U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2021
April 9-15, 2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith

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	X

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

	OOS		**RTS**		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	12/7	0643	5/30	N/A	Thrust bearing upgrades/Blade seals
12	4/12	0745	4/12	1230	ESBS installation
9 & 10	4/12	0730	4/13	1418	Transformer T5 work
13 & 14	4/13	1000	4/13	1100	ESBs camera inspections
11 & 12	4/14	0651	4/15	1410	Transformer T6 work

Comments: The hard one percent peak efficiency constraint began on April 10 per the 2021 Fish Passage Plan (FPP) page MCN-27. Also, unit priority is being followed per the FPP. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 11, 14 and 15. Fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’ to 0.3’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.2’

Comments: Debris loads near the Oregon shore exit went from minimal to light as northeast winds moved the debris from the powerhouse to the Oregon shoreline.

Debris loads were minimal near the Washington exit.

There are no problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.4'
X			NFEW2 Weir Depth	≥ 8.0'	8.1' to 8.2'
X			NFEW3 Weir Depth	≥ 8.0'	8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.6' to 1.7'
X			SFEW1 Weir Depth	≥ 8.0'	8.2' to 8.3'
X			SFEW2 Weir Depth	≥ 8.0'	8.1' to 8.3'
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'	9.3' to 9.6'
X			WFE3 Weir Depth	≥ 8.0'	9.4' to 9.7'

Comments: There are no problems to report.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			21° to 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: There are no problems to report.

Juvenile Fish Passage Facility

Normal sampling season, consisting of alternating days of primary and secondary bypass, continued. There were no interruptions in the sampling schedule this week.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Moderate to minimal
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 near the powerhouse. Northeast winds reduced those loads to minimal by week's end. Debris loads beside the spillway and new debris loads were minimal. The debris consisted mostly of woody material.

The next round of trash rack cleaning is scheduled to begin on April 26.

A few large woody debris pieces were removed from the gatewell slots this week.

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 unit 12 on April 12. All screens are in place except unit 5, which is OOS. The camera inspections in units 13 and 14 revealed no problems on April 13.

Unit 3's ESBS's currently cannot be controlled or communicated with from the control room. The electrical staff is working on the issue. The screens can be monitor in the powerhouse 8th floor gallery. The biologist noted the brushes on the screens in 3A and 3B slots were not fully cycling at times from April 9 to 12. However, enough brush cycles are being completed to keep the ESBS clean. Also, for the most part, the unit has been in standby.

All three ESBS brush systems for the screens in unit 4 tripped alarms and were reset on April 12.

Daily VBS differential monitoring revealed no issues.

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: All systems operated satisfactorily.

The channel hoist remains OOS due to the trolley system oil leak. The trolly will be repaired as soon as parts arrive on project.

The mechanical staff examined the rectangular screen brush and found no issues with the device on April 12.

The electrical staff downloaded monitoring data for the movement of the two side dewatering valves that regulate the channel elevation from the control system program on April 15.

Bypass Facility:

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

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

New ropes were installed on the sample tanks standpipes and the shop hoist was repaired on April 15.

This week, 350 juvenile lamprey and 13,952 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 was opened on April 10 at 0001 hours for the spill season. Crane 7 will be attached to the TSW in bay 19. The TSW in bay 20 was closed the morning of April 9 with the conclusion of the adult steelhead TSW passage efficiency study. However, the TSW was reopened on April 10 at 0001 hours. The TSW in bay 20 is attached to a hoist.

The TSW in bay 19 was closed on April 10 from 0830 to 1015 hours. This was done so spillbay 2 could be opened and the spillgate dogged at four feet, which was completed at 0936 hours. With Crane 6 still OOS, the gate in bay 2 must be dogged open at a set elevation.

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
133.1	125.0	73.3	0.1	47.9	47.1	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours. The spring spill program began on April 10 at 0001 hours. Repairs to cranes 6 are scheduled to be completed in late May or early June.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections are scheduled for May 4.

Avian Activity: Avian counts continued. These counts are reflected in Table 3 below.

The laser on the outfall pipe remains out of service due to a faulty emergency stop button. The button is scheduled to be replaced on April 20. This laser will be programmed on April 21. The navigation lock wing wall laser's patterning still concerns the project biologist. The fisheries staff will continue to monitor this laser and ask for adjustments as required. The electrical staff did slow the pattern down by 25 percent on April 15. Due to concern over the intensity of the laser, replacement bulbs will be ordered, and the laser will be examined again next week.

