U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#08-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April1 21-27, 2023

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(s)	Date	Time	Date	Time	Outage Description
11 & 12	1/9	0630	7/28	NA	Control system upgrades

Comments: RTS dates are subject to change.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on April 21, 23 and 26. Visual adult fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	0.9' to 1.2'
X		Oregon Count Station Differential	0.0' to 0.5'	0.1' to 0.3'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.1' to 0.3'

Comments: Debris loads were very light to light near the Oregon shore exit and minimal near the Washington exit. For the Oregon exit, a new temperature probe has been ordered. Also, the above out of criterion point of 0.9 feet head over weir was measured and revolved with a set point adjustment on April 23.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			NFEW2 Weir Depth	≥ 8.0'	8.5'
X			NFEW3 Weir Depth	≥ 8.0'	8.4' to 8.5'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.7' to 1.8'
X			SFEW1 Weir Depth	≥ 8.0'	8.4'
X			SFEW2 Weir Depth	≥ 8.0'	8.4' to 8.5'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.4' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	8.6' to 9.0'
X			WFE3 Weir Depth	≥ 8.0'	8.6' to 8.9'

Comments: There are no problems to report. At the Washington ladder entrance, the elevation of WFE3 continues to be monitored.

Three floating orifice gates (FOG's) slots, W32, W37 and W41 remain closed. Nine of 12 slots are open.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			22°	Oregon Ladder Fish Pump 1
Yes*			20° to 22°	Oregon Ladder Fish Pump 2
Yes			22°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 2 was out of service for repairs to an air relief valve and compressor on April 24, from 1330 to 1606 hours. The other two pumps blade angles were increased during the outage.

Juvenile Fish Passage Facility

Every other day sample collection continues with no interruption in the schedule this week. Installation of a new forebay (intake) deck crane began this week. This will add some challenges to trash rack and VBS cleaning along with ESBS work.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were minimal to light near the powerhouse. Wind direction changes moved the residual debris across the forebay from the powerhouse to the Oregon shore and back. Also, some of the debris passed through the spillway. The debris loads beside the spillway and new debris loads were minimal. Most of the debris was woody material.

The next trash rack cleanings are scheduled for May 30.

Several pieces of woody material were removed from the gatewell slots on April 21 to 23. 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: ESBS's are deployed in all units except in units 11 and 12, which are out of service. There are no problems to report. Camera inspections will begin on May 9.

Daily VBS differential monitoring continues, and no high differentials were recorded.

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: Orifice operators were repaired as needed.

A transition screen brush timing alarm came in on April 23 at 2120 hours. However, the alarm was only recorded under the alarm tab on the channel control panel view. Unfortunately, the alarm was discovered the next day. Thankfully, no issues were found. A transition brush timing alarm could be caused by another brush stalling during the brush cycle sequence. Since the rectangular screen brush appears to be operating longer this season, its cycle time and the brush cycle sequence time were increased on April 27.

Bypass Facility:

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

Comments: The sample gates continue to operate every other day for sample collection. The PIT sample tag system will not be used again this year.

This week, 200 juvenile lamprey and 13,962 smolts, mostly yearling Chinook, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

TSW Operations:

Both TSW's are attached to a hoist and are part of the spill pattern.

River Conditions

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
137.4	130.2	82.0	75.3	49.8	47.0	6.0	5.0

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

Cranes 6 and 7, due to their age and importance, will only be used to adjust spillgates without hoist, currently in bays 2 and 6. Additionally, due to safety concerns, the cranes can only be used to open and close those gates once.

Currently, only the hoist for bay 6 is out of service. Ordered parts are scheduled to arrive on May 6. The hoist could return to service by early June. However, at that time, the hoist will be attached to the gate in bay 16.

The weld cracks in the gate's dogging assembly for bay 16 are repaired. The dogging assembly is scheduled to be reinstalled on May 2. However, until the hoist is repaired, the gate cannot be raised, and the bay will have to remain closed. The manual/auto spill tables, which began this season, were modified to reflect bay 16 being closed.

So, into the season, bays 2 and 6 will require a crane for adjustment and bay 16 will be closed.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on May 2.

Avian Activity: Avian counts continue. The results are recorded in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 21	Spill	40	0	0	0	0
	Powerhouse	40	0	0	0	0
	Outfall	2	15	0	0	0
	Forebay	0	0	0	0	0
April 22	Spill	16	0	0	0	0
	Powerhouse	10	0	0	0	0
	Outfall	0	6	0	0	0
	Forebay	0	0	0	0	2
April 23	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	8	0	0	0
	Forebay	0	0	0	0	0
April 24	Spill	36	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	2	9	0	1	0
	Forebay	0	0	0	0	0
April 25	Spill	10	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	3	0	0	0
	Forebay	0	0	0	0	0
April 26	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	2	0	0	0
	Forebay	0	0	0	0	0
April 27	Spill	6	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	4	0	0	0
	Forebay	0	0	0	0	0

For the report week, no terns were observed on project.

