

Out of Criteria – Weekly Report #31-2023

**1. McNary**

Units 13&14 OOS until 12/21 for Control Upgrades

Dogging mechanisms in Bay 2 removed Sept. 29. Dogging mechanisms in bay 9 removed on Oct. 2. Gate in bay 9 will also be repaired. Upstream dogging mechanisms re-installed in bay 21 on Oct. 3. See MOC 23MCN10.

**2. Ice Harbor**

Sep 30 Unit 3 Tripped off while carrying full load due to delayed blade response time. RTS Oct 3.

The north shore channel/tailwater differential was high on October 1. This was due the difficulty in obtaining an accurate tailwater elevation reading with the choppy water during spill.

North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve. The hydraulic cylinder needs to be rebuilt but is on hold until funding is available.

**3. Lower Monumental**

Spillgate 5 is out of service for gearbox replacement, estimated return to service on September 30, 2024. Spillgate 7 is out of service for gearbox replacement, estimated return to service on September 30, 2024.

North Shore Entrance NSE-2 weir was out of criteria during the September 29 inspection with a reading of 7.8 feet. The digital gauge in the automated system did not match the gauge at the weir control box.

The five broken bird deterrent wires over Powerhouse 1 zone will be replaced by USDA personnel in September or October of 2023.

**4. Little Goose**

Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, testing scheduled for winter maintenance period in December. Unit 1 outage detailed in 23 LGS 12 MOC, RTS 10/4/2023.

The fishway cooling pump has been out of operation since June 29.

**5. Lower Granite Dam**

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.3', 7.3', 7.5'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.3', 7.3', 7.5'
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 8.0' or on sill	6.9'
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 8.0' or on sill	6.9'
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9', 0.9'

Pump 3 was removed from service to address a gearbox oil leak and to replace the input shaft. AWS pumps 1 and 2 remain in service. See MFR 23LWG10.

**Project: McNary**

Biologist: Bobby Johnson and Paul Bertschinger

Dates: September 29-October 5, 2023

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 14 turbine units available for service? (See table & comments below for details.)		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

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

Unit(s)	OOS		RTS		Outage Description
	Date	Time	Date	Time	
13 & 14	6/12	0636	12/21	NA	Control system upgrades
7 & 9	10/3	1000	10/3	1100	ESBS camera inspections, rotated through units

Comments: RTS dates are subject to change.

**Adult Fish Passage Facilities**

Measured inspections of the adult fishways occurred on September 29, October 1 and 3. Visual adult fish counting continues. Video review of nighttime lamprey passage concluded on September 30.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.0' to 1.1'
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'	0.2' to 0.3'

Comments: Debris loads were light (woody material) near the Oregon shore exit along the shoreline and minimal (aquatic material) near the Washington shore exit. The general maintenance staff has been cleaning the picketed leads at both exits as needed, including on Saturday.

There are no 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'	8.6' to 8.9'
X			NFEW3 Weir Depth	≥ 8.0'	8.8' to 8.9'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.8'
X			SFEW1 Weir Depth	≥ 8.0'	8.3' to 8.4'
X			SFEW2 Weir Depth	≥ 8.0'	8.4'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	9.2' to 9.5'
X			WFE3 Weir Depth	≥ 8.0'	9.2' to 9.6'

Comments: NFEW2 was found in manual mode on October 1. The control room operator immediately returned the weir to automatic mode.

Three floating orifice gates (FOG's) slots, W32, W37 and W 41 remain closed. Nine of 12 slots are open.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			23°	Oregon Ladder Fish Pump 1
Yes			21°	Oregon Ladder Fish Pump 2
Yes			23°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

**Juvenile Fish Passage Facility**

Every other day sample collection concluded on September 30 at 0700 hours, when fall primary bypass season began. Final steps to completion of the new forebay (intake) deck crane continues to add some challenges to various tasks.

The smolt monitoring staff is still looking to relocate their internet dish or find a new provider.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to moderate
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: Debris loads were minimal to moderate near the powerhouse. Residual debris loads beside the spillway and new incoming debris loads were minimal. Weather changes move the debris from the powerhouse to the Oregon shore and back. Most of the debris was fine or woody material and aquatic vegetation.

No trash rack cleaning was scheduled.

Some small pieces of woody material were removed from the gatewell slots this week.

For the new intake deck crane, unit 14's gatewell slots remained covered over. 13B and 13C slots were uncovered on October 4.

