

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for **Week 24** of 2022, which covers the period from **05 to 11 June 2022**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 374.8 to 441.8 kcfs. Daily average powerhouse forebay elevation ranged from 72.3' to 74.1' msl. Daily average project tailwater ranged from 25.9' to 29.4' msl. Secchi disk measurements ranged from 3.0' to 4.0'. Daily average water temperature ranged from 56 to 58°F.
- b. Daily average spill ranged from 155.3 to 235.1 kcfs.
- At 1955 on 05 June, BPA requested BON to increase spill to 180 kcfs to assist in high flow conditions
 - At 0038 on 06 June, BPA requested BON to increase spill to 200 kcfs to assist in high flow conditions
 - At 1300 on 06 June, BPA requested BON to decrease spill to 190 kcfs
 - At 2155 on 06 June, BPA requested BON to decrease spill to 171 kcfs
 - At 2300 on 06 June, BPA requested BON to decrease spill to 150 kcfs
 - At 0100 on 07 June, BPA requested BON to increase spill to 185 kcfs to assist in high flow conditions
 - At 0300 on 07 June, BPA requested BON to increase spill to 200 kcfs to assist in high flow conditions
 - At 0500 on 07 June, BPA requested BON to decrease spill to 180 kcfs
 - At 1115 on 07 June, BPA requested BON to decrease spill to 160 kcfs
 - At 1455 on 07 June, BPA requested BON to increase spill to 180 kcfs to assist in high flow conditions
 - At 0540 on 08 June, BPA requested BON to increase spill to 200 kcfs to assist in high flow conditions
 - At 0901 on 08 June, BPA requested BON to increase spill to 210 kcfs to assist in high flow conditions
 - At 1200 on 08 June, BPA requested BON to decrease spill to 200 kcfs
 - At 1000 on 09 June, BPA requested BON to increase spill to 225 kcfs to assist in high flow conditions
 - At 1710 on 09 June, BPA requested BON to decrease spill to 220 kcfs
 - At 1523 on 10 June, BPA requested BON to increase spill to 230 kcfs to assist in high flow conditions
 - At 0940 on 11 June, BPA requested BON to increase spill to 240 kcfs to assist in high flow conditions
 - These operations followed FPP Guidelines found in BON Section 4.2.2.2.b and Table BON-14.
- c. **Unit Operation: PH2** remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed.
- BON PH2 Units increased their operation above the mid-range to the 1% upper limit per BPA request for high flow conditions from:
 - (a) ~0700 on 05 June to 1955 on 05 June (~13 HRS)
 - This operation followed FPP Guidelines found in BON Section 4.2.2.2.b and Table BON-14.

- **Table 1. Main Unit Outages**

Unit	OOS	RTS	Reason	Duration
13	1628 on 18 Feb	---	F.O., Generator Ground	---
17	0719 on 18 Apr	---	P.O., 4-Year Overhaul	---
2	0000 on 06 June	1702 on 09 June	P.O., Annual Overhaul	3 days, 17 hours, 2 mins
12	0901 on 08 June	1035 on 09 June	P.O., Trash Raking	1 hour, 24 mins
11	1041 on 08 June	1143 on 09 June	P.O., Trash Raking	1 hour, 2 mins
11	(RS) 2104 on 10 June	2110 on 10 June	R.S., Float Trash	(RS) 6 mins

14	(RS) 2116 on 10 June	2122 on 10 June	R.S., Float Trash	(RS) 6 mins
18	(RS) 2128 on 10 June	2138 on 10 June	R.S., Float Trash	(RS) 10 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 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
F1	2252 on 04 June	0532 on 05 June	R.S., Nighttime Lamprey Ops	6 hours, 40 mins
F2	2230 on 05 June	0533 on 06 June	R.S., Nighttime Lamprey Ops	7 hours, 3 mins
F1	2231 on 06 June	0528 on 07 June	R.S., Nighttime Lamprey Ops	6 hours, 57 mins
F2	2230 on 07 June	0530 on 08 June	R.S., Nighttime Lamprey Ops	7 hours
F1	2232 on 08 June	0535 on 09 June	R.S., Nighttime Lamprey Ops	7 hours, 3 mins
F2	1814 on 09 June	2038 on 09 June	R.S., Float Trash	2 hours, 24 mins
F2	2230 on 09 June	0532 on 10 June	R.S., Nighttime Lamprey Ops	7 hours, 2 mins
F1	1759 on 10 June	1958 on 10 June	R.S., Float Trash	1 hour, 59 mins
F1	2232 on 10 June	0533 on 11 June	R.S., Nighttime Lamprey Ops	7 hours, 1 min
F2	2150 on 11 June	---	R.S., Float Trash and Nighttime Lamprey Ops	---

