MEMORANDUM

To: Fish Passage Advisory Committee (FPAC)

From: FPC Staff

Date: August 21, 2019

Subject: Action Notes from August 6, 2019 FPAC conference call

On August 6, 2019, FPAC met for its weekly conference call. The following people participated in the call:

- Paul Wagner (co-chair, NOAA)
- Tom Lorz (co-chair, NOAA)
- Brandon Chockley (FPC)
- Erin Cooper (FPC)
- Dave Benner (FPC)
- Gabe Scheer (FPC)
- Charles Morrill (WDFW)
- Dave Swank (USFWS)
- Jay Hesse (NPT)
- Russ Kiefer (IDFG)
- Eric Johnson (IDFG)
- Trevor Conder (NOAA)
- Tom Iverson (YIN)
- Sheri Sears (Colville Tribes)

AGENDA ITEMS

Review and Approval of Notes from July 23, 26, 30, and 31 Meetings (01:15 - 04:01)

- Russ Kiefer (IDFG) noted that he listened to the recording for the July 16 meeting and, he did state that 20% of adult sockeye sampled for genetics at LGR last year were Upper Columbia at around the 1 hour mark. He would like this to be added to the notes, where it is appropriate.
- Approval of July 26, 30, and 31 notes will be postponed until next FPAC (August 13). Russ noted that he has some edits and concerns with the July 31 notes that he would...
like to discuss at the next FPAC meeting. Russ noted that we need to take the time at
the next meeting to address his concerns, instead of sending comments ahead of time.

Water Supply and Reservoir Status (05:25 – 08:50)

- Dave Benner (FPC) provided an overview of recent reservoir operations, water supply
  forecasts, and 2019 flow objectives. See attached document.
- Russ Kiefer (IDFG) asked about how far Brownlee is normally drafted this time of year.
  Paul Wagner (NOAA) and Dave Benner (FPC) noted that it generally is drafted to the
  elevations in the low 2,050s. Paul noted that 237 Kaf is provided by Brownlee by August
  9th. 2,057’ is the target for August 7th.

Weather Update and Climate Forecast (08:50 – 09:30)

- Paul Wager (NOAA) noted that cooling is expected after Wednesday.

Fish Passage Status (09:53 – 16:00)

- Brandon Chockley (FPC) provided an update of current SMP sampling (see attached
  handout for details). Subyearling Chinook dominating SMP collections. Increased
  subyearling Chinook passage at LGR and LGS over the past few days, compared to last
  week.
- All Mid-Columbia sites are still sampling under high temperature sampling protocol.
- Brandon noted that GBT monitoring is mostly done for the season (except possibly RIS),
  due to low fish numbers.
- Every-other-day trucking began last week.
- Trevor Conder (NOAA) asked whether the SMP has records of non-native salmonids that
  are sampled. Brandon answered that, yes, this information is tracked and is available on
  the FPC website.

Adults (12:25 - 16:00)

- Dave Benner (FPC) provided an overview of adult counts to date (see handout).
- Bonneville has transitioned to fall Chinook.

Spill Review (16:00 - 18:10)

- Brandon Chockley (FPC) provided an overview of spill for July 30-August 5, 2019 (see
  attached handout).
- Summer spill operations have been met everywhere with a few exceptions.
  - LGR was unable to spill 18 Kcfs on July 31 due to low flows.
  - Doble testing at LGS began on August 5th. Spill was ~80% during spin no load
    period (0500-1700) then decreased to 30% from ~1700-0100 (August 6th) with
    ponding. Max elevation was 635.17’, which was reached at 0100 on August 6th.
    Spill was increased to ~61% from 0100 to at least 0500 to evacuate stored water.
    Don’t know how far down forebay elevations got after 0500 but was decreasing.
Project Temperature Status (18:10 - 19:00)

- Brandon Chockley (FPC) provided an overview of the forebay temperatures at BON, MCN, IHR, and LGR (see attached handout).
- Forebay temperatures generally close to current 10-year averages. Furthest was BON, where current temperature is 71.9°F and current 10-year average is 70.7°F.

