

*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, Doug Bruland, Nathanael Overman, Jory Oppenheimer, Jacob Venard, Caitlin Faulkner, Nick Verretto, and Tom Flynn (PSE); Brock Applegate, Steve Stout, Brett Barkdull, and Kevin Kurras (WDFW); Bob Helton (Citizen); Pat Cagney, Hannah Hadley, and Lynn Wetzler (USACE); Dan Berentson and Kara Symonds (Skagit Co.); Stan Walsh (SRSC); Jon-Paul Shannahan (Upper Skagit Tribe); Jeremy Gilman (USFS); Ashley Rawhouser (NPS); Steve Fransen by phone (NMFS); Monika Kannadaguli by phone (DOE); Lyn Wiltse and Jamie Riche (facilitators, PDSA Consulting).

**DECISIONS** – none today

**2013-2014 ARG DATES:** Meet quarterly, PSE Burlington: Sept. 10, Jan. 14, Mar. 11, Jun. 10, and Sept. 9.

### **OTHER UPCOMING MEETINGS/EVENTS:**

- June 27 Cultural Resources Training (Burlington), provided by CRAG
- July 12 VIP Celebration at Lower Baker
- July 20 Concrete Community Day – Open house at PSE Office
- Oct. 23 BRCC (Snoqualmie)

### **ACTION ITEMS**

- Tom, Arnie Check into USACE 404 permitting requirements related to hillside work (also 401, HPA).
- Arnie Distribute the hatchery hillside update PPT and Release Site PPT with these notes.
- Jory Send ARG a summary of the RRG's dialogue re: PSE's requested amendment to daily pool level change limits listed in Aquatics Table 1.
- Doug Fix the email issue with JP, and send the downstream passage weekly distribution spreadsheet to the ARG reps asking who wants to be on this distribution list.
- Nick CC the ARG when you send the FSC Emergency Response Plan to FERC.
- Nick Send out the Adult Trap Distribution List.
- Nick Develop a draft downstream facilities protocol, and then coordinate it's development with the co-managers and NMFS
- All Please review the Adult Trap Distribution List and ensure your contact(s) are up to date.

### **PREVIOUS - STILL RELEVANT - ACTION ITEMS**

- Doug Set up meeting with co-managers and fish techs.
- Co-Mgrs Determine drop location for "IHN hot" morts (work with USFS to determine disposal plan).
- Co-Mgrs Send a draft Fish Production Plan to Arnie ASAP, as per FPPF. Stan smiled, in progress.
- All Review / update the ARG representation list for your organization (ongoing, as needed).

### **SAFETY MOMENT**

Arnie also shared a tip sheet from the American Optometric Association ([aoa.org](http://aoa.org)) with suggestions for how to protect our vision in this "plugged in" / techie era. Most importantly, give your eyes a break from looking at computer / tablet / smart phone screens. At least every 20 minutes, look away from your screen(s) for at least 20 seconds and focus on something that requires distance vision, at least 20' away.

## **UPDATE ON PREVIOUS ACTION ITEMS**

Doug shared that he has tried to schedule a meeting between co-managers and techs; calendaring has been a challenge. He will continue to work on this since the group agrees that a regular annual meeting would be helpful. Note: there are other operational issues that could be added to the agenda for this year's meeting, including disposal of "IHN hot" morts, and the downstream species protocol.

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

The BRCC met May 21 at Burlington. Tom updated the group to some upcoming celebrations at the Baker Project (dates noted above), and walked through a high-level review of the notes from that meeting. 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 Oct. 23 in Snoqualmie.

## **LOWER BAKER UNIT #4 COMMISSIONING UPDATE**

Jory explained the load rejection testing required for the commissioning of Lower Baker Powerhouse Unit 4. Three tests were scheduled; two have been completed on April 4. PSE is spilling water at the dam to mitigate the flow reduction during the tests as talked about in previous ARG meetings. Results:

- 75% test: Max reduction of 1,690 cfs/hour at USGS Baker River gage. Limit is  $\leq 2,000$  cfs/hour when Skagit flow is  $<18,000$  cfs
- 100% test: max reduction of 180 cfs/hour at USGS Baker River Gage
- Skagit River flow was about 23,000 cfs during the load rejection tests.

The third test, which is a combined test of units three and four, is tentatively scheduled to happen later this week.

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

Jory talked about the upcoming requirements related to Baker Lake daily pool levels. Currently, there aren't any restrictions on daily pool level changes in Baker Lake. Once Aquatics Table 1 takes effect, the maximum change allowed during the recreation season (May 23 - Sept 9) will be limited to 0.5 foot per day, measured on a rolling 24-hour basis. Maintaining the Baker Lake pool level within those limits on a rolling 24-hour basis is challenging due to the quality and frequency of the forecasts.