In the spillway zone, a feeding gulls and one pelican were noted. Gull numbers fluctuated.

At the bypass outfall zone, cormorants and gulls were noted roosting on the juvenile bypass pipe. Also, a few cormorants were noted feeding in the outfall. The gull and cormorant numbers were low. One pelican was observed.

Gulls were noted roosting on the water in the powerhouse zone next to the spillway in fairly large numbers at times.

In the forebay zone, one to three loons were observed daily along with two grebes being noted once. However, outside the zone, a few gulls, cormorants, pelicans, loons, and osprey were noted.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. These calls are very effective at reducing roosting. Until further action could be taken, the laser on the navigation lock wingwall which appeared to be ineffective was turned off on April 25. The laser and LRAD on the walkway aimed at the bypass outfall remained activated. The birds are roosting only at the north end of the pipe, so these measures appear to be partially effective. However, more experimentation with the LRAD is required.

USDA Wildlife Services began daily shore hazing on April 23. Hazing from a boat for three days a week will begin on May 1.

Invasive Species: The mussel station examinations revealed no problems on April 23.

Siberian Prawn: No prawns were observed in this week's samples or for the season to date.

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

Research: USGS equipment for a juvenile passage study along the upstream edge of the powerhouse and spillway remains in place. For a CRITFC study, there were tissue samples removed from 15 juvenile lamprey collected at the facility this week for a total of 34 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on April 24 and 26. The data is reported the next day. No signs of trauma were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 7 – April 13, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

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

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on April 9, 10, and 12.

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	7.0’, 7.9’, 7.3’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.2’
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’	2.5’, 0.8’

Comments: The south shore entrance weir depth was below criteria on the April 9, 10, and 12 inspections. The south shore channel/tailwater differential was above criteria on April 9. The cause of these out of criteria readings is that the south shore tailwater transducer needs calibration and this was reported to electricians.

The north shore entrance channel/tailwater differential was above criteria on April 10 and below criteria on April 12. NSE-1 weir was down on sill on April 10, but the low tailwater caused the high differential. On April 12, the tailwater was higher and the entrance weir was on sill, resulting in the higher entrance weir depth and low channel/tailwater differential. The NEW-1 weir is in manual control to reduce the wear and tear on the hoist machinery of constantly adjusting in automatic control to the turbulent tailwater conditions caused by spill.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
5-6 pumps	2-3 pumps		Status of the 8 south shore AWS pumps
2 pumps		1 pump	Status of the 3 north shore AWS pumps

Comments: North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 12 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-20%
	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: STSs were switched to continuous-run mode on April 5 because of the presence of subyearling chinook fry in the Lower Monumental juvenile fish sample.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

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

Orifice 5BN light was found to be out on April 4 due to a bad ballast. Orifice 5BS was opened in place of orifice 5BN. The bad ballast will be replaced with a ballast from an orifice that is normally closed. The ballasts for the orifice lights are no longer being manufactured, so a long-term plan for orifice light replacement will be formulated.

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

Fish Sampling: Juvenile fish sampling began on April 3 and will occur on Mondays and Thursdays each week. The sampling that was scheduled for Monday, April 10, was rescheduled for April 11 because of illness of the project fishery biologist. See the tables below for a summary of the sampling results. Two Chinook in the April 13 sample exhibited hemorrhaging from one eye.

Fish condition sampling results at Ice Harbor Dam:

Date: April 11

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	18	0	0	0
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	0	---	---	---
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	18	0	0	0

Date: April 13

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	31	1	0	0
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	2	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	33	1	0	0

Removable Spillway Weir (RSW): Spring spill for fish began at 2345 hours on April 2.

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
78.7	34.3	67.3	23.7	46	44	7.8	6.6

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine unit 1, 2, 4, 5, and 6 cooling water strainers were inspected for fish on April 4. A total of 22 dead juvenile lamprey and 38 dead Siberian prawns were found.