Little Goose Decision and Discussion of FPAC Process (19:00 - 19:25)

- This discussion has been postponed until next week’s FPAC meeting.

Dworshak Operations and Lower Granite Discussion (19:25 – 53:20)

- Paul Wagner (NOAA) summarized an e-mail from John Roberts (COE) (attached). With current conditions (temperature), LGR is likely to exceed temperature criteria of 68°F today. COE proposes to change RSW operation to deep spill. Estimated effect is 0.5°F reduction in tailrace temperatures. Would be a temporary operation of 48-72 hours. Paul had asked COE why they didn’t increase discharge from DWOR earlier. COE indicated that where they are now is just at the 110% TDG limit. Given current temperatures and where they would increase spill from, COE estimates would get instantaneous jump to above 110% TDG. Temperature episode is expected to be short-lived.
- Paul noted that there will be an effect on juvenile passage. Information Paul provided last week for LGS discussion goes back to a time when survival estimates were made for fish migrating this time of year to LGR (1995-2000). At these temperatures, these flows, and these levels of turbidity, survival to LGR was low for migrating juveniles.
- Paul noted that he tends to defer to the Nez Perce Tribe and IDFG for these decisions that affect fall Chinook.
- Dave Swank (USFWS) asked to review most recent temperature modeling on TMT (note: a model run was posted at 0800 on August 6th under the agenda for August 14th but has since been overwritten with newer modeling. See recording of this meeting for August 6 modeling run). Paul noted that this forecast was done without an adjustment to the RSW operation. Dave noted that the projected temperature is going to hit 68°F but not exceed it. Current average temperature in the LGR tailrace is 67.7°F, average for August 6th was 67.7°F with a max of 68.1°F.
- Dave noted that he is open to temporarily removing the RSW with current conditions, as long as we set some conditions like a maximum amount of time or temperature threshold of some sort. Does not want to see this as a permanent removal for the season.
- Russ Kiefer (IDFG) asked why Dave is concerned with removing the RSW for the season. Russ noted that, at these temperatures, he believes it would be better for subyearling Chinook to be locked into LGR or LGS pool or to collect and transport them but not to have them continue to try to migrate in river. Russ asked what Dave’s opposition was based on. Dave asked for clarification on “locking” the subyearling into LGR or LGS pool. Russ noted that, this time of year, many subyearlings tend to stop migrating. Those that survive to the following spring have good SARs. We don’t know what the survival is
between now and late September but they do stop migrating. Would be better to stop higher up where it is cooler than lower down. If we collect and transport them, we get them down to below BON. Although transportation has some negative effects, these effects are counterbalanced by not having to migrate through these high temperatures. There is a lot of uncertainty but Russ truly believes that it is better to have subyearling Chinook stop migrating higher up or to collect and transport them. Russ recommends that the RSW be turned off for the remainder of the season. Plan is to have it running so if would like to turn it back on, that is the precedent.

- Dave Swank (USFWS) noted that he is not sure that closing the RSW is going to change a smolts behavior to migrate or not, it’s more about giving them an optional route of passage. Dave’s other concern is a process issue. Dave noted that these decisions are proposed as a solution to one issue (temporary removal of RSW to moderate water temperatures in LGR tailrace) for adult passage has become a discussion about benefits to juveniles and relative benefit of transportation. Proposals morphing from one thing to another is frustrating.

