

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

**COORDINATION TITLE-** 16BON32 MFR B-Branch erosion survey

**COORDINATION DATE-** 15 June 2016

**PROJECT-** Bonneville Lock and Dam

**RESPONSE DATE-** 16 June 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.



**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 ROV access to the erosion holes for one day. Outage for the ROV inspection is scheduled between 08:30 and NLT 13:00. 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 ROV inspection is intended to gain a better understanding of the foundation conditions below the B-Branch Fishladder and to help inform future actions. Failure to inspect may result in BON on having to prematurely close the B-Branch ladder to avoid structural failure. Based on the results of the ROV inspection, follow-on multi-beam hydrosurvey in the near future may be necessary.

**Dates of impacts/repairs** – 17 June 2016

**Length of time for repairs** – About 7 hours. The spillway will be tagged out starting at 0600. Outage for the ROV inspection is scheduled between 08:30 and NLT 13:00. 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.

Upstream migrants (including Bull Trout) – There will be no attraction flow from Bay 18 for B-Branch ladder. Attraction flow from Bay 1 for the Cascades Island ladder will remain if possible. A-Branch and Washington Shore fishways will remain in FPP criteria.

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

**Final results** – The operation went forward as detailed in the MOC and the teletype from RCC.

Please email or call with questions or concerns.

Thank you,

Tammy Mackey

NWP Operations Division Fishery Section

Columbia River Coordination Biologist

503-961-5733

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

**Update (20 June 2016)**– -----Original Message-----

From: Mackey, Tammy M NWP [mailto:Tammy.M.Mackey@usace.army.mil]

Sent: Friday, June 17, 2016 12:01 PM

Subject: Re: FPOM: Official Coordination 16BON32 MFR B-Branch erosion survey

Spill and B-branch returned to normal operation just before noon today. Survey results will be shared early next week.

Happy Father's Day weekend.

Tammy

An ROV inspection was conducted today to investigate the erosion holes in the grouted apron at the Bradford Island B-Branch fishladder revetment. Inspection observations are as follows:

Forebay: 73.8' MSL

Tailwater: 16.0' MSL

Q: 180 kcfs

Entered BRZ: 09:00

Exited BRZ: 11:00

Spillway back in service: ~ 11:45

Observations:

- 1) Two erosion holes in the grouted apron were inspected visually by boat and using ROV equipped with BlueView sonar.
- 2) The upstream erosion hole was most severe with an approximate 30' long opening in the grouted apron. Top of opening was approximately 4' above water surface. Erosion of the riprap was in an approximate a ½-bowl shape, extending approximately 10' upstream and 10' downstream beyond the opening. Erosion has exposed approximately 6' to 8' of the fishladder wall horizontally. The exposed surface is likely the concrete wedge placed below the fishladder floor during the 2011 repair. Erosion slopes downward away from the fishladder towards riprap toe with a maximum vertical depth of approximately 9' below the water surface (approximate El 7'). No indication of undercutting of the fishladder was noted.
- 3) The downstream erosion hole was less severe with an approximate 20' long opening in the grouted apron. Erosion has progressed approximately 5' into the slope, with a vertical depth of 3' to 4'. The fishladder wall was not exposed. No undercutting of the fishladder was noted.
- 4) The upstream and downstream erosion holes did not appear to communicate.

5) Of note, an approximately 18' x 18' depression was noted just beyond the toe of the rip rap toe (north of the toe). Depth of depression was uncertain due the limitations of the ROV in the prevailing water currents.

In summary, we have an erosion issue that requires repair. The good news is that the extent of the erosion gives us time to plan the repair process. However, we anticipate the need to implement some type of monitoring program which will need to be determined. More details will follow.

I have scheduled a teleconference for Monday, 20 June.  
Please let me know if any questions.  
Thanks - Matt

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Matthew Chase, PE  
Bonneville Lock and Dam  
Maintenance Engineering and Contracts Section  
(541) 374-2524  
(503) 312-1195 (Cell)

**Photos from the survey crew.**



**Comments from agencies –**

CRITFC (phone call on 14 June) – Lorz indicated an understanding of the critical nature of this work and asked only that Bay 1 be kept at attraction flow if possible and lead time be given so tribal fishermen can adjust their fishing days if they need to.

