

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#42-2022**

Project: McNary

Biologist: Bobby Johnson and Paul Bertschinger

Dates: December 16 – December 22, 2022

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.

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

Unit(s)	OOS		RTS		Outage Description
	Date	Time	Date	Time	
9	10/11	1008	2/3/23	NA	9-year overhaul
7	12/17	1827	12/19	0840	Relay issue

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2022 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

The McNary fisheries staff performed measured inspections of the adult fishways on December 18, 20 and 21. Video review of adult passage continues and will extend to February 28, 2023. Picketed leads will remain down through this time frame when the ladders are in service.

The Washington ladder remained out of service. Winter maintenance and installation of lamprey passage structures on the two of three entrance weirs continued. The downstream exit sensors, which helps control the exit weirs, was moved to the south ladder wall this week. The count station back board lost earlier in the year was recovered.

The top sections of entrance weirs, WFE2 and WFE3 remained offsite as the contractor continued to install the lamprey passage improvements. The bottom sections of both weirs are being rehabilitated on site by project staff.

District personnel continue to examine the data collection system to determine why faulty water temperatures are being recorded for the middle Washington ladder water temperature sensor.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.0'
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'	OOS
	X	Washington Count Station Differential	0.0' to 0.5'	OOS

Comments: Debris loads were light to moderate near the Oregon exit. The general maintenance staff cleaned the exits' picketed leads as needed, including the weekend. The Washington ladder exit remained out of service.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.1'
	X		NFEW2 Weir Depth	≥ 8.0'	7.7' to 8.5'
	X		NFEW3 Weir Depth	≥ 8.0'	7.8' to 7.9'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.4'
	X		SFEW1 Weir Depth	≥ 8.0'	7.8' to 7.9'
	X		SFEW2 Weir Depth	≥ 8.0'	7.8'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.6 fps.
	X		Washington Entrance Head Differential	1.0' – 2.0'	OOS
	X		WFE2 Weir Depth	≥ 8.0'	OOS
	X		WFE3 Weir Depth	≥ 8.0'	OOS

Comments: The above out of criteria points in the Oregon ladder were possibly due to calibration drifts, the juvenile collection system being switched to emergency bypass, hydraulic gradients, and/or overall condition of the ladder. NFEW2 was out of criterion on December 18 and 21. The weir was found in manual mode and switched back to automatic on December 20. NFEW3, SFEW1 and SFEW 2 were out of criteria all week. The noise issue with SFEW1, which had been previously reported, appears to have been resolved. The Washington ladder entrance remained out of service. WFE3 will be calibrated during the winter outage.

There are four floating orifice gate (FOG) slots that still require future gate replacement. Slots W37 and W 41 remain closed. Ten of 12 slots are open. Eight gates are new or rehabilitated. Two gates are old.

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			23° to 25°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2 RTS date is Jan. 31, 2023
Yes			23° to 27°	Oregon Ladder Fish Pump 3
		Yes		OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 2 remains out of service and stator repairs continued. The current return to service date is January 31, 2023.

The Wasco PUD and bypass remained out of service. The juvenile bypass system remained in emergency bypass with the Oregon north powerhouse pool no longer receiving water from the system.

Juvenile Fish Passage Facility

The fall primary bypass season and maintenance continued. The system remained in emergency bypass due to severe winter weather. Orifice will be closed on January 5. The facility remained dewatered.

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?	Twice a week
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. Wind direction changes moved the residual debris across the forebay from the powerhouse to the Oregon shore and back. Debris loads beside the spillway and new debris loads were minimal. Much of the debris was woody material.

No trash racks were cleaned. Four racks will be tested cleaned in early January.

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 ESBS's remained raised and winter maintenance has begun. No camera inspections were required.

Daily VBS differential monitoring will resume when ESBS's are reinstalled in April.

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: There was no moisture in the permanent air supply lines this week. Orifice operators are being repaired as required. Emergency bypass continued. Orifice will be closed on January 5.

