

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 27 of 2022, which covers the period from 26 June to 02 July 2022.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 297.6 to 405.2 kcfs. Daily average powerhouse forebay elevation ranged from 73.8' to 75.2' msl. Daily average project tailwater ranged from 22.4' to 27.3' msl. Secchi disk measurements ranged from 2.0' to 4.0'. Daily average water temperature ranged from 59 to 63°F.
- b. Daily average spill ranged from 94.8 to 196.4 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	---
17	0719 on 18 Apr	---	P.O., 4-Year Overhaul	---
18	1836 on 02 July	1935 on 02 July	R.S., Float Trash	59 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
F2	2229 on 25 June	0530 on 26 June	R.S., Nighttime Lamprey Ops	7 hours, 1 min
F1	2230 on 26 June	0530 on 27 June	R.S., Nighttime Lamprey Ops	7 hours
F2	1243 on 27 June	1251 on 27 June	R.S., Float Trash	8 mins
F2	2229 on 27 June	0528 on 28 June	R.S., Nighttime Lamprey Ops	6 hours, 59 mins
F2	1142 on 28 June	---	F.O., Water in Hub	---
F1	2046 on 30 June	2218 on 30 June	R.S., Float Trash	1 hour, 32 mins

**** Single Fish Unit Ops Initiated on 28 July due to the Forced Outage of Fish Unit 2 (F2). Please see 22BON022 MFR PH2 Fish Unit 2 Outage for more details ****

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

Date	F1	F2
06/26	1.5'	0.5'
06/27	3.1'	<0.5'
06/27	0.3'	1.6'
06/28	2.7'	---
06/29	0.5'	---
06/30	8.3'	---
06/30	0.5'	--
07/01	0.2'	---
07/02	0.2'	---

2. MAINTENANCE ACTIVITIES:

- Auxiliary Water System Closures:
 - FV 1-1 was placed in manual for cleaning from 1115 to 1145 on 29 June.
 - FV 3-9 was placed in manual for cleaning from 1215 to 1220 on 29 June.
 - FV 3-7 and 3-9 were placed in manual for cleaning from 1248 to 1404 on 30 June.
- STS/VBS Inspections: Nothing to report.
- Dewatering and Fish Salvages: Nothing to report.

3. RESEARCH:

- 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](#).
- USFWS – Lamprey Metamorphosis Study: Juvenile lamprey researchers are onsite, and the work is underway.
- 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 ranged from moderate to heavy consisting mostly of sticks and other woody debris. 30 steelhead, 30 salmon, and one unidentified salmonid 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 sub-yearling Chinook examined: six fish (3.0%) were observed with GBT symptoms. Please follow this link <https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf> to the FPC web page for more details. Non-salmonid GBT Monitoring was initiated at Bonneville with the start of summer spill operations. This effort is paired in conjunction with salmonid GBT monitoring with the goal of examining up to 50 non-salmonids (native and non-native species) per session using the same procedures and protocols employed in the salmonid GBT Monitoring Program. Results of this week’s Non-salmonid Gas Bubble Trauma (GBT) examinations: 14 fish in total were examined with no GBT symptoms observed. Please follow this link https://www.fpc.org/currentdaily/Summer_NS_gbtsumbybatchdate_realtime.pdf to the FPC web page for specific details. For research purposes, a total of 21 fin clips were obtained from Pacific lamprey macrophthalmia and six from Pacific Lamprey ammocoetes for Columbia River Inter-Tribal Fish Commission’s (CRITFC) genetic studies this week.
- 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 26 June – 02 July.
- b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
06/26 – 07/02	BON	Unit Priority	U13 F.O., Generator Ground	Repairs in Process
PH1				
06/26 – 07/02	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.
06/26 – 07/02	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island				
06/27	Bradford Island Fishway	FV 3-7 Low and Not Responding	PLC Issues	Ops and Elec. Notified
Cascades Island				
06/16 – 07/02	CI Fishway	FG 6-11 Mechanically Bound in the Closed Position, Should Be Open	Mechanically Bound	W.O.
Washington Shore				
06/26 – 07/02	PH2CC	A2 Diffuser Stuck Mid-Travel	Unknown	W.O.
07/01-02	WA Shore Fishway	NUE Ent/TW Diff <1.0'	Single Fish Unit Ops and Entrance Gate Issues	W.O. and NUE Manipulation
07/01-02	WA Shore Fishway	NDE Ent/TW Diff <1.0'	Single Fish Unit Ops and Entrance Gate Issues	W.O. and NDE Manipulation
06/29, 07/01-02	WA Shore Fishway	SUE Ent/TW Diff <1.0'	Single Fish Unit Ops and Entrance Gate Issues	W.O. and SUE Manipulation
06/29 – 07/02	WA Shore Fishway	SDE Ent/TW Diff <1.0'	Single Fish Unit Ops and Entrance Gate Issues	W.O. and SDE Manipulation

