

## OFFICIAL COORDINATION REQUEST FOR NON-ROUTINE OPERATIONS AND MAINTENANCE

**COORDINATION TITLE-** 16BON47 MFR B-Branch erosion survey

**COORDINATION DATE-** 27 June 2016

**PROJECT-** Bonneville Lock and Dam

**RESPONSE DATE-** 5 July 2016

**Description of the problem** – Two erosion holes have been observed in the previously repaired area of the B-Branch riprap. These holes were not observed during the May spillway inspection. Due to the water movement in the eroded areas, there are concerns that the undercutting may extend further beneath the ladder structure. Please see the photos of the erosion areas below.



The ROV survey on 17 June showed erosion but no undercutting of the fish ladder at this time (details are available in **16BON32 attachment 1**).

A multi-beam sonar survey is needed to gain better understanding of the bathymetry of the area around the erosion and to use as a baseline for monitoring erosion until repairs are completed.

**Type of outage required** – The spillway will need to be on sill (except for Bay 1 which will remain at attraction flow criteria of .5') and fish valves FV4-3 and FV4-4 will be closed to allow the multi-beam survey of the erosion holes and the river bed. Outage for the survey is scheduled between 12:00 and NLT 16:00. Bonneville will attempt to return the spillway and fish valves to service earlier if possible.

**Impact on facility operation** – BON will not be spilling as per the FOP or the FPP. The survey is intended to gain a better understanding of the baseline conditions at the erosion area near the B-Branch Fishladder and to help inform future actions.

**Dates of impacts/repairs** – 7 July 2016. This is when the survey boat is available for the baseline survey.

Another outage is requested for early August, when BON is scheduled to perform their routine mid-season ROV inspection. The spillway outage would be the same. Fish valves would already be closed due to the mid-season ROV inspection. Timing for this would coincide with the Project ROV inspection, currently scheduled for 1-3 August. This is expected to be the last survey during spill season.

**Length of time for repairs** – About 4 hours. The spillway will be tagged out starting at 1200. Outage for the multi-beam inspection is scheduled between 13:00 and NLT 16:00. Bonneville will attempt to return the spillway and fish valves to service earlier if possible.

### **Expected impacts on fish passage** –

Downstream migrants – juveniles and adults moving downstream will not be able to use the spillway. The B2CC and both powerhouses will still operate to FPP criteria. According to Table BON-2 in the 2016 FPP, sub-yearling chinook are the bulk of the juveniles passing during the early part of July, with 90% passing by the 3<sup>rd</sup> week in July, in most years.

	<b>10%</b>	<b>50%</b>	<b>90%</b>	<b># Days</b>
<b>Subyearling Chinook</b>				
<b>2006</b>	16-Jun	29-Jun	15-Jul	30
<b>2007</b>	19-Jun	8-Jul	22-Jul	34
<b>2008</b>	22-Jun	6-Jul	23-Jul	32
<b>2009</b>	20-Jun	30-Jun	19-Jul	30
<b>2010</b>	19-Jun	5-Jul	20-Jul	32
<b>2011</b>	24-Jun	14-Jul	2-Aug	40
<b>2012</b>	23-Jun	9-Jul	26-Jul	34
<b>2013</b>	29-Jun	9-Jul	16-Jul	18
<b>2014</b>	28-Jun	9-Jul	25-Jul	28
<b>2015</b>	16-Jun	4-Jul	14-Jul	29
<b>10-Yr</b>	<b>15-Jun</b>	<b>29-Jun</b>	<b>19-Jul</b>	<b>35</b>
<b>MED</b>				
<b>10-Yr</b>	<b>6-Jun</b>	<b>22-Jun</b>	<b>14-Jul</b>	<b>30</b>
<b>MIN</b>				
<b>10-Yr</b>	<b>21-Jun</b>	<b>9-Jul</b>	<b>15-Aug</b>	<b>70</b>
<b>MAX</b>				

Upstream migrants (including Bull Trout) – There will be no attraction flow from Bay 18 for B-Branch ladder. According to Table BON-4 of the 2016 FPP, this outage should miss the Spring Chinook, steelhead, and coho peaks. It may have a slight impact to sockeye and lamprey, however, A-Branch, Cascades Island, and Washington Shore fishways will remain in FPP criteria. In addition, B-Branch attraction flow will remain in FPP criteria during the morning hours, when most fish enter the fishways. Any fish in the fishway at noon will likely be moving up the ladder and will not be impacted by the fish valves closing.

