

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 10 of 2017, which covers the period from 05 March to 11 March.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 229.4 to 306.8 kcfs. Daily average powerhouse forebay elevation ranged from 72.2 to 73.7' msl. Daily average project tailwater ranged from 19.2 to 24' msl. Secchi disk measurements ranged from 3.0 to 4'. Daily average water temperature ranged from 38 to 40°F.
- b. Spill bays 01 and 18 (as of 08 March) were open 0.5' to provide attraction flow for Cascades Island and Bradford Island fishways. Daily average spill ranged from 2.7 to 79.1 kcfs.
- c. Unit Operation. PH2 became the priority powerhouse on 01 March. Main unit drawdowns are measured every Monday and more frequently as needed.

(1) Table 1. Unit Outages.

Unit	OOS Date	RTS Date	Reason
1	0850 on 06 Mar	1531 on 06 Mar	Model validation testing
2	1533 on 06 Mar	1704 on 06 Mar	Model validation testing
2	0742 on 07 Mar	0942 on 06 Mar	Model validation testing
2	0645 on 11 Mar	1251 on 11 Mar	Thrust cooler
5	1255 on 07 Mar	1357 on 07 Mar	Bank 7/8 disconnect
5	1256 on 09 Mar	1443 on 09 Mar	Bank 7/8 disconnect
6	1256 on 07 Mar	1358 on 07 Mar	Bank 7/8 disconnect
6	1256 on 09 Mar	1450 on 09 Mar	Bank 7/8 disconnect
7	0103 on 22 Feb	---	Annual, bank 7/8 outage, main unit breaker replacement
8	0103 on 22 Feb	---	
9	0944 on 07 Mar	1333 on 07 Mar	Model validation testing
10	1336 on 07 Mar	1533 on 07 Mar	Model validation testing
11	1401 on 11 Mar	1408 on 11 Mar	Model validation testing
12	2007 on 14 Sep	---	Exciter ground
14	0701 on 06 Mar	---	FGE installation

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

(1) F1 went OOS for winter maintenance at 0300 on 25 November. It was returned to service at 1150 on 2 March, two days behind schedule due to indication errors upon start-up.

- (2) F2 went OOS at 0300 on 25 November. It was returned to service at 0944 on 28 Feb.
- (3) Table 2. Fish unit drawdowns, in feet.

Date	F1	F2
3/5	0.2	0.2
3/6	0.5	0.5
3/7	0.2	0.2
3/8	0.4	0.4
3/9	0.2	0.2
3/10	0.2	0.3
3/11	0.6	0.8

2. MAINTENANCE ACTIVITIES:

a. Auxiliary Water System Closures.

- (1) FV1-1 was closed for cleaning from 1529 to 1550 on 09 March.
- (2) FV3-7 was closed for cleaning from 1550 to 1610 on 09 March.
- (3) FV3-9 was closed for cleaning from 1550 to 1610 on 09 March.
- (4) FV5-3 was out of service for the Cascades Island dewatering from ~0900 on 05 March to ~1200 on 09 March.
- (5) FV5-4 was out of service for the Cascades Island dewatering from ~0900 on 05 March to ~1200 on 09 March.
- (6) FV5-9 was out of service for the Cascades Island dewatering from ~0900 on 06 March to 0853 on 09 March.

b. STS/VBS inspections. None.

c. Dewatering and Fish Salvages.

- (1) On 06 March, Project Biologists salvaged 23 adult Steelhead from the upper section of the Cascades Island ladder. All fish were returned to the forebay in good condition.
- (2) On 07 March, 3 adult Steelhead were salvaged from CI entrance area. All fish were returned to the forebay in good condition.

3. RESEARCH:

a. Normandeau – Fish counting. Video counting continues. Visual counting will begin on 01 April.

b. PNNL – FGE testing. A hydroacoustic study at the PH2 gatewells as part of biological testing of the FGE mods will begin on 10 April. Equipment installation began on 07 March.

- c. PSMFC – Smolt Monitoring. Sampling began at 0700 on 03 March. Ten Steelhead fallbacks were observed this week. No research fish were collected this week. More details can be found on the [FPC web page](#).
- d. USDA – Pinniped hazing. Deck-based hazing began 01 March.

4. FISHWAYS:

- a. Project biologists inspected 05 March - 11 March.
- b. Fish passage plan observations.

(1) Table 3. FPP out of criteria items.

Date	Location	FPP Items	Cause	Response
3/5-11	All tailrace	Avian lines down	BI erosion repair, ice	Repairs coordinated
BRADFORD ISLAND				
3/5-11	A-branch	Water over weir > 1.1'	FV3-7 conduit leak	Repair in 2017
CASCADES ISLAND				
WASHINGTON SHORE				
3/5-11	Weir 37,38	Water over weir < 0.9'	Unknown	Investigating

- (2) FG3-3 is currently open and unplugged. The diffuser cannot be repaired until the north PH1CC area is dewatered. The next opportunity will be the 2017-18 winter maintenance period. It should be closed below tailwaters of 8.2' msl.
 - (3) The FG3-4 diffuser shaft was found to be vibrating unusually. The diffuser was closed on 29 Dec 2017 to prevent further damage to the gate. The next opportunity for repair is the 2017-18 winter maintenance period.
 - (4) FG3-5 has been stuck halfway open since mid-January. The next opportunity for repair is the 2017-18 winter maintenance period.
 - (5) To make up for reduced water flow through FG3-4 and 5, FG3-6 is open in manual (above normal criteria) according to water levels.
 - (6) Cascades Island diffusers FG6-18,-19, and -20 are closed to minimize attraction flow to blown grating and hatches in those areas (see 17BON03).
*Update: Cascade Island entrance bay work was successfully completed and the ladder is back to being fully operational.
- c. Adult Fishways.