**ODFW – Original Message**

From: Erick VanDyke

Sent: Thursday, June 16, 2016 16:35

To: Mackey, Tammy M NWP; Bissell, Brian M NWP; Carlsen, Elisa NWP; Clinton, Patricia L NWP; Cordie, Robert P NWP; Cutts, Matthew E NWP; Derugin, Andrew G NWP; Dykstra, Timothy A NWD; Ebner, Laurie L NWP; Faulkner, Donald L NWD; Feil, Dan H NWD; Fielding, Scott D NWP; Filan, Benjamin J NWP; Gallion, Darren G NWP; Gibbons, Karrie M NWP; Grosvenor, Eric NWP; Hausmann, Ben J NWP; Holm, Leanne NWP; Hutton, Rebecca E NWP; Khan, Fenton O NWP; Langeslay, Mike J NWD; Lear, Gayle HQ @ NWD; Medina, George J NWP; Ocker, Paul A NWD; Peters, Rock D NWD; Rerecich, Jonathan G NWP; Richards, Natalie A NWP; Royer, Ida M NWP; Stricklin, Eric T NWP; Tackley, Sean C NWP; Van der Leeuw, Bjorn NWP; Walker, Ricardo NWP; Wells, Elizabeth R NWP; Zorich, Nathan A NWP; Zyndol, Miroslaw A NWP; Bailey, John C NWW; Baus, Douglas M NWD; BPA Scott Bettin; Bill Hevlin; Charles Morrill (charles.morrill@dfw.wa.gov); david\_swank@fws.gov; Ed Meyer (ed.meyer@noaa.gov); Eppard, Matthew B NWP; Erick VanDyke; Fredricks, Gary; Haeseker, Steve; Jeffrey Brown - NOAA Federal; Kiefer,Russell; Klatte, Bernard A NWP; Lorz, Tom; Moody, Gregory P NWW; Paul Wagner; Richards, Steven P (DFW); Setter, Ann L NWW; Shutters, Marvin K NWW; trevor.conder@noaa.gov; Wertheimer, Robert H NWP; Wright, Lisa NWD

Cc: Aaron Jackson; Alan Brower; 'Brandon Chockley'; Smith, Brian K NWP; Yeadon, Bruce F NWP; Chris Caudill (caudill@uidaho.edu); Petersen,Christine H (BPA) - KEWR-4; Chris\_Peery@fws.gov; Statler, Dave; Smith, David B NWP; Dave Benner; Darren Chase; Ballinger, Dean; Derrek M Faber; Don Warf; Erin Cooper; 'Enrique Patino'; Fryer, Jeff; Kovalchuk, Greg; Webb, Gregory A NWP; Howard Takata; jadoubia@bpa.gov; Dalglish, Jane NWP; Fauth, Jeffrey D NWP; Jen Graham; Carroll, Jerry A NWP; Jerry McCann; Skidmore,John T - KEWR-4; Johnson,Kimberly O (BPA) - PGST-5; Ralph Lampman; Lane, Laurie E NWP; Lgrsmp1@gmail.com; Patrick Luke; Chase, Matthew T NWP; Brian McIlraith; Adams, Michael D NWP; Roth, Michael J NWP; Olaf Langness; Hamelink, Pete NWP; Guajardo, Angel R (Ray) NWP; Roger Clark; Roger Dick Jr.; Martinson, Rick; Bob Rose; rreagan@usgs.gov; Mac Kinnon, Scott R NWP; Shane Scott; Sears, Sheri; Tom Skiles; Donahue,Scott L (BPA) - KEWR-4; Scott Livingston; Tom; Troy Humphrey; Tucker Jones; Thomas VanNice; Whiteaker, John

Subject: [EXTERNAL] RE: FPOM: Official Coordination 16BON31 MFR B-Branch erosion survey

Oregon is disappointed at the disruption of planned spill operations planned for tomorrow morning at Bonneville Dam. Although it is difficult to understand if the erosion condition ultimately required immediate operational changes in the fish passage protection measures, we recognize that understanding the breathe of the erosion problem may help inform the expected coordination planned for next month's FPOM meeting. Given this, we will not elevate our objection at this time to the Corps internally coordinated change in spill operations.

We urge the Corps to resume spill sooner than the 7 hours of disruption described in the MFR if the inspection work is completed sooner than estimated. In addition, we urge the Corps to provide "gas cap spill" at night to compensate for fish passage protections lost during the inspection. We anticipate that any additional changes in spill at Bonneville dam (unexpected or otherwise) be inclusive of all regional management interests before making a change. We hope to receive a report of findings from the ROV survey as soon as it is available. This should help facilitate coordinated actions moving forward.