**Table BON-4.**

<b>Species</b>	<b>Count Period</b>	<b>Earliest Peak</b>	<b>Latest Peak</b>
Spring Chinook	Mar 14 – May 31	Apr 15	May 27
Summer Chinook	Jun 1 – Jul 31	Jun 3	Jul 31
Fall Chinook	Aug 1 – Nov 15	Aug 30	Sep 17
Sockeye	Jun 1 – Aug 15	Jun 20	Jul 13
Steelhead	Apr 1 – Mar 31	Jul 16	Sep 22
Winter Steelhead	Nov 16 – Mar 31	Mar 1	Mar 28
Coho	Jul 15 – Nov 15	Aug 29	Oct 11
Lamprey	Mar 15 – Nov 15	Jun 20	Jul 18

Lamprey – minimal impact to lamprey is expected since all fishways will remain watered up and LPSs should not be impacted by the spillway outage.

**Comments from others -**

**CENWP-EC-HD** - -----Original Message-----

From: Ebner, Laurie L NWP

Sent: Wednesday, June 22, 2016 10:35 AM

To: Chase, Matthew T NWP <Matthew.T.Chase@usace.army.mil>; Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>

Cc: Hanson, Matthew D NWP <Matthew.D.Hanson@usace.army.mil>

Subject: RE: Bonneville BI B-Branch survey MOC

Tammy,

Been doing a lot of thinking about spill operations and what I would suggest happen.

I would really like to see us go to a no change spill pattern for the rest of the season. Based on the blocks I would like to see us go to a flat 95 Kcfs. My concern is making the gate changes forces a re-establishment of the energy dissipation pattern in the tailrace. Each time we change spill this has to happen. This increases the turbulence at the area of concern. Can we start this conversation and who all needs to be involved?

Laurie Ebner  
CENWP-EC-HD  
503-808-4880

**NOAA** - -----Original Message-----

From: Gary Fredricks - NOAA Federal [mailto:gary.fredricks@noaa.gov]

Sent: Tuesday, June 28, 2016 10:49 AM

To: Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>

Cc: Lorz, Tom <lorz@critfc.org>; Trevor Conder - NOAA Federal <Trevor.Conder@noaa.gov>; Hausmann, Ben J NWP <Ben.J.Hausmann@usace.army.mil>

Subject: [EXTERNAL] Re: FPOM - B-Branch erosion survey

The issues for the call should include the two surveys and any spill modifications necessary for the remainder of the season. Concerns with these include closing spill during the peak subyearling outmigration (SMP index is shooting up right now) and potentially reducing ladder passage during near-peak sockeye and steelhead migrations (peak sockeye is now and steelhead is typically mid-August). Questions include: What is driving the need for these surveys? Can we modify spill now to reduce risk and wait for the non-spill period for survey's? Are the surveys critical now for timely repairs later? When would those repairs occur? How does this fit with the other winter maintenance issues at Bonneville Dam (WA Shore ladder)? I'm sure there are more.

**NWP response to NOAA** –

-----Original Message-----

From: Ebner, Laurie L NWP

Sent: Tuesday, June 28, 2016 8:44 PM

To: Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>; Chase, Matthew T NWP <Matthew.T.Chase@usace.army.mil>; Hausmann, Ben J NWP

<Ben.J.Hausmann@usace.army.mil>; Hanson, Matthew D NWP <Matthew.D.Hanson@usace.army.mil>

Subject: RE: FPOM - B-Branch erosion survey - NOAA questions

The only spill modification I am requesting is a shift to a flat pattern.

If undercutting is noted at the ladder I would suggest we look at dropping spill in bay 18 from 3 feet to 18 inches and see if that reduces the energy near the erosion zone that we could continue spill until the end of the spill season.

With regards to repair we need PM to appoint a PM and a team to work on this. One of the first things is a recommended repair schedule that marries/merges with all of the other activities at the project. This is critical but until we have the team pulled together we can only identify it as critical to get done.

