U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#06-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April 8-14, 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).

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
7	10/4/21	0730	6/23/22	N/A	Blade seals
5 & 6	4/11	0643	4/14	1457	Iso-phase bus
9	4/11	0846	4/11	1129	Semi-annual maintenance
10	4/11	1229	4/11	1546	Semi-annual maintenance
11	4/12	0648	4/12	1200	Semi-annual and ESBS's installed
9	4/12	1048	4/12	1353	ESBS's installed
10	4/12	1203	4/12	1625	ESBS's installed

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 April 8, 10, and 13. In person fish counting continued.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.0' to1.1'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.0' to 1.1'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

Comments: Debris loads were minimal near both exits.

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'	1.8' to 2.0'
X			NFEW2 Weir Depth	≥ 8.0'	9.4' to 9.6'
	X		NFEW3 Weir Depth	≥ 8.0'	Raised
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3'
	X		SFEW1 Weir Depth	≥ 8.0'	7.4' to 7.6'
	X		SFEW2 Weir Depth	≥ 8.0'	7.4' to 7.6'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.1 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3'
X			WFE2 Weir Depth	≥ 8.0'	9.0' to 10.4'
X			WFE3 Weir Depth	≥ 8.0'	9.0' to 10.4'

Comments: The above out of criteria points were due to the Oregon ladder operating with only one functional fish pump under the configuration as outlined in the FPP. NEFW3 was raised, SFEW1 and SFEW2 were out of criteria, and the velocity was low all week.

Floating orifice gate slot W26 is currently closed. However, the gate in that slot is damaged and will need to be replaced.

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			28°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is October 29
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pumps 2 and 3 remain out of service. Fish pump 3 will be repaired first. Return to service dates are subject to change.

Juvenile Fish Passage Facility

Every other day sample collection continued with no interruptions in the schedule.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Light to heavy
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 light to heavy near the powerhouse and minimal to light beside the spillway. New debris loads were minimal to very light. Much of the debris was passed when the spill program began on April 10. Also, weather systems moved the debris to the Oregon shore and back. Thus, forebay debris dissipated.

No trash racks were cleaned this week. The next scheduled cleaning is the week of April 18. There is nothing more 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's were installed in units 9 through 11 on April 12. Unit 7's screens will be installed before the unit returns to service. Otherwise, all units are now screened. There are no problems to report. Camera inspections will resume on April 26.

Daily VBS differential monitoring revealed no high differentials, and no screens were cleaned.

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: Moisture in the temporary supply line continued to be an issue, with the moisture being bleed off on every shift. With this main line, which is still rerouted for the headgate repair pit contractor, orifices were only cycled once a day. The south orifice in 8A slot remains closed, with the north orifice open. With an ESBS stored in the slot, we have yet to determine if the orifice has a blockage or not.

Last season, a contractor reinforced the intake deck crane's east rail. During the contract, many of the road drains were redirected. This week, we noted that one drain now empties into the rectangular screen cleaning brush electrical cord carrier tray. This drain will need to be adjusted before the end of the season when freezing weather could occur.

Bypass Facility:

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

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

This week, 440 juvenile lamprey and 7,901 smolts, mostly yearling Chinook salmon, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. No walleye adults were removed from the separator this week.

Top Spillway Weir (TSW) Operations: The TSW in spillbay 19 was opened on April 9 at 0908 hours. The two spillway cranes can no longer be operated remotely. A crane operator is required to open any gate attached to a crane. Since the TSW in bay 19 could not be opened on April 10 at 0001 hours remotely, it was opened early. The TSW in bay 20 is attached to a hoist and was opened remotely on April 10 at 0001 hours.

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
170.5	132.2	115.0	0.0	46.7	45.6	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours.

Cranes 6 and 7 are both in service and can be used in a limited bases for the spill program. Their load limits will be tested in May. The hoist in bay 6 has a failed gearbox. The hoist's return to service date has yet to be fully finalized with parts on order. The spill pattern changes caused by these issues are in the current FPP.