Erick Van Dyke  
Oregon Department of Fish and Wildlife  
17330 SE Evelyn Street  
Clackamas, Oregon 97015  
Voice: 971-673-6068

Fax: 971-673-6073

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

From: Erick VanDyke [mailto:erick.s.vandyke@state.or.us]  
Sent: Friday, June 17, 2016 12:40 PM  
To: Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>  
Subject: [EXTERNAL] RE: FPOM: Official Coordination 16BON32 MFR B-Branch erosion survey

Thanks for the update Tammy. Appreciate the earlier than expected return to spill and look forward to next week's follow-up. Thanks folk for their efficient efforts and hope your weekend is filled with fun-time too.  
Erick

**WDFW** - -----Original Message-----

From: Morrill, Charles (DFW) [mailto:Charles.Morrill@dfw.wa.gov]  
Sent: Friday, June 17, 2016 3:38 PM  
To: Mackey, Tammy M NWP <Tammy.M.Mackey@usace.army.mil>  
Subject: [EXTERNAL] RE: FPOM: Official Coordination 16BON32 MFR B-Branch erosion survey

Thanks Tammy ... And hopefully no bad news ...  
Have a Gr8 weekend  
Charlie

**RCC Teletype -**

ATTENTION: BONNEVILLE AND BPA  
SUBJECT: CLOSE SPILL BAYS 2-18 FOR ROV INSPECTION JUNE 17

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REFERENCE CBT: BON R 061016 1400 BONNEVILLE FOREBAY OPERATION FOR SUMMER TREATY COMMERCIAL FISHERY

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1. EFFECTIVE FRIDAY, JUNE 17, FROM 0600-1300 HOURS, CLOSE SPILLWAY BAYS 2-18 TO ACCOMMODATE AN ROV SURVEY OF NEWLY DISCOVERED EROSION HOLES AT THE BRADFORD ISLAND B-BRANCH LADDER ENTRANCE.
  2. SPILL THROUGH BAY 1 OPEN 0.5 FT (1 STOP) TO PROVIDE ATTRACTION FLOW TO THE CASCADES ISLAND FISH LADDER.
  3. CLOSE FISH VALVES (FV) 4-3, 4-4 TO REDUCE FLOW THROUGH THE B-BRANCH.
  4. THIS OPERATION MAY START LATER OR END EARLIER UPON REQUEST FROM THE SURVEY CREW (POC: TODD MANNY).
  5. CONTINUE TO OPERATE THE FOREBAY WITHIN A 1.5-FT BAND IN ACCORDANCE WITH REFERENCE CBT BON R 061016 1400 "SUMMER TREATY FISHERY", TO THE EXTENT POSSIBLE. IF NECESSARY TO OPERATE OUTSIDE OF THE 1.5-FT FOREBAY BAND, NOTIFY RCC (CONTACT INFO IN PARAGRAPH 9 BELOW).
  6. CONTINUE TO OPERATE TURBINE UNITS WITHIN OPERATING RANGES DEFINED IN THE 2016 FISH PASSAGE PLAN (FPP), SECTION 5.2.4.1. (PAGE BON-35). SPECIFICALLY, FROM JUNE 16-JULY 31, OPERATE AVAILABLE UNITS IN THE FOLLOWING ORDER OF OPERATING RANGES TO PASS INCREASING FLOW:  
--PH2 UNITS WITHIN THE 1% MID-RANGE (13-15 KCFS)  
--THEN, PH1 UNITS UP TO BOP;  
--THEN, PH2 UNITS UP TO THE 1% UPPER LIMIT.
  7. THE INTENT OF THIS ROV SURVEY IS TO ASSESS THE EXTENT OF NEWLY DISCOVERED EROSION HOLES IN THE RECENTLY REPAIRED RIPRAP NEAR THE B-BRANCH ENTRANCE. DUE TO THE OBSERVED HYDRAULICS IN THE ERODED AREAS, THERE ARE CONCERNS THAT THE EROSION MAY EXTEND BENEATH THE LADDER STRUCTURE.

**RCC email** - -----Original Message-----

From: Wright, Lisa NWD

Sent: Friday, June 17, 2016 11:36 AM  
Subject: BON Revised FOP spill schedule

Good morning,

In light of the erosion issues currently being surveyed at the Bradford Island B-Branch, we received a recommendation from Tom Lorz, CRITFC, to revise the spill treatment schedule to stay at 95 kcfs spill until we have a better understanding of the extent of the erosion and can go to higher spill without making the problem worse. The attached draft teletype has a revised spill treatment schedule to continue spill of 95 kcfs, 24-hours/day, for the next week. The first 2-day block of Day 85 kcfs/Night 121 kcfs would begin on Sunday, 6/26, at 0430.