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

Date	F1	F2
06/05	0.2'	2.0'
06/06	0.9'	0.4'
06/07	0.4'	4.0'
06/08	2.7'	0.4'
06/09	0.9'	0.4'
06/10	3.0'	1.2'
06/11	0.5'	8.5'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures:
- FV 6-9 was closed for cleaning from 0850 to 0905 on 06 June.
 - FV 3-9 was closed for cleaning from 1300 to 1305 on 06 June.
 - FV 6-9 was closed for cleaning from 0822 to 0828 on 07 June.
 - FV 3-7 was closed for cleaning from 0816 to 0851 on 08 June.
 - FV 3-9 was closed for cleaning from 1255 to 1310 on 09 June.
 - FV 1-1 was closed for cleaning from 1453 to 1529 on 09 June.
 - FV 6-9 was closed for cleaning from 1453 to 1503 on 09 June.
- b. STS/VBS Inspections: Nothing to report.
- c. Dewatering and Fish Salvages: Nothing to report.

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 to moderate consisting mostly of sticks. Seven steelhead and one salmon fallbacks were observed this week.
Gas Bubble Trauma (GBT) examinations began on 12 April and are typically performed two days per week through the end of spill. Results of this week’s GBT examinations: 200 yearling Chinook and steelhead examined: three fish (1.5%) were observed with GBT symptoms. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for more details.
For research purposes, a total of 59 fin clips were obtained from Pacific lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission’s (CRITFC) genetic studies this week.
- d. USDA – Pinniped and Avian Hazing: Deck-based pinniped hazing started 14 March and concluded for the Spring season on 31 May. Avian hazing started 01 April.
- 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.
- g. CRITFC – Lamprey Translocation: Adult lamprey collection and translocation began on 08 June and will occur daily through 30 September.

4. FISHWAYS:

- a. Project biologists inspected from 05 – 11 June.
- b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
06/05 – 06/11	BON	Unit Priority	U13 F.O., Generator Ground	Repairs in Process
PH1				
06/05 – 06/11	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.
06/05 – 06/11	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
06/05-06	PH1CC	North Entrance/TW Diff <1.0'	WG 1 & 65 Not Operating Correctly	W.O.
06/05-06	PH1CC	South Entrance/TW Diff <1.0'	WG 1 & 65 Not Operating Correctly	W.O.
06/05-06	PH1CC	WG 65 Not Responding to TW	Electrical and Mechanical Issues	W.O.
Bradford Island				

06/08	A-Branch	Weir Staff Gauge Unreadable	Vegetation	W.O.
Cascades Island				
06/05 – 06/11	CI Fishway	FG 6-11 Mechanically Bound in the Closed Position, Should Be Open	Mechanically Bound	W.O.
Washington Shore				
06/05 – 06/11	PH2CC	A2 Diffuser Stuck Mid- Travel	Unknown	W.O.
06/05	WA Shore Fishway	Weir 38 Low, <1.2'	Unknown	Adjusted Valve 2 in AFF

- 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 08 June.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service and have been placed into “Shad Mode” due to current fish passage numbers.

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 in service. The butterfly valve opening was reduced from 60% to 20% open to reduce water flow that was spraying out of flume. See MFR 22BON016 for more details.
- (4) The AFF lamprey trap was placed into service on 07 June.
- (5) The CI lamprey trap was placed into service on 07 June.

