

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#30-2021**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: September 17-23, 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).

Unit(s)	OOS		RTS		Outage Description
	Date	Time	Date	Time	
4	8/2	1018	10/ 28	N/A	Nine-year overhaul
9 thru 12	8/23	0646	10/1	N/A	Line 5 outage for BPA relays
13 & 14	9/20	0628	10/1	N/A	Transformer 7 Doble test/Bus inspection

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2021 Fish Passage Plan (FPP). RTS dates are subject to change. Since returning to service on August 18, Unit 5 has been derated to fixed blades at 22.5 degrees. This was currently the only way to avoid oil leaks around the blade seals.

Adult Fish Passage Facilities

The fisheries biologist and a technician performed a measured inspection of the adult fishways on September 18, 19, and 22. Fish counting, and video review of adult lamprey night passage continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.0' to 1.2'
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 exit were light to moderate and debris loads near the Washington shore exit were minimal. Picketed leads at both exits were cleaned as needed, including the weekend.

At the Washington shore exit, multiple alarms were reset on September 22.

There are no other problems 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' to 1.4'
X			NFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2'
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' to 8.1'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.6' to 1.7'
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' to 8.0'
	X		SFEW2 Weir Depth	≥ 8.0'	7.8' to 8.1'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.4 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	9.9' to 10.3'
X			WFE3 Weir Depth	≥ 8.0'	10.0' to 10.2'

Comments: Possibly due to calibration drifts, NFEW3, SFEW1 and SFEW2 were out of criteria on September 22.

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			25° to 26°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is October 29
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 3 remained out of service. The estimated return to service date is October 29. For electrical switching, which allowed transformer 7 to be removed from service, the Wasco County PUD was in bypass mode on September 20, from 0628 to 0717 hours.

Juvenile Fish Passage Facility

Normal sampling season, which concludes September 30, consist of alternating days of primary and secondary bypass. The B side sample tank water temperature was below 68 degrees Fahrenheit this week. There have been four samples with no smolts in them since September 12.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	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 light near the powerhouse and minimal beside the spillway. Incoming debris was minimal. Most of the debris appeared to be distribution along the Oregon shoreline.

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 Unit 10 revealed no issues on September 21.

Daily VBS differential monitoring revealed no differentials out of criteria. Four screens were cleaned on September 20. No fish mortalities were observed.

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 as required. With low debris loads and a temporary air supply line, orifice cycling remains at once a day. Orifice operators were repaired as needed.

The air supply to the channel was briefly lost during VBS cleaning on September 20. The mechanics found several small air leaks in the temporary air supply line from the north end of the powerhouse, which they repaired. A check valve in the supply line had briefly closed due to orifice exchanges and the leaks. After the repairs, no further issues have occurred, and the air supply will continue to be monitored.

The contractor who is reinforcing the intake deck crane's east rail will continue to 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, eight juvenile lamprey and 12 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.

A bus switch, with a brief electrical outage, had no adverse effect on sample collection on September 21. There are no other problems to report.

Top Spillway Weir (TSW) Operations:

The TSW's remain out of service. Standard spill gates are in bays 19 and 20. A TSW will be installed in bay 20 next week in preparation for the adult fallback season starting October 1.

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
87.1	69.4	0.0	0.0	67.9	65.3	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.

Though crane 6 is in service, remote operation has yet to be restored. The load limit indicator continues to be an issue. Crane 7 is out of service and work on the main hoist gearbox continued. 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.

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
Sept 17	Spill	41	0	0	0	0
	Powerhouse	0	2	0	0	0
	Outfall	5	23	0	0	0
	Forebay	0	0	0	0	0
Sept 18	Spill	6	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	22	0	0	0
	Forebay	0	0	0	0	0
Sept 19	Spill	20	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	21	0	0	0
	Forebay	0	0	0	0	0
Sept 20	Spill	215	0	0	0	0
	Powerhouse	4	0	0	0	0
	Outfall	5	42	0	0	0
	Forebay	0	0	0	0	0
Sept 21	Spill	19	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	41	0	0	0
	Forebay	0	0	0	0	0
Sept 22	Spill	12	1	0	0	0
	Powerhouse	5	0	0	0	0
	Outfall	3	35	0	0	0
	Forebay	0	0	0	0	0
Sept 23	Spill	32	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	3	19	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 along with one cormorant were noted. They were mostly roosting around the basin. Gull numbers fluctuated.

In the powerhouse zone, gulls and cormorants were observed twice and once, respectively. For the most part, the birds were feeding.

