Out of Criteria – NWW Weekly Report #1 – March 01-07, 2024

1. McNary

Due to the age of the ladder, one fish pump being out of service (see MFR 24MCN01), and the juvenile system being out of service, all Oregon ladder entrance weirs were out of criteria this week.
The Washington ladder pool differential and WFE3 were out of criteria briefly due to the PUD unit returning to service on March 1.

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
		X		Oregon Ladder Fish Pump 1, Return to service 3/15
		X		OR North Powerhouse Pool supply from juvenile fishway

2. Ice Harbor

On March 1, unit 5 was mistakenly operated out of unit priority ahead of unit 3 from 0001 hours to 0056 hours and from 0354 hours to 0530 hours.

The north shore entrance channel/tailwater differential was most likely below 1' on March 1 and March 5 when only one north shore auxiliary water supply pump was running.

On March 1, 2024, north shore AWS pump #2 tripped off at 0345 hours due to a lubrication alarm and was restarted at 0700 hours, resulting in only one pump running during that period.

North shore AWS pump #2 and #3 were taken out of service one at a time (with a brief overlap) on March 5 to perform maintenance on the electrical relays. This resulted in only one north shore pump being in operation from 0712 hours to 1110 hours and 1132 hours to 1417 hours, and no pumps operating from 1110 hours to 1132 hours (see MFR 24 IHR 01 for more details).

3. Lower Monumental

North Shore Entrance NSE-1 was out of criteria on March 6, with a reading of 7.8 feet. North Shore Entrance NSE-2 was out of criteria on March 5 and 6, with readings of 7.5 and 7.7 feet, respectively. The control room was notified of these readings.

4. Little Goose

South shore entrances (SSE-1 & SSE-2) were out of criteria on March 6th, with readings of 7.2 feet.
North powerhouse entrance (NPE-1) was out of criteria on March 4th 6th and 7th, with readings of 6.2, 5.2, and 5.3 ft, respectively. The NPE-1 weir is not lowering below 533.1, due to be a sensor issue.

On March 1 the ASW was not able to open due to a programing issue for a new variable frequency drive. The issue was resolved by 15:40 on March 1, and 8 hours of spill were performed on March 2 to compensate as per CBR LGS R 022904 1647 (see MFR 24LGS01).

5. Lower Granite Dam

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.7’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.7’
	X		North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	7.9’
	X		North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	7.8’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.9’, 0.7’, 0.7’

North shore did not meet channel/tailwater head differential criteria. Efforts of the electrical crew were able to bring the ladder into criteria except for the north shore channel/tailrace differential.

U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#01-2024

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: March 1-7, 2024

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
9 & 10	11/27/23	0631	4/26/24	NA	Control system upgrades
11 & 12	2/27/24	0630	3/15/24	NA	Gasket repairs

Comments: RTS dates are subject to change. Units ran outside the soft one percent criteria as needed and requested by BPA during the week.

Adult Fish Passage Facilities

McNary fisheries staff performed measured inspections of the adult fishways on March 1, 3 and 6. Winter maintenance was completed on schedule. However, Oregon ladder fish pump 1 did not return to service due to an exciter issue.

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’	0.0’ to 0.1’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.0’

Comments: Debris loads were light near the Oregon shore exit and minimal near the Washington shore exit.

At the Washington exit, the general maintenance staff removed wood debris from the regulation weir on March 4. Also, multiple exit alarms came in and were reset on March 6.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.4’ to 1.5’
	X		NFEW2 Weir Depth	$\geq$ 8.0’	6.2’ to 6.3’
	X		NFEW3 Weir Depth	$\geq$ 8.0’	5.8’ to 6.3’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.1’ to 1.4’
	X		SFEW1 Weir Depth	$\geq$ 8.0’	6.8’ to 7.3’
	X		SFEW2 Weir Depth	$\geq$ 8.0’	6.8’ to 7.3’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	1.9 fps
	X		Washington Entrance Head Differential	1.0’ – 2.0’	0.2’ to 1.5’
X			WFE2 Weir Depth	$\geq$ 8.0’	8.5’ to 10.4’
	X		WFE3 Weir Depth	$\geq$ 8.0’	7.3’ to 9.0’

Comments: Due to the age of the ladder, one fish pump being out of service, and the juvenile system being out of service, all Oregon ladder entrance weirs were out of criteria this week. NFEW3 was found in manual mode and returned to automatic on March 6.