- Russ Kiefer (IDFG) asked, why Dave is frustrated. Russ noted that engineer from COE is concerned with temperature. But FPAC members are biologists and focused on biology. Yes, removing RSW is probably ok for temperature but, instead of putting it back in, as biologists, can we adjust operations and improve SARs. Russ noted that the LGR forebay is 72°F at 5 meter depth and he does not think subyearlings like to move in 72°F water and may already be migrating deeper at this time. COE temperature modeler requested FPAC to consider this operation for LGR tailrace temperatures but Russ believes that, as biologists, we should be able to make decisions, given the conditions we’re facing, that can be implemented that we think has a better chance of improving adult return rates. Russ noted that he believes the data indicate that transporting subyearling Chinook is likely better than spillway passage at this time of year. Russ truly believes that we are clearly in that period when temperatures are above 70°F all the way down to BON for fish migrating in-river. Russ reiterated his recommendation to remove the RSW at LGR for the remainder of the season. Russ asked Dave again, why is it so important to him to put the RSW back in and what benefit does he think it is providing when IHR is already 70°F at the bottom.

- Dave Swank (USFWS) noted that we can argue the relative benefit of transport versus spill position all day. Frustration is that conversations in FPAC and TMT have focused on changes to surface weir dates by a piece meal process where we are given a solution to one problem and then justified by another. It’s relatively simple to make a decision to remove the weir temporarily to benefit adults by moderating temperatures. When we start adding justifications based on transport, there’s a long history of different interpretations of the data. It becomes a quagmire. If an agency wants to make a change to the removal of the surface weir dates, it should be done through FPOM. Already states explicitly in the FPP that early removal of a surface weir should be done through FPOM. Dave noted that he understands why it’s done through TMT for desire for quick responses but it seems like this is happening year after year. Dave believes that this is not appropriate forum and seems disingenuous to propose an operation based on one explanation and then to use different explanation to justify it when FPAC
gets into discussing.

- Michele DeHart (FPC) asked FPAC about the agenda. It seems like the question that was asked was a narrow question. Question was related to COE proposal to close RSW for 48-72 hours. Michele suggested that FPAC focus back on the actual proposal from the COE.

- Paul Wagner (NOAA) noted that the COE proposal was for a temporary closure and Russ took the next step of asking why bother reopening after proposed closure period was over. Paul agreed that there are different interpretations and desires of transportation. CSS comes to a conclusion for the season as a whole. NOAA did an in-season analysis and came to a different conclusion. Getting back to Dave’s issue of implementing an operation for one purpose and justify it with another, Paul noted that we need to look at the overall effect when evaluating special operations. With temperature issue at LGR, if the fish move, they will move to a better environment but noted that this is theoretical. COE proposal was straight forward, do we want to do this for 48-72 hours. How do we make this simpler, do we go with Russ’s desire to keep it closed for the remainder of the season or do we keep it as a temporary closure. Paul asked for Jay Hesse’s (NPT) thoughts.

- Jay Hesse (NPT) noted that the temperature modeling doesn’t seem to indicate RSW removal will result in a big change in the environment. Fish response, both adults and juveniles, will likely be small. He is ok with leaving RSW in, ok with taking RSW out and leaving it out. If had to pick one right now, would note that cumulative effects of water temperature is a driving force and would opt to take RSW out and leave it out. Does not feel strongly in any direction on this.

- Trevor Conder (NOAA) noted that the FPP has criteria for removal of the RSW. If flows are <30 Kcfs and are projected be below 30 Kcfs for three consecutive days, can take out. Brandon Chockley (FPC) noted that, according to the latest STP, LGR flows are projected to be <30 Kcfs on August 13th and projection is for flows to remain <30 Kcfs thereafter. RSW would likely be removed ~August 14-16th. Taking RSW out now and leaving out would result in closure ~7-10 days earlier than FPP criteria.

- Paul Wagner (NOAA) noted that it looks like FPAC is in agreement with taking RSW out for ~3 days and then putting it back in until FPP criteria have been met. Paul asked whether Russ Kiefer (IDFG) was ok with this. Russ indicated that, yes, he is ok with this. What he was proposing (leaving out for the season) was a deviation from the FPP and if anyone objected, it cannot be implemented. Charlie Morrill (WDFW) noted that work from USGS indicates that subyearlings tend to stop migrating when it gets warmer and whatever pool they are in they tend to stay. We do see some migrating out later in the fall and the following spring. Those out-migrants do tend to have higher SARs but whether changing the RSW operation impeded their choice in passage is unclear. WDFW is ok with the COE proposal.

