U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#06-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April1 7-13, 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*	X*	Available turbines operated within 1% peak efficiency? Constraint in effect.	X	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
9	4/10	0631	4/10	1016	ESBS install & semiannual maintenance
10	4/10	1019	4/10	1443	ESBS install & semiannual maintenance
9	4/10	1445	4/11	1120	ESBS failed and replaced in B slot
13	4/11	0636	4/11	1152	ESBS install & semiannual maintenance
1	4/11	1151	4/11	1612	ESBS install & semiannual maintenance

*Comments: At times, units ran outside the one percent criterion per BPA's request before April 10, when the hard constraint began. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 7, 9 and 12. 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' to 1.1'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.2'

Comments: Debris loads were very light 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.

There 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'	1.3'
	X		NFEW2 Weir Depth	≥ 8.0'	7.7' to 7.8'
	X		NFEW3 Weir Depth	≥ 8.0'	7.7' to 7.8'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
X			SFEW1 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			SFEW2 Weir Depth	≥ 8.0'	8.0' to 8.1'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.8 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.5' to 1.6'
X			WFE2 Weir Depth	≥ 8.0'	8.6' to 9.2'
X			WFE3 Weir Depth	≥ 8.0'	8.6' to 9.2'

Comments: At the north Oregon entrance, NFEW2 and NFEW3 were out of criteria during all inspections, probably due to the overall condition of the ladder.

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° to 24°	Oregon Ladder Fish Pump 1
Yes*		Yes*	OOS/20°	Oregon Ladder Fish Pump 2 RTS date April 12
Yes			22° to 24°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 2 returned to service on April 12 at 1415 hours. The pump's blade angle was set at 20 degrees. The other two pumps' blade angles were reduced to 22 degrees. The juvenile bypass system remains in service.

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)	Moderate 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 moderate to heavy 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 late in the week. New debris loads were minimal. The debris loads beside the spillway were minimal to very light. Most of the debris was woody material.

The next trash rack cleaning is scheduled for the week of April 17. Trash differentials were measured daily.

Several pieces of woody material were removed from the gatewell slots on April 9 and 13. 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 were installed in units 1, 9, 10 and 13 on April 10 to 11. The screens in units 11 and 12 will be installed before those units return to service. The screen in 9B slot failed on April 10 and was replaced the next day. The ESBS's in unit 13 were found in manual mode after install and were later returned to automatic mode on April 11. Camera inspections will begin in early to mid-May.

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: There are no problems or changes to report. A replacement for the faulty latch pin sensor on the transition screen cleaning brush has been ordered. The brushes are cycling properly.

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, 34 juvenile lamprey and 4,777 smolts, mostly yearling Chinook, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Two walleye adults were removed from the separator this week.

The project biologist and the assistant biologist cleaned the sample holding tanks upwell screens and replaced facility light bulbs, respectively, on April 11.

TSW Operations:

Both TSW's are attached to a hoist. The TSW in bay 20 was being used as required by the Biological Opinion for adult fallbacks up to and including April 9. Both TSW's were opened for the spring spill season on April 10 at 0001 hours.

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
161.1	89.9	105.9	0.5	46.5	45.3	6.0	6.0

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 spill recorded was due to the TSW in bay 20 until the spring spill season began on April 10 at 0001 hours. During opening of the spillway, the hoists in bays 18 and 19 were slow to respond but the issue was resolve.

Repairs to cranes 6 and 7 have been completed. However, due to their age and the importance of these cranes, they 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 the gates once.

Currently, only the hoist for bay 6 is out of service. If ordered parts arrive, the hoist could return to service late 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 will be completed 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. With projected increases in flows, bay 2 was opened to 4 stops the morning of May 11 and bay 6 was opened to 6 stops the afternoon of May 12.

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.

For the report week, no terns or grebes were observed on project. One pelican was observed in the tailwater outside of the counting period. An occasional osprey and merganser were also observed.

In the spillway zone, a few flying, roosting, or feeding gulls were noted. Mostly after the spill season began.

At the bypass outfall zone, cormorants and gulls were noted roosting on the juvenile bypass pipe. A few cormorants and gulls were noted feeding in the outfall. The cormorant numbers were fairly stable. Gull numbers were slowly increasing.

No birds were noted in the powerhouse zone.

In the forebay zone, no birds were observed. However, outside the zone, a few gulls, cormorants, and osprey were noted along with one loon.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. The two lasers aimed at the bypass outfall remained activated. The LRAD has been activated but its frequency of operation was under question. The LRAD was removed from the outfall walkway for reprogramming from April 7 to 13.

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

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 7	Spill	2	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	8	0	0	0
	Forebay	0	0	0	0	0
April 8	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	17	0	0	0
	Forebay	0	0	0	0	0
April 9	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	17	0	0	0
	Forebay	0	0	0	0	0
April 10	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	8	0	0	0
	Forebay	0	0	0	0	0
April 11	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	23	0	0	0
	Forebay	0	0	0	0	0
April 12	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	24	0	0	0
	Forebay	0	0	0	0	0
April 13	Spill	7	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	3	12	0	0	0
	Forebay	0	0	0	0	0

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

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 six juvenile lamprey collected at the facility this week for a total of nine fish this season (a corrected total). All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on April 10 and 12. 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 7 - 13, 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	X

Comments: All available turbine units are operated in accordance with App. C of the Fish Passage Plan. Hard restraint for operating within 1% efficiency started at 00:00:01 on April 3.