In the bypass outfall zone, gulls and cormorants were noted. Bird numbers were stable. All the birds were roosting on the pipe with occasional feeding noted. The lack of feeding may be due bird behavior or juvenile shad numbers.

In the forebay zone, no birds were observed. Outside the zone, a few gulls, and cormorants were noted along with one great blue heron. A small gull flock was noted along the Oregon shoreline.

Invasive Species: The next mussel station examinations will occur on September 26.

Siberian Prawn: One Siberian prawn were removed from the sample and euthanized this week. The yearly total is 10 prawns.

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

Research: Pacific Northwest National Laboratory (PNNL) removed a total of 430 juvenile shad from the samples examined on September 20 and 22. The collected shad will be used for an off sight tagging protocol study.

Project: Ice Harbor
 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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind

Comments: Units 6, 5, 4, 2, and 1 were taken out of service one at a time for STS inspections on September 20, 21, and 22.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on September 21, 22, and 23.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head \leq 0.3'	
x		North Ladder Picketed Lead Differential	Head \leq 0.3'	
x		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
x		South Ladder Exit Differential	Head \leq 0.3'	
x		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
	x		South Shore Channel/Tailwater Differential	1.0' – 2.0'	2.6', 2.6', 2.3'
x			South Shore Channel Velocity	1.5 – 4.0 fps	
		x	North Powerhouse Entrance (NFE-2) Weir Depth	\geq 8.0' or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0' – 2.0'	
		x	North Shore Entrance (NEW-1) Weir Depth	\geq 8.0' or on sill	
x			North Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: The south shore entrance channel/tailwater head differential was above criteria on all three inspections, due to the low tailwater elevation. The auxiliary water supply pump speed is not adjustable to make small changes to the water supply to help meet head criteria at the entrances. A minimum of five south shore auxiliary water supply pumps needs to be operating to maintain the depth over the stationary weirs in the lower part of the fish ladder, so another pump cannot be shut off to lower the head differential at the entrance.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
5 pumps	3 pumps		Status of the 8 south shore AWS pumps
2 pumps	1 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 2 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-2%
	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: The STSs for Units 6, 5, 4, 2, and 1 were inspected on September 20, 21, and 22. There were no significant problems found.

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 light for orifice 5CN was found to be burned out over the weekend. The light was replaced on September 20.

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.

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): Summer spill for fish has ended for the season.

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
23.6	16.3	0.0	0.0	68	66	8.0	7.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Inspection of turbine cooling water strainers for lamprey will resume in December.

Avian Activity: There was a moderate number of gulls and pelicans observed foraging or resting at 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: On September 22 and 23, Pacific Northwest National Laboratory (PNNL) personnel released sensor fish through the fish release control pipe that is mounted on the wall of the tailrace deck by unit 3. They recovered the sensors using boats in the tailrace. Their purpose is to test the performance of the pipe as a suitable control release point, in preparation for the actual biological testing of Unit 3 after the new runner is installed.

Project: Lower Monumental

Biologists: Raymond Addis & Paul Bertschinger

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 2	07/15/2019	0720	11/18/2021	ERTS	Annual, Draft Tube Liner

Comments: None

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS biologists on September 17, 18, 19 and 22.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head \leq 0.5'	
X		North Ladder Picketed Lead Differential	Head \leq 0.4'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head \leq 0.5'	
X		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	\geq 8.0' or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	\geq 8.0' or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X		X	South Shore Entrance (SSE-1) Weir Depth	\geq 8.0' or on sill	
X			South Shore Entrance (SSE-2) Weir Depth	\geq 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 7.3, 7.2, 7.2 and 6.8 feet respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 7.3, 7.2, 7.2 and 6.8 feet respectively. The south shore entrance weir (SSE-1) was on sill during one inspection with readings of 7.8 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)	31 yds ²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 - 4%
	X		Any oil seen in gatewells?	

Comments: None

STSS/VBSs:

Yes	No	NA	Item
X			STSS deployed and in service in operating and available units?
	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: STSS'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 16 fish were collected with 16 fish bypassed back to the river during this reporting period.

Transport Summary: Transport at Lower Monumental ended June 20.

Spillway Weir: Summer Spill ended at 23:59:59 on August 31. 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
22.4	17.1	0.0	0.0	66.5	65.2	6.9	5.6

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections will resume in December.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
09/17/2021	0915	0	4	0	0	0
09/18/2021	1130	5	6	0	0	0
09/19/2021	1045	6	8	0	0	0
09/22/2021	1130	2	7	0	0	0

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

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on September 19.

