

MEMORANDUM FOR Biologist, Operations Division (CENWP-OD)

SUBJECT: Bonneville Project, Fishway and Fish Activities for **Week 34** of 2021, which covers the period from **15 to 21 August 2021**.

1. OPERATION SUMMARY:

- a. Daily average river flows ranged from 117.5 to 145.0 kcfs. Daily average powerhouse forebay elevation ranged from 73.9' to 75.0' msl. Daily average project tailwater ranged from 10.7' to 12.8' msl. Secchi disk measurements ranged from 6.0 to 7.0'. Daily average water temperature ranged from 70 to 73°F.
- b. Daily average spill ranged from 50.6 to 51.4 kcfs. Summer spill season began on 16 June and will continue through 31 August in accordance with FOP guidelines.
- 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
2	0012 on 09 Aug	---	P.O., Annual Overhaul	---
1	0630 on 09 Aug	2008 on 17 Aug	P.O., BPA Work	8 days, 13 hours, 38 mins
9	0630 on 09 Aug	1006 on 19 Aug	P.O., BPA Work	10 days, 3 hours, 36 mins
10	0630 on 09 Aug	2008 on 17 Aug	P.O., BPA Work	8 days, 13 hours, 38 mins
18	1040 on 16 Aug	1143 on 16 Aug	P.O., Trash Raking	1 hour, 3 mins
12	1147 on 16 Aug	1311 on 16 Aug	P.O., Trash Raking/DC Work	1 hour, 24 mins
11	1342 on 16 Aug	1526 on 16 Aug	P.O., Trash Raking	1 hour, 44 mins
14	0001 on 17 Aug	0800 on 17 Aug	P.O., QTCI	7 hours, 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
F1	2242 on 14 Aug	0602 on 15 Aug	R.S., Nighttime Lamprey Ops	7 hours, 20 mins
F2	2242 on 15 Aug	0558 on 16 Aug	R.S., Nighttime Lamprey Ops	7 hours, 16 mins
F1	1107 on 16 Aug	1113 on 16 Aug	P.O., DC Work	6 mins
F2	1115 on 16 Aug	1137 on 16 Aug	P.O., DC Work	22 mins
F2	2058 on 16 Aug	0603 on 17 Aug	R.S., Nighttime Lamprey Ops	9 hours, 5 mins
F1	1203 on 17 Aug	1359 on 17 Aug	P.O., R.S. for ROV Inspection	1 hour, 56 mins
F2	1203 on 17 Aug	1359 on 17 Aug	P.O., R.S. for ROV Inspection	1 hour, 56 mins
F1	2145 on 17 Aug	0601 on 18 Aug	R.S., Nighttime Lamprey Ops	8 hours, 16 mins
F2	2129 on 18 Aug	0601 on 19 Aug	R.S., Nighttime Lamprey Ops	8 hours, 32 mins
F1	2130 on 19 Aug	0603 on 20 Aug	R.S., Nighttime Lamprey Ops	8 hours, 33 mins
F2	2130 on 20 Aug	0559 on 21 Aug	R.S., Nighttime Lamprey Ops	8 hours, 29 mins
F2	2129 on 21 Aug	---	R.S., Nighttime Lamprey Ops	---

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

Date	F1	F2
08/15	0.1'	1.0'
08/16	0.4'	0.5'
08/17	0.2'	0.2'
08/18	0.2'	0.6'
08/19	0.6'	0.2'
08/20	0.2'	0.9'
08/21	0.4'	0.2'

2. MAINTENANCE ACTIVITIES:

a. Auxiliary Water System Closures.