Evaluation of the laser was to begin on April 15.

Two large bird distress calls remain installed on the navigation lock wing wall.

USDA Wildlife Services will begin their first shift on April 25.

In the spillway zone, gulls and pelicans were observed. The birds were mostly feeding in the spill flow. They worked the area especially during northeast winds. One osprey was observed. Many of the birds appeared to be migrating through the area.

In the powerhouse zone, no birds were observed.

In the bypass outfall zone, generally, a small number of gulls were observed. They were mostly roosting however feeding did occur especially on windy days. Cormorants were noted roosting on the juvenile bypass outfall pipe in the same numbers they did during the winter. Their feeding activity slowly increased during the week. One pelican was noted near the outfall. Spill flow does appear to reduce feeding.

In the forebay zone, one small gull flock was observed. However, outside the zone, gulls appeared to be staging as numbers fluctuated during the week. A small number of pelicans was also noted staging outside the zone. Two loons, one tern, a few cormorants, and several ospreys were also noted at the edges of the zone. No grebes were observed on project.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 9	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	58	0	0	0
	Forebay	0	0	0	0	0
April 10	Spill	18	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	4	24	0	0	0
	Forebay	0	0	0	0	0
April 11	Spill	2	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	40	0	0	0
	Forebay	10	0	0	0	0
April 12	Spill	2	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	45	0	0	0
	Forebay	0	0	0	0	0
April 13	Spill	48	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	22	47	0	0	0
	Forebay	0	0	0	0	0
April 14	Spill	110	0	0	5	0
	Powerhouse	0	0	0	0	0
	Outfall	3	59	0	1	0
	Forebay	0	0	0	0	0
April 15	Spill	0	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	2	36	0	0	0
	Forebay	0	0	0	0	0

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

Siberian Prawn: No Siberian prawns were removed or euthanized this week.

Fish Rescue/Salvage: There is nothing to report.

Research: The spring phase of the Pacific Northwest National Laboratory (PNNL) adult steelhead TSW passage efficiency study concluded on the morning of April 9. That afternoon, the cameras near the TSW in bay 20 were removed. More equipment will be removed next week.

The first gas bubble trauma (GBT) examinations occurred on April 12. The fish observed showed no signs of trauma.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

Turbine Operation

Yes	No	Turbine Unit Status		
	x	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
x		Available turbines operated within 1% peak efficiency? Constraint in effect.	x	

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 12, 13, 14.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	x		South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	7.9’
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
	x		North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	7.7’, 7.1’
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’	2.8’

Comments: On April 13, the south shore fish ladder exit debris boom was found to be broken at several of the chains that hold the logs together. Some of the logs were blown against the south shore upstream of the ladder exit and the rest of the logs were against the dam between unit 1 and the south shore ladder exit. Water turbulence in the forebay from an east wind caused the logs to break loose. Maintenance personnel used a work boat to re-attach the logs and fix the boom on April 15. Fortunately, there was very little debris observed in the forebay while the boom was broken.

The south shore entrance weir depth was slightly below criteria on April 13. The depth was noted to be in criteria on the PLC shortly after the inspection.

The north powerhouse entrance weir depth was below criteria on April 12 and 14 when the weir was off sill. The powerhouse operator was informed, and he lowered NFE-2 weir down a little bit on April 12 to get the 8’ depth. On

April 14, the operator lowered NFE-2 weir down to sill to bring it into criteria after the tailwater elevation had dropped some more.

The north shore entrance channel/tailwater differential was above criteria on April 14. The low tailwater elevation at the north shore resulted in the high channel/tailwater differential. Two north shore auxiliary water supply pumps are operating and the entrance criteria most likely cannot be met if a second pump is shut off. If a high channel/tailwater differential continues to occur at the north shore, possible solutions will be identified for implementation.

Auxiliary Water Supply (AWS) System:

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

Comments: South shore AWS pump #7 was taken out of service on April 7 at 1505 hours to replace the lower gearbox shaft seal.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 4 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-5%
	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: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: Orifices are being backflushed three times per day. There were no debris obstructions observed at the orifices, as indicated by reduced flow through the orifices. There was no significant debris that came into the separator when the orifices were being backflushed.