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	4/20/23	ERTS	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 7, 8, 10 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 5.3, 5.6, 5.5 and 6.9 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections 5.3, 5.6, 5.5 and 6.9 feet respectively. South Shore Entrance Weir SSE-1 was on sill during all inspections with readings of 5.9, 6.2, 6.6 and 6.4 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)	45 yd²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 35%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: The STSs are running in cycle-run mode due to average sub-yearling Chinook and sockeye lengths being greater 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 7, 10 and 13. A total of 1,011 fish were collected with 1,009 fish being bypassed during this reporting period.

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

Spillway Weir: Spring spill started at 00:00:01 on April 3.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F) *		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
76.5	33.1	63.3	20.3	44.9	43.8	5.1	4.6

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers were examined on April 12. Mortalities included 2 juvenile lamprey.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/7/2023	1000	5	0	0	0	0
4/8/2023	1330	18	10	0	0	0
4/9/2023	0900	16	6	0	2	0
4/10/2023	1025	12	3	0	0	0
4/11/2023	0615	18	0	0	0	2
4/12/2023	1445	11	2	0	0	0
4/13/2023	1130	19	6	0	2	2

Bird hazing by USDA personnel began on April 9.

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 7	5	10
April 10	1	2
April 13	8	16
Totals	14	28

*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 12. A total of 14 clipped yearly smolts were examined. No gas bubble trauma was detected.

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 7 – April 13, 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	14:11	06/30/2023	ERTS	Spider and upper guide bearing repair.
1	4/13/2023	12:00	4/13/2023	16:47	BPA requested outage – Doghouse cover removal
2	4/13/2023	12:00	4/13/2023	16:47	BPA requested outage – Doghouse cover removal
3	4/13/2023	12:00	4/13/2023	16:47	BPA requested outage – Doghouse cover removal
4	4/13/2023	12:00	4/13/2023	16:47	BPA requested outage – Doghouse cover removal
6	4/13/2023	12:00	4/13/2023	16:47	BPA requested outage – Doghouse cover removal

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023. The April 13, 2023, outage is documented per 23 LGS 05 MFR "Unit 5 Roof Top Hatch Repair".

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on April 9 and 13

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	5.5 4/9 2.8 4/13
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0' or on sill	2.4 4/13
X	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	2.1 4/13
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 board and physical weir height measurements. We will continue to monitor criteria with physical measurements at the North Shore location.

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 30 ft² - Low 10 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 9 at 30 ft². The overall total forebay debris high also occurred April 9 at 30 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 1559 fish were collected, 1553 were bypassed, and there were 6 sample or facility mortalities. The descaling and mortality rates were 1.1% and 0.38%, 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
73.0	31.2	46.1	15.9	46.6	44.4	5.5	4.0

*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
4-7	8:30	5	2	0	0
4-8	8:30	1	0	0	0
4-9	8:30	1	2	0	0
4-10	8:30	2	2	0	0
4-11	8:30	0	0	0	0
4-12	8:30	0	2	0	0
4-13	8:45	1	2	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*
4-7	12	12
4-8	0	0
4-9	2	2
4-10	0	0
4-11	1	1
4-12	0	0
4-13	1	1
Totals	16	16

*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. No fish were collected.

Fish Rescue/Salvage: Fish Rescue occurred on 11 April 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. 1 Juvenile Unclipped Steelhead and 16 Juvenile Clipped Steelhead were recovered and released.

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 7-13, 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 8, 10, and 12.

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'	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	
	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'	0.5', 0.4', 0.2'
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	6.5', 6.1'
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	6.7', 6.3'
	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 will continue to be evaluated this season to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. With spill and both entrance gates operating, north shore did not meet channel/tailwater head differential criteria. Efforts of the electrical crew were able to bring the ladder into criteria with the exception of the north shore channel/tailrace differential. 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)	349.7 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 in river survival resumed April 10. Collection for the transport study will begin April 17 with the research barge departing April 20. Collection for transport is scheduled to begin April 23.

Transport Summary: The first research trip is scheduled for April 20.

Spillway Weir: Spring spill began April 3. There have been 113 adult steelhead and 1,591 juvenile steelhead and 5,406 juvenile Chinook salmon detected at the RSW since March 1. There have been 7 adult steelhead, 144 juvenile steelhead, and 491 juvenile Chinook 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
75.2	35.3	62.7	23.0	47.5	44.0	4.7	3.5

*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 0 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 7	1410	17	5	0	1
April 8	1130	8	1	0	1
April 9	0740	38	1	0	1
April 10	1235	52	1	0	0
April 11	1020	6	0	0	0
April 12	1147	3	0	0	0
April 13	1400	2	1	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 40 kelts from the juvenile fish separator with 29 sampled and release, 11 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 1,000 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 2,000 juvenile and 1,000 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 98 juvenile and 125 larval lamprey this season.