U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April1 14-20, 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
1, 10, 13 & 14	4/17	0635	4/17	1438	Rotated through units for trash rack cleaning

Comments: RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 14, 16 and 19. Visual adult fish counting continues.

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'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.1' to 0.3'

Comments: Debris loads were minimal to light near the Oregon shore exit and minimal near the Washington shore exit.
For the Oregon exit, a new temperature probe has been ordered.
here is nothing more to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.6'
X			NFEW2 Weir Depth	≥ 8.0'	8.4' to 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' to 8.5'
X			SFEW2 Weir Depth	≥ 8.0'	8.4' to 8.5'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.5 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.5'
X			WFE2 Weir Depth	≥ 8.0'	8.6' to 8.9'
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°	Oregon Ladder Fish Pump 2
Yes			22°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

Juvenile Fish Passage Facility

Every other day sample collection continues with no interruption in the schedule this week.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were minimal to moderate near the powerhouse. 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 were minimal to very light. New debris loads were minimal. Most of the debris was woody material.

The trash racks were cleaned in units 1, 10, 13 and 14 on April 17. With spill season, most units were in standby or out of service. The debris removal was delayed due to mechanical issue with the debris clam. There were 17.5 yards of woody material removed. No fish were observed in the debris. Trash differentials were measured daily.

Several pieces of woody material were removed from the gatewell slots on April 19. 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 was no communication from the control program to the ESBS's in unit 6 from April 15 to 17. Fortunately, the unit was in standby. If needed, the control room operator could have cycled the screen brushes hourly. 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 and attraction lighting were repaired as needed. Orifices were adjusted for trash rack cleaning as required.

A transition screen brush timing alarm came in on April 17 at 1019 hours. No issues were found. However, this alarm was masked by the latch pin alarm, which has been continuous. The electrical staff disabled the latch pin alarm on April 20. A replacement for the faulty latch pin sensor has been ordered. The brushes are cycling properly. However, a transition brush timing alarm could be caused by another brush stalling out during the brush cycle sequence.

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, 100 juvenile lamprey and 5,217 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
148.2	128.3	92.7	72.7	47.4	46.2	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. If ordered parts arrive, the hoist could return to service in 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 in bay 16 are being repaired on project. The repairs are half completed and should be done in early May. Since it is the dogging assembly that is damaged, the gate cannot be raised, and the bay will have to remain closed until the repairs are complete. 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 14	Spill	4	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	10	0	0	0
	Forebay	0	0	0	0	0
April 15	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	12	0	0	0
	Forebay	0	0	0	0	2
April 16	Spill	6	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	2	8	0	0	0
	Forebay	0	0	0	0	0
April 17	Spill	17	0	0	1	0
	Powerhouse	23	0	0	0	0
	Outfall	4	14	0	0	0
	Forebay	0	0	0	0	0
April 18	Spill	26	0	0	0	0
	Powerhouse	5	0	0	1	0
	Outfall	4	16	0	0	0
	Forebay	0	0	0	0	0
April 19	Spill	18	0	0	0	0
	Powerhouse	8	0	0	0	0
	Outfall	3	5	0	0	0
	Forebay	0	0	0	0	0
April 20	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	12	0	1	0
	Forebay	0	0	0	0	0

For the report week, no terns were observed on project. An occasional merganser was observed in the tailwater area.

In the spillway zone, a some feeding gulls and an occasional pelican were noted.

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

Gulls were noted roosting on the water in the powerhouse zone next to the spillway in fairly good numbers at times. One pelican was also noted in this area.

In the forebay zone, two grebes were observed along with an occasional loon. 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. The two lasers and LRAD 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.

USDA Wildlife Services will begin daily shore hazing on April 23.