- Tom Lorz (CRITFC) noted that, since DWOR operations are expected to stay the same, it will be interesting to see if shutting RSW down really has the expected response of reducing tailrace temperatures by 0.5°F.

- Russ Kiefer asked for an official FPAC poll on the COE’s proposal to turn RSW down for
48-72 hours. NOAA, IDFG, WDFW, CRITFC, NPT, YATR, COLV, USFWS all support the proposal for 3-day closure of RSW. Paul will e-mail the COE and tell them that FPAC discussed the proposal and there were no objections. Brandon Chockley (FPC) noted that it is worth mentioning that ODFW was not on the call, could not object and could not support.

Other: Pilot for Drone Surveys of the Ives Island Complex in 2019 (53:30 - 58:30)
• Dave Swank (USFWS) informed FPAC that USFWS is planning a pilot project to survey chum at Ives Island with a drone this fall. USFWS is still seeking permissions. Objective is to see what information can be gathered on chum spawning abundance and red locations with a drone. Unclear whether the data will be useful for operations. No dates are set yet. If anyone has comments, concerns, suggestions, please let Dave know.
• Charlie Morrill (WDFW) noted that he has asked whether infrared technology can be used to survey stellar and California sea lions. Still working on this.
• Russ Kiefer (IDFG) noted that IDFG has done some studies to compare drone surveys to ground surveys. Russ will send contact information for IDFG personnel that may be able to provide some information.
• Tom Lorz (CRITFC) suggested contacting Jake McDonald at COE regarding infrared and drone technology.

Coordination for Other Scheduled Meetings (58:30 – 59:15)
• No TMT tomorrow
• Flex spill conference call today (11:00-1:00)
• Next FPAC is a face-to-face at FPC (August 13th at 10:00 am)
• Next week’s TMT is face-to-face followed by process meeting (August 14th)
• FPOM on Thursday (August 8th)
FPAC Agenda for Tuesday August 6, 2019
Meeting time: 9:00 AM

1. Review and approval of notes from July 23, 26, 30, and 31 meetings
2. Water supply and reservoir status
3. Weather update and climate forecast
4. Fish passage status
5. Spill review
6. Project temperature status
7. Little Goose decision and discussion of FPAC process
8. Dworshak operations and Lower Granite discussion
9. Coordination for other scheduled meetings
9. Other
MEMORANDUM

TO: FPAC

FROM: David Benner, FPC

DATE: August 6th, 2019

RE: Reservoir Operations/Water Supply/Flows

Grand Coulee Reservoir is at 1,285.4 feet (8-5-19) and has drafted 2.7 feet over the last week. Outflows at Grand Coulee have ranged between 87.7 Kcfs and 121.6 Kcfs over the last week.

The Libby Reservoir is currently at elevation 2,441.7 feet (8-5-19) and has refilled 0.7 ft. over the past week. Daily average outflows at Libby Dam have been 7.0 Kcfs.

Hungry Horse is currently at an elevation of 3,556.4 feet (8-5-19) and has held steady last week. Outflows at Hungry Horse have been 1.8 Kcfs over the last week.

Dworshak is currently at an elevation of 1,566.6 feet (8-5-19) and has drafted 7.2 feet over last week. Dworshak outflows have ranged between 8.5 and 11.8 Kcfs last week.

The Brownlee Reservoir was at an elevation of 2,058.7 feet on August 5th, 2019 and has drafted 5.1 feet in the last week. Outflows at Hells Canyon have been approximately 9.8-25.0 Kcfs over the last four days.