The Washington ladder pool differential and WFE3 were out of criteria briefly due to the PUD unit returning to service on March 1. The ladder inspection happened to occur during the switch from bypass mode to the turbine unit. Both entrance weirs were in manual mode during the switch.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
X		X		WA shore Wasco County PUD Turbine Unit
X	X			WA shore Wasco PUD Bypass
		X		Oregon Ladder Fish Pump 1, Return to service 3/15
X			23° to 24°	Oregon Ladder Fish Pump 2
X			24° to 25°	Oregon Ladder Fish Pump 3
		X		OR North Powerhouse Pool supply from juvenile fishway

Comments: After the winter outage, Oregon ladder fish pump 1 remained out of service due to an exciter issue. The return to service date is subject to change. The blade angles on the other two pumps were increased. The juvenile system remains out of service and is not supply auxiliary flow to the north powerhouse pool.

On the Washington shore ladder, the Wasco County PUD was in bypass mode to start the week. The turbine unit returned to service on March 1 at 1147 hours.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to moderate near the powerhouse
X			Gatewell drawdown measured this week?	Twice
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: The powerhouse debris moved to and from the Oregon shore with weather changes. No debris was seen at the spillway. New debris loads were minimal.

Trash rack cleaning is scheduled for the week of March 18. There were 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: ESBS maintenance and screen brush programming continue. ESBS install will begin April 2. Camera inspection will begin in early May.

VBS monitoring will begin with ESBS install.

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

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

Comments: Maintenance continues on all systems. Valves and programming are being examined to try to find a cause to last year's channel elevation fluctuations. Three small baffles were found missing behind the side screen. Material needs to be ordered and the baffles will be replaced next winter. Replacement of area lighting around the dewatering structure began this week.

Bypass Facility:

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

Comments: Maintenance continues. A and B water add-in lines winterizations drains and both supply valves were repaired this winter.

TSW Operations: The TSW in bay 20 is being used as required by the Biological Opinion for adult fallbacks per RCC schedule starting March 1. The TSW in bay 19 is ready for the season. Both TSW's are attached to a hoist.

River Conditions

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
118.0	102.9	1.7	1.6	42.0	42.0	6.0	6.0

Comments: The flow about is due to the TSW. Slight testing of spillgates and hoists also occurred. The data is from the control room.

During the winter outage, the spillway hoists and gates were set up for the upcoming season. When final determination of spill per gate is made, the pattern will appear in the Fish Operation Plan of the FPP.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections reveal 82 mortalities and 11 live lamprey juveniles on March 5. One subyearling Chinook mortality was also observed. All live fish were returned to the river.

Avian Activity: Casual bird observations began this week. Counting will begin April 1. Only cormorants were observed and that was birds roosting on the outfall pipe. No hazing is occurring currently. The fisheries staff is examining the use of tori lines in front of the Oregon ladder's south entrances.

Invasive Species: No issues were observed during the winter. The mussel stations will be examined in late March.

Siberian Prawn: With no sampling occurring, no prawns were observed.

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

Research: PNNL began deployment of their equipment on the spillway this week. They will be doing a juvenile lamprey passage study and a smolt passage study, which relates to the new configuration of the spillway.

Project: Ice Harbor
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: March 1 – March 7, 2024

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)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
1	6/27/23	0708	---	---	Turbine runner replacement and stator rewind
4	3/5/24	1739	---	---	Failed vacuum breaker valve
5, 6	3/6/24	0800	3/6/24	1714	BPA line 3 maintenance

Comments: On March 1, unit 5 was mistakenly operated out of unit priority ahead of unit 3 from 0001 hours to 0056 hours and from 0354 hours to 0530 hours.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on March 4, 6, and 7.

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’	
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’	

Comments: In February, the intake trash rack at the north fish ladder upper diffuser was modified behind the picking eyes to block a gap where fish may be going through into the diffuser chamber.