The recently installed actuator for the water regulating weirs cannot be operated automatically because it does not have an analog controller input. A determination will be made whether this feature can be added to the actuator or whether the failed actuator can be repaired. In the meantime, the water level in the collection channel is being visually monitored three times per day and the actuator is operated electronically in "local" control to adjust the weirs as needed.

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

Fish Sampling: Fish condition sampling is occurring on Mondays and Thursdays each week. See the table below for a summary of the sampling results. The descaling observed on one of the steelhead on April 12 and four of the steelhead on April 15 was attributed to predation attempts by birds.

Fish condition sampling results at Ice Harbor Dam:

Date: April 12

Species, Run, Rear type	Sampled	#Descaled	Mortality	Avian Marks
Chinook yearling clipped	66	0	0	0
Chinook yearling unclipped	6	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	42	2	0	1
Steelhead unclipped	3	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	117	2	0	1

Date: April 15

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	53	0	0	0
Chinook yearling unclipped	5	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	61	3	0	4
Steelhead unclipped	12	2	0	1
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	131	5	0	5

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

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
58.3	43.4	38.3	27.8	48	46	6.0	5.5

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on April 8 for units 1, 2, 4, 5, and 6. A total of 1 juvenile clipped chinook and 5 juvenile lamprey (all mortalities) were found.

Avian Activity: There were low numbers of piscivorous birds observed around the project (see table below). Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing for 8 hours per day, 3 days per week, is taking place. Bird hazing has been effective at dispersing birds away from the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 9	0	1	0	0	1
April 10	---	---	---	---	---
April 11	0	0	0	0	1
April 12	0	5	0	0	0
April 13	0	4	0	0	1
April 14	1	14	0	0	0
April 15	0	4	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 12	1	1
April 15	0	0
Totals	1	1

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

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

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis

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	

Comment: Hard constraint for turbine operating within 1% peak efficiency began on April 3.

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	7/15/2019	0720	9/02/2021	ERTS	Annual, Draft Tube Liner

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on April 9, 10, 11 and 14.

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:

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 (SPE-1) Weir was on sill during all inspections with readings of 6.6, 5.8, 6.2 and 5.5 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 6.6, 5.8, 6.2 and 5.5 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 6.4, 6.3, 5.8 and 5.8 feet respectively.

Auxiliary Water Supply System:

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

Comments:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	18 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-15%
	X		Any oil seen in gatewells?	

Comments:

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 STS's 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:

Collection Facility: Collection for condition sampling occurred from 0700 to 0700 on April 10 – 11 and 13 - 14. A total of 3,280 fish were collected with 3,280 fish being bypassed back to the river.

Collection into the raceways for transport is scheduled to begin on April 23.

Transport Summary: Every-day barge transport is scheduled to begin on April 24.
Spillway Weir: RSW went into service at 0001 on April 3 with the start of spring spill.

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
56.0	44.3	39.7	31.5	47.0	46.2	3.8	3.4

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 8. No living fish were found. Mortalities included 6 juvenile lamprey, 1 Chinook salmon smolt and 1 steelhead smolt.

Avian Activity: Highest counts of foraging piscivorous birds in tailrace (SWT1+PH1+PH2) at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/9/2020	1300	9	0	0	0	0
4/10/2020	1230	6	0	0	0	0
4/11/2020	1230	2	0	0	0	0
4/12/2020	1130	2	1	0	0	1
4/13/2020	1230	2	0	0	0	0
4/14/2020	1300	0	0	0	0	0
4/15/2020	1130	2	0	0	0	0

Comments: Bird hazing efforts by USDA personnel began on April 1.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 9.

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

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John

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	

Little Goose Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	04/14/17	14:11	03/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	03/31/2022	17:00	T2 ground
1	11/30/20	08:00	04/15/2021	17:15	6-year overhaul

Comments: Little Goose experienced a T2 transformer ground on March 18 at 14:17. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be conducted.

Adult Fish Passage Facility

Little Goose fish facility and Environmental Assessment Services (EAS) staff inspected the adult fishway on April 11, 14 and April 15.

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’	7.9
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.9
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’	2.1
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.9
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.9
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The fish control system still has a faulty hydro-ranger for the NSE1 weir and is currently awaiting parts. The SSE weir depths were found out of criteria on April 14, NSE weir depths were found out of criteria April 14. The NPE channel to tailwater differential was found out of criteria on the April 14 inspection. Subsurface water velocity was measured on April 11 at NPE and averaged 3.1 fps.