- FV 3-9 was put in manual for cleaning on 17 August from 0902 to 0912.
- FV 1-1 was closed for cleaning on 19 August from 1325 to 1346.
- FV 3-7 and 3-9 were closed for cleaning on 19 August from 1359 to 1421.
- FV 3-7 (Bradford Island) was placed in manual and pinched down to reduce flow in the BI AWS to prevent blown diffuser grating and further damage to FG 3-3. FG 3-4, FG 3-5, and FG 3-6 are all OOS due to mechanical failure. These settings for the A-Branch AWS and diffusers will likely remain until the problems can be addressed during the 2021-2022 winter maintenance period. Please see 21BON014 MFR A-Branch FV 3-7 and FG 3-4,5,6 OOC for further explanation.
<http://pweb.crohms.org/tmt/documents/FPOM/2010/>

b. STS/VBS Inspections. Nothing to report.

c. Dewatering and Fish Salvages. Nothing to report.

d. ROV Inspection: Project Fisheries assisted the district dive team in the ROV inspection of the lower portion of the Bonneville fishways.

Results:

- **PH2 Collection Channel:** Nothing to report.
- **Cascades Island Fishway Entrance Bay:** Nothing to report.
- **B-Branch Fishway Entrance Bay:** Slight gaps in several diffuser gratings.
- **PH1 Collection Channel:** Bent grating around the diffuser shaft of FG 2-21 was observed. There was significant concrete spalling littered along the north end floor of the collection channel. The dive team noted a significant increase in size and quantity of these concrete masses in comparison to observations from the previous inspection. Almost all gratings for currently closed diffusers were

found completely clogged. Many of the open diffusers were found with partially clogged grating. The first sign of measurable sediment buildup working north to south in collection channel was found on the south side of FG 2-18 with about 6 inches of sediment. The inspection showed increased buildup of sediment, shells, and coarse woody debris as the inspection moved south through the collection channel.

3. RESEARCH:

- a. Four Peaks Environmental - Fish counting contract: Daytime visual counting (0500 to 2100 PDT) began on 01 April. Night video (2100 to 0500 PDT) counting began 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 SMF began at 0700 on 02 March. Debris at the primary dewatering structure (PDS) and fish/debris separator was light consisting mostly of aquatic macrophytes, a few sticks and dead adult American shad. Higher temperature sampling protocols were initiated on 07 July (sample end-date of 08 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 (GBT) examinations concluded for the season as of 25 July due to high river temperatures, low TDG levels and the inability to meet the 50 fish minimum sample size criteria. No fallbacks were observed this week. Truck releases of summer/fall out-migrants originating from Little Goose and Lower Granite dams continued at Bonneville every other day. No fish collections for research purposes were conducted this week. More details can be found on the [FPC web page](#).
- d. USDA – Pinniped and Avian Hazing: Deck-based hazing continues for the late summer/fall season.
- e. WDFW/ PSMFC – Pikeminnow Sampling: Hook and line angling activities continue for native non-salmonid fish species within the BON BRZ as a constituent of Gas Bubble Trauma (GBT) monitoring.
- f. CRITFC – Adult Salmonid Sampling: Adult Salmonid sampling in the AFF began on 20 April and typically occurs 5 days per week. High water temperature sampling protocols are in place.
- g. WDFW – Bright and Tule Chinook Stock Observation: Observation research of fall Chinook at Bonneville Dam started on 01 August.

4. FISHWAYS:

- a. Project biologists inspected 15 to 21 August.

b. Fish Passage Plan observations.

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

Date	Location	FPP Violation	Cause	Response
PH1				
08/15-21	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.
08/18,19	PH1CC South	South Ent/TW Diff <1.0'	PLC Communication Issues	Troubleshooting
Bradford Island				
08/15-21	A-Branch	FG 3-4 Partially Open	FG 3-4 Mechanically Bound Partially Open/Closed	W.O.
08/16-18,21	B-Branch	FG 3-27 Open, Should be Closed	FG 3-27 Mechanically Bound in the Open Position	Caution Order
08/15-21	BI Exit	FV 3-7 High	Currently in Manual	Caution Order
Cascades Island.				
08/15	CI Entrance	CI Entrance Bay/TW Diff >2.0'	PLC Issues	W.O.
08/15-18,21	CI Fishway	FG 6-12 Open, Should Be Closed	FG 6-12 Mechanically Bound	W.O.
Washington Shore. Nothing to Report.				
08/20	WA Shore Fishway	Weir 37 High >1.1'	Unknown	N.A.
08/19	WA Shore Fishway	PH2 SUE Ent/TW Diff <1.0	Unknown	N.A.

