

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for **Week 34** of 2022, which covers the period from **14 to 20 August 2022**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 157.4 to 193.2 kcfs. Daily average powerhouse forebay elevation ranged from 74.2' to 74.5' msl. Daily average project tailwater ranged from 14.0' to 15.9' msl. Secchi disk measurements ranged from 4.0' to 7.0+'. Daily average water temperature ranged from 70 to 71°F.
- b. Daily average spill ranged from 49.7 to 95.3 kcfs.
- c. Unit Operation: **PH2** remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed.

• **Table 1. Main Unit Outages**

Unit	OOS	RTS	Reason	Duration
13	1628 on 18 Feb	---	F.O., Generator Ground and BPA Work – Grounded Clearance	---
7	0857 on 11 July	---	P.O., 5-Year Overhaul	---
8	0002 on 25 July	---	P.O., Annual Overhaul	---
9	0000 on 15 Aug	---	P.O., Annual Overhaul	---

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

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

• **Table 2. Fish Unit Outages.**

Unit	OOS/RS	RTS	Reason	Duration
F2	2245 on 13 Aug	0602 on 14 Aug	R.S., Nighttime Lamprey Ops	7 hours, 17 mins
F1	2244 on 14 Aug	0601 on 15 Aug	R.S., Nighttime Lamprey Ops	7 hours, 17 mins
F2	1807 on 15 Aug	2008 on 15 Aug	R.S., Float Trash	2 hours, 1 min
F2	2244 on 15 Aug	0603 on 16 Aug	R.S., Nighttime Lamprey Ops	7 hours, 19 mins
F1	1233 on 16 Aug	1626 on 16 Aug	R.S., ROV Inspection/Slip Ring and Brush Replace	3 hours, 53 mins
F2	1233 on 16 Aug	1625 on 16 Aug	R.S., ROV Inspection/Slip Ring and Brush Replace	3 hours, 52 mins
F1	2130 on 16 Aug	0558 on 17 Aug	R.S., Nighttime Lamprey Ops	8 hours, 28 mins
F2	2131 on 17 Aug	0601 on 18 Aug	R.S., Nighttime Lamprey Ops	8 hours, 30 mins
F1	2129 on 18 Aug	0557 on 19 Aug	R.S., Nighttime Lamprey Ops	8 hours, 28 mins
F2	2129 on 19 Aug	0559 on 20 Aug	R.S., Nighttime Lamprey Ops	8 hours, 30 mins
F1	2131 on 20 Aug	---	R.S., Nighttime Lamprey Ops	---

- **Table 3. Fish Unit Drawdowns, in Feet.**

Date	F1	F2
08/14	1.2'	0.4'
08/15	0.3'	3.0'
08/16	0.1'	0.1'
08/17	0.4'	1.0'
08/18	1.0'	0.1'
08/19	0.2'	1.0'
08/20	0.8'	0.4'

2. MAINTENANCE ACTIVITIES:

a. Auxiliary Water System Closures:

- FV 1-1, 3-7 and 3-9 were all placed in manual and pinched down for a few hours in the morning of 16 August to help facilitate the annual ROV inspection of the PH1CC and lower section of the A-Branch Fish Ladder.
- FV 4-3 and 4-4 were placed in manual and pinched down for about an hour on the morning of 16 August to help facilitate the annual ROV inspection of the B-Branch Entrance Bay.
- FV 5-3 and 5-4 were placed in manual and pinched down for about an hour on the morning of 16 August to help facilitate the annual ROV inspection of the Cascades Island Entrance Bay.

b. STS/VBS Inspections:

UNIT	Previous STS HRS	Present readings	STS-A	STS-B	STS-C	HRS RUN	REMARKS
11	66590	66878				288	
12	51275	51440				165	
13	7950	*****				0	OOS
14	20971	21215				244	
15	28686	29436				750	
16	41100	41786				686	
17	9518	10331				813	
18	12667	13510				843	

c. Dewatering and Fish Salvages: Nothing to report.

d. Fishway ROV Inspection:

PH1CC:

The Powerhouse 1 Collection Channel (PH1CC) was inspected from south to north. There were no unusual findings within the channel except for slightly excessive sediment buildup by FG 2-15.

A-Branch:

The ROV inspection entered the lower section of the A-Branch Fishway Ladder to check for possible damage caused by high flows and malfunctioning AWS controls earlier this fish passage season. There were missing and misplaced bolts around FG 3-3. There was also substantial concrete spalling and sediment buildup found around FG 3-4.