The cleaning and control systems remained out of service. Repairs of the side screen cleaning brush continued. Other maintenance has begun. The channel hoist, which installs the emergency stoplogs, remained out of service for electrical repairs.

Bypass Facility:

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

Comments: Winter maintenance continued. The facility is fully dewatered.

Top Spillway Weir (TSW) Operations: Spillbay 19 currently has a standard spillgate installed. The TSW is installed in bay 20, which will remain closed, until the spring adult fallback season, which begins March 1.

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
147.3	126.2	0.0	0.0	43.0	40.0	6.0	6.0

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

Crane 7 remains in service. Electrical work on crane 6 continues. With limited crane use and hoist issues, a crane is required in order to move the gates in bays 2, 6, 16 and 21. The hoist for bay 6 is still out of service until February 2023 at the earliest. Only portion of the parts have arrived on project. The hoist with the broken coupler is scheduled to be repaired by January 3, 2023.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on January 3.

Avian Activity: Casual avian observations while doing other work continue.

There are no forms of hazing occurring at this time. For the outfall, parts for the laser have been ordered.

In the spillway zone, a small number of cormorants were roosting on structure. Occasionally, a few gulls were noted, and one pelican was observed.

In the powerhouse zone, gull numbers were low, with a few birds feeding occasionally.

In the bypass outfall zone, gull numbers were very low and cormorant numbers were stable at a fairly high number. All the of the birds were roosting. At the emergency bypass outfall, no birds were noted.

In the forebay zone, a fluctuating number of roosting grebes were observed with a high of 33 birds along with a few mergansers. Outside the zone, a few cormorants, grebes, and gulls were noted.

Invasive Species: The mussel station examinations revealed no issues on December 18.

This season, during turbine unit, juvenile system and Washington ladder dewatering, no mussels were observed.

Siberian Prawn: No Siberian prawns were observed this year.

Fish Rescue/Salvage: There is nothing to report.

Research: There is currently no research taking place.

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: None.

Adult Fish Passage Facility

Ice Harbor staff inspected the adult fishways on December 19, 21, and 22.

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'	0.9'
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 north powerhouse entrance channel/tailwater differential was slightly below criteria on December 19 because of higher tailwater levels, but was in criteria on the other inspections.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
6 pumps	2 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 43 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	Stored 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/VBSs inspected this week?
		x	STS/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: STSs are pulled out of the water for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		x	Orifices operating satisfactory?	18-20
		x	Dewaterer and cleaning systems operating satisfactory?	

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

Juvenile Fish Facility: The fish facility is unwatered for winter maintenance.

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

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done for the year.

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
26.6	14.8	0	0	42	40	12.0	10.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainers were cleaned of juvenile shad on December 22. A total of 33 dead shad were removed.

Avian Activity: There were high numbers of mergansers, gulls, cormorants, and pelicans observed around the project. Most of the birds were observed foraging along the south shore downstream of the powerhouse, near the upstream tip of Eagle Island, and in the tailrace adjacent to the navigation lock when the lock was being drained.

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

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Monumental

Biologists: Denise Griffith and Raymond Addis

Turbine Operation

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

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 1	10/25/2022	0707	1/26/2023	TBD	Annual

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Army Corps biologists December 19, 20 and 21.

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: The counting station backdrops were sandblasted on December 21. Once they are repainted, they will be returned to the count stations.

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'	
		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) and (SPE-2) were on sill during all inspections with readings of 6.5, 6.7 and 6.4 feet, respectively. SSE-1 was on sill during all inspections. The project has received the new staff gauges and will be installing them in January and February of 2023.

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)	47 yds ²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
		X	Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: STSs are stored in the gatewell slots blocking most of the visual access to obtain an accurate measurement of the debris coverage. Only general observations occurred in the gatewells slots this week.

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 raised, and the powerhouse has begun winter maintenance on the screens. On deck visual inspections of STS screens occurred on December 19. Approximately three screens had some tearing observed. All observable issues with the screens were documented and the powerhouse was notified.