The rollers on the south shore entrance weirs were replaced with new rollers in January. The old rollers were in poor condition and had caused the weirs to consistently bind up in the guide slots when lowering them down last year.

The north shore entrance channel/tailwater differential was most likely below 1' on March 1 and March 5 when only one north shore auxiliary water supply pump was running (see next section below).

Auxiliary Water Supply (AWS) System:

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

Comments: North shore AWS pump #1 has been out of service since March 1, 2023, because of a hydraulic cylinder leak on the butterfly valve. A new cylinder has been ordered. On March 1, 2024, north shore AWS pump #2 tripped off at 0345 hours due to a lubrication alarm and was restarted at 0700 hours, resulting in only one pump running during that period. The problem with pump #2 is being investigated. North shore AWS pump #2 and #3 were taken out of service one at a time (with a brief overlap) on March 5 to perform maintenance on the electrical relays. This resulted in only one north shore pump being in operation from 0712 hours to 1110 hours and 1132 hours to 1417 hours, and no pumps operating from 1110 hours to 1132 hours (see MFR 24 IHR 01 for more details).

South shore AWS Pump #6 has been out of service since March 1 due to high vibration readings coming from the motor and gearbox. The gearbox will be replaced with a refurbished one.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 72 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	STSs partially blocking view into slots
	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 inspected this week?
		x	STSs inspection results acceptable?
		x	VBSs differentials checked this week?
		x	VBSs differentials acceptable?

Comments: The STSs are removed for annual maintenance. Old mesh was replaced with new mesh on some of the STSs over the winter.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		x	Orifices operating satisfactory?	0
		x	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish channel is unwatered for annual maintenance.

The halogen lights on orifice 1AN, 1BN, 1CN, 2AN, and 2BN are being replaced with green LED lights as a proactive measure to improve attraction lighting for fish passage out of the gatewell slots. More green LED lights may be purchased to install at other orifices.

The rusted, leaky outfall sprinkler heads and adjacent water lines were replaced with new material in February.

Juvenile Fish Facility: The fish facility is unwatered for annual maintenance. The fish separator was repainted and two new winterization drain valves were installed over the winter. Residual water sitting on the floor of the separator over many years had caused corrosion and rust.

Fish Sampling: Sampling is scheduled to begin on April 1.

Removable Spillway Weir (RSW): Voluntary spill through the RSW is periodically occurring for the downstream passage of adult steelhead that may have strayed into the Snake River. The RSW was operated from 0500 hours to 0900 hours PST seven days a week starting March 1.

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
48.2	32.4	1.5	1.4	44	43	6.2	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 2, 3, 4, 5, and 6 turbine cooling water strainer inspections took place on March 5. A total of 264 dead juvenile lamprey and four live juvenile lamprey were recovered.

Avian Activity: There were very few piscivorous birds seen around the project. Bird observation counts are scheduled to begin on April 1.

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 will be humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

Fish Rescue/Salvage: The four live juvenile lamprey found in the strainers were released into the lower south fish ladder in poor condition.

Research: No on-site research is occurring at this

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: March 1-7, 2024

Turbine Operation

Yes	No	Turbine Unit Status
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.

Comments: All available turbine units are operated in accordance with Appendix 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

Comments: None

Adult Fish Passage Facility

Lower Monumental fish facility staff inspected the adult fishways on March 4, 5 and 6.

Fish Ladder Exit:

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: During the winter, the south fish ladder picketed leads were raised on January 16 at 1415 hours and lowered and returned to service on February 21 at 0955 hours. During the winter outage period, the staff gauges and the fish count windows were cleaned, and the grating was inspected. The debris found at the south exit was extremely high this winter, consisting mostly of large logs. The north fish ladder picketed leads were raised on January 3 at 0730 hours and lowered and returned to service on January 10 at 0930 hours. The staff gauges and the fish count windows were inspected and cleaned. The grating at the north fishway was inspected this winter with the ROV, due to the inability to dewater the ladder fully.

