U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#26-2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 20 – August 26, 2021

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
4	8/2	1018	9/24	N/A	Nine-year overhaul
2	8/20	2254	8/21	1308	Exciter issue
9 thru 12	8/23	0646	10/1	N/A	Line 5 outage for BPA relays
6	8/24	1000	8/24	1030	ESBS camera inspections

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2021 Fish Passage Plan (FPP). The saw tooth unit priority pattern for temperature abatement will conclude when the temperature monitoring program is completed on August 31. RTS dates are subject to change.

Adult Fish Passage Facilities

The fisheries biologist and a technician performed a measured inspection of the adult fishways on August 21, 23 and 25. Fish counting, and video review of adult lamprey night passage continues.

No heat stressed adult fish mortalities were observed this week.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.3’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’ to 0.3’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.2’

Comments: Debris loads near the Oregon and Washington shore exits were minimal. Picketed leads at both exits were cleaned as needed, including the weekend.

At the Oregon shore exit, tilting weir 335 was OOS due to an encoder issue from August 22 to 23. The operators ensured the exit remained in criteria. A regulating weir alarm came in and was reset on August 23.

For the Washington exit, there is nothing to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.3'
X			NFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2'
X			NFEW3 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			SFEW1 Weir Depth	≥ 8.0'	8.0' to 8.2'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.2'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.5 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.2' to 1.5'
X			WFE2 Weir Depth	≥ 8.0'	9.7' to 10.1'
X			WFE3 Weir Depth	≥ 8.0'	9.8' to 10.2'

Comments: Possibly due to calibration drifts, SFEW2 was out of criterion on August 25.

Fabrication of the six remaining FOG's is on hold until fish pump 3 repairs are completed.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			25°	Oregon Ladder Fish Pump 1
Yes			23° to 24°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is September 30
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remained out of service. The estimated return to service date is now October 29.

Juvenile Fish Passage Facility

Normal sampling season, consisting of alternating days of primary and secondary bypass, continues. With personnel returning to work, 24-hour sampling resumed on August 20, with data collected the next day. Sample tank mortality has remained below 3.0 percent. There appears to be very little heat stress occurring. The B side sample tank water temperature dropped below 69 degrees Fahrenheit by week's end.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to very light
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Current debris loads were minimal to very light near the powerhouse and very light beside the spillway. Incoming debris was minimal. Wind direction and project operations effected the debris distribution.

No trash racks were cleaned this week.

There are no problems to report.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
X			ESBSs inspected this week?
X			ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: All screens are in place. Camera inspections in units 6 and 10 revealed no issues on August 24.

Daily VBS differential monitoring revealed no differentials out of criteria. Four screens were cleaned on August 23 and 24. The screens in units 3 and 5 were inspected on August 26. No fish mortalities were observed during cleaning or inspection.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
X			Dewatering and cleaning systems operating satisfactory?	

Comments: Orifices were adjusted for VBS cleaning and inspection as required. With low debris loads and a temporary air supply line, orifice cycling remains at once a day.

The temporary air supply line from the north end of the powerhouse will continue to be monitored.

Last week, the contractor who will reinforce the intake deck crane's east rail began work. They removed the debris racks above the channel on the forebay side, which allows them access to the underside of the rail support. This week, the contractor began scaffolding installation in the channel. There should be no fish passage issues and the area will be monitored.

Bypass Facility:

Yes	No	NA	Item
X			Sample gates on?
		X	PIT-tag sampling system on?

Comments: All bypass facility systems operated satisfactorily. The sample gates were only on during secondary bypass. The PIT-tag system gates remained off as there is no need for that system.

This week, 24 juvenile lamprey and 545 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Since mid-July, juvenile shad have been the predominate species in the sample.

There are no problems to report.

Top Spillway Weir (TSW) Operations:

The TSW's remain out of service. Standard spill gates are in bays 19 and 20.

River Conditions

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
142.1	124.0	19.9	19.8	71.1	68.8	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours. Water temperature monitoring throughout the juvenile system will conclude on August 31. The smolt monitoring staff reports temperature data and monitoring issues in a separate report.

The summer spill program continues with a spill volume of 20 kcfs. Spill season will conclude on September 1 at 0001 hours.

The electrical staff has begun the motor starter installation and other work for Crane 6. The load limit indicator continues to be an issue.

Crane 7 remains serviceable. However, work on the main hoist gearbox will begin as soon as Crane 6 RTS. The crane's motor starter still needs to be replaced. A contract will be required. The current target date for replacement will be in October or November. Also, the crane's load limit indicator continues to be an issue.

The gate in bay 19 remains dogged open at four feet, with is required by the FPP, Table MCN-9 with current flow volumes. Crane 7 will be used to close the bay on September 1 at 0001 hours.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 7.

