

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 32 of 2023, which covers the period from 13 to 19 August 2023.

1. ITEMS OUT OF CRITERIA (OOC) (Previously found under Section 4: Fishways):

- **Table 1.** FPP Items Out of Criteria.

Date	Location	FPP Violation	Cause	Response
<b>BON:</b>				
08/16	BON PH2	Unit Priority – U11,12,17,18 F.O.	Unknown Cause of Trip	Investigation
08/17	BON PH2	Unit Priority – U14 F.O.	Water in Turbine Bearing	Repairs Made Same Day
08/17	BON PH2	Unit Priority – U12,16 F.O.	Unknown Cause of Trip	Investigation
<b>PH1:</b>				
08/13 – 19	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
08/13 – 19	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
<b>Bradford Island:</b> Nothing to report				
<b>Cascades Island:</b>				
08/15,19	CI Fishway	FG 6-18 Open, Should be Closed	Mechanically Bound	W.O.
<b>Washington Shore</b>				
08/14,15	WA Shore Fishway	SUE Ent/TW Diff <1'	ROV Inspection/Fish Unit Maintenance	N/A
08/14,15	WA Shore Fishway	SDE Ent/TW Diff <1'	ROV Inspection/Fish Unit Maintenance	N/A
08/14,15	WA Shore Fishway	NUE Ent/TW Diff <1'	ROV Inspection/Fish Unit Maintenance	N/A
08/14,15	WA Shore Fishway	NDE Ent/TW Diff <1'	ROV Inspection/Fish Unit Maintenance	

- PH1 Collection Channel diffuser FG 2-19 was found mechanically bound in the mostly closed position on 02/24/22 by PH1 Mechanics. No repairs can be made until the PH1CC can be dewatered in the next Oregon Fishway Winter Maintenance Period (winter 2023/2024).
- The Cascades Island Fishway diffuser FG 6-11 is mechanically bound in the closed position due to stripped shaft threads. A work order has been created and repairs will be made during the next full dewater of the Cascades Island Fishway.
- Cascades Island Fishway diffuser FG 6-12 is mechanically bound in the open position for unknown reasons. A work order has been created and repairs will be made during the next full dewater of the Cascades Island Fishway.
- Cascades Island Fishway diffuser FG 6-18 was found stuck in the open position with limitorque problems in the fall of 2022. A work order has been created and repairs have been attempted, but full repair requires

complete dewatering of the fishway. These repairs will be made during the next full dewater of the Cascades Island Fishway.

**2. OPERATION SUMMARY:**

- a. Daily average river flows ranged from 141.6 to 152.7 kcfs. Daily average powerhouse forebay elevation ranged from 73.5’ to 75.4’ msl. Daily average project tailwater ranged from 12.4’ to 13.3’ msl. Secchi disk measurements remained at 7.0+’. Daily average water temperature ranged from 71 to 73°F.
- b. Daily average spill ranged from 50.4 to 94.6 kcfs.
  - At 0001 on 15 August, Late Summer Spill was initiated, reducing spill requirements to 50 kcfs per FPP guidance found in Appendix E – Fish Operations Plan.
  - Spillbay 14 was opened from 1420 to 1455 on 15 August to flush trash
- c. **Unit Operation: PH2** remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed.
  - Starting on 13 August, BPA requested a load transfer from the 230 kV system to the 115 kV system due to the potential overload conditions on the 230 kV system. As a result, some PH1 units were used for power generation. This operation was in effect until 15 August.
  - Further load movement requested by BPA occurred on 16 August.