Laurie Ebner  
CENWP-EC-HD  
503-808-4880

-----Original Message-----

From: Chase, Matthew T NWP  
Sent: Wednesday, June 29, 2016 7:22 AM  
To: Ebner, Laurie L NWP <Laurie.L.Ebner@usace.army.mil>; Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>; Hausmann, Ben J NWP <Ben.J.Hausmann@usace.army.mil>; Hanson, Matthew D NWP <Matthew.D.Hanson@usace.army.mil>  
Subject: RE: FPOM - B-Branch erosion survey - NOAA questions

Thanks Laurie,

I would also add that yes, the surveys are critical now for timely repairs later. The surveys serve several functions: 1) The surveys will inform us as to the type and extents of repair. 2) The surveys will help to monitor the rate of erosion. 3) The surveys inform us on the structural integrity of the fishladder (is it being undermined or not, and by how much?).

Thanks - Matt

**5 July 2016 FPOM conference call to discuss 16BON47 and 16BON49:** Attendees included: BON Project (Chase, Guajardo, Roth, and Royer), BPA (Bettin), CRITFC (Lorz), NOAA (Fredricks and Meyer), NWD RCC (Baus and Wright), NWP (Ebner and Mackey), ODFW (van Dyke), WDFW (Morrill). There were no representatives from USFWS or IDFG.

Fredricks expressed concerns about impacting the sub-yearlings, especially with the numbers so high right now.

Ebner explained there are growing concerns because the holes appear to be getting larger. She explained that the survey will provide a baseline for monitoring erosion as well as provide information for planning a repair. Lorz wanted to know how the holes were growing and what indicators are being used to monitor erosion.

FPOM asked if the survey could be delayed a few days to allow the sub-yearlings to move through. Guajardo explained T11 will be OOS for annual maintenance beginning the week of 11 July through the end of the month. This outage takes out four units at PH2. It makes it difficult to shut off spill when half of PH2 is also OOS. More discussion occurred around the T11 outage but moving the outage was eventually dropped.

Ebner explained the shot-crete cap is blocking the view of what is happening closer to the ladder. For the August inspection, she really wants eyes on what is going on under the cap. Chase noted that the shot-crete is chunking off and that is how he noticed the erosion is progressing. He also said the Project had painted areas on the shot-crete and riprap but the paint has either washed off or the painted areas have eroded.

**FPOM discussed moving to a constant spill pattern – 95k cfs day/night. Those on the phone reached consensus regarding changing to a 95k spill.** FPOM also discussed potentially modifying patterns to reduce the energy out of Bay 18. Ebner would like Bay 18 at 1.5' She

recommended meeting at BON to adjust spill patterns and observe the changes in flow patterns and energy dissipation. Fredricks agreed and has looked at patterns that reduce the flow through the three southernmost bays since they have the 7' deflectors instead of the 14' deflectors. He also stressed looking at modifying the spill pattern before going to a no-spill option. **FPOM will wait to see the survey results before pursuing further spill volume/pattern changes.**

**FPOM reluctantly agreed with the survey on 7 July.** Fredricks stressed that the consensus was for the July survey only. August will need to be coordinated after the results from July are known. He said there would be impacts to the juveniles but that those impacts will be minimal.

**Final results** – The 7 July survey may go forward as coordinated. A follow up survey in August will be coordinated separately.

-----Original Message-----

From: Roth, Michael J NWP  
Sent: Thursday, July 07, 2016 4:19 PM  
Subject: Bonneville Hydro-Survey

Bern/Jerry, baseline survey complete. Visually, nothing significant to report however, lighting conditions were not ideal due to cloudy conditions. Anticipate preliminary data from hydro survey tomorrow 7/8. Spillway and "B" branch fish-way returned to service at 1615

r/Mike

Michael Roth  
Chief of Maintenance and Repair  
Bonneville Lock and Dam  
Cascade Locks, Oregon  
Office: 541-374-8307  
BB: 541-429-5041

Please email or call with questions or concerns.

Thank you,

Tammy Mackey

NWP Operations Division Fish Section

503-961-5733

[Tammy.m.mackey@usace.army.mil](mailto:Tammy.m.mackey@usace.army.mil)