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*
09/17/2021	37	74
09/18/2021	---	---
09/19/2021	47	94
09/20/2021	---	---
09/21/2021	81	162
09/22/2021	---	---
09/23/2021	38	76
Total	203	406

*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 & Deborah Snyder

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
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 C phase ground fault
4	09/20/21	08:00	10/15/2021	17:00	Annual Maintenance

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 September 18, 21 and 23.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head \leq 0.5'	
X			Fish Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	\geq 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			North Powerhouse Entrance (NPE-1) Weir Depth	\geq 7.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	\geq 7.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
	X		North Shore Entrance (NSE-1) Weir Depth	\geq 6.0' or on sill	5.6 on 09/21
	X		North Shore Entrance (NSE-2) Weir Depth	\geq 6.0' or on sill	5.6 on 09/21
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 repair.

Ladder exit cooling pumps were placed into service at 2052 hrs on 12 June when 0.5m forebay temperatures exceeded 64°F. Failure occurred 09/16/2021 at 02:35 due to an electrical cable ground short potentially placing the

cooling pump out of commission for the remainder of the season, however at 16:00 on September 19, the 0.5m forebay temperature met the qualifying criteria to shut down the ladder exit cooling pump for the season.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X	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)	400ft ² on 9/20; 2200ft ² on 09/17
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	5C: 3% 9/19; 10% 9/18
	X		Any oil seen in gatewells?	

Comments: There is currently fluctuating minimal to moderate floating woody debris inside the trash shear boom. Gatewell drawdowns for Unit 1 were conducted on September 23 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 September 23 and were in criteria. ESBS/VBS camera inspections for all units took place June 8-10. Unit 3 was inspected again on August 26. Unit 6 has 1 remaining ESBS currently raised and stored within the Unit 5-B slot position. Unit 6 bulkheads are in place; both Units 5 and 6 are out of service.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	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 141 fish were collected, 106 were transported via truck, 0 were bypassed, and there was 1 sample or facility mortality. The descaling and mortality rates were 2.2% and 0.84%, respectively. No 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.

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
22.8	15.9	0.0	0.0	66.0	65.8	6.0	5.5

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inspections will resume in December.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
9-17	0800	15	9	0	0
9-18	0830	0	7	0	0
9-19	1645	4	2	0	0
9-20	1400	0	0	0	0
9-21	1045	0	5	0	0
9-22	0930	2	2	0	0
9-23	0730	17	7	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*
9-17	212	212
9-18	183	183
9-19	260	260
9-20	102	102
9-21	238	238
9-22	263	263
9-23	187	187
Totals	1445	1445

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)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
6	07/26	0727	09/21	1239	Six Year Overhaul
4	09/13	0729			Annual Maintenance and Bearing Indication Work

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway September 18, 20, and 22.

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: The fish ladder cooling water pumps were turned off at 0942 hours September 23 due to forebay temperatures decreasing below the FPP criteria.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
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	≥ 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'	0.8', 0.8', 0.9'
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.7', 0.7', 0.7'
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 20.0 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: None.

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

Transport Summary: A total of 403 smolts were transported this reporting period. There have been 119,139 smolts transported by truck since July 2.

Spillway Weir: A total of 250,440 PIT tagged smolts have been detected over the RSW this season compared to a total of 23,579 smolts detected in the juvenile system. A total of 697 adult PIT tagged steelhead, 42 Chinook salmon, and 2 Sockeye salmon have been detected at the RSW this season compared to 87 adult steelhead and 22 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
21.3	17.7	0.0	0.0	64.9	64	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga mussels were detected on the trap substrate. There were 2,500 Siberian prawns collected in sample and euthanized this week.

Avian Activity:

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Sept 17	1535	4	13	0	0
Sept 18	1000	2	6	0	0
Sept 19	1530	23	14	0	0
Sept 20	1225	20	24	0	0
Sept 21	0905	27	10	0	0
Sept 22	1210	36	17	0	0
Sept 23	1535	41	10	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

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

Fish Rescue/Salvage: N/A

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.

USGS Juvenile Fall Chinook Salmon Growth and Origin

USGS began collection of previously tagged subyearling Chinook salmon utilizing LWG juvenile collection facility SbyC system began September 8 and will continue through October 31. Previously PIT tagged fish are diverted to the SbyC tanks, weighed, measured, GSI sampled, scanned for PIT tag code, recovered from anesthetic, and released back to the river. The objective of this project is to estimate the growth of PIT-tagged subyearling Chinook salmon from the Clearwater River to Lower Granite Dam.