The spillway was opened for the spill program on April 10 at 0001 hours. Six hoists stalled when opening remotely. The roving operator was able to get five of the six gates raised. After an electrical limit issue was resolved, the gate in bay 9 was opened on April 11 at 1400 hours. Due to the hoist and crane issues mentioned above, bays 2 and 6 were opened with the cranes on April 11 at 0942 hours, when crane operators were available.

Other

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

Avian Activity: Recording avian counts continued. These counts are reflected in the table below.

Due to the beam hitting the navigation lock wingwall, the laser on the outfall pipe remained out of service for safety concerns. The laser will be tested in the early morning on April 18. We suspect the laser needs a new mounting backet manufactured.

The navigation lock wing wall laser, which is aimed at the outfall, remains in service along with the two large bird distress calls. Solar panels for the LRAD have been ordered. There is no other hazing at this time. However, USDA Wildlife Services will begin daily shore hazing on April 24.

In the spillway zone, gulls moved in to feed when the TSW in bay 19 and the spillway opened on April 9 and 10, respectively. Gull numbers depended on smolt outmigration. One pelican was observed.

In the powerhouse zone, gulls, two cormorants and one osprey were noted along the northern edge of the powerhouse flow. Most birds were feeding. The gulls moved to the spillway once it was opened.

In the bypass outfall zone, gulls and cormorant were observed. Most birds were roosting, but several were noted feeding in the outfall. More hazing effort needs to be applied to the feeding birds. Cormorant numbers remained high. Gull numbers fluctuated.

In the forebay zone, no birds were noted. Outside the zone, a few gulls, cormorants, pelicans, osprey, and loons were observed. Most of the birds were staging.

No grebes or terns were noted on project.

McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 8	Spill	0	0	0	0	0
	Powerhouse	15	2	0	0	0
	Outfall	6	71	0	0	0
	Forebay	0	0	0	0	0
April 9	Spill	6	0	0	0	0
	Powerhouse	12	0	0	0	0
	Outfall	7	78	0	0	0
	Forebay	0	0	0	0	0
April 10	Spill	58	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	62	0	0	0
	Forebay	0	0	0	0	0
April 11	Spill	22	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	10	52	0	0	0
	Forebay	0	0	0	0	0
April 12	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	3	59	0	0	0
	Forebay	0	0	0	0	0
April 13	Spill	1	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	2	31	0	0	0
	Forebay	0	0	0	0	0
April 14	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	39	0	0	0
	Forebay	0	0	0	0	0

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

Siberian Prawn: No Siberian prawns were removed from the sample this week. None have been seen this year.

Fish Rescue/Salvage: For this week, there is nothing to report.

Research: For a CRITFC study, there were tissue samples removed from 28 juvenile lamprey collected at the facility this week. For the season, 252 juvenile lampreys have been sampled. All fish were returned to the river unharmed.

Gas bubble trauma examinations began this week and occurred on April 12 and 14. Fish are recorded on the next data day. No signs of trauma were observed.

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)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
1, 2	4/4/22	0758	---	---	Franklin Substation 115 kv line #1 bus upgrades

Comments: Units 1 and 2 are expected to be out of service until April 18 for the bus upgrades at the Franklin Substation.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on April 11, 13, and 14.

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: None.

Auxiliary Water Supply System:

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

Comments: South shore AWS pump #1 is out of service for unwatering and investigation of a cavitation/vibration problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 7 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-12%
	x		Any oil seen in gatewells?	

Comments: None.

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

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

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The actuator for the water regulating weirs in the collection channel was placed in local control shortly after watering up the channel due to a problem with the automatic control settings. The weirs will be operated at the actuator to adjust the water level as needed until electricians fix the problem.

Juvenile Fish Facility: The fish facility is operating in primary bypass mode except when collecting fish for sampling.