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: ESBS's are deployed in all units. Camera inspections in units 7 and 9 revealed no issues on October 3.

Daily VBS differential monitoring continued. No high differentials were recorded. Three screens were cleaned on October 4. No fish 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. Orifice operator oil and air leaks were repaired as needed.

Bypass Facility:

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

Comments: The sample gates were removed from service after the last sample was collected on September 30, at 0700 hours. The PIT-tag sampling system was not used this year.

This week, no juvenile lamprey and no smolts were bypassed during secondary bypass on the last sample collection day of the season. Juvenile shad continued to be the predominate species in the sample, however, at greatly reduced numbers. The smolt monitoring staff will publish this year's fish data in a separate report.

TSW Operations: The TSW in bay 19 remains out of service with a standard gate in place. The TSW in bay 20, per RCC schedule, was being opened as required.

**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
81.7	66.0	1.8	0.0	65.0	64.0	6.0	6.0

Comments: The above data is provided by the control room. The data day runs from 0000 to 0000 hours.

Cranes 6 and 7 can perform their next overloaded lift on April 18, 2024. All hoists are functional. Spillway hoist scheduled maintenance began this week and will occur most of October.

The dogging mechanisms in bay 2 was removed on September 29. The dogging devices in bay 9 were removed on October 2. The gate in bay 9 will also be repaired. The upstream dogging mechanisms were reinstalled in bay 21 on October 3.

**Other**

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 5.

Avian Activity: Avian counts concluded on September 28. With fall primary bypass season, casual bird count observations resumed.

For the report week, no terns, or pelicans were observed.

In the spillway zone, gulls and cormorants were noted roosting. Gull numbers fluctuated greatly. The gulls did feed in the TSW flow when open. Overall gull numbers were the highest on TSW flow days.

At the bypass outfall zone, a few gulls and a large number of overwintering cormorants were noted roosting. Occasionally, the birds would feed.

In the powerhouse zone, a few gulls were noted roosting and occasionally feeding. Gulls moved freely between the three tailwater zones.

In the forebay zone, few roosting gulls and a fair number of feeding and roosting grebes were noted. Outside the zone, a few cormorants were observed along with a small number of gulls. One great blue heron was observed.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. These calls became less effective during the juvenile shad out migration. It is possible these birds are a different species than what our calls are programmed for. The laser and LRAD remained deployed on the outfall walkway and are also less effective during the shad out migration. No other hazing is occurring.

Invasive Species: The next mussel station examinations will occur in late October.

Siberian Prawn: Three prawns were removed from the last sample of the season. After reviewing the data, the season total was adjusted to forty-nine prawns. Five prawns were removed from the perforated plate upstream of the separator on October 3.

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

Research: USGS personnel will return to the project to remove their spillway equipment in November. For a CRITFC study, there were no tissue samples removed from juvenile lamprey as no lamprey were collected in the last sample. The total number of tissue samples taken this year remained at 780.

**Project: Ice Harbor**

Biologist: Ken Fone

Biological Science Technician: Ben McArthur

Dates: September 29 – October 5, 2023

**Turbine Operation**

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix 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	
1	6/27/23	07:08	---	---	Turbine runner replacement and stator rewind
3	9/30/23	0954	10/03/23	17:00	Blade response timing
4	10/02/23	09:30	---	---	6-year overhaul

Comments: Unit 3 tripped off while carrying full load due to delayed blade response time.

**Adult Fish Passage Facility**

Ice Harbor Fish Facility staff inspected the adult fishways on September 29, 30, and October 1.

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'	
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'	2.3'

Comments: The north shore channel/tailwater differential was high on October 1. This was due the difficulty in obtaining an accurate tailwater elevation reading with the choppy water during spill.

The adult lamprey entrance at SFE-2 was closed for the season on October 2.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply 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: North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve. The repairs are on hold until funding is available.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 12 square yards
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.

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	VBSs differentials checked this week?
		x	VBSs 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: The actuator for the water regulating weirs in the collection channel is in local control due to a problem with the automatic control function. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

Juvenile Fish Facility: The juvenile fish facility is operating in primary bypass.

Fish Sampling: Juvenile fish sampling is done for the season.

Removable Spillway Weir (RSW): Spill is occurring three times per week on non-consecutive days from 0500 hours to 0900 hours.

## 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
24.7	18.0	1.6	0	68	65	7.6	5.8

\*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Turbine unit cooling water strainers will not be regularly inspected again until juvenile shad start plugging them up in the fall.