- 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 29 June.
- (3) SLEDs are installed at all locations.
- (4) Bradford Island, Cascades Island, and Washington Shore Fishways remain in service and are in “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 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 26 June – 02 July.*

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
06/26	1	5	0	0	0
06/27	2	6	0	0	0
06/28	1	2	0	0	0
06/29	3	7	2	0	0
06/30	3	11	0	0	0
07/01	7	4	0	0	0
07/02	3	11	0	0	0

5. WATER QUALITY MONITORING:

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

Table 6. Fishway Temperatures for 26 June to 02 July 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
26-Jun	60.2	60.2	60.3		60.1		60.1	60.0		60.7	60.6	OOS
27-Jun	61.1	61.1	61.2		61.0		61.0	60.9		61.4	61.4	OOS
28-Jun	61.5	61.6	61.6	61.5	61.5		61.5	61.4	61.8	61.8	61.8	OOS
29-Jun	61.8	61.9	61.9	61.7	61.8		61.7	61.7	62.0	62.0	62.1	OOS
30-Jun	62.2	62.3	62.3	62.1	62.2		62.2	62.1	62.4	62.4	62.5	OOS
1-Jul	62.8	62.8	62.9	62.7	62.7		62.7	62.7	63.0	63.0	63.1	OOS
2-Jul	63.1	63.1	63.2	63.0	63.1		63.0	63.0	63.3	63.2	63.4	OOS

** The Washington Shore Entrance and Bradford Island LPS probes were malfunctioning and were replaced with new probes on 28 June.