PSE proposes changing the limit to 1.5 foot per 24-hour period. PSE does not propose any changes to minimum and maximum Baker Lake elevations (which must remain within a three foot range, roughly 725' – 728', during the recreation window). Allowing up to 1.5 foot per day would result in a change of about  $\frac{3}{4}$  inch per hour. The rate of daily change is limited by the generation capacity of Upper Baker powerhouse.

Jory reviewed notes from the settlement agreement process and found that the 0.5 foot per day constraint was requested by USFS within the context of recreational use of the reservoir. The proposed modification will be discussed at the June 18 Recreation Resources Group (RRG) meeting.

Brett asked about possible downstream effects. JP asked about the potential risk to fry, particularly in the earlier part of the recreation season. After some additional discussion of the Settlement Agreement, Aquatics Table 1, and PSE's proposal, Steve shared his view that the proposed change should have limited impacts on fish. There was general agreement around the table. Jory agreed to send a summary of the RRG's discussion on this subject to the ARG. PSE plans on emailing the specific proposed modification to the ARG and RRG for their approval, pending the outcome of the meeting with the RRG.

## **SKAGIT GENERAL INVESTIGATION UPDATE**

Lynn Wetzler has replaced Dan Johnson as PM for the Skagit General Investigation (GI); she is also the GI Program Manager for this area. She reported on the Corp's GI process and activities that have happened since the March ARG update. The Corps has been reviewing and evaluating the modeling alternatives, moving toward selection of a "preferred alternative." Selection of the preferred alternative was originally scheduled for this month, but has been pushed back to fall. They are moving forward as much as possible within the limited funding they have available. The next step after that would be the concurrent public review

process, likely in early 2014. They are still aiming for completion in 2015, but Lynn noted that forward progress is dependent upon federal funding. Skagit County has been paying its portion of the costs and Lynn confirmed that their funding has been helpful and is being applied to the project, but it is not enough to complete the necessary studies. She emphasized that the Corps will need the federal funding in order to move the project forward on schedule.

Dan asked what would happen if federal funding sequestration keeps us from moving forward within the 3-year USACE timeline. (New rules require projects to move forward within three years or be dropped.) Would the Skagit GI get dropped? Lynn thinks that the schedule will slip a full fiscal year if funding is not available, but she does not think that the project would be disqualified as long as the delay is caused by the federal sequestration. Lynn will provide another update at our September ARG meeting.

## **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. Crews have been removing boulders, fallen trees, and other debris. Kevin estimates that they've hauled out about 40 truckloads at this point. Tom showed photos of the work to date. They have reestablished a good flow of water into the channel.

Next steps: fabricate and replace the rebar intake pipe and "grizzly cages" and install the partial graded filter over geotextile fabric. Project completion and hatchery water-up forecasted for June 21.

## **ARTIFICIAL INCUBATION (AI) and SPAWNING BEACH #4 (SB4) OPERATIONS**

Kevin reported that AI went very well this year. He characterized this as a spectacular year. Every group was tested for IHN, sometimes two or three times. They only broke with IHN during the very last take (resulting in the need to euthanize about half, or 28k). Out-migrants were sampled from the FSC, 20 each from Upper and Lower Baker. Beaches showed no IHN at all.

**Distribution:** 1.8 million AI to Baker (plus 2 million from SB4, for a total of 3.8 million to Baker), 1.3 million to Shannon, 131K reserved for delayed rearing.

Kevin and Doug conduct a process improvement review after each season. Kevin will suggest adding a day to the beginning and end of the hatchery inspection and cleaning window, making it a true 7-day close-down. This will give the system enough time to drain.

Kevin also showed photos of the "hose tree" that was installed at the hatchery to give faster access to the back-up water supply. There is not enough back-up water to run a fully-loaded operation, but this modification would let them make the best use of the available back-up supply as quickly as possible.

Doug updated the group on the fish in the raceways, which are holding 117k sockeye and 93k coho. 65k of the Coho will be held for pit-tagging and spring releases.

## **FRY RELEASE SITES**

Arnie updated the group on efforts since the last ARG meeting to identify backup fry release sites. He showed a map of Baker Lake with eleven access points highlighted: six developed boat launches (Kulshan, Seaplane, and four USFS launches), two places with roadside creek access (Channel and Little Park Creeks), a developed fish release site "blue tarp", and two access points on Lake Shannon. There are two former road-beds that would require re-development (old Scott Paper Road and USFS "Big Pond") to open access for a total of 13 potential release sites.