B-Branch Entrance Bay:

The ROV inspection revealed that FG 3-29 is missing some bolts and has some broken bolts around the gate itself. All other sections of the B-Branch Entrance Bay looked good.

Cascades Island Entrance Bay:

Nothing to report.

PH2CC:

The Powerhouse 2 Collection Channel (PH2CC) was inspected from south to north. Significant sediment buildup was discovered throughout much of the channel. The PH2CC will be unwatered this winter 2022-2023 winter maintenance season. A suck truck has been recommended as a tool to remove the large amounts of sediment.

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 28 July (sample end-date of 29 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 daily average descends to 69.5°F. Sample and bypass mode occurs on alternating 24-hour periods (0700-0700).
Gas Bubble Trauma (GBT) examinations were terminated for the season this week due to current high river temperatures, low TDG levels, and the inability to meet the 50 fish minimum size criteria. The final GBT collection effort occurred on 06 August. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for more details.
Non-salmonid GBT Monitoring was suspended after the 27 July sample due to river temperatures at Bonneville reaching 68°, as per guidance from Oregon DEQ. Please follow this link: https://www.fpc.org/currentdaily/Summer_NS_gbtsumbybatchdate_realtime.pdf to the FPC web page for specific details for results through 27 July.
For research purposes, a single fin clip was obtained from a Pacific Lamprey macrophthalmia specimen for Columbia River Inter-Tribal Fish Commission's (CRITFC) genetic studies this week.
Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite dams began at Bonneville on 03 August and occur every other day.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped hazing started 14 March and concluded for the Spring season on 31 May. Fall pinniped hazing started on 15 August. Avian hazing started 01 April and ended 31 July.
- e. USGS TDG Monitoring: USGS placed TDG monitoring equipment back in service on Cascades Island above and below the Main Dam on 31 March. 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 21 April and typically occurs 5 days per week. High water temperature sampling protocols started on 28 July.
- g. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 08 June and will occur daily through 30 September.
- h. ODFW – Adult Steelhead Sampling: Steelhead sampling in the AFF began on 05 July and occurs in conjunction with CRITFC Adult Salmonid Sampling. High water temperature sampling protocols started on 28 July.

- i. WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville Dam started 01 August.

4. FISHWAYS:

- a. Project biologists inspected from 14 – 20 August.
- b. Fish Passage Plan observations:

• **Table 4. FPP Items Out of Criteria.**

Date	Location	FPP Violation	Cause	Response
08/15 – 20	BON	Unit Priority	U13 Forced Outage	W.O.
PH1				
08/14 – 20	PH1 ITS	S. End Gate Inoperable and Chain Gates 1a & 1b Closed	S. End Gate Inoperable, 1a and 1b Closed for Safety Reasons	W.O.
08/14 – 20	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
08/14	PH1CC	South Ent/TW Diff <1.0'	FV 1-1 Not Operating Correctly	W.O.
Bradford Island				
08/19	A-Branch	A-Branch Staff Gauge High >1.1'	Unknown	N/A
Cascades Island				
08/16, 20	CI Fishway	FG 6-11 Mechanically Bound in the Closed Position, Should Be Open	Mechanically Bound	W.O.
08/14 – 20	Cascades Island Tailrace	1 B2CC Avian Array Line is Broken	High Tailwater Elevations	N/A
Washington Shore				
08/14 – 20	PH2CC	A2 Diffuser Stuck Mid-Travel	Unknown	W.O.
08/16 – 17	PH2CC	NUE Ent/TW Diff <1.0'	Unknown	Ops Notified and Modifications Made
08/16	PH2CC	NDE Ent/TW Diff <1.0'	Unknown	Ops Notified and Modifications Made
08/16, 18	PH2CC	SUE Ent/TW Diff <1.0'	Unknown	Ops Notified and Modifications Made
08/16-19	PH2CC	SDE Ent/TW Diff <1.0'	Unknown	Ops Notified and Modifications Made

- 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 Washington Shore/Cascades Island Fishway Winter Maintenance Period (winter 2022/2023).

c. Adult Fishways:

- (1) The AFF remains in service.
- (2) Sensor calibrations were conducted on 17 August.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service.

d. Juvenile Fishways:

- (1) The ITS remains in service (auto-chain gates 3B, 6C, & 10B only).
- (2) The hydro-cannon remains in service.
- (3) The B2CC remains in service.
- (4) The DSM remains in service.
- (5) STSs remain in service.