The Biological Opinion flow period began on April 3rd in the lower Snake River (Lower Granite). According to the April Final Water Supply Forecast (April 3rd, 2019), the flow objective this spring was 95 Kcfs at Lower Granite. Flows at Lower Granite Dam have averaged 120.4 Kcfs over the spring season. The summer flow period began on June 21st at Lower Granite with a flow Objective of 53 Kcfs, flows have averaged 41.2 over the summer period and 32.4 Kcfs over the last week.

Based on the April Final Water Supply Forecast, the Spring Biological Opinion Flow Objective was 220 Kcfs at McNary Dam and 135 Kcfs at Priest Rapids Dam. Flows at McNary averaged 250.1 Kcfs at McNary and 123.5 Kcfs at Priest Rapids over the spring
season. The summer flow period began at McNary began on July 1st at McNary with a flow objective of 200 Kcfs, flows have averaged 150.1 Kcfs over the summer flow season at McNary and 157.4 Kcfs last week.

Figure 1. Grand Coulee
Figure 2. Libby

Figure 3. Dworshak
Figure 4. Hungry Horse

Figure 5. Brownlee
### Project Spill Update: July 30-August 5, 2019
For FPAC Conference Call (8/6/2019)

#### Chart Data Table:

<table>
<thead>
<tr>
<th>Date</th>
<th>2019 FOP: 18 Kcfs/18 Kcfs</th>
<th>24-hr Avg Spill</th>
<th>LGR TR (12-hr Avg TDG = 116%) - TDG waiver not exceeded;</th>
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**Project Spill Update: July 30-August 5, 2019**

**For FPAC Conference Call (8/6/2019)**

<table>
<thead>
<tr>
<th>Date</th>
<th>2019 FOP: 30%/30%;</th>
<th>24-hr Avg Spill</th>
<th>LGS TR (12-hr Avg TDG = 111%) - TDG waiver not exceeded;</th>
<th>LMN FB (12-hr Avg TDG = 108%) - TDG waiver not exceeded;</th>
<th><strong>Flat spill operation in effect due to low flows</strong></th>
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<tr>
<td>7/30/19</td>
<td>2019 FOP: 30%/30%;</td>
<td>10.5 Kcfs (33.0%);</td>
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<td>8/4/19</td>
<td>2019 FOP: 30%/30%;</td>
<td>10.7 Kcfs (29.7%);</td>
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<td>8/5/19</td>
<td>2019 FOP: 30%/30%;</td>
<td>17.0 Kcfs (56.7%);</td>
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<td><strong>Doble testing</strong></td>
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**Graph:**

- **Little Goose**
- **Spill (Kcfs)**
- **Total Dissolved Gas (%)**
- **Date**
- **2019 FOP Spill (30%/30%)**
- **Actual Spill**
- **12-hr Avg TDG @ LGS Tailrace**
- **Tailrace Waiver (120%)**
- **12-Hr Avg TDG @ LMN Forebay**
- **Forebay Waiver (115%)**
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## Project Spill Update: July 30-August 5, 2019
For FPAC Conference Call (8/6/2019)

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<td>IHR TR (12-hr Avg TDG = 112%)</td>
<td>TDG waiver not exceeded;</td>
<td>MCN FB (12-hr Avg TDG = 109%)</td>
<td>TDG waiver not exceeded;</td>
<td></td>
</tr>
<tr>
<td>8/5/2019</td>
<td>24-hr Avg Spill = 9.9 Kcfs (29.9%);</td>
<td>IHR TR (12-hr Avg TDG = 113%)</td>
<td>TDG waiver not exceeded;</td>
<td>MCN FB (12-hr Avg TDG = 109%)</td>
<td>TDG waiver not exceeded;</td>
<td></td>
</tr>
</tbody>
</table>
### Project Spill Update: July 30-August 5, 2019
For FPAC Conference Call (8/6/2019)

#### 7/30/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 85.4 Kcfs (56.9%);
MCN TR (12-hr Avg TDG = 116%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 105%) - TDG waiver not exceeded;