Avian Activity: There was light piscivorous bird activity observed around the project.

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: Unit 4 scroll case was unwatered on October 3. The species composition of recovered fish were two juvenile white sturgeon, three channel catfish, and four yellow bullheads. Fish were released in good condition into the juvenile fish bypass flume.

Research: Unit 3 bio-testing with sensor fish was canceled on September 30, October 2 and 3 due to the unit 3 forced outage. Bio-testing with sensor fish ended for now on October 4. Bio-testing with live fish and sensor fish will resume in a few weeks when water temperatures are cooler to reduce the temperature-related stress on the live fish.



**Project: Lower Monumental**

Biologists: Denise Griffith and Raymond Addis

Dates: September 29 – October 5, 2023

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
X		All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Comments: 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 5	8/03/23	2200	10/07/23	0459	T-2 Repairs
Unit 6	8/03/23	2200	1/02/24	ERTS	T-2 Repairs

Comments: Unit 6 is out of service awaiting total load testing of T-2 which will take place after the end Fish Passage Plan of unit priority.

**Adult Fish Passage Facility**

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on September 29, 30, October 1, 3 and 4.

**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	South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 6.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: North Shore Entrance NSE-2 weir was out of criteria during the September 29 inspection with a reading of 7.8 feet. The digital gauge in the automative system did not match the gauge at the weir control box. The operator adjusted the set point to bring back in criteria. South Powerhouse Entrance SPE-1 weir was at sill during all inspections with readings 6.3, 6.4, 6.5, 5.3 and 7.2 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings of 6.3, 6.4, 6.5, 5.3 and 7.2 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 7.4, 7.5, 7.3, 6.5 and 7.9 feet respectively.

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: None.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
	X		Forebay debris load acceptable? (amount)	187 yd <sup>2</sup>
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: The STSS were on cycle mode due to average sub-yearling Chinook and sockeye 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 for condition sample took place between September 30 and October 1. A total of 0 fish were collected. The collection season ended at 0700 on October 1 and the facility was dewatered at 1200 on October 2.

Transport Summary: Collection for transport ended for the season.

Spillway Weir: RSW spill for fall steelhead continues. Spillgate 5 is out of service for gearbox replacement, estimated return to service on September 30, 2024. Spillgate 7 is out of service for gearbox replacement, estimated return to service on September 30, 2024.

**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
27.2	16.4	3.6	0.0	65.0	64.2	5.6	4.6

\*Scrollcase temperatures.

### Other

Cooling Water Strainers: The cooling water strainers will not be examined again until December.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam ended with the September 30 count.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
9/29/2023	1230	96	52	0	0	0
9/30/2023	1230	23	37	0	0	0

Comment: Bird hazing by USDA personnel ended on July 1. The five broken bird detourant wires over Powerhouse 1 zone were replaced by USDA personnel on October 5.

Invasive Species: Mussel traps were inspected for zebra or quagga mussels on October 4. None were found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by EAS, frozen and properly disposed of in a landfill. Sampling occurred on October 1.

Date	Sample (euthanized)	Collection*
October 1	30	60
Total	30	60

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

Fish Rescue/Salvage: No fish salvage took place this week.

Research: A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam will start on April 1 and run to September 30. PNNL removed most of the monitoring equipment from the raceways on June 22 and plans to remove remaining equipment during the first 2 weeks of November.

**Project: Little Goose Dam**

Biologist: Deb Snyder, Brooke Gerard, Cole Reeves

Dates: September 29 – October 5, 2023

**Turbine Operation**

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	4/14/2017	1411	12/01/2023	ERTS	Spider and upper guide bearing repair.
1	10/4/2023	0745	10/4/2023	1155	Cleaning rings on generator excitor

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023, testing scheduled for winter maintenance period. Unit 1 outage detailed in 23 LGS 12 MOC.

**Adult Fish Passage Facility**

EAS Bio and ODFW staff inspected the adult Fishway on October 3, 4, and 5.