(1) The Cascades Island ladder went to orifice flow at ~0900 on 05 March. It was dewatered to tailwater on 06 March, and below tailwater on 07 March (see

17BON03). Emergency repairs were completed and it was brought back to service on 09 March.

- (2) The AFF returned to service on 05 March.
- (3) Sensor calibration was checked on 08 March.
- (4) SLEDs are installed in all fishway entrances.

d. Juvenile Fishways.

- (1) The ITS remains in service.
- (2) The hydro-cannon is on.
- (3) The B2CC is open intermittently with spill, per FPP section 2.2.7.
- (4) The DSM was returned to service on 21 Feb.
- (5) Bonneville had the majority of its avian lines broken due to the ice storm (not including the lines that were already removed for the spillway work). These broken lines will be replaced in March when the spillway lines are reinstalled.

e. Lamprey Fishways.

- (1) The WA shore AWS LPS began operating 28 Feb to test the new pumps.
- (2) All other LPSs remain OOS.

f. Avian Monitoring. Bird counts are made between 01 April and 31 October.

5. WATER QUALITY MONITORING:

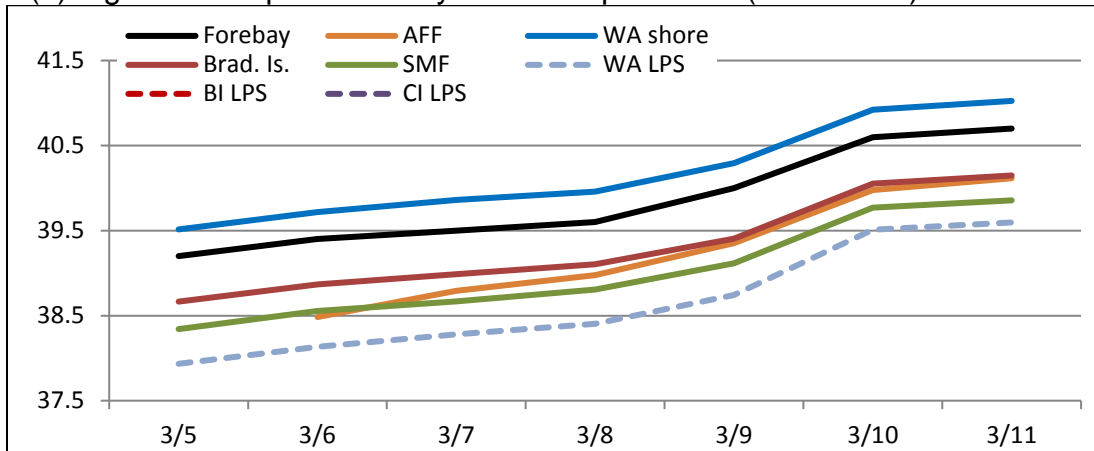
a. Fishway Temperatures. Temperatures are taken from 01 March through 30 November. Forebay temperatures can be found [online](#).

(1) Table 4. Average daily fishway water temperatures (Fahrenheit).

Date	Forebay	Fishways				Lamprey
		Brad. Is.	WA shore	AFF	SMF	WA LPS
3/5	39.2	38.7	38.3	OOS	39.5	37.9
3/6	39.4	38.9	38.6	38.5	39.7	38.1
3/7	39.5	39.0	38.7	38.8	39.9	38.3
3/8	39.6	39.1	38.8	39.0	40.0	38.4
3/9	40.0	39.4	39.1	39.4	40.3	38.7
3/10	40.6	40.1	39.8	40.0	40.9	39.5

3/11	40.7	40.1	39.9	40.1	41.0	39.6
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(2) Figure 1. Graph of fishway water temperatures (Fahrenheit).



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

6. CONSTRUCTION:

- a. Flow control plates in the A and B gatewells at PH2 have been installed in all units except 14 as part of the FGE modifications. Unit 14 is scheduled to be completed on 17 March.
- b. An equipment barge for the FGE study was installed near the B2CC on 07 March.

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

8. TELETYPES CURRENTLY IN EFFECT:

- a. A teletype sent on 24 February provides updated wintertime spill and lack of load conditions to be used from 23 February 2017 through 31 March 2017.
- b. A teletype sent on 04 Jan states that effective at 1400 on 04 Jan, minimum tailwater at Bonneville is 12.5 feet during all hours for Chum incubation.
- c. A teletype sent on 03 March states that from 0800 to 1700 on 7 March, close and apply clearance to the B2CC to install equipment as part of a PH2 FGE biological evaluation.
- d. A teletype sent on 03 March cancels requirements for no spill due to lack-of-load conditions due to completion of the BI Erosion Repair. Spill ops are governed

by the provided spill pattern (above).

- e. A teletype sent on 03 March requests no spill from 0900 to 1400 on 06 March to allow a post rock placement hydrosurvey of the BI Erosion Repair. The B2CC may be operated. One hour notice is required if spill is imminent.
- f. A teletype sent on 14 March updates the order that projects spill for lack of load conditions and spill caps for fish passage.
- g. A teletype sent on 09 March states that Bonneville is to resume spilling per FPP patterns by 1800 on 09 March. Spill had been adjusted for B-Branch erosion repairs.

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