/day for compliance reporting. (The 1 foot/day trigger translates to an average of 0.5 inches/hour of lake elevation change). This revised approach will be addressed by modifying the SA 106 Flow Implementation Plan (FIP) and submitting the modified FIP to FERC for their approval.

In November 2013, PSE drafted a revision of the FIP to reflect this modified monitoring and reporting approach and requested ARG approval. PSE received 3 responses: NMFS and USFWS approved, WDFW approved pending discussion of rolling 24-hour vs. daily monitoring approach. Jeremy confirmed that USFS is comfortable with the current proposal.

As requested by WDFW, Jory then presented how a rolling 24-hour vs. daily monitoring would work. For the rolling 24-hour monitoring, PSE would compare an hourly lake level reading with the reading from 24 hours earlier and continuously roll this comparison forward throughout the summer recreational period. For example, PSE would compare the Tuesday 2 pm reading with Monday 2 pm reading, then compare the Tuesday 3 pm with Monday at 3 pm, and so on. In contrast, a daily measurement would be taken by comparing the lake level at the same time each day (midnight). The group asked about the choice to compare daily change at midnight. Jory shared that this time was chosen because it aligns with how the operations are scheduled for the facility.

Stan asked why this change does not require a license amendment. Jory explained that the monitoring and compliance reporting requirements for implementing SA 106 are specified in the FIP (the plan), not Aquatics Table 1 (the license). Therefore, this modification could be handled by amending the plan, rather than the license.

**DECISION:** Does the ARG approve the proposed SA 106 Flow Implementation Plan (FIP) compliance reporting of maximum daily pool level changes as listed below?

“Daily changes in Upper Baker reservoir elevations will be monitored on the basis of measured elevation changes over a ~~rolling~~ 24-hour period. Excursion reporting will be triggered when the maximum daily pool level change exceeds one foot per day.”

Lyn confirmed that a quorum is present. The ARG approved the decision as presented by consensus of those present. Jory will submit the revised FIP to FERC and update the ARG when FERC responds.

#### **LOWER BAKER UNIT 4 (LBU4) UPDATE**

Roque Bamba and Shane Richards updated the ARG about issues with the new powerhouse and Unit #4 at Lower Baker. Powerhouse prep work began in 2008-09, construction began December 2010, and construction was complete in June 2013. It looked like they were well ahead of the October 2014 deadline to be operational. When they started up the unit and began commissioning work, they found a significant vibration issue starting when the dam’s wicket gates were about 85% open. (Wicket gates control the amount of water entering the turbine from the penstocks.) When the gates were fully open the vibration would disappear, and the vibration seemed to vary based on reservoir levels. This vibration issue at first seemed to be a relatively routine, fixable issue. PSE implemented a supplier-recommended repair that seemed to work at first but ultimately failed. The supplier then tried a number of additional approaches before informing PSE that they would have to build a physical hydraulic model in order to identify the source of the problem, and test and analyze solutions to the problem. Those results will guide the next steps.

The supplier is planning to build the model and conduct testing between now and July 2014 and determine whether it makes more sense to “repair” or “build new” by August 2014. The repair option may allow for a

quicker timeline, but Roque noted that this is considered a low-likelihood possibility. If they have to build a new unit, they would likely begin operating the new equipment in August 2015.

Jory explained that PSE will request an extension from FERC if the results of the model tests indicate that operating the new unit is delayed past October 2014. Until the new unit has been tested and verified that it is working properly, PSE proposed following the Interim Protection Plan (IPP) and SA 106(A) Interim Operations Best Practices:

- Zero daylight down-ramping Feb 16 – June 15
- Limit LB flow to 3,200 cfs Sept. 1 – Dec. 31, except for high-flow conditions

Stan requested PSE and the ARG form a working group to discuss alternate interim operations if the results indicated that the October 2014 deadline for implementing Aquatics Table 1 cannot be met. Tom agreed that convening a working group or “teamlet” is a reasonable approach. This would likely be convened in August, once PSE has learned the outcomes of its supplier’s modeling. Stan asked PSE to convene the group sooner than that if early study results indicate a delay will be likely. Tom agreed.

### **HEADWORKS WATER SUPPLY**

Tom updated the ARG on the hatchery headworks water supply protection work completed last spring. The repair seems to be largely holding up well. A big rainstorm last November raised the need for additional, longer-term measures to control erosion and protect the work that was completed last year. PSE is working with USFS to implement some temporary erosion control in the coming weeks and may plant additional vegetation this summer for longer term erosion control.

Steve asked whether erosion control is really possible, given the geotechnical dynamics of that hillside. Tom agreed that slides on that hill will remain a fact of life; the goal is to stabilize the work that was already completed to protect the hatchery’s water supply. Doug added that the hatchery’s water supply remained good throughout the rainstorm event; the previous work appears to have been successful; the November rain issue was related to surface sand run-off.

### **ARTIFICIAL INCUBATION, SPAWNING BEACH 4 OPERATIONS**

Kevin (WDFW) shared end-of-year sockeye numbers from the spawning beaches. He pointed out some pre-spawn sockeye mortality that was slightly higher than usual, and noted that he has discussed this at length with the fish co-managers. Some IHN was present, but most of the loss is likely attributed to natural injuries. Kevin is individually incubating the remaining fish from the spawning beaches as an experiment in case the Cushman Project makes another request for eggs from our system.