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	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	7.6- 10/5
X	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	7.7- 10/5
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 7.0' or on sill	
X		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	X*		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 6.0' or on sill	5.8- 10/5*
X	X*		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0' or on sill	5.5- 10/5*
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

\* taken with NSE FSC board, which shows readings discrepant from physical weir height measurements

Comments: The adult fishway was initially returned to service on February 14, dewatered February 16 due to discovery of a second fish viewing window leak, then subsequently watered back up and commissioned for the season on February 23. The AWS pumps returned to service on February 23. The Fish Ladder Exit Cooling Water Pump was pulled, inspected, and readied for modest repairs on February 21. The Collection Channel Surface Velocity is measured at NPE. Rickly channel velocity measurements were completed and met criteria on July 27. Transponder readings documenting the Fish Ladder Depth over Weirs began displaying data inconsistent with physical staff gauge measurements beginning March 30. The North Shore fish entrance weirs continue to

experience discrepancy readings between the Fish System Control (FSC) board and physical weir height measurements. We are working with SMP contracted personnel to standardize reporting to default to physical staff gauge measurements when FSC board discrepancies are detected. North Shore elevator was out of service for report period defaulting measurements to FSC only at NSE. Criteria for activation of Fish Ladder Exit Cooling Pump was met, and the system was started at 2030 hours on June 7. The Fish Ladder Exit Cooling Pump failed during the 0900 hour on June 29<sup>th</sup> initially from two ground fault alarms, details outlined in 23 LGS 09 MFR.

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, 2, and 3 were returned to service February 23.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 125 ft <sup>2</sup> - Low 0 ft <sup>2</sup>
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	2B - 2% on 10/4 & 10/5
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on September 30 and October 3, 5 at 25 ft<sup>2</sup>. The overall total forebay debris high occurred October 5 at 125 ft<sup>2</sup>.

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: Installation of Unit 4-6 ESBS's were completed on March 13 and installation of units 1-3 took place March 14. Underwater camera inspections of all unit gatewell VBS screens occurred June 12, 13, and 14. No deficiencies were found; detailed notes were taken and forwarded to mechanical crew personnel in preparation for upcoming scheduled unit annual maintenance activities. During unit 6 annual, VBS screens in slot A were pulled and the few remaining stainless-steel fasteners were refurbished with nylon replacements.

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: The juvenile bypass system was initially watered up March 6, was halted to fix pinhole leaks discovered in the 42” primary emergency fish bypass pipe, resumed and was fully commissioned on March 7.

Collection Facility: The juvenile collection facility watered up on March 21. Every other day collection for condition monitoring in conjunction with secondary bypass began March 25 with the first sample being conducted on March 26. Everyday collection began April 23 coinciding with every other day barge transportation. Barging transportation concluded with the final barge departure of June 19 returning to a combination of everyday condition sampling and secondary bypass operations. Every-other day primary by-pass was initiated on July 11 due to water temperatures above 68°F. Every day collection resumed at 0700 on August 1<sup>st</sup> corresponding with the start of every other day trucking operations as per the FPP. A total of 52 fish were collected and 63 were trucked. There was 1 sample or facility mortality. The descaling and mortality rates were 0% and 1.9%, respectively. The collection and transport facility operated within criteria. No adult lamprey were removed from the collection facility during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging is scheduled thereafter pending situational transition to everyday barging due to any unforeseen increase in fish numbers. Barge transportation for the season ended with the final barge departure on June 19. Collection for truck transport operations began August 1 with the first truck departure on August 2.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week every other day for four hours in the morning. Spring spill operations began as scheduled on April 3. On June 12 the ASW was adjusted to high crest at 0840 hours per teletype instructions reducing ASW outflow from 11 to 7.4 kcfs due to decreased reservoir inflows. Summer spill operations began as scheduled on June 21. On August 1 at 14:02 hours the ASW was closed per RCC teletype in conjunction with FPP Chapter 8 section 2.3.2.7.e, diminished outflows below the 35 kcfs threshold.

### 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
24.70	15.50	1.2	0	66.0	64.6	5.6	5.3

\*Ladder temperature.

### Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2022. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place. October 1 additionally documented 12 Grebes in the tailrace.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
9-29	1130	8	2	0	0
9-30	0830	22	8	0	0
10-1	0830	32	13	0	0
10-2	0830	35	19	0	0
10-3	0800	107	1	0	0
10-4	1635	67	6	0	0
10-5	1200	67	0	0	0

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

Siberian Prawn: Juvenile fish collection began March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill.

<b>Date</b>	<b>Sample</b>	<b>Collection*</b>
9-29	66	66
9-30	112	112
10-1	139	139
10-2	20	20
10-3	42	42
10-4	78	78
10-5	44	44
Totals	501	501

\*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring services starting on April 4, 2023. Final season GBT monitoring occurred on July 26 and 27th. Of the 46 fish examined, 0 fish exhibited signs of GBT.