Invasive Species: The next mussel station examinations will occur 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 ten juvenile lamprey collected at the facility this week for a total of 19 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on April 18 and 20. No signs of trauma were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 14 – April 20, 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
2	4/14/23	0655	4/14/23	1428	BPA marker ball replacement on 115 kv line 1
4	4/14/23	0655	4/14/23	1555	BPA marker ball replacement on 115 kv line 2
1	4/14/23	0729	4/14/23	1428	BPA marker ball replacement on 115 kv line 1

Comments: Units 6, 5, 4, 2, and 1 were taken out of service one at a time for submersible traveling screen inspections on April 17, 18, and 19.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on April 15, 18, and 19.

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	7.4’, 7.2’, 7.8’
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.2’, 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’	

Comments: The south shore entrance weir depth was below criteria on the April 15, 18, and 19 inspections. The south shore channel/tailwater differential was above criteria on April 15 and 18. The probable cause of these out of criteria readings is that the south shore tailwater transducer needs calibration and this was reported to electricians. Electricians checked the transducer reading against the staff gauge reading and noted that the readings were close to each other. However, the turbulent tailrace conditions caused by spill make it difficult to obtain accurate readings.

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 5 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-14%
	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. Unit 6, 5, 4, 2, and 1 STSs and unit 1 VBSs were inspected on April 17, 18, and 19. There were no significant problems found.

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 is scheduled to occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. Two Chinook in the April 20 sample exhibited hemorrhaging from one eye. Three Chinook in the April 20 sample had partial descaling that was attributed to predation attempts by other fish.

Fish condition sampling results at Ice Harbor Dam:

Date: April 17

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	45	0	0	0
Chinook yearling unclipped	1	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	8	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	54	0	0	0

Date: April 20

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	37	0	0	0
Chinook yearling unclipped	13	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	17	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	67	0	0	0

Removable Spillway Weir (RSW): Spring spill for fish 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
70.8	54.5	61.8	43.8	47	46	6.0	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly inspection of the turbine unit cooling water strainers will occur in early May.

Avian Activity: There were low numbers of piscivorous birds seen around the project (see table below). Land-based hazing of piscivorous birds for 16 hours per day is taking place. Boat-based hazing is occurring for 8 hours per day, 3 days per week. 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 14	0	4	0	8	4
April 15	4	2	0	0	0
April 16	0	12	0	0	6
April 17	---	---	---	---	---
April 18	0	0	0	0	0
April 19	3	0	0	0	1
April 20	1	1	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 17	0	0
April 20	0	0
Totals	0	0

*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 14 - 20, 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**
Unit 1	4/13/23	0703	4/17/23	1607	Replace wicket gate and shaft packing.

Comments: None.

Adult Fish Passage Facility

Lower Monumental fish facility, EAS and WDFW staff inspected the adult fishways on April 14, 15, 16, 18 and 20.

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, 5.9, 5.8, 6.5 and 6.3 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections 6.3, 5.9, 5.8, 6.5 and 6.3 feet respectively. South Shore Entrance Weir SSE-1 was on sill during all inspections with readings of 6.0, 5.6, 5.5, 6.3 and 6.5 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)	36 yd²
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 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 cycle-run mode until 1330 on April 16 at which time they were switched to 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 15, 17 and 19. A total of 2002 fish were collected with 2000 fish being bypassed during this reporting period.

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

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
65.5	54.3	52.7	41.4	47.6	45.9	5.0	2.8

*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
4/14/2023	1300	4	0	0	0	0
4/15/2023	1515	16	2	0	4	0
4/16/2023	730	29	12	0	0	0
4/17/2023	1545	57	6	0	0	0
4/18/2023	1045	47	3	0	0	0
4/19/2023	1430	63	4	0	0	2
4/20/2023	1345	72	3	0	0	4

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 15	0	0
April 17	2	4
April 19	4	8
Totals	6	12

*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 19. A total of 53 clipped yearling Chinook, 29 unclipped yearly Chinook 16 clipped steelhead and 2 unclipped steelhead smolts were examined. Gas bubble trauma was detected in 1 clipped yearling Chinook (anal fin), and 2 clipped yearling Chinook (eye and anal fin).