e. Lamprey Fishways:

- (1) BI, CI, and WA Shore LPS's remain in service.
- (2) The Bradford Island Wetted Wall (BIWW) remains out of service.
- (3) The PH2 Lamprey Flume Structure (LFS) remains out of service for the year.
- (4) The AFF lamprey trap and CI lamprey trap both remain in service.
- (5) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. *Avian Counts 14 – 20 August.*

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
08/14	59	24	0	0	0
08/15	27	23	0	0	0
08/16	41	3	0	0	0
08/17	12	2	0	0	0
08/18	13	8	0	0	0
08/19	12	4	0	0	0
08/20	1	4	0	0	0

5. WATER QUALITY MONITORING:

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

Table 6. Fishway Temperatures for 14 to 20 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	LFS
14-Aug	70.99	71.02	71.14	70.87	70.97		70.91	70.91	71.24	71.13	71.24	OOS
15-Aug	71.20	71.25	71.39	71.09	71.21		71.07	71.10	71.50	71.41	71.48	OOS
16-Aug	71.36	71.39	71.45	71.21	71.35		71.16	71.24	71.57	71.53	71.63	OOS
17-Aug	71.61	71.67	71.69	71.50	71.64		71.58	71.51	71.82	71.91	71.95	OOS
18-Aug	71.79	71.87	71.86	71.70	71.83		71.77	71.73	71.95	72.00	72.07	OOS
19-Aug	71.87	71.93	71.96	71.76	71.89		71.82	71.76	72.06	72.08	72.15	OOS
20-Aug	72.06	72.12	72.14	71.96	72.09		72.02	71.98	72.23	72.23	72.33	OOS