Kevin reported that coho spawning went well. They have an estimated 250,000 green coho eggs. (Green eggs are the freshly fertilized eggs that have not yet “eyed up.”) They also have just over 5 million green sockeye eggs. Everything has gone well and he believes they will be able to make their goals. They have set up artificial incubation ponds to hold back 1 million fry until mid-May so that they can be a little larger and heartier before being released. Next year, they are planning to modify two more ponds so they will have capacity to hold back 2 million in future years. The program goal is to release 2 million into Shannon and 4 million into Baker Lake, from the Artificial Incubation program. Kevin thinks they will have no problem meeting their goals. According to Kevin, “Everything is just peachy.”

### **HATCHERY FISH INVENTORY**

Doug (PSE) reported that circulars 1-4 are holding sockeye and coho for pit-tag biological studies. 22,540 rainbow trout are being held in circulars 5-8 pending release into Depression Lake, and provision to the tribes. 86,500 ad-clipped coho are being held until they smolt out; they will be released into the stress relief ponds and used for biological studies in the spring. He added that staff members are currently busy with cleaning the ponds and getting ready for the fry to emerge from the beaches.

Doug reported that they are still collecting the unmarked wire-tagged fish from the upstream fish trap; the numbers are coming down quickly. They will coordinate a transfer to WDFW when that run is finished.

Tom asked how otolith marking works. Kevin shared that changing the water temperature over a period of days around when the eggs eye-out will affect the development of bones in the fishes' inner ear. Craig added that those changes end up looking similar to tree rings and can be used to differentiate fish from different populations. Tom then asked how co-managers would use this data to manage production. Brett answered that we do not yet fully understand the lake's capacity, the incidence of natural production within the system, and optimal fry release timing. Brett added that the goal is to understand the lake's carrying capacity and the number of fry coming from natural spawners, and then to use those numbers to identify the appropriate level of fry to plant to make best use of the lake's capacity.

**Release sites:** Tom asked a clarifying question about the co-manager letter about release sites and a request for a chiller. It looks like we are taking steps to ensure we have adequate release sites for this year. There will be focused discussions in the next month about potential new release sites. Tom and JP agreed that it might make sense to convene a teamlet to review these issues.

### **SPAWNING BEACH 1-3 DECOMMISSIONING**

Caitlin reviewed the status of the project to decommission spawning beaches 1-3 at the northern end of Baker Lake and return the land to a natural state. Final grading of the site is complete and about half the site has been replanted. Planting efforts were suspended until 2014 due to an early cold spell and issues with frozen ground. The contractor has stabilized the site for the winter and will be back to modify the LWD structures per USFS request in mid-July. Jeremy added that they are relatively minor adjustments, but they are important to the long-term viability of the site. Brett noted that one of the LWD structures (structure 3) has already failed, allowing water underneath. This issue will be addressed, the remainder of the site will be planted, and all remaining punch list items will be completed in the fall of 2014.

### **FISH PASSAGE OPERATIONS CONSULTATION**

Nick shared a brief recap of the January 7 fish passage operations meeting. The first half of that meeting focused on of 2013 (1<sup>st</sup>-year) LB FSC evaluation results by Eric Jeanes' (R2). The evaluation was consistent with Upper Baker results, i.e., that sockeye prefer 1000-cfs over 500-cfs entrance flow. Coho also showed a preference for the higher flow, which was not indicated in UB results. Future LB FSC entrance flow will be 1,000-cfs during the peak emigration period, as determined annually in consultation with the co-managers. Eric noted that 92.1% of the released PIT-tagged group was recovered. The next two years' evaluation will focus on determination of capture performance, and will include an evaluation of ATPase levels of sockeye for analysis of migration readiness.

Steve added that Eric's study of marked-recaptured fish seemed to show that the release strategy associated with the marked groups affects recovery rate. He commented that this adds a frustrating level of confusion since the whole idea of the marked-recapture study was to estimate the efficiency of the unmarked population (meaning that the marked fish are supposed to be surrogates for unmarked fish), rather than to maximize collection rate. If estimates of efficiency have been influenced by mark-release methods, the question may remain unanswered.

Nick clarified that the study methodologies were intended to maximize migration opportunity and not collection rate, although the two are likely consistent. Analysis of results from past studies and planning for subsequent ones have focused on understanding the inter-annual variation in migration numbers and behavior, in isolating environmental and operational influences on behavior, and improving release strategies to maximize migration opportunity to remove the depressing affect indicated by previous results. Attendees at last week's working meeting spent a lot of time discussing these issues, and Stan and Steve commented that it was a good meeting with a lot of thoughtful dialogue.

The draft downstream passage protocol distributed at the fish passage meeting was reviewed and discussed with the ARG. Several issues were highlighted as requiring co-manager review and direction, such as the apparent one-way transport of cutthroat trout from the basin that is a concern of Doug's biological staff. Ashley asked about a change to the upstream trap protocol related to the disposition of sea-run cutthroat trout caught in the upstream trap. Steve pointed out that the co-managers are presently reviewing the upstream protocol and suggested that Ashley participate in the review.