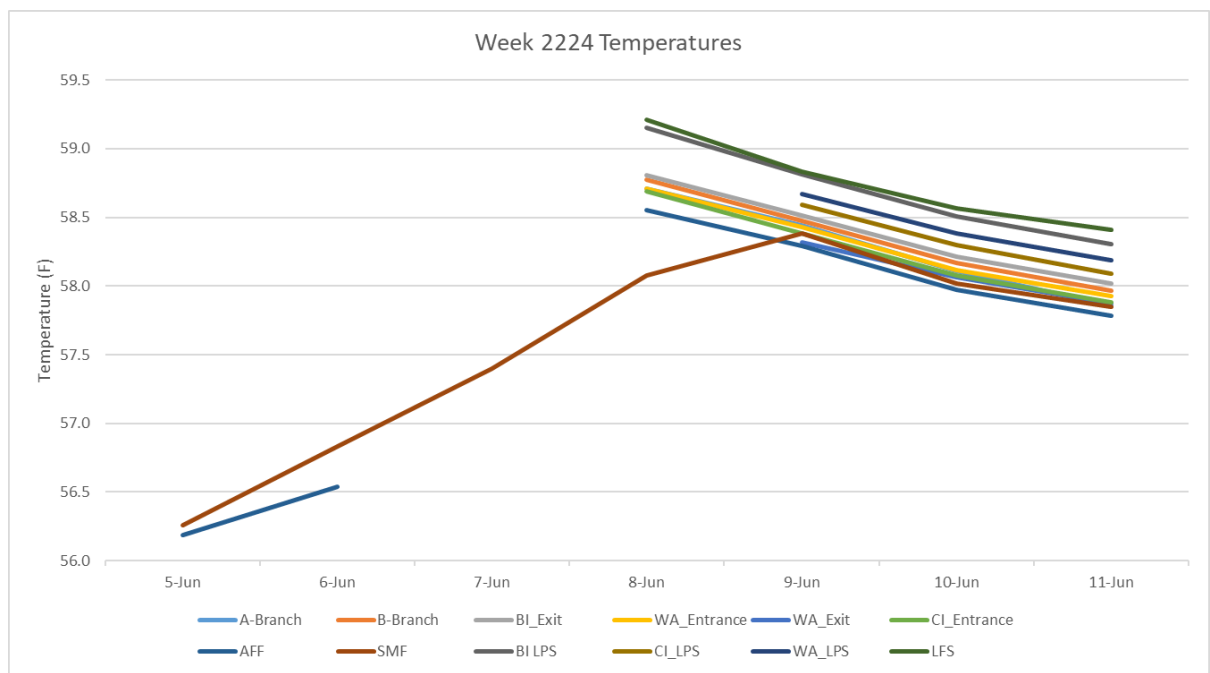
(6) Avian Monitoring: Avian counts are recorded 01 April – 31 October.

Table 5. Avian Counts 05 – 11 June.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
06/05	13	3	0	0	0
06/06	13	3	0	0	0
06/07	10	6	0	0	0
06/08	6	1	0	0	0
06/09	7	6	0	0	0
06/10	2	7	0	0	0
06/11	7	3	0	0	0

5. WATER QUALITY MONITORING:

a. Fishway Temperatures: Fishway temperature monitoring is currently underway. This reporting week has missing temperature data between 05-09 June for several locations due to programming malfunction.



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 out 07 April regarding Bonneville Spring Spill for Juvenile Fish Passage. This teletype is a revision to the original Spring Spill for Juvenile Passage teletype (BON R 040422 1038) with revisions to include the current location of the 125% gas cap spill rate, which is now in the Level 2 of the spill priority list.

Effective Sunday 10 April at 0001 HRS through Wednesday 15 June at 2359 HRS, Bonneville Dam is to

operate in accordance with the 2022 Fish Operations Plan (FOP) to provide spring spill for juvenile fish passage, as described below:

- Pursuant to FOP Table 3, the 2022 spring spill operation at Bonneville is as follows:
 - 125% gas cap, 24 HRS/Day:
 - The spill rate for the 125% gas cap is defined in the current spill priority list teletype, Level 2. This spill rate is estimated to meet but not exceed 125% TDG in the Bonneville Dam Tailrace, unless otherwise determined based on current conditions or Project constraints. The spill cap for BON will not exceed a MAX of 150 kcfs to avoid causing erosion in the spillway stilling basin.
- Distribute spill according to spill patterns in the 2022 Fish Passage Plan (FPP) Table BON 16. Actual spill may range up to +/- 3 kcfs from the target due to project operational limits described in the FOP Sections 3 and 8.8.3.
- Operate PH2 Units within the restricted operating ranges defined in the FPP Section 4.2.2.2, unless otherwise instructed via teletype.
- During periods of high spill, there may be a need to temporarily reduce spill or modify patterns to maintain safe navigation in the tailrace (per FOP Section 4.6).
 - Spill adjustments for navigation safety may be made at the discretion of the Project Operator based on current conditions and the navigation situation. Make best efforts to minimize the magnitude and duration of the adjustment to the extent possible.
 - Coordinate all spill adjustments with BPA Hydro Scheduling
- 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.
- 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 040722 1620 for more details of this teletype. Please see teletype BON R 04072022 1525 for specifics on the 125% Gas Cap in Level 2 for fish passage projects pursuant to the 2022 FOP.

- A teletype was sent out on 27 April for the Columbia and Snake River Projects and BPA regarding revisions to the order of lack of load spill priority. Please see teletype BON R 04272022 1439 for more details.
- A teletype was sent out on 27 May updating the previous teletype BON R 051322 1058 Operational Specs for U14 and 15 Testing. This new CBT message replaces the previous as U14 testing is complete and U15 testing is ahead of schedule. The remaining ops for the testing of U15 are included below.
 - Wednesday, 1 June, through Thursday 2 June, daily from 0700 to 2100 HRS, for U15 pressure/velocity testing:
 - Forebay Ops:
 - Operate BON Forebay within the following constraints: Hard constraint 71.5 – 73.0 ft during the daytime hours of 0700 to 2100. Outside these hours, BON may operate in accordance with the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority for U15 testing: 11, 18, 15, 14, 16, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U15 Ops:
 - For BPA hydro-scheduling purposes, U15 will not be on AGC during this time but U15 will be online and used for testing.
 - Adjacent Unit Operations:
 - During the U15 test, operate the adjacent units at the midpoint of the 1%.
 - Monday, 6 June, through Thursday, 9 June, daily from 0700 to 2100 HRS, for U15 pressure/velocity testing (daily VBS cleaning required).
 - Forebay Ops:

- Operate BON Forebay within the following constraints: 71.5 to 73.0 ft during the daytime hours of 0700 to 2100 HRS. Outside these hours, BON may operate within the normal forebay operating range of 71.5 to 76.5 ft.
 - Powerhouse Priority:
 - PH2 revised turbine unit priority order for U15 testing: 11, 18, 15, 14, 16, 12, 17, 13.
 - PH1: No change from 2022 FPP.
 - U15 Ops:
 - For BPA hydro-scheduling purposes, U15 will not be on AGC during this time but U15 will be online and will be used for testing.
 - Adjacent Unit Ops:
 - During U15 test, operate the adjacent units at the midpoint of the 1%.
- The goal of this operate is to maintain a project head of 57 ft or less in order to provide hydraulic conditions to facilitate the testing of U14 and U15. Additional information on U14 and U15 test operations are described in Memorandum of Coordination 22BON007 U14 and U15 B2FGE Hydraulic Testing. This may be found on the FPOM website: <https://pweb.crohms.org/tmt/documents/FPOM/2010/NWP%20Memos%20of%20Coordination%20and%20Notification/BON%20MOC%20and%20MFR/> Outside the dates and times of this CBT message, ensure BON continues operating in accordance with reference to CBT message BON R 040422 1038 Spring Spill for Juvenile Fish Passage 4/10 – 6/15. Please see teletype BON R 052722 1338 for more details of this updated operation.
- A teletype was sent out on 07 June regarding operational specifications for unit 14 and 15 testing for FGE work. This CBT message replaces reference CBT message BON R 052722 1338. Due to current high project outflows, there is no longer a request for a low forebay operation. Bonneville Dam may return to operating within the normal operating range of 71.5 to 76.5 feet. Please see teletype BON R 060722 1109 for more details.

MICHAEL ADAMS, P.E.
Operations Project Manager
Bonneville Project