Avian Activity: Avian counts continued. These counts are reflected in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
August 20	Spill	19	0	16	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	9	5	0	0
	Forebay	1	0	0	0	17
August 21	Spill	27	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	3	17	0	0	0
	Forebay	2	0	0	0	0
August 22	Spill	253	2	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	17	0	0	0
	Forebay	0	0	0	0	0
August 23	Spill	66	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	15	0	0	0
	Forebay	0	0	0	0	0
August 24	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	10	0	0	0
	Forebay	0	0	0	0	0

August 25	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	18	0	0	0
	Forebay	0	0	0	0	0
August 26	Spill	104	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	9	9	0	0	0
	Forebay	0	0	0	0	0

The lasers on the outfall pipe and navigation lock wing remained off. Two large bird distress calls remain installed on the navigation lock wing wall. No other hazing is currently occurring.

Testing the LRAD continues Monday through Thursday. Due to the limits of the device, it is only being used once a day at this time. However, the unit does seem to disperse birds very well.

In the spillway zone, gulls were the predominate species. One pelican and two cormorants were observed. Terns were noted once. The gulls were mostly roosting around the basin with some feeding in the spill flow. The terns were feeding. Osprey were also noted roosting in the area. Gull numbers fluctuated.

In the powerhouse zone, no birds were observed during counts. However, gulls were noted feeding in the zone on August 26.

In the bypass outfall zone, gulls and cormorants were noted. Terns were observed once. Gull numbers were low and cormorant numbers were stable. All the birds were roosting on the pipe. The lack of feeding may be due bird behavior.

In the forebay zone, grebes were noted once and gulls were observed twice. Most birds were roosting on the water. Outside the zone, gulls, herons, ospreys, and cormorants were observed in low numbers.

No grebes or pelicans were noted elsewhere.

Invasive Species: The mussel station examinations revealed no issues on August 23.

Siberian Prawn: One Siberian prawn was removed from the sample and euthanized this week. The yearly total is now nine prawns.

Fish Rescue/Salvage: No fish rescue occurred this week.

Research: There is nothing to report.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
4	8/16/21	0830	---	---	Annual maintenance and new oil

Comments: Unit 1 was turned off (not out of service) on August 26, from 0946 hours to 1055 hours, to drain some oil from the thrust bearing. Unit 2 was operated out of priority order ahead of unit 1 during that period.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on August 23, 24, and 25.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head ≤ 0.3’	
x		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head ≤ 0.3’	
x		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
	x	South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		x	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.6’, 2.2’, 2.3’
x			South Shore Channel Velocity	1.5 – 4.0 fps	
		x	North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
		x	North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.6’, 0.9’

Comments: The south fish ladder picketed leads at the count station are being cleaned of filamentous algae daily to keep the differential within criteria.

The south shore entrance channel/tailwater head differential was above criteria on all three fishway inspections. Only four south shore auxiliary water supply (AWS) pumps have been operating since August 12 to decrease the head differential, but the low tailwater elevation is still causing the high readings. The pump speed is not adjustable to make small changes to the water supply to help meet head criteria at the entrances.

On August 26, the Project Biologist noticed that there was almost no water flowing over one set of the stationary weirs in the south fish ladder upstream of the junction pool (1.0'-1.3' criteria). The adjacent set of weirs upstream had about 6" of water depth and the adjacent set downstream had 1"-2" of depth. This was the result of operating only four south shore AWS pumps, which must not create enough head from the pump discharge chamber to fill all of the diffuser chambers in the fish ladder. A fifth pump was started up on August 26 to rectify the situation. The depth over the weirs upstream of the junction pool in the south fish ladder was most likely below criteria for the entire time that four pumps were operating, which was July 31 to August 2, and August 12 to August 26.

The north shore entrance channel/tailwater head differential was above criteria on August 23. Two north shore AWS pumps were operating with the north shore channel diffusers turned down to 50% open during the August 23 fishway inspection. The high head differential at the north shore prompted the Project Biologist to have the powerhouse operator turn off a second north shore AWS pump on August 23. The head differential was slightly below criteria on August 25. The low tailwater conditions are making it difficult to keep the head differential in criteria. The pump speed is not adjustable.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
4-5 pumps	3-4 **pumps**		Status of the 8 south shore AWS pumps
1-2 pumps	1-2 pump		Status of the 3 north shore AWS pumps

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 1 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-1%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

Yes	No	NA	Item
x			STSs deployed in all slots that are in service?
	x		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	x		STSs/VBSs inspected this week?
		x	STS/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices are being backflushed once per day. There were no debris obstructions observed at the orifices, as indicated by reduced flow through the orifices.

