CENWP-ODB 19 May 2023

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Lock & Dam, Fishway and Fish Activities for Week 19 of 2023, which covers the period from 07 to 13 May 2023.

1. OPERATION SUMMARY:

a. Daily average river flows ranged from 330.6 to 361.3 kcfs. Daily average powerhouse forebay elevation ranged from 73.5' to 75.2' msl. Daily average project tailwater ranged from 23.9 to 25.6' msl. Secchi disk measurements ranged from 2.0 to 4.0'. Daily average water temperature ranged from 53 to 55°F.

b. Daily average spill ranged from 148.7 to 150.0 kcfs.

c. Unit Operation: **PH2** remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed.

- Per FPP BON Section 4.2.1 and FPP Appendix C, Units were operated above 1% range due to excess flow and to manage TDG levels in the river at the following times:
  (a) PH2 Units were operated out of the mid 1% range from 1100 on 09 May to 2300 on 10 May.
  (b) PH1 Units were operated at BOP and PH2 Units were operated at the upper 1% from 0601 to 1410 on 11 May.
  (c) PH1 Units were operated at BOP and PH2 Units were operated at the upper 1% at 1440 on 11 May.
    (a) The mid 1% constraint was applied to Units 13 and 14 at 2300 on 11 May.
    (b) The mid 1% constraint was applied to Unit 12 at 2319 on 11 May.
    (c) The mid 1% constraint was applied to the rest of operating PH2 Units at 0100 on 12 May.
    (d) The mid 1% constraint was applied and PH1 units were taken out of BOP at 0200 on 12 May.

- **Table 1**. Main Unit Outages

Unit	OOS	RTS	Reason	Duration
4	1631 on 29 Mar	---	F.O., Oil Leak Investigation	---
3	1600 on 30 Mar	---	F.O., Oil Leak Investigation	---
17	0729 on 01 May	---	P.O., FGE Gatewell Improvement	---
15	0002 on 09 May	1319 on 09 May	P.O., QTCI	13 hours, 17 mins
12	1503 on 09 May	1536 on 09 May	P.O., Trash Raking	33 mins
11	1539 on 09 May	1710 on 09 May	P.O., Trash Raking	1 hour, 31 mins
12	0600 on 11 May	1409 on 11 May	P.O., Headgate Oil Leak Repair	8 hours, 9 mins
11	0601 on 11 May	1402 on 11 May	P.O., Headgate Oil Leak Repair	8 hours, 1 min

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 2**. Fish Unit Outages

Unit	OOS/RS	RTS	Reason	Duration
F2	2200 on 07 May	2303 on 07 May	P.O., Float Trash	1 hour, 3 mins
F1	2241 on 07 May	2304 on 07 May	P.O., Float Trash	23 mins
F2	2158 on 08 May	2301 on 08 May	P.O., Float Trash	1 hour, 3 mins
F1	2228 on 08 May	2302 on 08 May	P.O., Float Trash	34 mins

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

Date	F1	F2
05/07	0.4’	0.6’
05/07	1.3’	5.8’
05/07	0.4’	0.5’
05/08	0.3’	3.1’
05/08	0.2’	0.6’
05/09	0.2’	0.6’
05/10	0.3’	1.3’
05/11	0.2’	0.3’
05/12	0.2’	0.4’
05/13	0.1’	0.7’

2. MAINTENANCE ACTIVITIES:

a. Auxiliary Water System Closures:
- FV 3-9 was placed into manual for cleaning from 0955 to 0958 on 07 May.
- FV 3-7 and 3-9 were placed in manual for cleaning from 1301 to 1510 on 08 May.
- FV 1-1 was placed into manual for cleaning from 1500 to 1520 on 11 May.
- FV 6-9 was placed into manual for cleaning from 1530 to 1541 on 11 May.