#### 7/31/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 89.8 Kcfs (56.9%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 106%) - TDG waiver not exceeded;

#### 8/1/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 103.4 Kcfs (57.0%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 106%) - TDG waiver not exceeded;

#### 8/2/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 97.3 Kcfs (57.0%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 106%) - TDG waiver not exceeded;

#### 8/3/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 84.0 Kcfs (57.0%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 105%) - TDG waiver not exceeded;

#### 8/4/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 86.2 Kcfs (56.9%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 107%) - TDG waiver not exceeded;

#### 8/5/2019
2019 FOP: 57%/57%;
24-hr Avg Spill = 87.4 Kcfs (61.0%);
MCN TR (12-hr Avg TDG = 117%) - TDG waiver not exceeded;
JDA FB (12-hr Avg TDG = 108%) - TDG waiver not exceeded;
Project Spill Update: July 30-August 5, 2019
For FPAC Conference Call (8/6/2019)

<table>
<thead>
<tr>
<th>Date</th>
<th>2019 FOP: 35%/35%; 24-hr Avg Spill =</th>
<th>JDA TR (12-hr Avg TDG =</th>
<th>TDA FB (12-hr Avg TDG =</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/30</td>
<td>49.2 Kcfs (34.9%)</td>
<td>114%</td>
<td>109%</td>
</tr>
<tr>
<td>7/31</td>
<td>50.9 Kcfs (35.1%)</td>
<td>114%</td>
<td>106%</td>
</tr>
<tr>
<td>8/1</td>
<td>58.4 Kcfs (34.9%)</td>
<td>115%</td>
<td>108%</td>
</tr>
<tr>
<td>8/2</td>
<td>53.3 Kcfs (34.8%)</td>
<td>114%</td>
<td>108%</td>
</tr>
<tr>
<td>8/3</td>
<td>51.7 Kcfs (35.0%)</td>
<td>115%</td>
<td>108%</td>
</tr>
<tr>
<td>8/4</td>
<td>50.3 Kcfs (34.9%)</td>
<td>115%</td>
<td>110%</td>
</tr>
<tr>
<td>8/5</td>
<td>49.0 Kcfs (35.1%)</td>
<td>115%</td>
<td>110%</td>
</tr>
</tbody>
</table>
### Project Spill Update: July 30-August 5, 2019
For FPAC Conference Call (8/6/2019)

#### 2019 FOP: 40%/40%;
- **24-hr Avg Spill** = 49.6 Kcfs (39.8%);
- **TDA TR** (12-hr Avg TDG = 114%) - TDG waiver not exceeded;
- **BON FB** (12-hr Avg TDG = 108%) - TDG waiver not exceeded;

#### 7/30/2019

<table>
<thead>
<tr>
<th>Date</th>
<th>2019 FOP Spill (40%/40%)</th>
<th>12-hr Avg TDG @ TDA Tailrace</th>
<th>Forebay Waiver (115%)</th>
<th>Tailrace Waiver (120%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/30/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 49.6 Kcfs (39.8%); TDA TR (12-hr Avg TDG = 114%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 108%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>7/31/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 52.9 Kcfs (39.9%); TDA TR (12-hr Avg TDG = 113%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 106%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>8/1/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 62.1 Kcfs (40.0%); TDA TR (12-hr Avg TDG = 115%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 107%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>8/2/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 55.8 Kcfs (39.9%); TDA TR (12-hr Avg TDG = 115%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 108%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>8/3/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 55.5 Kcfs (40.0%); TDA TR (12-hr Avg TDG = 115%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 110%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>8/4/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 52.8 Kcfs (40.5%); TDA TR (12-hr Avg TDG = 116%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 112%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
<tr>
<td>8/5/2019</td>
<td>2019 FOP: 40%/40%; 24-hr Avg Spill = 52.4 Kcfs (40.0%); TDA TR (12-hr Avg TDG = 116%) - TDG waiver not exceeded; BON FB (12-hr Avg TDG = 112%) - TDG waiver not exceeded;</td>
<td>100</td>
<td>110</td>
<td>115</td>
</tr>
</tbody>
</table>
| Date     | 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 91.2 Kcfs;  
<table>
<thead>
<tr>
<th></th>
<th>Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded;</th>
</tr>
</thead>
</table>
| 7/30/2019| 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.2 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
| 7/31/2019| 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.6 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
| 8/1/2019 | 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.8 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
| 8/2/2019 | 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.5 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
| 8/3/2019 | 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.3 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
| 8/4/2019 | 2019 FOP: 95 Kcfs/95 Kcfs;  
|          | 24-hr Avg Spill = 95.4 Kcfs;  
|          | Cascades Island (12-hr Avg TDG = 117%) - TDG waiver not exceeded; |
To: FPAC