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 JCC is dewatered, and all the orifices are closed for winter maintenance. The debris was removed from the dewatered PDS and flume on December 19.

Collection Facility: Winter maintenance of the facility continues. During the dewater of the JCC, the winch that lifts the gate covering access to the return to river pipe was damaged. A new winch has been ordered and will be installed once it is received.

The heating system in the separator booth stopped heating on December 21. A temporary space heater was placed into the booth until a replacement can be made for the main system.

Transport Summary: No transport is occurring currently due to winter maintenance.

Spillway: No spill occurred this week.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.8	14.4	0.0	0.0	39.5	38.5	7.1	7.1

* Scrollcase temperatures are used for water temperatures. Due to Unit 1 being OOS, temperatures are currently being read from Unit 2.

Other

Cooling Water Strainers: Units 5 and 6 were unable to be inspected because of mechanical issues with the units on December 8. A trouble report has been placed on the issue. The cause is being investigated and they will be inspected as soon as the problem is found.

Avian Activity: Only general observations occurred this week with ladder inspections. Approximately 13 cormorants and 7 gulls were observed foraging and roosting around the tailrace during one day of ladder inspections this week.

Invasive Species: Zebra or quagga mussel observations will take place later in December.

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

Research: No research is occurring currently.

Project: Little Goose
 Biologists: 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	
1	10/17/2022	1530	01/06/2023	ERTS	Turbine oil leak, unit annual
5	4/14/2017	14:11	12/31/2022	ERTS	Spider and upper guide bearing repair.
6	4/18/2022	5:10	12/31/2022	ERTS	Rooftop/BUS work replacement; 6-year overhaul

Comments: Previously reported Unit 6 RTS date of 4/21/2022 pertained to station service only, the anticipated RTS for regular service is 12/31/2022. Unit 1 was forced out of service for a turbine oil leak. Repairs will be combined with the unit annual maintenance.

Adult Fish Passage Facility

USACE staff inspected the adult Fishway on December 19, 20, and December 22.

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	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 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 8 with AWS pumps returning to service on February 24. The NSE channel/tailwater differential and NSE weir depths were manually measured, adjusted, and monitored into criteria from February 24 through March 1. The fishway Fish System Control (FSC) was recommissioned on May 5 with NSE weir reading anomalies. NSE weirs 1 and 2 are being monitored with manual measurements as both weir targets enabling the FSC system to accurately read and automatically adjust weir heights were compromised during emergency flood control measures in June, repairs are pending. The Fish Ladder Exit

Cooling Water Pump was replaced, installed, and readied for service on April 23. Criteria requiring the activation of the Fish Ladder Exit Cooling Pump was met during the night hours of June 26, and the system was started at 0800 hours on June 27. The Fish Ladder Exit Cooling Pump met criteria and was turned off at 1700 hours on September 30. The Collection Channel Surface Velocity is measured at NPE.

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 24.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 51 ft ² - Low 21 ft ²
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 December 21 at 41 ft². The overall total forebay debris high occurred December 19. Prior week draw down differential measurements took place December 15.

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 began March 21 with most units completed on March 22. Units 6 and 1 ESBS and VBS undergoing work during scheduled maintenance periods. ESBS winter maintenance removal occurred on December 12 and December 13 for units 1, 5, and 6. ESBS removal for units 2 and 3 took place on December 19, and unit 4 on December 20 in preparation for the Juvenile Channel dewatering activity. The Juvenile Collection System was dewatered for the winter maintenance period on December 21.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18, 0 on 12/21
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system was watered up March 23.