** The Cascade Island probe is currently experiencing technical difficulties.

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

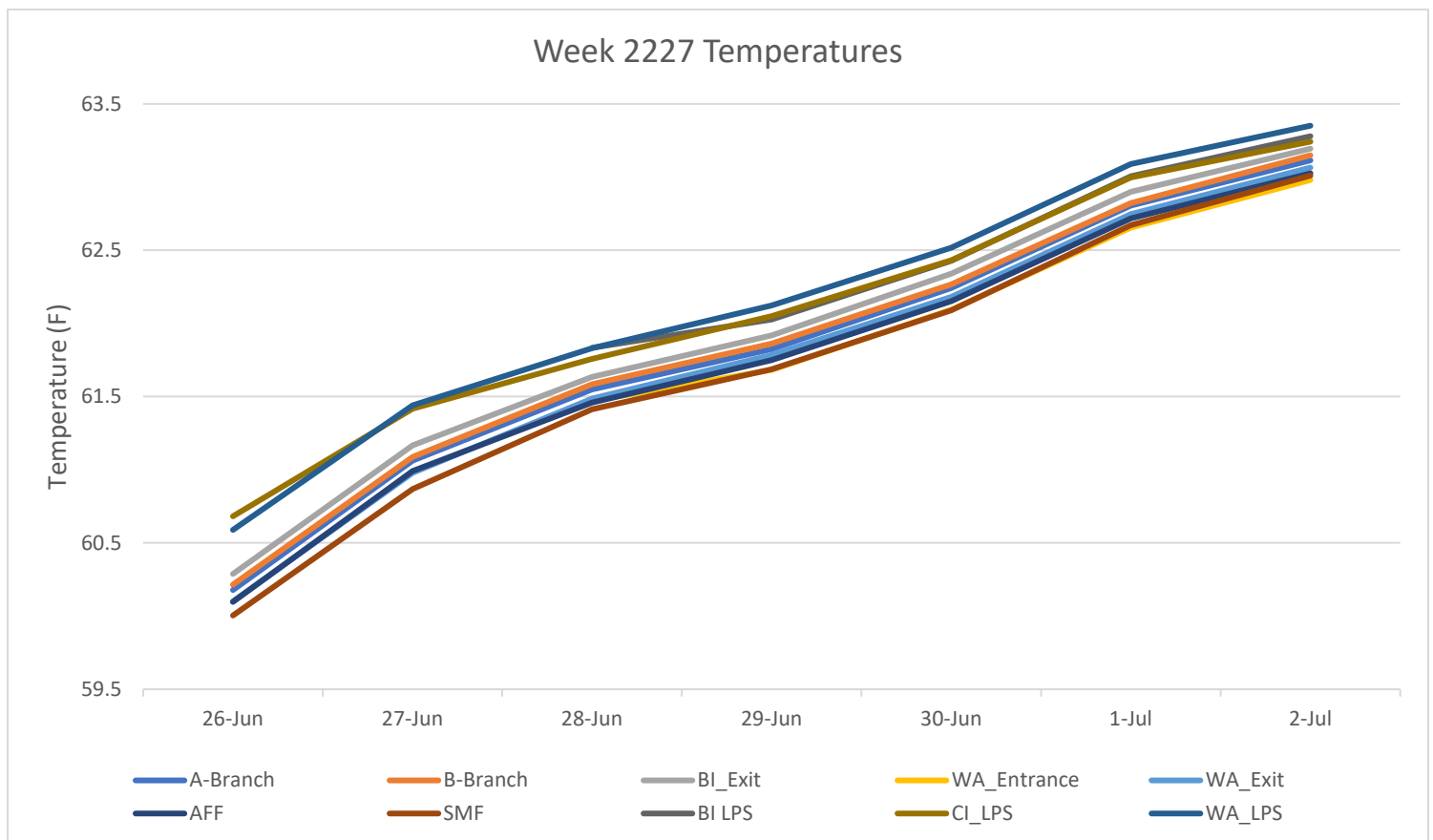


Figure 1. Average fishway temperatures for 26 June to 02 July at Bonneville Lock & Dam.

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 10 June regarding Bonneville Forebay operations for treaty fishery. This operation includes Bonneville Pool operating within a 1.5-foot band, hard constraint for the periods listed below:
 - From 0600 Thursday, 16 June to 1800 Saturday, 18 June 2022
 - From 0600 Monday, 20 June to 1800 Friday, 24 June 2022
 - From 0600 Monday, 27 June to 1800 Friday, 01 July 2022

The goal of this operation is to limit pool fluctuation to avoid debris in fishing nets, reduce rapid water drops that may entangle nets, minimize boat access problems, and avoid nets being torn from their anchors. Please see teletype BON R 061022 1244 for more details.

- A teletype was sent 30 June regarding the Bonneville Forebay operations for treaty fishery. This operation includes Bonneville Pool operating within a 1.5-foot band, hard constraint for the periods listed below:
 - From 0600 Monday, 04 July to 1800 Friday, 08 July 2022
 - From 0600 Monday, 11 July to 1800 Friday, 15 July 2022

The goal of this operation is to limit pool fluctuation to avoid debris in fishing nets, reduce rapid water drops that may entangle nets, minimize boat access problems, and avoid nets being torn from their anchors. Please see teletype BON R 063022 1252 for more details

- 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 on 05 July updating the Spill Priority List and is to be used until further notice. The teletype outlines maximum spill level estimated not to exceed the applicable TDG water quality standard and lack of load spill levels and order to which should be spilled. Please see teletype BON R 070522 1341 for more details.

- A teletype was distributed on 06 July outlining a high forebay operation for Bonneville Dam. This operation will be occurring Wednesday, July 13, from 0900 to 1500 HRS and consists of the following constraints:

Hard Constraint: 75.0 to 76.5 feet

Soft Constraint: 75.5 to 76.5 feet

The forebay constraint request is to operate as close as possible to 76.5 feet. The goal of this operation is to evaluate hydraulic conditions of the Washington Shore Auxiliary Water System (AWS) at the upper limit of the Bonneville Dam Forebay operating range. At this time there are concerns associated with the performance of the AWS at the upper limit of the forebay operating range and this high forebay operation may inform any future actions needed to ensure effective operation of the AWS. Please see teletype BON R 070622 0700 for more details.

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