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.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard
Dates: April 14 – April 20, 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.

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on April 15, 19, and 20

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	2.6 4/15 3.5 4/19
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0' or on sill	2.9 4/15 3.2 4/19
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 March 16. 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 are once again experiencing discrepancy readings between the Fish System Control (FSC) board and physical weir height

measurements. The North Shore elevator was out of service on April 15, 2023, limiting weir readings to the questionable FSC board only for both NSE-1 and NSE-2. We will continue to monitor criteria with physical measurements at the North Shore location when possible.

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 25 ft² - Low 5 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 15 at 5 ft². The overall total forebay debris high also occurred April 5 at 25 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. A total of 20,518 fish were collected, 20,492 were bypassed, and there were 26 sample or facility mortalities. The descaling and mortality rates were 1.7% and 0.1%, respectively. The collection and transport

facility operated within criteria and no adult lamprey were removed from the separator during this report period. Everyday collection is scheduled to begin April 23 coinciding with every other day barge transportation.

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

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week every other day for four hours in the morning. 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
61.8	49.8	38.9	30.8	48.7	46.8	5.2	2.0

*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
4-14	7:30	2	4	0	1
4-15	8:30	0	0	0	0
4-16	8:45	1	2	0	0
4-17	8:00	0	0	0	0
4-18	8:00	0	0	0	0
4-19	15:30	1	0	0	0
4-20	8:45	0	1	0	0

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*
4-14	0	0
4-15	1	1

4-16	0	0
4-17	2	20
4-18	0	0
4-19	1	200
4-20	0	0
Totals	4	221

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

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife performed GBT monitoring services with the start date of April 4, 2023. GBT monitoring occurred on April 14 and 20. Of the 100 fish examined, 2 fish exhibited signs of GBT on each day.

Fish Rescue/Salvage: Fish Rescues occurred on April 15, 17, and 19. During switching of collection to primary bypass during every other day sampling. Routine operations when switching from collection and secondary bypass to primary bypass leave the potential to strand fish in flume if present. On April 15, 1 Juvenile CHC and 1 Juvenile CHU were recovered. On April 17, 11 Juvenile STU and 116 Juvenile STC were recovered. On April 19, 3 CHU-fry, 3 Juvenile STU, 2 Juvenile STC, and 32 Juvenile lamprey were recovered. There were 3 Juvenile lamprey mortalities.

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 14-20, 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:

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway on April 14, 15, 17, and 19.

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’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.8’
		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’	0.6’, 0.5’, 0.3’, 0.5’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.6’, 6.4’, 6.6’ 6.9’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.8’, 6.6’, 6.7’
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
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)	201.1 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 study began April 17 with the research barge departing April 20. Collection for transport is scheduled to begin April 23.

Transport Summary: The first research trip departed April 20. An additional 20,000 Juvenile spring Chinook salmon were loaded onto the research barge trip at Lyons Ferry Hatchery to help with evaluations of stocking strategies for the Tucannon River.

Spillway Weir: Spring spill began April 3. There have been 138 adult steelhead and 8,621 juvenile steelhead, 9,327 juvenile Chinook salmon, and 24 juvenile Coho salmon detected at the RSW since March 1. There have been 10 adult steelhead, 1,410 juvenile steelhead, 1,831 juvenile Chinook salmon, and 7 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
66.2	55.9	53.8	43.6	47.0	44.5	3.5	1.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 4 Siberian prawns collected in the sample and euthanatized.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 14	1350	0	1	0	0
April 15	1145	0	0	0	0
April 16	1330	15	0	0	4
April 17	1420	7	0	0	0
April 18	1335	22	0	0	0
April 19	0630	36	0	0	4
April 20	1417	37	0	0	0

Gas Bubble Trauma (GBT) Monitoring: April 13, SMP examined 80 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. The 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 163 juvenile and 171 larval lamprey this season.