

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)
 SUBJECT: Bonneville Project, Fishway and Fish Activities for Week 31 of 2018, which covers the period from 29 July – 04 August.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 123.9 to 175.4 kcfs. Daily average powerhouse forebay elevation ranged from 73.8' to 76.3' msl. Daily average project tailwater ranged from 11.1' to 14.8' msl. Secchi disk measurements ranged from 7.0' to 7+'. Daily average water temperature remained at 72°F.
- b. Daily average spill ranged from 80.0 to 100.0 kcfs.
- c. Unit Operation. PH2 remains the priority powerhouse. Main unit drawdowns are measured every Monday and more frequently as needed.

(1) Table 1. Unit Outages.

Unit	OOS Date	RTS Date	Reason
03	0921 on 30 July	1534 on 30 July	BPA Relay Work
03	0903 on 31 July	1529 on 31 July	BPA Relay Work
03	0825 on 01 Aug	1532 on 01 Aug	BPA Relay Work
03	0832 on 02 Aug	1435 on 02 Aug	BPA Relay Work
04	0921 on 30 July	1534 on 30 July	BPA Relay Work
04	0903 on 31 July	1529 on 31 July	BPA Relay Work
04	0825 on 01 Aug	1532 on 01 Aug	BPA Relay Work
04	0832 on 02 Aug	1435 on 02 Aug	BPA Relay Work
05	1654 on 23 July	---	Forced out, ZM278 failure
06	1654 on 23 July	---	Forced out, ZM278 failure
07	0922 on 05 Apr	---	FO, Underrated Disconnect
08	0921 on 05 Apr	---	FO, Underrated Disconnect
15	0550 on 23 July	0900 on 29 July	PO Terminal Clearance
16	0001 on 23 July	0900 on 29 July	FGE Mods
17	0001 on 23 July	0900 on 29 July	FGE Mods
18	0550 on 23 July	0900 on 29 July	PO Terminal Clearance

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

(1) F2 goes into RS nightly from 2200-0400 for regular spill season PH2 Lamprey ops (per FPP 2.4.2.13.c.).

- e. Table 2. Fish unit drawdowns, in feet.

Date	F1	F2
7/29	0.4'	0.6'
7/30	0.4'	0.2'
7/31	0.5'	1.1'
8/1	0.3'	0.4'
8/2	0.1'	0.1'
8/3	0.2'	0.5'
8/4	0.1'	0.2'

2. MAINTENANCE ACTIVITIES:

- a. Auxiliary Water System Closures. Nothing to report.
- b. STS/VBS Inspections. Nothing to report.
- c. Dewatering and Fish Salvages. Nothing to report.

3. RESEARCH:

- a. Normandeau – Fish counting. Daytime visual counting (0500 to 2100) began on 01 April. Nighttime video recording (2100-0500) began on 15 May. Fish counts can be viewed [here](#).
- b. PSMFC – Smolt Monitoring. Sample collections at the SMF began on 02 March. Debris at the primary dewatering structure and fish/debris separator was light consisting mostly of aquatic macrophytes, a few sticks, and dead adult shad. Higher temperature sampling protocols were initiated on 25 July (sample end-date of 26 July) when water temperatures 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 will occur on alternating 24 hour periods (0700-0700). Gas Bubble Trauma examinations began on 15 April and are typically performed two days per week through the end of spill. However, due to higher water temperatures and decreased TDG levels, GBT exam effort has been reduced to one day per week. Results of this week's GBT examinations: 100 subyearling Chinook examined with no GBT symptoms observed. Please follow this [link](#) to the FPC web page for further details. No fallbacks were observed this week. No fish were collected for research this week.
- c. USDA – Avian hazing. Avian deck-based hazing concluded on 31 July.