• **Table 2.** Main Unit Outages

Unit	OOS	RTS	Reason	Duration
4	1631 on 29 Mar	---	F.O., Oil Leak Investigation/5-YR Overhaul	---
3	1105 on 12 Jun	---	F.O., Oil Leaks	---
15	0729 on 10 Jul	---	P.O., 4-Year Overhaul	---
13	0804 on 07 Aug	---	P.O., FGE Gatewell Improvement	---
6	0001 on 14 Aug	---	P.O., Annual Overhaul	---
11	1343 on 16 Aug	1417 on 16 Aug	F.O., Tripped OOS – Unknown Cause	34 mins
12	1343 on 16 Aug	1421 on 16 Aug	F.O., Tripped OOS – Unknown Cause	38 mins
17	1343 on 16 Aug	1422 on 16 Aug	F.O., Tripped OOS – Unknown Cause	39 mins
18	1343 on 16 Aug	1417 on 16 Aug	F.O., Tripped OOS – Unknown Cause	34 mins
14	0214 on 17 Aug	1521 on 17 Aug	F.O., Water in Turbine Bearing	13 hours, 14 mins
12	1013 on 17 Aug	1043 on 17 Aug	P.O., Trash Raking	30 mins
11	1046 on 17 Aug	1343 on 17 Aug	P.O., Trash Raking	2 hours, 57 mins
12	1300 on 17 Aug	1339 on 17 Aug	F.O., Tripped OOS – Unknown Cause	39 mins
16	1300 on 17 Aug	1339 on 17 Aug	F.O., Tripped OOS – Unknown Cause	39 mins

- d. **Fish Units:** Second Powerhouse Fish Units provide attraction flow for the Washington Shore (WS) fish ladder.

**Fish Unit Outages:** Fish Units are periodically paced into reserve service (RS) to float trash when debris differentials become excessive and trash raking is not possible.

• **Table 3.** Fish Unit Outages

Unit	OOS/RS	RTS	Reason	Duration
F2	2245 on 12 Aug	0601 on 13 Aug	R.S., Nighttime Lamprey Ops	7 hours, 16 mins
F1	2244 on 13 Aug	0607 on 14 Aug	R.S., Nighttime Lamprey Ops	7 hours, 23 mins
F1	0808 on 14 Aug	1115 on 14 Aug	R.S., PH2CC Fishway ROV Inspection	3 hours, 7 mins
F2	0837 on 14 Aug	1114 on 14 Aug	R.S., PH2CC Fishway ROV Inspection	2 hours, 37 mins
F1	1241 on 14 Aug	1705 on 14 Aug	R.S., CO2 Work	4 hours, 24 mins
F2	2244 on 14 Aug	0559 on 15 Aug	R.S., Nighttime Lamprey Ops	7 hours, 15 mins
F2	0704 on 15 Aug	1138 on 15 Aug	R.S., CO2 Work	4 hours, 34 mins
F2	2245 on 15 Aug	0600 on 16 Aug	R.S., Nighttime Lamprey Ops	7 hours, 15 mins
F1	2129 on 16 Aug	0600 on 17 Aug	R.S., Nighttime Lamprey Ops	8 hours, 31 mins
F2	2135 on 17 Aug	0559 on 18 Aug	R.S., Nighttime Lamprey Ops	8 hours, 24 mins
F1	2129 on 18 Aug	0600 on 19 Aug	R.S., Nighttime Lamprey Ops	8 hours, 31 mins
F2	2129 on 19 Aug	---	R.S., Nighttime Lamprey Ops	---

• **Table 4.** Fish Unit Drawdowns, in Feet.

Date	F1	F2
08/13	0.4'	0.5'
08/14	0.2'	0.9'
08/15	0.2'	0.9'
08/16	3.3'	0.4'
08/17	0.2'	5.0'
08/18	1.5'	0.2'
08/19	0.1'	2.1'

**3. MAINTENANCE ACTIVITIES:**

a. Auxiliary Water System Closures:

- FV 5-3 and 5-4 were closed from 1150 to 1215 on 14 August for an ROV inspection of the Cascades Island Entrance Bay.
- FV 4-3 and 4-4 were closed from 1250 to 1330 on 14 August for an ROV inspection of the B-Branch Entrance Bay.
- FV 1-1 was closed from 1345 to 1600 on 14 August for an ROV inspection of the PH1 Collection Channel.
- FV 3-7 and 3-9 were closed from 1350 to 1602 on 14 August for an ROV inspection of the PH1 Collection Channel.
- FV 3-9 was placed into manual for cleaning from 1335 to 1339 on 17 August.