- FV 3-7 (Bradford Island) was placed in manual and pinched down to reduce flow in the BI AWS to prevent blown diffuser grating and further damage to FG 3-3. These settings for the A-Branch AWS and diffusers will likely remain until the problems can be addressed during the 2021-2022 winter maintenance period.
- FG 3-4 (A-Branch) was found mechanically bound and unable to move from the "almost closed" position in December of 2020. This diffuser will likely remain in this position until the 2021-2022 winter maintenance period.
- FG 3-5 (A-Branch) was not operating correctly on 07 June 2021 and was banging heavily underwater due to an assumed broken fish gate. To prevent further damage to the fishway and equipment, a clearance has been issued for FG 3-5 to be closed and taken out of service until the winter maintenance period.
- FG 3-6 (A-Branch) was found mechanically bound in the closed position on 07 June 2021. This diffuser will likely remain in this position until the 2021-2022 winter maintenance period.

c. Adult Fishways.

- (1) The AFF remains in service.
- (2) Sensor calibration occurred on 16 August.

- (3) SLEDs are installed at all locations.
 - (4) Cascades Island Fishway and Washington Shore Fishways are in service.
 - (5) Bradford Island Fishway is in service.
- 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) was taken out of service on 14 August due to warm water trap operation protocols.
 - (4) The AFF lamprey trap was placed back into service on 18 August.
 - (5) The CI Lamprey trap was placed back into service on 18 August.
- f. Avian Monitoring. Avian counts are recorded 01 April – 31 October.

Table 5. *Avian Counts for 15 to 21 August.*

Date	Gulls	Cormorants	Terns	Wh. Pelicans	Grebes
08/15	85	23	0	0	0
08/16	43	37	0	0	0
08/17	92	39	0	0	0
08/18	82	56	0	0	0
08/19	60	3	0	0	0
08/20	77	7	0	0	0
08/21	91	68	0	0	0

5. WATER QUALITY MONITORING:

- a. Fishway Temperatures. Temperature logs began on 28 February and will continue through 30 November.

Table 6. Bonneville Fishway Temperatures for 15 to 21 August.

The Cascades Island temp probe was not logging data correctly the night of 17 August to the morning of 18 August. Project Fisheries is currently troubleshooting the issue

The LFS Trap was dewatered and taken out of service on the morning of 14 August

Date	A-Branch	B-Branch	BI Exit	WA Entrance	CI Entrance	WA Exit	CI LPS	WA LPS	BI LPS	AFF	LFS	SMF	Forebay
15-Aug	74.2	74.1	74.3	74.1	74.1	74.1	74.3	74.4	74.6	74.0		74.0	73
16-Aug	74.0	73.9	74.1	73.8	73.8	73.8	74.0	74.1	74.4	73.7		73.8	73
17-Aug	73.1	72.7	73.2	72.6	71.7	72.6	72.6	72.8	73.4	72.5		72.7	73
18-Aug	71.9	71.7	72.0	71.6	68.8	71.6	71.7	71.8	72.3	71.5		71.6	72
19-Aug	71.3	71.1	71.4	71.1	71.1	71.1	71.2	71.3	71.6	71.0		71.1	71
20-Aug	70.7	70.6	70.7	70.6	70.5	70.5	70.6	70.7	71.0	70.5		70.6	70
21-Aug	70.0	70.0	70.1	70.2	70.1	70.1	70.2	70.3	70.3	70.0		70.1	70