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 ranged from light to heavy consisting mostly of sticks and aquatic macrophytes. Fallbacks observed this week: 12 steelhead and 3 salmon.
Gas Bubble Trauma (GBT) examinations began on 10 April and are typically performed two days per week through the end of spill. Results of this week’s GBT examinations: 200 combined yearling Chinook and steelhead examined: two fish (1.0%) was observed with GBT symptoms. Please follow this link https://www.fpc.org/currentdaily/gbtsumbybatchdate.pdf to the FPC web page for further details.
A total of 42 fin clips were obtained from Pacific Lamprey macrophthalmia for Columbia River Inter-Tribal Fish Commission’s genetic studies this week.

d. USDA – Pinniped and Avian Hazing: Deck-based pinniped and avian hazing operations are underway.

e. State Agency Pinniped Trapping: Sea lion trapping operations are underway.

f. 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.

g. CRITFC – Adult Salmonid Sampling: Adult salmonid sampling in the Adult Fish Facility (AFF) began on 19 April and typically occurs 5 days per week.

4. FISHWAYS:

a. Project Biologists inspected 07 to 13 May.

b. Fish Passage Plan observations:

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

Date	Location	FPP Violation	Cause	Response
05/07 – 13	BON	Unit Priority	U3 & U4 Forced OOS	W.O./Investigation
PH1				
05/07 – 13	PH1 ITS	S. End Gate Inoperable and Chain Gates 1b Closed	S. End Gate Inoperable, 1b Closed for Safety Reasons	W.O.
05/07 – 13	PH1CC	FG 2-19 Stuck in the Mostly Closed Position, Should Be Open	Mechanically Bound	W.O.
Bradford Island				
05/07,09	A-Branch	A-Branch Staff Gauge High >1.1’	Unknown	N/A
Cascades Island				
05/07 – 13	Cascades Island	FG 6-11 Closed, Should be Open	Mechanically Bound in Closed Position	W.O.
Washington Shore				
05/07	WA Shore Fishway	Weir 38 High, >1.1’	Unknown	N/A
05/07	WA Shore Fishway	NUE Ent/TW Diff >2.0’	Unknown	N/A

- 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.

c. Adult Fishways:

(1) The AFF remains in service.

(2) Sensor calibration checks occurred on 10 May.

(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 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 (7th) trash rack was installed in the 1A gate slot, extending the height of stacked trash racks to approx. +80' el. Without the 7th 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. However, it was taken out of service to repair a leak from 0830 to 1405 on 10 May.

(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.

(4) The 2022 lamprey trapping and translocation activities have concluded for the year.

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

Table 5. Avian Counts for 07 – 13 May.

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
05/07	33	1	0	0	0
05/08	15	0	0	0	0
05/09	31	1	0	0	0
05/10	63	0	0	0	0
05/11	81	0	0	0	0
05/12	42	0	0	0	0
05/13	15	3	0	0	0

5. WATER QUALITY MONITORING:

a. Fishway Temperatures: Fishway temperature monitoring has concluded for the 2022-2023 cool weather season.

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

7. CONSTRUCTION:

- FGE modification work in U17 Gatewell slots 17A and 17B is ongoing.

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

9. TELETYPES CURRENTLY IN EFFECT:

- A teletype was distributed on 05 April describing Spring Spill for juvenile fish passage at Bonneville. Effective Monday, 10 April at 0001 HRS, through Thursday, 15 June at 2359 HRS, operate Bonneville Dam in accordance with the 2023 Fish Operations Plan (FOP) to provide spring spill for juvenile fish passage as described below:
    - Pursuant to FOP Table 3, the 2023 spring spill operation at Bonneville Dam is as follows: 125% gas cap, 24 HRS/day. During all hours, spill at the rate defined in the Level 2 of the most recent spill priority list teletype. This spill rate is estimated to meet but not exceed 125% total dissolved gas (TDG) in the Bonneville Dam Tailrace (unless otherwise adjusted due to Project constraints or current conditions). The spill cap for Bonneville Dam will not exceed a maximum of 150 kcfs to avoid causing erosion in the spillway stilling basin.

  Distribute spill according to spill patterns in the 2023 Fish Passage Plan (FPP) Table BON-16. Follow the pattern in the table for the spill rate that is closest to the target. Actual spill may range up to +/- 3 kcfs from the target due to Project operational limitations described in the FOP Sections 3 and 8.8.3.
  Operate turbine unites within the operating ranges defined in FPP Section 4.2.1.1 (PH1) and 4.2.1.2 (PH2), 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).
  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.
  Please see teletype BON R 040523 1710 for more thorough details.

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