Subject: Information relevant to fall chinook survival in the Lower Snake River during the August time frame.

From: Paul Wagner

Date: 8/5/2019

I was surprised at the amount of debate and revisiting of positions that occurred following the discussion and decision of the Little Goose operation that took place on August 1. The issue seemed relatively straightforward. The desire was to consider an alternative operation to provide a potentially better adult passage condition at the project. The rationale was to abate high spill conditions (approximately 75% during daytime hours and 50% during evening and night) which will occur at the project during Doble testing scheduled for August 5 - 8. The alternative operation proposed by Russ Keifer, IDFG, was to provide a period of 30% spill during evening and nighttime hours (1800 to 0100 hours). The rationale was to potentially allow migrating adult sockeye, summer chinook, steelhead and fall chinook adults to pass the Little Goose project and enter the much cooler temperature afforded in the Lower Granite pool. All of the adult runs are far below the 10 year average and any benefit that could be provided would be positive. The temperature of the Little Goose pool is exceeding 68 degrees and increasing while at depth, the temperature of the lower Granite Pool is 64 degrees and will be maintained in that range.

The concern expressed about the proposed operation was that it would decrease flows and spill percentages for the hours of 1800 to 0100 (7 hours). The flow and spill would subsequently increase over the remaining hours so the effect would “wash out” within a 24 hour period. However this reduction in flow was viewed by some as too high a risk for the juvenile migrants. NOAA’s perspective is the juveniles are at high risk not by the operation but by prevailing conditions in the Snake River. The data we have available (Smith et al 2003) indicates that at the current and forecasted temperature, flow, and turbidity the survival of migrating juveniles is exceptionally low (figure attached). If there is data that suggests this is not the case, we would appreciate it. NOAA also determined that if fish are collected at the powerhouse at this time of year the preferential treatment would be to collect and transport them (Smith et al 2018). Data on the survival of fish migrating by way of the spillway at this time is not available. If it is available, we would appreciate it.

Lastly, the issue of how our decisions are made and communicated should be the discussed. We need to establish a clear process for communication so our process is clear.

Literature cited

FIGURE 8.—Relations between the estimated probability of survival to Lower Granite Dam and indices of discharge, temperature, and transparency and release date for groups of PIT-tagged hatchery fall chinook salmon released at Pittsburg Landing and Billy Creek on the free-flowing Snake River, 1995–2000. Lines illustrate descriptive models selected from generalized additive and linear regression analyses.
Alex Saint