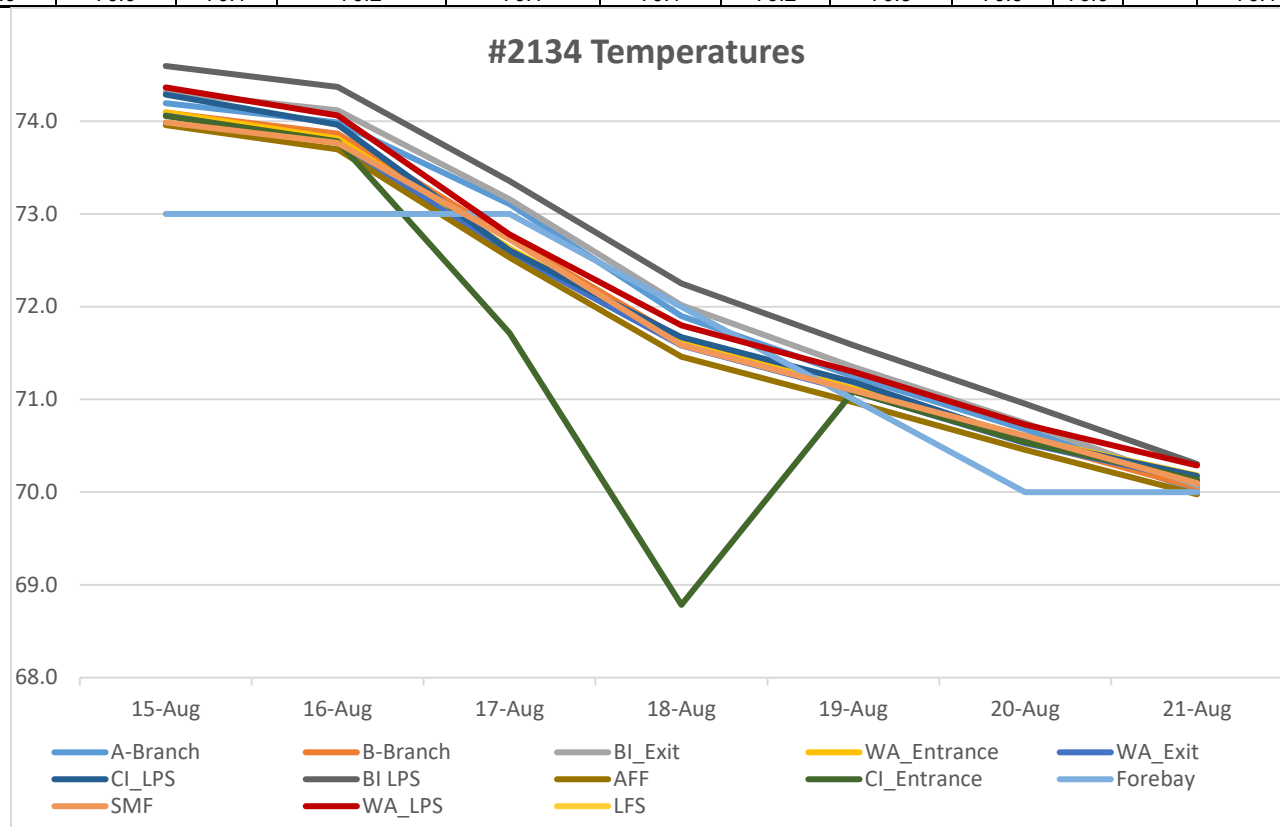


Figure 1. Average fishway temperatures for 15 to 21 August.

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. TELETYPE CURRENTLY IN EFFECT:

- A teletype sent out on 11 June stating effective 16 June at 0001 hours through 31 August at 2359 hours,

Bonneville Dam is to operate in accordance with the 2021 Fish Operations Plan to provide summer spill for fish passage. Please see teletype BON R 061121 1732 for more details.

- A teletype sent out on 15 June provided guidance for summer spill caps for MCN, JDA, TDA, and BON starting at 0001 on 16 June and until further notice. Please see teletype BON R 061521 1307 for more details.
- A teletype was sent out on 18 August requesting that Bonneville pool operate at a 1.5 ft band, hard constraint for the following periods:
From 0600 HRS Monday August 23 to 1800 HRS Thursday August 26 2021
From 0600 HRS Monday August 30 to 1800 HRS Thursday September 2 2021
The purpose of this operation is for treaty fishery. Please see teletype BON R 08182021 1405 for more details.

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