- b. STS/VBS Inspections: The August STS inspection results can be found in the table below. Screen 19 was discovered to have some damaged mesh. It was determined the repairs can wait until the next time the unit it is associated with is down for maintenance. All other screens looked good.

UNIT	Previous STS HRS	Present readings	STS-A	STS-B	STS-C	HRS RUN	REMARKS
11	71664	72356				692	
12	56481	56614				133	
13	9923	9961				38	OOS
14	25727	25727				0	
15	33040	33040				0	OOS
16	44026	44044				18	
17	13777	13861				84	
18	18419	19103				684	

- c. Dewatering and Fish Salvages: Nothing to report.
- d. ROV Inspection: The annual fishway ROV inspection was conducted on 14 August by the District Dive Team and Project Fisheries. The ROV inspection areas included the PH1 Collection Channel (PH1CC), PH2 Collection Channel (PH2CC), B-Branch Entrance Bay, and Cascades Island Entrance Bay. The purpose of this inspection is to examine the fishway structural integrity, determine if any grating has been dislodged or blown completely, and evaluate overall fishway condition. Two diffuser gratings in the PH2CC were “popped” out of proper alignment with corners elevated and slight gaps around the edges. One popped diffuser grating was discovered between Diffusers C-4 and C-5 and the other between Diffusers C-6 and C-7. Significant sand buildup was noted under the grating between Diffusers C-4 and C-5 as well. The remaining surveyed areas were found with intact grating and fasteners. Sand buildup was typical in areas where diffusers aren’t used regularly. The Cascades Island Entrance Bay access hatch, previously repaired during an emergency dive operation 05 April 2023 (see 23BON015 MFR CI Entrance Impacts for FG6-18 Dive Ops), was found intact and holding well. search

### 3. RESEARCH

- a. Four Peaks Environmental - Fish counting contract: Daytime visual counting (0500 to 2100 PDT) began on 01 April. Night video counting (2100 to 0500 PDT) began on 15 May. Fish counts can be viewed [here](#).
- b. USFWS – Lamprey Metamorphosis Study: Juvenile lamprey researchers are onsite and the work is underway.
- c. Pacific States Marine Fisheries Commission - Smolt Monitoring: Sample collections at the Smolt Monitoring Facility (SMF) began at 0700 on 02 March. Debris at the primary dewatering structure (PDS) and fish/debris separator was light consisting mostly of aquatic macrophytes, a few sticks, and dead adult American shad. No fallbacks were observed this week.  
Higher temperature sampling protocols were initiated on 15 July (sample end-date of 16 July) when daily average river temperatures at Bonneville ascended to 70°F. Modified sampling during higher temperatures means Index/Condition sampling will take place every other day until the average descends to 69.5°F. Sample and bypass mode will occur on alternating 24-hour periods (0700-0700).  
Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite Dams began at Bonneville on 02 August and occur every other day.  
Gas Bubble Trauma (GBT) examinations were terminated for the season this week due to current high river temperatures, low TDG levels and inability to meet the 50 fish minimum sample size criteria. The final GBT collection effort occurred on 01 August. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for further details.  
Non-salmonid GBT Monitoring has concluded in conjunction with the end of salmonid GBT monitoring. Please follow this link [https://www.fpc.org/currentdaily/Summer\\_NS\\_gbtsumbybatchdate\\_realtime.pdf](https://www.fpc.org/currentdaily/Summer_NS_gbtsumbybatchdate_realtime.pdf) to the FPC web page for specific details.  
No fin clips were obtained from Pacific Lamprey macrophthalmia or ammocoetes for Columbia River Inter-Tribal Fish Commission’s genetic studies as no juvenile lamprey were sampled this week.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped hazing resumed on 15 August.
- e. USGS TDG Monitoring: USGS placed TDG monitoring equipment back in service on Cascades Island above and below the Main Dam on 04 April. Water-quality data collection will continue through the end of spill season.
- f. CRITFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 19 April and typically occurs 5 days per week. Warm water sampling protocols are being followed at this time due to elevated water temperatures.
- g. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 05 June.
- h. WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville

Dam started 02 August.