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: South Powerhouse Entrance SPE-1 weir was at sill during all inspections with readings 7.8, 7.9 and 6.3 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with readings 7.8, 7.9 and 6.3 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 8.4, 8.4 and 6.8 feet respectively. North Shore Entrance NSE-1 was out of criteria on March 6, with a reading of 7.8 feet. North Shore Entrance NSE-2 was out of criteria on March 5 and 6, with readings of 7.5 and 7.7 feet, respectively. The control room was notified of these readings.

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: The fish pumps returned to service after the winter maintenance period at 1235 hours on February 29. During the winter all three fish pumps had the bearing clearances and seals checked. All of the oil for each pump was purified and changed for all of the components in the pumps. Also, inspection of the port covers, and removal of small debris was performed on all three fish pumps.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	643 yrd²
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
		X	Any oil seen in gatewells?	

Comments: A forebay debris spill occurred on February 15 due to the large amount of logs within the forebay. The RSW was opened and released over 50% of the accumulated debris.

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: All STSs are still currently in the raised position for winter. An on-deck visual rolling inspection was completed on March 6 off all STSs, except for 3. It was found during the inspection that the STS screening material for unit 1A was splitting and needed the screening replaced. In addition, the gearbox on unit 3A needed replaced and a leaking oil plug on unit 4A. These repairs will be made between March 11-20 before the STSs will be lowered and returned to service.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: Collection channel and primary dewatering structure are still currently dewatered for winter maintenance.

Collection Facility: The JFF is currently dewatered for winter maintenance. During the winter maintenance period a festoon cabling system was installed at the raceways for the tailscreens, a tool was designed for the hoist to lift the tailscreens safely, and new rubber strips were installed on the sample tank crowders for both A and B tanks.

Transport Summary: Daily barge transport is scheduled to begin on April 24.

Spillway Weir: Trunnion bearing friction tests occurred on spillgates 1 and 8 on February 27 between 0730-1600 hours. During the test, the gates were opened to 3 stops incrementally for a duration of 3-5 minutes. Two or three tests were performed on each gate. Spillgates 5 and 7 are currently OOS until parts arrive for the repairs, planned before spill occurs on April 3.

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
46.6	32.4	1.4	1.2	41	40	5.6	5.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were examined in December, January and February during the winter. When the cooling water strainers were examined on February 29, there were a total of 385 juvenile lamprey mortalities, primarily removed from unit 1. A total of 32 live juvenile lamprey were removed from units 1 and 2 and were returned to the river safely.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam are scheduled to begin on April 1. Bird hazing by USDA personnel is schedule to begin on April 7 and end June 30 this season.

Invasive Species: Zebra or quagga mussel examinations will be completed during the month of March.

Siberian Prawn: Sampling at Lower Monumental Dam has not occurred yet for the season.

Fish Rescue/Salvage: No fish rescue was performed this week for Lower Monumental Dam.

Research: No research is currently being performed at Lower Monumental Dam. This season, PNNL plan to obtain lamprey from Lower Monumental Dam to study behavior and survival of Pacific lamprey. In addition, the Nez Perce Tribe will be collecting steelhead kelts this season for reconditioning consisting of the collection of post-spawned steelhead and the administration of prophylactics and feeding for the purpose of improving survival relative to the untreated conditions.

Project: Little Goose Dam
Biologist: Deb Snyder, Cole Reeves
Dates: March 01 – March 07, 2024

Turbine Operation

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

*All available turbine units are operated in accordance with Appendix 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**
1	3/01/2024	19:32	03/04/2023	13:08	Thrust bearing over-temp trip
5	4/14/2017	14:11	06/30/2024	ERTS	Spider and upper guide bearing repair.

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2024.

Adult Fish Passage Facility

USACE staff inspected the adult Fishway on March 4, 6, and 7.

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	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	3/6 – 7.2
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	3/6 – 7.2
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X	X	X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	3/4, 6, & 7 – 6.2, 5.2, 5.3
X		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 was returned to service on February 15. The AWS pumps returned to service on February 22. The Collection Channel Surface Velocity is measured at NPE. The NPE-1 weir is not lowering below 533.1, due to be a sensor issue.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X		3/7 08:58 to 14:22	AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: Fish pumps 1 and 3 were returned to service February 22. Fish pump 2 was returned to service on February 28. Fish pump 2 went offline on March 7 from 8:58 to 14:22 due to an oil leak seal inspection.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 450 ft² - Low 30 ft²
		X	Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
		X	Any oil seen in gatewells?	