Collection Facility: The juvenile collection facility completed water up activities on March 29. Every other day collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Everyday collection began April 23 coinciding with every other day barge transportation. Collection ended for the season with the final sample of November 1. The Juvenile Fish Facility was dewatered and winterized on November 2 while the Juvenile Collection System was dewatered for winter maintenance on December 21.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging transitioned to everyday barging on May 16 due to an increase in fish numbers. Every other day barging resumed on May 24. Barge transportation for the season ended with the final barge departure of June 19. Collection for truck transport operations began on August 1 with the first truck departure on August 3 and concluded with the final truck departure of November 1.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week on non-consecutive days for four hours in the morning on Tuesday, Thursday, and Sunday each week through March 31. Spring spill operations began as scheduled on April 3 with the ASW in high crest. The ASW was positioned in low crest on May 28. Summer spill operations began as scheduled on June 21, and the ASW was repositioned into high crest on June 28. The ASW was closed for the spill season at 10:00 on August 1. Summer spill concluded for the season at 2357 hours on August 31. Surface spill to facilitate downstream passage of pre-spawn adult steelhead as natal stream overshoots commenced at 0500 hours on September 1. The ASW was positioned at an elevation of 639 feet and is scheduled to spill from 0500 hours through 0900 hours every Tuesday, Thursday, and Sunday through the month of October, with an anticipated slight schedule change to occur early November. Final ASW steelhead natal stream overshoot spill ended at 0900 on November 15.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
21.1	14.8	0.0	0.0	40.1	38.7	6.0	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 9, 2021. 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 began April 1 with hazing beginning on March 29 and ended June 18. Daily bird counts ended for the season with the November 1 count as reported in the previous reporting period.

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 were humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam concluded for the season with the November 1 counts.

Gas Bubble Trauma (GBT): The last GBT monitoring event occurred August 24.

Fish Rescue/Salvage: The season end Juvenile Collection System fish rescue and salvage operations took place on December 21 in preparation for the winter maintenance period. 190 adult salmonids, 23 adult lamprey, 1 sculpin, and 29 juvenile lamprey were salvaged and released. There were 19 juvenile lamprey and 2 sculpin mortalities

recovered from the frozen flooring of the bottom chambers of the primary dewaterer, and 1 juvenile shad mortality retrieved from the primary dewaterer inclined screen. All mortalities were resultant of freezing temperatures averaging 14°F - 18°F.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on April 1 and concluded June 29.

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	
1-4	12/1	0603	12/22	1204	500 KV Line outage/Transformer Maintenance
4	11/21	0700			Thrust bearing repair and indication upgrades
1	12/1	0603	12/22	1234	Annual Maintenance

Comments: Units 5 was operating at station service power daily. Units 5 and 6 were returned to service with the 500 kV line restored nightly.

Adult Fish Passage Facility

Lower Granite Biologists inspected the adult fishway on December 20, 21, and 22.

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: Temperature data can be found at <https://www.nwd-wc.usace.army.mil/dd/common/dataquery/www/>.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
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 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	\geq 8.0' or on 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	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 7.0' or on sill	
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	0.8', 0.7', 0.9'
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The fishway system controls failed again this week causing the system to stop automatically adjusting the entrance weir elevations at all three entrances. Weirs are being operated in local mode while electricians trouble shoot the control system. The fish ladder control system continues to be evaluated to resolve ongoing issues. FOGs

1, 4, 7, and 10 are in operation. Although both NSEs and all four FOGs are in operation, the north shore has not consistently met channel/tailwater head differential criteria this season.

Auxiliary Water Supply System:

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

Comments: Fish pumps were taken off line from 1237 hours to 1240 hours December 22 to transfer station power.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	70.3 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: The juvenile bypass system was dewatered December 19 for winter maintenance.

Collection Facility: Dewatered for winter maintenance. There have been 39,798 juvenile and 55 adult Chinook salmon, 28,754 juvenile and 191 adult steelhead, 2,124 juvenile and 1 adult sockeye salmon, and 951 juvenile and 4 adult coho salmon detected at the JBS full flow PIT tag detection array since March 14 (DART).

Transport Summary: No transport.

Spillway Weir: N/A

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
23.2	18.4	3.5	0.0	37.0	37.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: NA

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

Avian Activity: N/A

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: N/A

Fish Rescue/Salvage: N/A

Research: N/A