From: Alex Saint
Sent: Tuesday, August 6, 2019 8:21 AM
To: Barry Hansen (barryh@cskt.org); Bill Tweet; Bobby Hsu; Brad Houslet; Brandon Chockley; Brent Hall; Brent Nichols; Brian Crossley; Brian Marotz; Brian Zimmerman; Casey Baldwin; Charles Morrill (2nd Email) (cfm97@me.com); Charles Morrill (charles.morrill@dfw.wa.gov); Christine Golightly (GOLC@critfc.org); Claire McGrath; Conor Giorgi; Dave Statler; Dave Benner; David Swank; Dean Ballinger; Deane Osterman (dosterman@knrd.org); Dennis Rondorf; Erick Van Dyke; Erin Cooper; FPC Tablet; Gabriel Scheer; Gary James; Jay Hesse; Jen Graham; Jerry Marco; Jerry McCann; Joe Skalicky (joe_skalicky@fws.gov); Josie Thompson; Keith Kutchins (Keith@uceachtsen.org); Ken Merrill; Kenneth Tiffin; Kirk Truscott; Kyle Dittmer; Lance Hebdon; Les Evans (lese@cskt.org); Go to Meeting; Michele Dehart; Mike Rayton; William Price; Paul Kline; Paul Wagner; Rick Martinson; Rob Lothrop (lotr@critfc.org); Rod Engle; Roler, Ronald (DFW); Russ Kiefer (russ.kiefer@idfg.idaho.gov); Ryan Lothrop; Sheri Sears (sherisears@colvilletribes.com); Steve Haeseker; Steve Williams; Sue Ireland; Ted Knight; Tom Iverson; Tom Lorz; Tom Skiles; Trevor Conder; Tucker Jones
Cc: Brandon Chockley
Subject: FW: Lower Granite Tailwater Temperatures

From: Paul Wagner - NOAA Federal [mailto:paul.wagner@noaa.gov]
Sent: Tuesday, August 6, 2019 8:11 AM
To: Alex Saint
Subject: Fwd: Lower Granite Tailwater Temperatures

Alex,

Would you please forward this message to the FPAC membership for discussion during today's meeting.

Thanks,

Paul

---------- Forwarded message ----------
From: Roberts, Jonathan M CIV USARMY CENWW (US) <Jonathan.M.Roberts@usace.army.mil>
Date: Mon, Aug 5, 2019 at 1:56 PM
Subject: Lower Granite Tailwater Temperatures
Thank you for taking time to discuss the temperatures at LWG tailrace. Currently the temperature at LWG tailrace at 1100 (from the hourly data stream) was 67.82 degrees and is expected to climb throughout the day until the evening, when the peak day time air temperature has passed. As we move through the 3rd day of plus 100 degree heat and with 3 days still remaining, we are limited with how much influence DWR cooling water can have at LWG tailwater. With the current condition we will likely put our 12-hour average LWG tailwater either very close to 68 degree or slightly over for today. As we are aware it will continue to be hot over the next 3 days with temperatures higher the next 2 days than today at LWG and throughout the basins. We will likely see numerous hours that exceed the 12h-average 68 degree mark over the next several days. DWR start sending additional cooling water downstream on this past Friday at midnight, and have been limited by sending more water due to our 110% TDG requirement. Currently our TDG is 103.8% (1300 on 8/5), but climbs to close 105% with the hot temperatures. With the hot temperatures we can only achieve about another 200-500cfs from DWR with our exceeding 110%, but this has most minimal effect on LWG tailrace temperature, while likely exceed the 110% range.

Our current course of action is to continue the current spill operations at LWG and continue pushing as much cool water from DWR as possible. An alternative plan is that with TMT member's recommendation we could temporary close (48-72h) the RSW at LWG and redistribute the spill in other bays, so that slightly cooler water could be pulled from further down, until the heat wave pass. Ultimately this would provide a reduction in temperatures at LWG tailwater by 0.5degrees. With the current spill pattern it is expected that the LWG tailwater will reach 69 degrees and remain at this level until cooler temperatures arrive on Friday evening and into the weekend.

I will provide Doug an update model run in the morning, so that it can be posted to the TMT website, so that a better visual (with the current conditions) can be viewed with any discussion that may take place.

We will remain the current operations as is, but wanted to ensure that we had the best information to your team for any alternatives that they might be consider for how TMT would like USACE to proceed.

Thanks for the assistance in relaying the information.

- Jon

Jon Roberts, PE
Hydrology Section
USACE - Walla Walla District
509-527-7518 (o)
509-405-0655 (c)