Avian Activity: There were low numbers of piscivorous birds seen around the project (see table below). Land-based hazing of piscivorous birds for 8 hours per day changed to 16 hours per day on April 9. Boat-based hazing for 8 hours per day, 3 days per week, began on April 9. Hazing has been effective at moving birds out of areas around the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 7	1	1	0	0	0
April 8	3	2	0	1	2
April 9	2	9	0	0	0
April 10	0	0	1	0	7
April 11	10	3	0	0	0
April 12	0	2	0	0	0
April 13	1	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	1	1
April 13	0	0
Totals	1	1

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

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Denise Griffith and Raymond Addis
Dates: April 21 - 27, 2023

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	

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on April 22, 26 and 27.

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 6.3, 6.1 and 6.8 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections 6.3, 6.1 and 6.8 feet respectively. South Shore Entrance Weir SSE-1 was on sill during all inspections with readings of 5.9, 6.6 and 7.2 feet respectively.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	10 yd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 40%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: The STSs were running in continuous-run mode due to average sub-yearling Chinook and sockeye lengths being less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: Collection for condition sample took place on April 21. A total of 1,592 fish were collected with 1,591 fish being bypassed during this reporting period. Collection for transport began at 0700 on April 23. Total dissolved gas began being recorded with the start of barging on April 25 in the raceways. Air conditioner was turned on for to prepare for the warmer season in the PIT tag shelters on April 27.

Transport Summary: Every-other day barge transport began with the April 24 barge. A total of 51,953 fish were collected with 33,069 fish transported and 142 fish being bypassed. Bypass fish include fry and GBT sampled fish.

Spillway Weir: Spring spill continued.

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
62.4	54.3	47.1	35.0	48.5	47.1	5.7	3.4

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers will be inspected again in May.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam began on April 1.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/21/2023	820	18	5	2	0	6
4/22/2023	915	55	1	0	0	2
4/23/2023	712	13	0	0	0	0
4/24/2023	1300	65	3	0	0	2
4/25/2023	1430	25	0	0	0	2
4/26/2023	1115	25	0	0	0	1
4/27/2023	1645	42	0	0	0	0

Bird hazing by USDA personnel is ongoing.

Invasive Species: Inspection for zebra or quagga mussels will occur in May.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by EAS, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
April 21	0	0
April 23	4	20
April 24	6	60
April 25	4	80
April 27	0	0
Totals	14	160

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

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

Research: GBT examinations occurred on April 26. A total of 52 clipped yearling Chinook, 16 unclipped yearly Chinook 33 clipped steelhead and 1 unclipped steelhead smolts were examined. Gas bubble trauma was detected in 3 clipped yearling Chinook (2 anal fin and 1 eye).

A PNNL study on behavior and survival of juvenile Pacific lamprey at Lower Monumental Dam will start on April 1 and run to September 30.

The Nez Perce steelhead kelt study and rehabilitation collection tank setup was completed on March 26 with collection of kelts beginning on March 28. A total of 4 unclipped steelhead kelts were placed in the collection tank.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard
Dates: April 21 – April 27, 2023

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
5	4/14/2017		06/30/2023	ERTS	Spider and upper guide bearing repair.
1	4/26/2023	1208	4/26/2023	2236	500kV line outage, Unit 5 shaft installation
2	4/26/2023	1208	4/26/2023	2236	500kV line outage, Unit 5 shaft installation
3	4/26/2023	1208	4/26/2023	2236	500kV line outage, Unit 5 shaft installation
4	4/26/2023	1208	4/26/2023	2236	500kV line outage, Unit 5 shaft installation
6	4/26/2023	1208	4/26/2023	2236	500kV line outage, Unit 5 shaft installation

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023. The April 26, 2023 outage is documented per 23 LGS 04 MOC titled "Unit 5 Shaft Reassembly, 500 kV line outage".

Adult Fish Passage Facility

EAS Bio, USACE, and ODFW staff inspected the adult Fishway on April 21, 24, 25, 27

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	X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.9-4/24
X		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	5.5-4/24, 4.2-4/27
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0' or on sill	5.5-4/24, 4.1-4/27
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 initially returned to service on February 14, dewatered February 16 due to discovery of a second fish viewing window leak, then subsequently watered back up and commissioned for the season on February 23. The AWS pumps returned to service on February 23. The Fish Ladder Exit Cooling Water Pump was pulled, inspected, and readied for modest repairs on February 21. The Collection Channel Surface Velocity is measured at NPE. Rickley channel velocity measurements were completed and met criteria on April 21. Transponder readings documenting the Fish Ladder Depth over Weirs began displaying data inconsistent with physical staff gauge measurements beginning March 30. The North Shore fish entrance weirs continue to experience discrepancy readings between the Fish System Control (FSC) board and physical weir height measurements and is the reason for failed criteria during this report period. We are working with SMP contracted personnel to standardize reporting to default to physical staff gauge measurements when an FSC board discrepancies are detected.