Fish Sampling: Fish condition sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results.

Fish condition sampling results at Ice Harbor Dam:

Date: April 11

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	81	0	0	1
Chinook yearling unclipped	5	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	21	0	0	0
Steelhead unclipped	8	1	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	115	1	0	1

Date: April 14

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	43	0	0	0
Chinook yearling unclipped	7	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	74	1	0	1
Steelhead unclipped	16	1	0	1
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	140	2	0	2

Removable Spillway Weir (RSW): Spring spill for fish passage is occurring.

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
42.9	34.6	29.0	20.4	48	47	5.5	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainer inspections for fish occurred on April 6. A total of approximately 77 dead juvenile lamprey, 121 dead Siberian prawns, and two unidentifiable decomposing fish were found.

Avian Activity: There were low to high numbers of piscivorous birds observed around the project (see table below). The number of gulls, cormorants, and terns counted on April 8, 9, and 10 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). Those birds were not

concentrated in any particular avian observation zones, but were spread out among all zones. Because of that, the Project Biologist and Wildlife Services Field Crew Leader decided to wait and see how birds responded to the April 10 start of 16 hours per day of land-based hazing and 8 hours per day, 3 days per week, of boat-based hazing. As shown in the table, the number of gulls, cormorants, and terns dropped off after April 10.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 8	14	27	2	0	0
April 9	8	20	16	0	0
April 10	16	64	10	0	12
April 11	2	6	0	0	9
April 12	2	10	0	0	2
April 13	2	19	0	0	32
April 14	0	0	0	0	0

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. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
April 11	0	0
April 14	6	6
Totals	8	8

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

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

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

Project: Lower Monumental
Biologists: 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)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description

Comments: No unit outages this reporting period.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on April 8, 9 and 13.

Fish Ladder:

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

Comments: None.

Fishway Entrances and Collection Channel:

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

Comments: South Powerhouse Entrance Weir SPE-1 was on sill during all inspections with readings of 6.1, 5.8 and 5.2 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with 6.1, 5.8 and 5.2 feet respectively. SSE-1 was at sill during all inspections with readings of 6.6, 6.5 and 5.6 feet respectively. South Powerhouse tailwater staff gauge’s, SG9N, frame was found loose on the April 13 inspections. If the gauge remains unreadable, readings will be taken from the digital readings. There has been an order placed for new staff gauges and the project plans to install them during the winter maintenance period.

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)	147 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 20%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: The STSs are running in cycle-run mode until an average length of sub-yearling Chinook salmon and sockeye salmon can be determined.

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 air bubbler, zone 3, stopped functioning on April 1. The mechanics examined the bubbler and found it needed a solenoid replacement. Zone 3 is currently OOS until the electrical powerhouse staff can complete the work.

Collection Facility: Collection for condition sampling occurred from 0700 to 0700 on April 7 - 8, 10 - 11 and 13 - 14. A total of 1,326 fish were collected with 1,325 fish being bypassed back to the river during those sampling periods. Collection for transportation is scheduled to begin on April 23.

Transport Summary: Every-other day barge transport is scheduled to begin on April 24.

Spillway Weir: Spring spill is still occurring.

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
42.2	35.0	29.7	22.6	47.0	46.0	5.0	3.8

*Scrollcase temperatures.

Other

Cooling Water Strainers: Cooling water strainers were inspected on April 7. There were no live fish recovered. Mortalities included 100 juvenile lamprey and 2 juvenile salmon.

Avian Activity: Highest daily counts of piscivorous birds in all zones combined at Lower Monumental Dam are reported in the table below.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/8/2022	1500	1	2	0	0	0
4/9/2022	1130	8	2	0	0	0
4/10/2022	1430	2	1	0	0	0
4/11/2022	1000	18	7	0	0	0
4/12/2022	0900	13	9	0	0	2
4/13/2022	1100	24	8	0	0	2
4/14/2022	0800	15	23	0	0	2

Comments: Piscivorous bird observations began on April 1. Bird hazing by USDA personnel began on April 3. The outfall bird cannon functioned efficiently this week.