- d. CRITFC – Adult Salmonid Sampling. Adult salmonid sampling in the adult fish facility (AFF) began on 25 April and typically occur 5 days per week. At water temperatures of 70–72°F, sampling will be permitted as defined below for up to four days per week from 0600-1030 hours to allow for U.S. v Oregon requirements. This operation will remain in effect until daily average water temperature drops to ≤ 69.9°F. High temperature sampling protocols went into effect on 24 July.
- a. University of Idaho. Evaluation of adult Pacific Lamprey passage behavior in relation to lower Columbia River dam modifications, AFEP Study Code LMP-P-17-1 began on 11 May.
- b. NOAA – Northwest Fisheries Science Center (Frick). Development and evaluation of an adult lamprey wetted wall structure at Bradford Island Fishway 2017-2019 began on 08 May.
- c. USFWS – Lower Columbia River Fish Health Center. Adult and juvenile American Shad will be collected from the project as part of the annual National Wild Fish Health Survey. BON mortalities will also be sent to the USFWS for pathogen analysis and potential causes of death.

4. FISHWAYS:

- a. Project biologists inspected from 29 July - 04 August.
- b. Fish passage plan observations.

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

Date	Location	FPP Violation	Cause	Response
Bradford Island				
8/2	A-Branch	Differential > 1.1'	Unknown	NA
8/2-3	B-Branch Entrance	Differential > 2.0'	Unknown	NA
8/3-4	WG-64	Submergence < 8.0'	Unknown	NA
Cascades Island – Nothing to Report.				
Washington Shore				
7/29	SDE	Differential < 13.0'	Unknown	NA
7/29-31	NDE	Differential < 13.0'	Possibly AWS Sand	NA
8/4	Weir 37	Differential < 0.9'	Unknown	NA
7/29, 8/3-4	Weir 38	Differential < 0.9'	Unknown	NA

- (2) On 01 May, FG6-11 was found broken partially open. The diffuser shaft had broken away from the motor. Due to the subsidence issues at Cascades Island, repairs can not occur until crane support is allowed in the vicinity.

(3) Bonneville had the majority of its avian lines broken due to ice storms during the 2016/17 winter. All zones had been installed besides PH2. PH2 lines are awaiting installation. Numerous lines have since been broken again by high flows and debris at CI and Spillway locations.

(4) PH2 diffuser B4 was discovered to have its stem bent on 24 May 2017. This likely occurred while trying to close and the valve is believed to be open. It should be closed at tailwaters above 31.0' and below 11.0' msl.

c. Adult Fishways.

(1) The AFF remains in service.

(2) Sensor calibration occurred on 29 July.

(3) SLEDs are installed at all entrances.

d. Juvenile Fishways.

(1) The ITS remains in service.

(2) The hydro-cannon remains in service.

(3) The B2CC remains in service.

(4) The DSM remains in service.

(5) STSs are installed.

e. Lamprey Fishways.

(1) The Bradford Island, Cascades Island, and WA Shore AWS LPSs remain in service.

(2) The NDE Lamprey Flume Structure (LFS) remains in service.

(3) The AFF lamprey trap remains in service.

(4) The Bradford Island Lamprey Wetted Wall remains in service.

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

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
7/29	3	4	0	0	0
7/30	1	8	0	0	0
7/31	2	2	0	0	0
8/1	0	0	0	0	0
8/2	0	3	0	0	0
8/3	0	5	0	0	0
8/4	5	2	0	0	0

5.