** The Cascade Island Entrance probe is currently unserviceable.

** The LFS was taken out of service on 16 June.

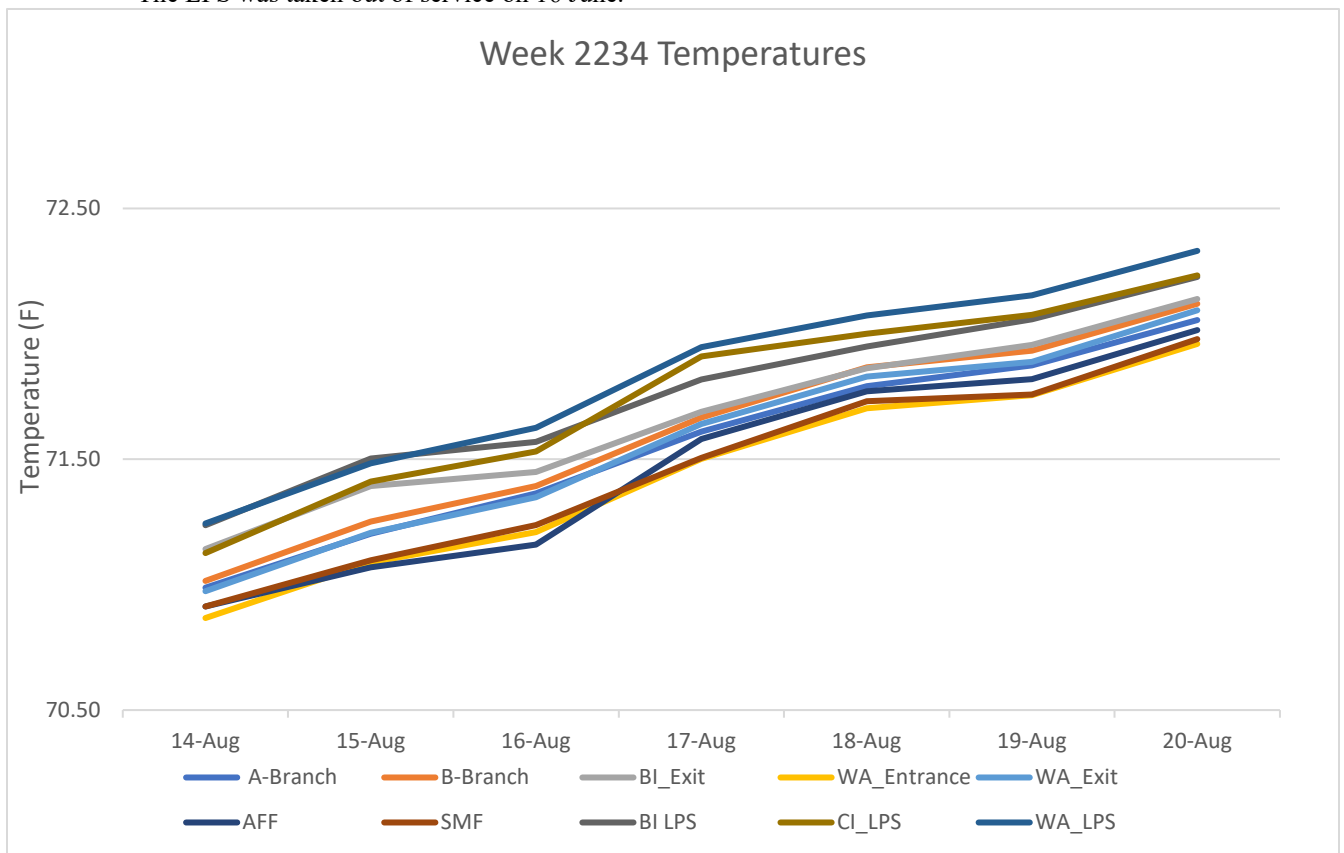


Figure 1. Average fishway temperatures for 14 to 20 August at Bonneville Lock & Dam.

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

6. CONSTRUCTION: Nothing to report.

7. HAZMAT, SPILLS AND CLEANUP: Nothing to report.

8. TELETYPES CURRENTLY IN EFFECT:

- A teletype was sent on 13 June detailing Summer Spill Operations for fish passage at Bonneville Lock & Dam. Effective Thursday 16 June at 0001 HRS, through Wednesday August 31 at 2359 HRS, operate Bonneville Dam in accordance with the 2022 Fish Operations Plan (FOP) to provide Summer Spill for fish passage as described below:
 - Pursuant to FOP Table 4, the 2022 Summer Spill Operation at Bonneville Dam is as follows:
 - June 16 at 0001 HRS to August 14 at 2359 HRS: Target Spill = 95 kcfs
 - August 15 at 0001 HRS to August 31 at 2359 HRS: Target Spill = 50 kcfs
 - Distribute spill according to spill patterns in the 2022 Fish Passage Plan (FPP) Table BON-16. Follow the pattern spill rate that is closest to the target. Actual spill may range +/-3 kcfs from the target from the target due to Project operational limitations.
 - Continue to operate the Powerhouse 2 Corner Collector (B2CC) throughout Summer Spill, then close B2CC within one hour of the end of spill on 31 August. B2CC operating criteria are found in the FPP Section 2.3.2.5.v.
 - 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 involuntary 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.
 - During periods of low flow, it may be necessary to operate outside the minimum operation range defined in FOP Table 1 in order to maintain reserves for transmission reliability, as defined below.
 - 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).
Please see Teletype BON R 061322 0955 for more details.
- A teletype was sent out on 18 August outlining the Bonneville Spillway outage for a hydrosurvey operation. On Friday, 02 September from 0700-1500 HRS, the entire Bonneville Spillway will be tagged out and not available for spill. The hydrographic survey will be occurring in the BON spillway stilling basin. Fish attraction flow from Spillbays 1 and 18 will be coordinated between operations personnel and Bonneville Control Room during the hydrosurvey as follows:
 - Maintain spillbays 1 and 18 open one stop (approx. 1.1 kcfs per bay) during daytime hours, per the 2022 FPP Section 2.2.4.4., except when requested by surveyors to close one of the two bays.
 - When requested by surveyors, close only on bay at a time. One of the two bays must remain open during the hydrosurvey.
 - In order to complete the hydrosurvey, surveyors will request the Control Room to implement one of the following operations:
 - Close Bay 1 and maintain Bay 18 open
 - Close Bay 18 and maintain Bay 1 open
Please see teletype BON R 081822 1330 for further details.
- A teletype was sent out on 19 August regarding Bonneville Forebay operation for fall treaty fishery. This teletype requests that Bonneville Pool operate within a 1.5 foot band hard constraint, for the periods listed below:
 - From 0600 Monday, 22 August to 1800 Thursday, 25 August 2022
 - From 0600 Monday, 29 August to 1800 Friday, 02 September 2022
 - From 0600 Monday, 05 September to 1800 Saturday, 10 September 2022
The goal of this operation is to limit pool fluctuation to avoid debris in fishing nets, reduce rapid water level drops that entangle nets, minimize boat access problems, and avoid being torn from their anchors. Please see teletype BON R 081922 1137 for more details.

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