Auxiliary Water Supply System:

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

Comments: Fish pumps 1, 2, and 3 were returned to service February 23.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 50 ft² - Low 0 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 maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on April 27 at 30 ft². The overall total forebay debris high also occurred April 27 at 50 ft².

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?
	X		VBSs inspected this week?

Comments: Installation of Unit 4-6 ESBS's were completed on March 13 and installation of units 1-3 took place March 14.

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

Collection Facility: The juvenile collection facility watered up on March 21. Every other day collection for condition monitoring in conjunction with secondary bypass began March 25 with the first sample being conducted on March 26. Everyday collection began April 23 coinciding with every other day barge transportation. A total of 165,052 fish were collected, 57,895 were bypassed, and 87,601 were transported via barge. There were 82 sample or facility mortalities. The descaling and mortality rates were 1.7% and 0.05%, respectively. The collection and transport facility operated within criteria and no adult lamprey were removed from the separator during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging is scheduled thereafter pending situational transition to everyday barging due to any unforeseen increase in fish numbers.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week every other day for four hours in the morning. Spring spill operations began as scheduled on April 3. 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
65.2	51.9	42.1	32.0	49.8	47.6	4.0	3.1

*Ladder temperature.

Other

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-21	8:00	0	5	0	0
4-22	8:30	1	0	0	0
4-23	9:00	0	0	0	0
4-24	12:30	2	1	0	0
4-25	12:33	7	0	0	0
4-26	8:00	0	0	0	0
4-27	8:45	1	0	0	3

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

Date	Sample	Collection*
4-21	0	0
4-22	0	0
4-23	0	0
4-24	0	0
4-25	0	0
4-26	0	0
4-27	0	0
Totals	0	0

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

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring services starting on April 4, 2023. GBT monitoring occurred on April 27. Of the 101 fish examined, 2 fish exhibited signs of GBT.

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

Research: The Nez Perce Tribe (NPT) began 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: April 21-28, 2023

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

Comments: Units were rolled out of service for ESBS April 23 inspections.

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway on April 21, 22, 25, and 26.

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:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8’,7.7’, 7.8’, 7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’, 7.9’, 7.9’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	5.5’, 5.6’, 5.8’, 5.7’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	5.5’, 5.6’, 5.8’, 5.8’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.5’, 0.5’, 0.5’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.5’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.6
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. Spill and current low flow conditions result is a drawdown on the north side of the spillway and at both NSEs.

Auxiliary Water Supply System:

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

Comments: AWS pump 3 remained 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)	217.5 yd^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:

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?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: Collection for the transport started at 0700 hours April 23.

Transport Summary: Barge transport began April 24 with barges departing every-other-day on even numbered days.

Spillway Weir: Spring spill began April 3. There have been 187 adult steelhead and 26,089 juvenile steelhead, 3 adult and 14,633 juvenile Chinook salmon, and 31 juvenile Coho salmon detected at the RSW since March 1. There have been 14 adult steelhead, 3,493 juvenile steelhead, 2,818 juvenile Chinook salmon, and 9 juvenile Coho salmon detected through the Juvenile Bypass System since it was opened on March 15.

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
66.7	56.6	47.5	37.7	48.0	45.5	5.0	3.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted April 27.

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 21	1310	0	0	0	0
April 22	1045	0	2	0	0
April 23	1239	1	4	0	0
April 24	1848	4	0	0	4
April 25	1517	14	2	0	0
April 26	1115	2	2	0	0
April 27	0653	5	0	0	0

Gas Bubble Trauma (GBT) Monitoring: April 27, SMP examined 100 salmonids with no signs of GBT symptoms. There was one hatchery steelhead handling mortality.

Adult Fish Trap Operations: Fish will continue to be sampled 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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Thee goal is to collect 450-700 kelts from LWG juvenile fish facility separator. Selected kelts are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study. LWG Corps biological technicians collected 52 kelts from the juvenile fish separator with 34 sampled and release, 18 were handled and release, and one being transported to the hatchery this season.

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

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile and 450 larval lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. An additional 1000 juvenile or larval lamprey will be implanted with PIT tags. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system. In addition, 50 dead tagged juvenile lamprey will be released from LGR and 50 from LMN to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at LGR and LMN, estimate reach survival downstream of LGR and downstream of LMN, and evaluate travel time between detection arrays. LWG has collected 74 larval and 162 juvenile lamprey for PNNL this season.

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

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1000 larval Pacific lamprey, not to exceed 10 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. LWG SMP collected genetic samples from 194 juvenile and 180 larval lamprey this season.