Invasive Species: The next zebra or quagga mussels' observation will occur in May.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: GBT examinations occurred on April 10. A total of 17 clipped yearling Chinook salmon, 3 unclipped yearling Chinook salmon and 16 clipped steelhead smolts were examined. No gas bubble trauma was detected.

Project: Little Goose
Biologists: Chuck Barnes and 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)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	04/14/17	14:11	12/31/2022	ERTS	Spider and upper guide bearing repair.
6	04/04/22	05:00	04/11/22	13:51	Frequency excursion, running station service only
4	04/04/22	05:00	04/11/22	13:51	Frequency excursion / ground fault
3	04/04/22	05:00	04/11/22	13:51	Frequency excursion / ground fault
2	04/04/22	05:00	04/11/22	13:51	Frequency excursion / ground fault
1	04/04/22	05:00	04/11/22	13:51	Frequency excursion / ground fault
1	04/12/22	05:10	4/12/22	08:17	Unit gland water leak

Comments: None.

Adult Fish Passage Facility

EAS Bio and ODFW staff inspected the adult Fishway on April 9, 11 and 14.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.6 on 04/09
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.7 on 04/09
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 interface again failed prior to the April 4 inspection. Except for NSE-1 and NSE-2 weir differentials readings on April 9, all other remaining locations met criteria during inspections for this report period.

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 0ft² - Low 0ft²
X			Gatewell drawdown measured this week?	Unit 1 available only
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
X			Any oil seen in gatewells?	04/11 – 2A;2C;3A;4B

Comments: The forebay maintained 0 square feet of floating woody debris inside the trash shear boom for all three inspections. Debris elimination was due to favorable wind direction conditions timed with ASW spill actions. Oil sheens were observed in the April 11 Juvenile Inspection within gatewells 2A, 2C, 3A, and 4B and were attributed to deck wash from raining weather conditions by ODFW personnel. The remaining daily inspections from April 12, 13, and 14 did not report any traces of oil sheen residues.

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. Differentials on available units 1 through 4 were last completed April 14. Unit 1 was the only unit available for examination of differential measurements during this reporting period.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The juvenile bypass system was watered up 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. A total of 1,473 fish were collected, 1,469 were bypassed, and there were 4 sample or facility mortalities. The descaling and mortality rates were 0.0% and 0.35%, respectively. No adult lamprey were removed from the separator during this report period. The collection and transport facility operated within criteria this report period.

Transport Summary: Collection for fish transportation is scheduled to begin April 23.

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 and will continue to occur 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. On April 14, the ASW standard high crest setting of 622 ft. elevation was raised to 625 ft. elevation as outlined in 22 LGS 03 MOC. Actions were taken to raise the forebay elevation to MOP+3 in order to mitigate a navigational hazard with an estimated duration of 2 weeks without impact to spill levels as outlined in both FOP and FPP.

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
40.0	32.4	25.6	15.5	47.9	46.6	3.6	2.8

*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.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-8	8:00	0	0	0	0
4-9	8:00	0	1	0	0
4-10	8:00	1	3	0	0
4-11	8:00	3	1	0	0
4-12	9:00	0	0	0	0
4-13	8:30	0	2	0	0
4-14	11:00	0	0	0	0

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

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

Date	Sample	Collection*
4-8	0	0
4-9	0	0
4-10	0	0
4-11	0	0
4-12	1	20
4-13	0	0
4-14	0	0
Totals	1	20

Gas Bubble Trauma (GBT): GBT monitoring occurred April 13. Of the 100 fish examined, zero fish exhibited signs of GBT.

Fish Rescue/Salvage: No fish salvage operations occurred during this report period.