## **PLANS AND REPORTS**

Arnie reviewed the schedule of upcoming plans and reports. The comprehensive aquatics annual report is due to the ARG for 30-day review & comment January 31.. Plans have been submitted for all articles, and most have been approved by FERC. The FSC post-construction evaluation plan was approved by the FERC with an order to submit the report to the FERC by February 28, including documentation of 30-day review by the ARG and approval by the Services. Nick will submit the biological evaluation and screens status reports to the ARG next week to initiate the 30-day review & comment period, and will coordinate the Services' approval in the usual way. The upstream trap post-construction evaluation plan also approved, but requires schedule modification due to the issues with Lower Baker unit 4 and the related delay in provision of flow necessary to test the trap entrance design (the primary component of the PCEP).

## **SA 101 AND 104 UPDATES**

### **SA 101c2, Fish Propagation**

Stan reported that analysis of the caloric samples collected in 2013 is being held in a freezer, pending funding through the nutrient enhancement fund. The PSE team is working on a process document to describe how those funds are to be distributed. A draft of the document has been routed to the fish co-managers for comment.

**SA 101 (c) Overview:** Arnie reviewed the context for this subpart of article 101 is to operate the hatchery in a manner that enables sequential sockeye enhancement based on (1) two-year reservoir carrying capacity study (now completed), (2) tracking empirical data - smolts and adults (above topic), and (3) testing loading to optimize fry output from Beach 4. Arnie introduced SA 101(c) 3 at the September ARG meeting, as a consideration for the co-managers who own the decisions when planning for broodstock goals, to consider approaches to loading one or more of the sections as testing of the facilities upper limits. He reminded to keep this conversation among the fish co-managers and PSE going as the co-managers enter discussions to set 2014 broodstock goals.

### **SA 104, Fish Connectivity Implementation Plan**

Arnie noted that soon it will be time to hold the consultation meeting to review protocols for Char management, including results of last year's activity, and determine whether any changes are warranted for 2014. He will send out an email to identify a good date for that meeting. The outcome of that meeting will be shared at an upcoming ARG meeting.

## **SA 108, 109, 110, 505 UPDATES**

**SA 108, Gravel:** Jacob reminded folks about the annual sampling protocols, which include three cross-sections at 3 locations, 100-count Wolman pebble counts at 10 sites, and a comparison of the size of surface material vs. sub-surface material ("armor ratio"). The first two measures are scheduled to occur annually. Surface to sub-surface comparisons are scheduled to happen in 2013, 2015, 2017, and every ten years thereafter.

R2 is handling the analysis and PSE folks are active participants in the data collection. The license calls for a ten-year trend analysis. Jacob shared highlights of 2012-2013 data. There was little variation between 2012 and 2013 findings; details will be included in the SA 108 report.

### **SA 109, Large Woody Debris**

Jacob reported that PSE has prepared a site to store LWD. He showed a photo of the site, which is next to a cove where floating wood will be gathered each year until the reservoir drops, allowing the wood to be hauled onto dry land for storage. Last year, PSE staff collected and stored 52 pieces, all of which were trimmed to a uniform size by someone trying to be helpful and therefore do not have root wads. They now know that variation in length is desired. They gathered another 62 pieces this year, twelve of which include a root wad.

### **SA 110, Shoreline Erosion Control**

Jacob reminded folks that there are camping sites situated between a steep, eroding bank and old growth forest. It is easier and better to stabilize that shoreline than to move the camping sites into the old growth forest. He reported that this project has been ongoing for some time, and is currently being redesigned to better meet the safety needs of an active recreation site. He expects to see construction begin October 2014.

### **SA 505, Aquatic Riparian Habitat**

Six projects have been approved over the last two years. Funds for all of them have been allocated. Many of those projects are moving forward in a big, visible way this year, so he thinks this is going to be a fun year for SA 505. Proposals are due tomorrow and the Article 505 Aquatic Riparian Habitat Working Group (ARG-TRIG) will meet again January 23 to consider the proposals.

### **CLOSURE OF BAKER LAKE ROAD SOUTH OF BOULDER CREEK**

Jeremy let the group know that USFS is currently planning to close Baker Lake Road south of Boulder Creek at the Boulder Creek campgrounds. The road will be closed October 6-10, October 14-16.

Along those lines, Jeff shared that Skagit County is proposing to replace a culvert on Everett Lake Road sometime this summer.

### **MEETING EVALUATION**

Went Well:

- Great turnout; and, welcome new friends
- “Everything went well!”
- Food is great; love the deviled eggs and salmon chowder
- Got out early

Do Differently:

- Well, everything went well except for technology ... once again, Lync system did not work well
- Perhaps send attachments in advance to callers so we're less reliant on the Lync system
- Please add salad and diet beverages to the food choices

### **March 4 Agenda Topics:**

- Usual ARG welcome and standard updates / reports
- Update from USACE re: Skagit GI
- ARG-TRIG SA 505 Update