Comments: The forebay had minimal floating debris inside the trash shear boom with the highest measurement occurring on March 7 at 90 ft². The overall total forebay debris high occurred March 8. The season initial draw down differential measurements are scheduled for the week of March 11 post ESBS installation.

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 ESBS's are scheduled for the week of March 11.

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 watered up on March 7 without incident.

Collection Facility: The juvenile collection facility is tentatively scheduled to water up on March 20. Every other day collection for condition monitoring in conjunction with secondary bypass will commence on March 25 with the first sample being conducted on March 26. Everyday collection is scheduled to begin April 23 coinciding with every other day barge transportation.

Transport Summary: Collection for fish transportation is scheduled to begin 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.

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. On March 1 the ASW was not able to open due to a programing issue for a new variable frequency drive. The issue was resolved by 15:40 on March 1, and 8 hours of spill were performed on March 2 to compensate as per CBR LGS R 022904 1647. Spring spill operations are scheduled to being on April 3. Summer spill operations are scheduled to begin on June 21.

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
44.4	32.5	2.4	0.0	42.3	40.4	6.0	5.9

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2023. 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.

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

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

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife will perform GBT monitoring services with the scheduled start date to be determined.

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

Research: The Nez Perce Tribe (NPT) will begin adult steelhead kelt collection efforts on March 26 with an anticipated conclusion date of July 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: March 1-7, 2024

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
2	02/28	0742	03/05	0928	Gate Lock Solenoid Repair

Comments: Units were rotated out of service February 26-29 to rake trash racks.

Adult Fish Passage Facility

The adult fishway was watered up with gravity flow January 23. LWG adult fish ladder was returned to FPP operating criteria February 27. Lower Granite staff inspected the adult fishway on March 4, 5, 6, and 7.

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 annual maintenance PM will be completed March 12.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	7.7’
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.7’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
	X		North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0’ or on sill	7.9’
	X		North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0’ or on sill	7.8’
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	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.9’, 0.7’, 0.7’
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. Although there is no spill and both entrance gates are

operating, north shore did not meet channel/tailwater head differential criteria. Efforts of the electrical crew were able to bring the ladder into criteria with the exception of the north shore channel/tailrace differential.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
No		Yes	AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS Pump 1 is operating in Fast mode and AWS pump 3 is On. AWS pump 2 remains out of service for maintenance.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	
	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: Unit trash racks were raked February 26-29.

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:

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The juvenile primary bypass system is schedule to be watered with fish being diverted directly back to the river March 13.

Collection Facility: The collection facility is scheduled to be watered up for operational testing of the sample line upgrade, PIT tag sample line upgrade, and Vaki count system. Condition sampling is scheduled to begin at 0700 March 25 with the first sample worked up March 26. Research collection for in-river survival tagging will take place the weeks of April 1 and April 8, collection for the transport study will begin the week of April 15, and collection for everyday barging is scheduled to begin April 23.

Transport Summary: The first research trip is scheduled for April 18. Spring Chinook salmon from the Tucannon fish hatchery will be loaded at Lyons Ferry fish hatchery and released below Bonneville Dam with the on the research trip departing LWG April 18.

Spillway Weir: The RSW will be operated from 0500-0900 hours March 1-20. The RSW will switch to 24-hour operation on March 21. There were 36 adult Steelhead and 1 juvenile Chinook salmon detected at the RSW PIT array March 1-7 (PTAGIS).

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
44.4	34.0	1.7	1.3	41.5	40.5	4.0	3.4

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on February 22.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam. Some gulls and cormorants are present in the tailrace.

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap was watered up March 4. Collection for sampling started at 1400 hours on March 4 at a 25% (18% /week) sample rate. Collection for sampling will be conducted Monday through Friday until broodstock collection starts August 18.

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 will be PIT tagged 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.