- i. State Agency Pinniped Trapping: State agencies are back on site to prepare for the upcoming pinniped trapping season, slated to begin in September.

#### 4. FISHWAYS:

- a. Project Biologists inspected 13 to 19 August.

- b. Adult Fishways:

- (1) The AFF remains in service.
- (2) Sensor calibration checks occurred on 14 August.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service.

- c. Juvenile Fishways:

- (1) The ITS remains in service.
  - Auto-chain gates 3B, 6C, & 10B remain operational.
  - Mechanical-chain gate 1A was opened on 10 January 2023 to increase downstream surface passage and reduce trash raking workloads on the FV 1-1 trash racks. For safety measures, an additional (7<sup>th</sup>) trash rack was installed in the 1A gate slot, extending the height of stacked trash racks to approx. +80' el. Without the 7<sup>th</sup> trash rack, the existing 6 trash racks extend from the river floor (approx. -2' el) to +68' el. This additional trash rack provides a safety barrier to block accidental sluiceway entry of a person, vessel, or other undesirable object floating uncontrollably downstream.
- (2) The hydro-cannon remains in service.
- (3) The B2CC remains in service.
- (4) The DSM remains in service.
- (5) STSs remain in service.

- d. Lamprey Fishways:

- (1) BI, CI, and WA Shore LPS's remain in service.
- (2) The Bradford Island Wetted Wall (BIWW) is in service.
- (3) The PH2 Lamprey Flume Structure (LFS) remains out of service.
- (4) The AFF Lamprey Trap remains in service. The Cascades Island Lamprey Trap was taken out of service for the season on 22 August due to low catch numbers.

(5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

**Table 5.** Avian Counts for 13 – 19 August.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
08/13	107	127	0	0	0
08/14	51	65	0	0	0
08/15	57	10	0	0	0
08/16	81	42	0	0	0
08/17	69	34	0	0	0
08/18	74	48	0	0	0
08/19	48	17	0	0	0