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

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

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

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
1-3	4/11	1433			T1 Transformer oil leak
4	4/11	0710			Annual Maintenance DCLV Switchgear/T1 Transformer oil leak

Comments: LWG main transformer 1 (T1) oil level was 21 inches below full when measured April 7. The oil depth dropped another 1.5 inches when measured Monday April 11. LWG T1 was forced out of service at 1443 on April 11 for plant safety. Units 1-3 were forced out of service with T1 due to loss of a generating path. Units 1-3 will remain out of service until oil is added and T1 is returned to service. Unit 4 is currently out of service for scheduled DC low voltage switchgear work.

LWG has submitted an MOC to FPOM for T1 and T2 repair work. Work for each transformer is expected to take 12 weeks as described in 22 LWG 04 MOC. T1 will be repaired in 2023 and T2 in 2024. This will be added to Appendix A in the FPP. Not repairing T1 and T2 will result in a non-scheduled outage with larger impacts to fish passage.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway on April 8, 9, 12, and 13.

Fish Ladder:

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

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.9’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.7’
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.9’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.9’, 6.8’

	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.9’, 6.8’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. Although both entrance gates are operating, north shore have not consistently meet channel/tailwater head differential criteria which seems to be related to the operations of all four FOGs.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 lower guide bearing work has been completed. AWS pump 1 will return to service will requires a four-hour outage of AWS pumps to swap stoplogs which will be coordinated thought FPOM.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	24.5 yds²
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: Gatewells are inspected for foreign substances and debris quantity and removal daily

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?	
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system is in secondary bypass until collection for transports begins April 23.

Collection Facility: Collection for condition sampling in secondary bypass mode continues. Collection for transport occurred April 11 and 12 as part of the ongoing NOAA transport study. Fish not transferred to the NOAA tagging trailer that remaining in the raceways were bypassed to the river though the barge load line.

Transport Summary: Research trips are scheduled for April 14 and 21. Regular season barging is scheduled to start April 24.

Spillway Weir: Lower Granite shifted to Spring Spill operations with the RSW open 24 hours per day at 0001 hours April 3. There were 104 adult and 5,097 juvenile PIT-tagged steelhead, 4,060 juvenile PIT tagged Chinook salmon, and 1 juvenile coho salmon detected over the RSW spillway since March 1. Since the juvenile bypass system was watered up on March 14, PIT detection within the JBS has detected 1,712 juvenile Chinook salmon, 1,800 juvenile and 13 adult steelhead, and 1 adult Chinook salmon.

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
42.3	39.1	28.2	24.0	47.0	44.5	5.0	3.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 24.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 0 Siberian prawns in the condition sample.

Avian Activity: Biologist daily piscivorous bird counts and hazing began April 1 at Lower Granite Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 8	1230	11	1	0	0
April 9	1100	21	0	0	0
April 10	1241	114	7	0	0
April 11	1602	143	1	0	2
April 12	1045	25	0	0	0
April 13	1010	9	0	0	1
April 14	1900	10	1	0	0

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred April 14 with 100 smolts sampled and no symptoms of GBT observed.

Adult Fish Trap Operations: The adult trap is operating Monday through Friday at a 25% (18% /week) sample rate.

Fish Rescue/Salvage: N/A

Research:

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

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

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

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. 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.

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 lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. 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. Since March 24, 66 juvenile lamprey have been collected for the study, 61 were tagged and released Blyton Landing upstream of LWG.

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 1000 juvenile and 500 larval Pacific lamprey, not to exceed 20 juvenile or larvae daily, 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. Since the start of SMP condition sampling on March 24, 188 juvenile and 67 larval lamprey samples have been collected.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT tags Chinook salmon and steelhead smolts for their survival study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace. Fish were collected April 11 and 12, tagged April 12 and 13, and loaded onto a barge for transport to Bonneville Dam April 14. Collection will be similar next week and then will continue Monday-Friday until the middle of June.