Fish Rescue/Salvage: No fish salvage operations transpired during this reporting period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on March 26 and concluded collection on July 1.

**Project: Lower Granite**

Biologists: David Miller/Steve Lee

Dates: September 29-October 5, 2023

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
X		All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
3	02 Oct	0700			Scheduled Maintenance and VBS Replacement

Comments:

**Adult Fish Passage Facility**

Lower Granite biologists inspected the adult fishway on September 29 and 30, and October 02 and 04.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
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 Cooling Water Pumps Operating Satisfactorily		

Comments: Fish Ladder Cooling Pump 2 was turned off at 1200 on September 30. Both cooling water pumps are in standby.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	7.3', 7.3', 7.5'
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	7.3', 7.3', 7.5'
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	7.7' sill
X			North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	7.7' sill
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
	X		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	6.9
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0' or on sill	6.9
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.9', 0.9'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	



Comments: Ladder collection channel operation and configuration will continue to be evaluated this season to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. Electrical crew continues to calibrate the ladder when issues are reported.

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: AWS pumps 1 and 2 remain in service.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	17.6 yd <sup>2</sup>
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:

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: Unit 3 ESBS were removed to facilitate the replacement of the VBS in all three gatewells. All ESBS will be redeployed prior to bringing the unit back into service on October 19.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments:

Collection Facility: The collection facility is general collection mode for transport and collecting for condition sampling and USGS research. Lamprey genetic sampling for CRITFC continues. Collection for truck transport started at 0700 hours August 1.

Transport Summary: Transport resumed with the first truck departing LWG August 3. A total of 41 fish were transported by truck during the current report week. For the season, 16,850 fish have been transported by truck and 3,041,835 were transported by barge from Lower Granite.

Spillway Weir PIT OBS: Late summer spill started August 15. There have been 227 adult and 84,648 juvenile Chinook salmon; 724 adult and 54,965 juvenile steelhead; 21 adult and 2,981 juvenile Coho salmon; and 12,162 juvenile Sockeye salmon detected at the RSW since March 1 (DART).

Juvenile Bypass System PIT OBS: There have been 40 adult and 45,250 juvenile Chinook salmon; 202 adult 38,032 juvenile steelhead; 10 adult and 1,209 juvenile Coho salmon; and 1,141 juvenile Sockeye salmon detected through the JBS since March 15 (DART).

### 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
23.3	18.5	1.8	0.0	63.0	62.0	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 585 Siberian prawns collected in the sample.

Avian Activity: Biologist daily piscivorous bird counts and bird hazing began April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Sep 29	0840	8	16	0	0
Sep 30	0915	1	20	0	0
Oct 01	0820	3	19	0	0
Oct 02	1524	2	18	0	0
Oct 03	0956	6	21	0	0
Oct 04	1252	2	15	0	0
Oct 05	1500	5	13	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Broodstock collection for WDFW and NPT restarted October 2 due to fish mortalities at the hatcheries. There was a request for an additional 40 female adult Chinook to replace those lost. The trap sample rate is 18% and the trap is being operated 7 days per week.

Fish Rescue/Salvage: N/A

Research:

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

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook 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 March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder March 1-November 30. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All 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.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap are PIT tagged and released back into the ladder to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

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.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival at Lower Granite:

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile and 450 larval lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. An additional 1000 juvenile or larval lamprey will be implanted with PIT tags. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system. In addition, 50 dead tagged juvenile lamprey will be released from LGR and 50 from LMN to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCT) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at LGR and LMN, estimate reach survival downstream of LWG and downstream of LMN, and evaluate travel time between detection arrays. Of the total collection, 655 larval and 1116 juvenile lamprey have been either PIT tagged or acoustic tagged at LWG and released at Blyton Landing, 110 larval and 200 juveniles were handled and released without being tagged, and there were 26 larval and 17 juvenile lamprey recovery mortalities. Collection of juvenile lamprey resumed the last week of September

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1250 larval Pacific lamprey, not to exceed 10 juvenile and 5 larvae daily (*Samples limits for larval season total were increased to 1250 and larval daily collection limits were decreased to 5 daily on September 13*), during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information

collected will be used to evaluate the tribal Pacific lamprey programs efficacy and assist with guiding future management. LWG SMP collected genetic samples from 426 juvenile and 1060 larval lamprey this season.