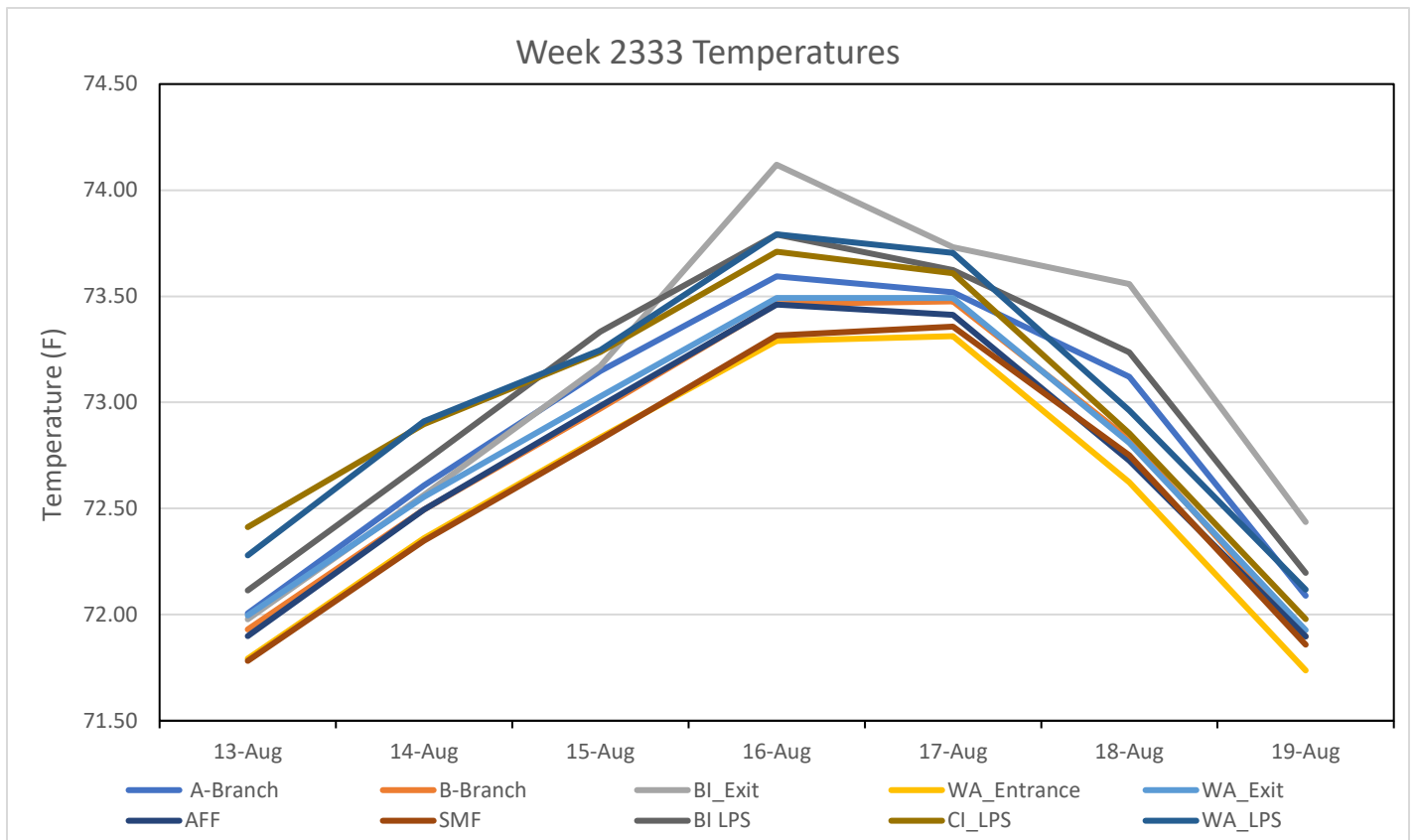
**5. WATER QUALITY MONITORING:**

a. Fishway Temperatures: Fishway temperature monitoring is currently underway.

**Table 6.** Daily Average Fishway Temperatures for 13 to 19 August at Bonneville Lock & Dam.

Date	A-Branch	B-Branch	BI_Exit	WA_Entrance	WA_Exit	CI_Entrance	AFF	SMF	BI LPS	CI_LPS	WA_LPS
13-Aug	72.01	71.93	71.98	71.79	72.00	---	71.90	71.78	72.11	72.41	72.28
14-Aug	72.61	72.50	72.56	72.36	72.55	---	72.50	72.35	72.72	72.90	72.91
15-Aug	73.15	72.97	73.17	72.83	73.03	---	72.98	72.83	73.33	73.24	73.25
16-Aug	73.59	73.46	74.12	73.29	73.49	---	73.46	73.32	73.79	73.71	73.79
17-Aug	73.52	73.48	73.73	73.31	73.49	---	73.41	73.36	73.62	73.61	73.70
18-Aug	73.12	72.83	73.56	72.62	72.81	---	72.73	72.75	73.24	72.85	72.96
19-Aug	72.09	71.90	72.44	71.74	71.93	---	71.90	71.86	72.20	71.98	72.12

\*The Cascades Island Entrance probe is currently unserviceable.