Once the survey information is available, the schedule may be revised again if necessary.

Thanks!

Lisa

**RCC Teletype** - BON R 061716 1547 CO BON TDA JDA MCN BPA BPC NPD NPC NPP  
ATTENTION: BONNEVILLE DAM AND BPA  
SUBJECT: [REVISED] FOP SPRING AND SUMMER SPILL FOR FISH  
PASSAGE

REPLACE CBT: BON R 040716 1549 FOP SPRING AND SUMMER SPILL FOR FISH PASSAGE  
\*REVISED PARAGRAPH 2 - CHANGED TREATMENTS JUNE 18, JUNE 22 DUE TO EROSION  
ISSUES AT BRADFORD ISLAND B-BRANCH LADDER

1. EFFECTIVE APRIL 10-AUGUST 31, OPERATE PER THE 2016 FISH OPERATIONS PLAN (FOP) TO PROVIDE SPRING AND SUMMER SPILL FOR FISH PASSAGE.
2. THE FOP SPRING AND SUMMER SPILL SCHEDULE AT BONNEVILLE DAM IS DEFINED BELOW (SEE FOP, PAGE 15):

START DATE/TIME	FOP SPILL OPERATION
Apr 10 0:01	100 kcfs SPRING SPILL
Jun 16 4:30	95 kcfs SUMMER SPILL
*Jun 18 4:30	*95 kcfs
Jun 20 4:30	95 kcfs
*Jun 22 4:30	*95 kcfs
Jun 24 4:30	95 kcfs
Jun 26 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2130
Jun 28 4:30	95 kcfs
Jun 30 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2130
Jul 2 4:30	95 kcfs
Jul 4 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 6 4:30	95 kcfs
Jul 8 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 10 4:30	95 kcfs
Jul 12 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 14 4:30	95 kcfs
Jul 16 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 18 4:30	95 kcfs
Jul 20 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 22 4:30	95 kcfs
Jul 24 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 26 4:30	95 kcfs
Jul 28 4:30	Day 85 kcfs/Night 121 kcfs DAY=0430-2200
Jul 30 4:30	95 kcfs

Aug 1	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2145
Aug 3	5:00	95 kcfs	
Aug 5	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2145
Aug 7	5:00	95 kcfs	
Aug 9	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2145
Aug 11	5:00	95 kcfs	
Aug 13	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2145
Aug 15	5:00	95 kcfs	
Aug 17	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2030
Aug 19	5:00	95 kcfs	
Aug 21	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2030
Aug 23	5:00	95 kcfs	
Aug 25	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2030
Aug 27	5:00	95 kcfs	
Aug 29	5:00	Day 85 kcfs/Night 121 kcfs	DAY=0500-2030
Aug 31	24:00	0	END FOP SPILL

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3. DURING DAY/NIGHT SPILL OPERATIONS, TRANSITION TO DAY SPILL AFTER NIGHT SPILL IS OVER. DAY HOURS ARE DEFINED IN THE 2016 FISH PASSAGE PLAN (FPP) TABLE BON-5 (PAGE BON-14).

4. SPILL ACCORDING TO PATTERNS IN FPP TABLE BON-16 AT A RATE THAT IS CLOSEST TO THE FOP TARGET. ACTUAL SPILL MAY RANGE UP TO +/-3 KCFS DUE TO PROJECT OPERATIONAL LIMITATIONS. FOR MOREINFO, SEE THE 2016 FOP (PAGE 15).

5. OPERATE THE POWERHOUSE 2 CORNER COLLECTOR (B2CC) DURING FOP SPRING AND SUMMER SPILL. CLOSE THE B2CC WITHIN 1 HOUR OF THE END OF FOP SPILL ON AUGUST 31. FOR MORE INFO, SEE THE 2016 FPP SECTION 2.3.2.5.t (PAGE BON-20) AND 2016 FOP (PAGE 15).

6. MAINTAIN SPILL AT THE FOP TARGET AS LONG AS IT DOES NOT EXCEED THE TDG CAP IN LEVEL 1 OF THE MOST RECENT "SPILL PRIORITY LIST" CBT. DO NOT SPILL ABOVE EITHER THE FOP TARGET OR THE LEVEL 1 TDG SPILL CAP, EXCEPT AS REQUIRED DURING INVOLUNTARY SPILL IN ACCORDANCE WITH THE "SPILL PRIORITY LIST" CBT.