All thirteen of those sites were evaluated against a variety of criteria, including whether USFS approval would be required, whether the pool levels would be an issue, and likelihood of needed improvements. He showed photos and additional data about the most promising sites. The PowerPoint included quite a bit of supplemental research references, including a history of production and release since 2002. Blue Tarp, Beach 3, and Lake Shannon have been the primary release sites.

Arnie suggested Blue Tarp, Lake Shannon at the hatchery, and the Channel Creek sites as primary release sites. Blue Tarp and Lake Shannon at the hatchery are proven sites; Arnie thinks Channel Creek is promising.

Jon-Paul and Steve thanked PSE for the depth of work that went into the research for this presentation. The resource folks will review the information included in the PPT and will meet with PSE offline to continue discussions. We'll get an update at the September ARG meeting.

### **SPAWNING BEACHES 1-3 DECOMMISSIONING UPDATE**

Caitlin updated the group on work to decommission spawning beaches 1-3 and remove the associated structures from that site. She showed maps of the site plan and conditions at completion. The in-water work is scheduled for July 16 – Aug. 16, and the project is on track for completion by November 2013. We will get another update, with photos of the progress, at the September ARG meeting.

### **OUTMIGRATION UPDATE**

Doug agreed with Kevin's earlier opinion that this has been a spectacular year. As of yesterday, 766K fish have left the system so far. 614K of those had been collected at Upper Baker. And there are still a surprisingly high number of fish going through, so every day is a new record this year. There were eleven days where the numbers were high enough to trigger direct transfers, and Nick reported that the subsampling protocol worked well. The group talked through some details from the subsampling protocol, and briefly reviewed previous-year data for comparisons of fry to collected smolt.

The numbers at Lower Baker have been phenomenal, too. The new FSC and net layout make a huge difference. 152K fish have been collected at Lower Baker. For comparison, 28K was a more usual number for Lower Baker using the old equipment (about 58k was the old LB record).

Doug shared that the new facilities are making life better for the fish techs, too. They are able to do more work and do it more safely thanks to the new FSC, pier, and transport equipment.

Weekly distribution of the downstream passage spreadsheet will be sent to the ARG reps. Please let Doug know if you want to be removed from the list.

### **2013 FSC STUDY UPDATE**

Jacob reported that this year's planned sockeye study was cancelled due to the IHN outbreak. So, our data from this year are for coho only. He said that the coho smolt ATPase study has been going well. They released 2K coho near the boat launch as a test. As of yesterday, they have caught about 90% of them. (Pretty remarkable!) Jacob doesn't have the final numbers, yet, but it appears that the facility is operating very well for smolt-sized fish. He also reported that the updated process to store our samples in on-site freezers and transport them to USFWS lab in Abernathy directly is working well, too.

### **LB FSC SCREEN BALANCING / FRY MORTALITY**

Nick talked with the group about the high fry mortality rates at the Lower Baker Floating Surface Collector (LB FSC). He shared updated data that showed significantly higher mortality at Lower Baker than Upper Baker:

- UB sockeye, 18.4% mortality
- LB sockeye, 62.7% mortality
- UB coho 2.5% mortality
- LB coho 21.5% mortality

They have considered a number of potential causes, including impingement on primary and/or secondary screens, impingement only at higher flows, fish health, fish size, occluded screens, holding conditions, and debris. It is complicated, and fish health remains a minor possibility (tests for IHN and other viruses have been negative, however). The secondary screens appear to be satisfactory and other potential causes have also been substantially ruled out, so evidence suggests impingement on primary screens.

Nick reviewed a detailed report of the research and findings to date, and the group talked about a variety of possible causes and potential solutions.

**Next steps:** More work is planned, including data collection in June and during the dewatered inspection in August. PSE will continue to work with NMFS and engineers, and they expect the investigations to continue into next year or beyond due to uncertainties surrounding the cause. They will keep the ARG updated.

#### **FSC FINAL EMERGENCY RESPONSE PLAN**

Nick reviewed comments to the FERP received during the 30-day review period, specifically, modifications to Plan sections regarding co-manager notification of incidents. Stan suggested setting a hard mortality threshold for notification, such as a percentage of the daily collection. Nick will review 2012-13 data and establish a hard number for triggering notification. The Plan will then be submitted to the FERC and copied to the ARG, with changes identified in a separate memo to the co-managers and NMFS.

#### **DOWNSTREAM SPECIES PROTOCOL DEVELOPMENT**

JP asked Nick to develop a draft downstream facilities protocol, and then to coordinate its development with the co-managers and NMFS. This could be reviewed at the new (first annual) meeting between the co-managers and fish techs.