**Figure 1.** Average Fishway Temperatures for 13 to 19 August at Bonneville Lock & Dam.

b. Zebra Mussel Monitoring: No signs of colonization were observed this reporting week.

**7. CONSTRUCTION:**

- Preparation for FGE modification work on U13 Gatewells is underway.

**8. HAZMAT, SPILLS AND CLEANUP:** Nothing to report.

**9. TELETYPES CURRENTLY IN EFFECT:**

- A teletype was distributed on 15 June updates Summer Spill Caps. Effective 0001 hours on June 16, operate Bonneville Dam in accordance with table listed in teletype BON R 061523 0839. Per the FOP (Level 1) spill to 140kcfs, levels beyond that cap spill at 150kcfs.
- A teletype was distributed on 12 June regarding FOP Summer Spill for fish passage. Effective 16 June through 31 August, operate Bonneville Dam in accordance with the 2023 Fish Operations Plan (FOP) to provide summer spill for fish passage, as described below.
  - Pursuant to FOP Table 4, the 2023 Summer Spill operation at Bonneville Dam is as follows:
    - 16 June, 0001 HRS – 14 August, 2359 HRS: Spill 95 kcfs, 24 HRS/DAY
    - 15 August, 0001 HRS – 31 August, 2359 HRS: Spill 50 kcfs, 24 HRS/DAY
  - Distribute spill according to spill patterns in the 2023 Fish Passage Plan (FPP) Table BON-16. Follow the spill pattern that is closest to the intended spill rate. Actual spill may vary up to +/- 3 kcfs from the target due to Project operational limitations described in the FOP sections 3 and 8.8.3.
  - Continue to operate the Powerhouse 2 Corner Collector (B2CC) throughout Summer Spill, then close the B2CC within one hour of the end of spill on 31 August. B2CC operating criteria are defined in FPP Section 2.3.2.5.v (Page BON-20).

- Maintain spill at the FOP target as long as it does not exceed the spill cap in Level 1 of the most recent spill priority list teletype. Do not spill above the Level 1 spill cap except as required during forced spill, pursuant to the spill priority list teletype.
- If river flow is too low to maintain FOP spill and minimum generation requirements in FOP Table 1, operate at minimum generation and spill the remainder of outflow. This operation supports power system reliability during low flows.
  - During periods of low flow, it may be necessary to operate outside of the minimum generation range defined in FOP Table 1 in order to maintain reserves for transmission reliability, as defined blow.
- If notified that BPA has declared a “Transmission System Reliability Need” or “Transmission System Emergency”, adjust operations as instructed by BPA Hydro Scheduling or Transmission Dispatch (per FOP Section 4.4).
  - If the adjustment results in a deviation from the FOP target spill level, or results in operating outside of the minimum generation requirements in the FOP Table 1, describe details of the even in the Project Operator Logbook and provide to RCC upon request for reporting requirements.

Please see teletype BON R 061223 1145 for details.

- A teletype was distributed on 02 August describing a Bonneville Spillway outage for hydrosurvey operations. On Wednesday, 06 September, from 0800 to 1500 HRS, the entire Bonneville Spillway will be tagged out and not available for spill. The purpose of this operation is for a hydrographic survey in the Bonneville Spillway stilling basin. Surveyors will be in the spillway basin during the date and times listed above. Please see teletype BON R 080223 1200 for further details.
- A teletype was distributed on 17 August describing a Bonneville Forebay operation for the fall treaty fishery. Bonneville Pool is to operate within a 1.5 foot band, hard constraint, for the periods listed below:  
 From 0600 Monday, 21 August to 1800 on Thursday, 24 August 2023  
 From 0600 Monday, 28 August to 1800 on Thursday, 31 August 2023  
 The goal of this operation is to limit pool fluctuation to avoid debris in the fishing nets, reduce rapid water level drops that may entangle nets, minimize boat access problems, and avoid nets being torn from their anchors.  
 Please see teletype BON R 081723 0905 for further details.

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