The replacement actuator for the water regulating weirs in the collection channel is being operated in manual control. An analog controller input was added to the actuator and needs to be programmed to function automatically. Currently, the water level in the collection channel is being visually monitored once per day. The actuator is operated electronically in "local" control to manually adjust the weirs as needed.

The light for orifice 6CN was found to be burned out on August 24 and was replaced the same day.

Juvenile Fish Facility: The Juvenile Fish Facility is operating in primary bypass mode.

Fish Sampling: Sampling at Ice Harbor Dam has concluded for the season.

Removable Spillway Weir (RSW): Beginning on August 15, approximately 8.5 kcfs of spill, 24 hours per day, has been occurring. The RSW remains closed because of low river flows below 30 kcfs.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		**Daily Average Spill (kcfs)**		**Water Temperature* (°F)**		**Water Clarity (Secchi disk - feet)**	
High	Low	High	Low	High	Low	High	Low
25.4	18.6	8.5	8.5	70	70	9.0	8.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: None.

Avian Activity: There was a low level of piscivorous bird activity observed around the project. Most of the birds were observed foraging or resting around Eagle Island.

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Raymond Addis

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	07/15/2019	0720	11/18/2021	ERTS	Annual, Draft Tube Liner
Unit 3	08/16/2021	0825	09/02/2021	ERTS	Annual
Unit 4	07/06/2021	0700	09/23/2021	ERTS	Annual, Scroll Case Repair

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS biologists on August 20, 21, 22, and 25.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.5’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.5’	
X		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	≥ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south powerhouse entrance weir (SPE-1) was on sill during all inspections with readings of 6.4, 6.3, 6.8 and 6.7 feet respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 6.4, 6.3, 6.8 and 6.7 feet respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 7.3, 7.1, 7.7 and 7.5 feet respectively.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	21 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 - 5%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	X		STSs inspected this week?
		X	STSs inspection results acceptable?
	X		VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: STS's were operating on cycle mode during the reporting period due to average sub-yearling Chinook salmon and sockeye salmon lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Collection into the raceways for transport ended June 20 at 1500. Secondary Bypass began June 20 at 1500. Sampling for condition on alternating days began July 9. The facility was placed into Primary Bypass on non-sample days. A total of 190 fish were collected with 189 fish bypassed back to the river during this reporting period.

Transport Summary: Transport at Lower Monumental ended June 20.

Spillway Weir: Summer Spill began at 00:00:00 on June 21. The RSW went into service at 0001 on April 3 and was closed on July 9 due to high river temperatures with low river flows.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.3	19.2	7.1	6.8	71	70	7	5.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected June 14.

Avian Activity: Highest counts of foraging piscivorous birds in the tailrace (SWT1+PH1+PH2) during adult ladder inspections at Lower Monumental Dam are listed in the table below.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
08/20/2021	0930	12	2	0	0	16
08/21/2021	1430	0	0	0	0	2
08/22/2021	0845	6	2	0	0	8
08/25/2021	1230	3	7	0	0	6

Comments: Bird hazing efforts by USDA personnel ended on June 2.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on August 7.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and EAS, frozen and properly disposed of in a landfill. Total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported in the table below.

Date	Sample (euthanized)	Collection*
08/20/2021	73	126
08/21/2021	---	---
08/22/2021	53	106
08/23/2021	---	---
08/24/2021	92	184
08/25/2021	---	---
08/26/2021	190	380
Total	408	796

*Collection and sample numbers are the same as the facility when sampling at 100%

Fish Rescue/Salvage: No fish rescue or salvage occurred.

Research: No research is occurring currently.

Project: Little Goose
Biologists: Chuck Barnes

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Little Goose Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	04/14/17	14:11	12/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	09/30/2021	17:00	T2 ground
3	07/26/21	07:20	09/03/2021	17:00	Unit annual and controls upgrade

Comments: Little Goose experienced a T2 transformer ground on March 18 at 14:17. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be performed.

Adult Fish Passage Facility

Little Goose fish facility, Environmental Assessment Services (EAS) and Oregon Department of Fish and Wildlife (ODFW) staff inspected the adult fishway on August 21, August 23, and August 26. All inspections took place during emergency modified summer spill operations.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway continues to operate in manual mode. The fish control system still has a faulty hydroranger for the NSE1 weir and is currently awaiting the end of summer spill for repair.

Ladder exit cooling pumps were placed into service at 2052 hrs on 12 June when 0.5m forebay temperatures exceeded 64°F.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: Fish pumps 1 and 2 were returned to service on February 23. Fish pump 3 returned to service April 7.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	100ft^2 on 08/21
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	GW 5C, 1% on 08/21
	X		Any oil seen in gatewells?	