#### **ADULT TRAP DISTRIBUTION LIST**

Nick will send out the upstream trap fish allocation list for review and edits by the co-managers.

#### **UPSTREAM FISH TRAP POST-CONSTRUCTION EVALUATION**

Nathanael gave a very quick update on the next phase of the post-construction study. He reminded the group that results from the first phase of the study (completed in 2010 by R2) 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 Unit #4 coming online, they will repeat this analysis with the new flows to analyze results within new flow regime. If the data continue to show that the trap is functioning according to design, no further study beyond ongoing monitoring will be needed.

#### **UPSTREAM FISH TRAP – JUVENILE ISSUES**

Nick and Nathanael visited the upstream fish trap during the recent maintenance outage to look for design issues that may influence juvenile fish passage through the trap. The most obvious solution is to exclude most juveniles by raising the entrance weir from 15 to at least 18 inches. PSE is planning to move forward with this, following consultation with the NMFS. They identified a few additional improvements for passage of juveniles that do enter the trap. Door tolerances at the electroanesthesia tank could be letting juvenile fish underneath the tank; they have a plan to resolve that. The other improvement involves a revised method of netting juvenile fish when they are sliding down the flume after exiting the fish lock. The current process is for a crew member to net the fish out into a bucket; they are thinking that a lighter-weight net may make that work easier for the crew and safer for the juveniles.

#### **NUTRIENT ENHANCEMENT FUND**

Arnie reported that there is a meeting scheduled tomorrow at 1:30 in Stan's office to talk about this issue.

#### **SA 101c2 SAMPLING APPROACH**

Nathanael reminded the group that SA 101c1 called for a carrying capacity study. That study estimated the sockeye capacities at 750K in Baker, 333K in Shannon. We are not seeing those kinds of numbers, yet, but we are getting close. We will want to continue to evaluate the system as we get closer to reaching the estimated capacity.

The co-managers were sent a draft (Article 101C2) approach for monitoring sockeye data and Nathanael and Stan met to confirm the sampling protocol for this year. The approach is designed to monitor for indications of density dependence as the number of fry in both reservoirs are incrementally increased. This includes monitoring both numerical data (e.g., fry to smolt, and smolt to adult data) and morphological data including

length, condition factor, and percent dry weight. To facilitate collection of samples for dry weight analysis, Doug and Stan have coordinated to ensure that dry ice is available every Wednesday from late April through the end of May, and the samples are placed in frozen storage for laboratory analysis at the University of Washington. These data, along with the numerical data, identify a means to recognize and track population level responses to increased in-reservoir densities and will help guide fry production goals. The co-managers thanked PSE for going the extra mile to make this study possible.

### **LARGE WOODY DEBRIS ALLOCATION PROTOCOL**

Jacob distributed a draft allocation guidance protocol for managing requests for Large Woody Debris (LWD) and asked for feedback. Stan had three suggestions: review requests for LWD during the annual ARG-TRIG (SA 505) process; ask PSE to maintain a basic inventory of available material by size categories and presence / absence of root ball; and specify that Article 505 projects get priority over other requests. Jacob made note of those suggestions. The first collection of wood will happen this summer.

### **SA 108 GRAVEL UPDATE**

Jacob reported that this will be the second year of gravel monitoring. He invited anyone interested to join them in the gravel bar surveys this summer ... let him know if you'd like to participate.

### **SA 110 SHORELINE EROSION UPDATES**

Jacob reminded the ARG that PSE has been working with USFS on a project to stabilize the bank near the Swift Creek campground. They are looking to modify the project design, with construction tentatively slated for next fall.

### **SA 505 AQUATIC RIPARIAN HABITAT UPDATE**

Jacob announced that PSE's contracting office is up and running for all six projects that have been approved (three projects in each of the last two years). The RFP process begins again this fall.

### **UPDATE ON PLANS AND REPORTS**

Watch for 2012 annual reports on 110 Shoreline Erosion in June, 505 Riparian, and 602 Funding out in July.

### **DRAFT SEPTEMBER AGENDA ITEMS**

- Routine ARG updates
- Skagit GI update
- Operations updates: fish passage 2013 season review
- Hatchery /headworks/ release sites
- Distribution of "IHN Hot" morts
- Adult Upstream Trap Protocol
- 101 Nutrient Enhancement Funds

### **MEETING EVALUATION**

#### **Worked Well:**

- Great attendance
- Covered a lot of ground; folks hung in well
- Food excellent

#### **Do Differently:**

- Improve visibility on projected slides
- Improve the phone system to include more satellite microphones
- Meeting ran long