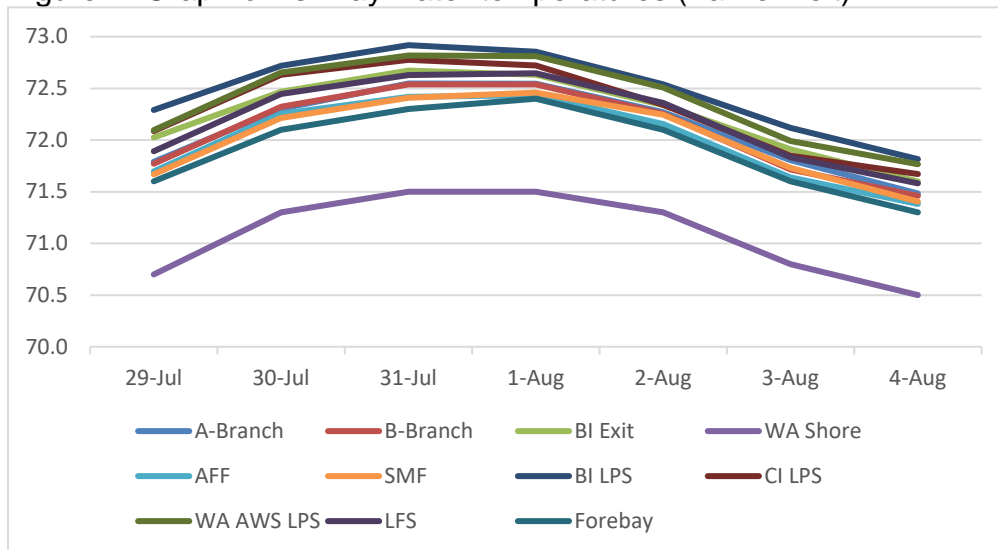
WATER QUALITY MONITORING:

- a. Fishway Temperatures. Temperatures are taken from 01 March through 30 November.

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

Date	A-Branch	B-Branch	BI Exit	WA Shore	AFF	SMF	BI LPS	CI LPS	WA AWS LPS	LFS	Forebay
29-Jul	71.8	71.8	72.0	70.7	71.7	71.7	72.3	72.1	72.1	71.9	71.6
30-Jul	72.3	72.3	72.5	71.3	72.3	72.2	72.7	72.6	72.7	72.4	72.1
31-Jul	72.5	72.5	72.7	71.5	72.4	72.4	72.9	72.8	72.8	72.6	72.3
1-Aug	72.5	72.5	72.6	71.5	72.4	72.5	72.9	72.7	72.8	72.6	72.4
2-Aug	72.3	72.3	72.3	71.3	72.2	72.2	72.5	72.3	72.5	72.4	72.1
3-Aug	71.8	71.7	71.9	70.8	71.6	71.7	72.1	71.8	72.0	71.8	71.6
4-Aug	71.5	71.5	71.6	70.5	71.4	71.4	71.8	71.7	71.8	71.6	71.3

(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. The PH2 roofing project continues.

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

8. TELETYPES CURRENTLY IN EFFECT:

- a. A teletype sent on 13 June outlines the summer spill schedule related to fish passage. Effective 0001 on 16 June until 2359 on 31 August, operate Bonneville dam in accordance with the 2018 summer fish operations plan to provide spill for fish passage.
- b. A teletype sent on 18 July states that effective immediately, unit 15 will resume operating according to the priority defined in the 2018 FPP table BON-13. Effective immediately through 2359 on 31 July, PH2 units that do not have flow control plates are to be restricted in operating range to the 1% mid-range (13-15 kcfs). Units that still have flow control plates in both gatewells A-B may be operated within the full 1% range. Starting 0001 on 01 August, all PH2 units may be operated within the full 1% range in accordance with the 2018 FPP section 5.2. During this time, PH2 units will typically be operated within the 1% mid-range, but may be operated in the full 1% range as necessary to avoid deadband issues at lower flows. The intended purpose is to minimize turbulence in PH2 unit gatewells without flow control plates.
- c. A teletype sent on 19 July updating Bonneville spill caps.
- d. A teletype sent on 26 July states that Bonneville forebay will be operated above 74 feet from 1400 to 2200 on 09 and 12 August for sailboat races.
- e. A teletype sent on 27 July states that Bonneville is to operate the forebay between between 75-76.5 feet from 1400-2100 on 03 and 04 August for sailboat races.
- f. A teletype sent on 31 July allows an exceedance of the normal summertime 24-hour tailwater fluctuation limit of 4.0' between 0001 and 2400 on Thursday, August 2nd. The tailwater is allowed to fluctuate up to 5.0' during this time; maximum rate of 1.5' / hour. This teletype was requested in anticipation of low flows in the Columbia and Snake Rivers.

MICHAEL ADAMS, P.E.
Operations Manager
Bonneville Project