Comments: There is currently minimal floating woody debris inside the trash shear boom. Gatewell drawdowns for Unit 1 were conducted on August 26 and were in criteria.

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
X			ESBSs inspected this week?
X			ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?
X			VBSs inspected this week?

Comments: ESBS's were installed in Units 2, 3 and 4 on March 22 and 23. VBS differentials for Unit 1 were conducted on August 12 and were in criteria. ESBS/VBS camera inspections for all units took place June 8-10, and August 26 on unit 3.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18-19
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system was watered up on March 22 and began daily collection for transportation on April 23.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Every other day collection and sampling occurred through April 22. Daily collection for transportation began on April 23 with the first daily barge departing on April 24. The collection and transport facility operated within criteria this report period. A total of 3,579 fish were collected,

3,260 were transported via truck, 0 were bypassed, and there were 56 sample or facility mortalities. The descaling and mortality rates were 1.2% and 2.16%, respectively. Four adult lamprey were removed from the separator during this report period.

Transport Summary: Daily fish transportation via barge began on April 24. Every other day barge transportation began May 18 and ended June 21. Collection for transport resumed at 0700 hrs July 5 and every other day truck transportation began July 6.

Spillway Weir: Spring spill operations began on April 3 with the ASW in high crest. ASW day surface spill emergency procedure began July 3 at 0900 hours and ceased July 9 at 1600 hours. Unknown partial opening of ASW discovered on 25 August. Further details can be found in "MFR 21 LGS 11 Unknown Opening of ASW Due to Equipment Malfunction" on the FPOM website.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
21.8	18.1	6.3	6.2	69.5	68.0	6.0	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13 with the last inspection occurring on July 15. Inspection results were submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1. USDA hazing actives began on March 29 and ended June 19.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-20	0800	18	1	0	0
8-21	0745	18	7	0	0
8-22	1530	19	9	0	1
8-23	0800	30	4	0	0
8-24	0830	30	5	0	0
8-25	0800	3	4	0	0
8-26	0830	23	6	0	0

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile fish collection began on April 1. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam for this reporting period are reported below.

Date	Sample	Collection*
8-20	268	1072
8-21	510	2040
8-22	859	1792
8-23	2328	4656

8-24	111	222
8-25	55	110
8-26	107	214
Totals	4238	10106

Gas Bubble Trauma (GBT): GBT monitoring for the 2021 season concluded July 26.

Fish Rescue/Salvage: No fish rescue / salvage activities were performed this period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection on May 3 and ended June 30.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
6	07/26	0727			Six Year Overhaul

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway August 21, 23, and 25.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.9’, 7.9’, 7.8’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.9’, 7.8’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.4’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.5’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 0.5’, 0.5’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North shore and north powerhouse channel/tailrace head differential’s ability to maintain criteria range is dependent of tailrace conditions. Lower Granite electrical crew continue to work on the ladder control system issues.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
	Yes		AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 16.4 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices on 6A are closed due to a bulkhead being installed for the 6-year overhaul.

Collection Facility: The facility is in collection mode for condition sample and juvenile truck transport.

Transport Summary: A total of 3,832 smolts were transported this reporting period. There have been 117,361 smolts transported by truck since July 2. Prior to loading fish trucks biologist remove 2-3 five-gallon buckets of Siberian prawns from the raceway to prevent clogging of recirculating systems during transport and overflow systems while loading.

Spillway Weir: A total of 250,439 PIT tagged smolts have been detected over the RSW this season compared to a total of 23,563 smolts detected in the juvenile system. A total of 687 adult PIT tagged steelhead, 42 Chinook salmon, and 2 Sockeye salmon have been detected at the RSW this season compared to 77 adult steelhead and 15 Chinook salmon detected at the juvenile facility.

River Conditions

River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
20.4	19.5	7.0	7.0	66.2	63.5	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 51,039 Siberian prawns collected in sample and euthanized this week. There were 2-3 five-gallon buckets of Siberian prawns removed from raceways on transport days.

Avian Activity:

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Aug 20	1050	4	14	0	0
Aug 21	1030	4	0	0	0
Aug 22	0940	7	12	0	0
Aug 23	1520	3	12	0	0
Aug 24	1545	9	23	0	0
Aug 25	1319	6	12	0	0
Aug 26	1532	3	22	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Trapping 7 days per week at 70% and collection of fall Chinook salmon broodstock for transport to NPT and WDFW hatcheries began August 18.

Fish Rescue/Salvage: A fish salvage was conducted on August 24 within the Unit 6 draft tube. No salmonids were present. Species rescued included 12 channel catfish, 2 sucker spp., and 2 white sturgeon.

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook salmon and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook salmon and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. Natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion

rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.