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 and 2 were returned to service on February 23. Fish pump 3 returned to service April 7.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X	X		Any debris seen in gatewells (% coverage)	5%
X			Any oil seen in gatewells?	

Comments: There was approximately 60,000 square feet of floating woody debris inside the trash shear boom on April 11. The majority of floating woody debris was spilled through the ASW on April 13 and there is currently about 3,000 square feet in the forebay. Oil was observed leaking from the ESBS screen cleaning gearbox into gatewell 5B on April 6. The orifices were closed and cleanup and reporting efforts initiated immediately. Gatewell drawdowns were conducted on April 7 for Unit 2 and were in criteria.

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: ESBS's were installed in Units 2, 3 and 4 on March 22 and 23. VBS differentials were conducted on April 7 for Unit 2 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: The juvenile bypass system was watered up on March 22 and is currently alternating between primary bypass and secondary bypass to facilitate collection for condition monitoring.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. The juvenile fish facility is alternating to primary bypass on non-collection days. The collection and transport facility operated within criteria this report period. A total of 7,231 fish were collected, of which 7,217 were bypassed back to the river. The descaling and mortality rates were 3.0% and 0.02%, respectively. No adult lamprey were removed from the separator this report period.

Transport Summary: Fish transportation is scheduled to begin on April 24.

Spillway Weir: Spring spill operations began on April 3 with the ASW in high crest.

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
51.2	38.6	31.9	22.0	48.4	48.6	5.0	3.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13. Inspections will continue in accordance to the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1. USDA hazing actives began on March 29.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-9	11:30	0	5	0	0
4-10	8:30	2	4	0	0
4-11	8:30	5	0	0	0
4-12	10:00	6	5	0	0
4-13	9:00	0	4	0	0
4-14	8:15	6	0	0	0
4-15	8:00	3	2	0	0

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

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

Date	Sample	Collection*
4-9	N/A	N/A
4-10	1	5
4-11	N/A	N/A
4-12	1	5
4-13	N/A	N/A
4-14	0	0
4-15	N/A	N/A
Totals	2	10

Gas Bubble Trauma (GBT): GBT monitoring was performed on April 11. Of the 71 fish examined, no signs of GBT were observed.

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

Research: No research activities occurred during this report period.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status		
X		All 6 turbine units available for service (see table & comments below for details).	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
5	04/12	0700			DC low voltage switchgear/Replace ESBS/VBS
3	04/15	1202	04/15	1315	Tripped/Bus transfer part of DC low voltage work
4	04/15	1205	04/15	1233	Bus transfer part of DC low voltage work
1	04/15	1209	04/15	1227	Bus transfer part of DC low voltage work

Comments: Unit operations were briefly interrupted to support DC low voltage switchgear upgrade.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway April 9, 10, 12, and 14.

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: Operation of diffuser 14 will remain in manual for the season due to an issue with the elevation sensor.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8’, 7.9’
	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	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.8’, 0.7’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.9’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North shore and north powerhouse channel/tailrace head differentials ability

to maintain criteria range is dependent of tailrace conditions. The Project is working with hydraulic engineers to find a permanent solution to the ongoing channel/tailwater criteria discrepancies.

Auxiliary Water Supply System:

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

Comments: AWS pumps 2 and 3 are in operation. AWS pumps 2 and 3 were taken offline briefly from 1211-1212 hours April 15 due to an interruption in power as part of DC low voltage switchgear work.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 94.5 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments:

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: Sockeye/Kokanee continue to be considered incidental species and will not be included as part of the SMP sample until NOAA guidance changes.

Transport Summary: No transport.

Spillway Weir: Spring flex spill continues. A total of 12,570 PIT tagged smolts have been detected over the RSW this season (2390 Chinook and 10,180 steelhead) compared to a total of 1948 smolts detected in the juvenile system. A total of 96 adult PIT tagged steelhead have been detected at the RSW this season compared to 45 PIT tagged adult steelhead detected at the juvenile facility.

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
56.4	44.8	36.1	27.9	47.5	46.5	4.7	4.0

*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 no Siberian prawns collected in the condition sample.

Avian Activity: Biologist began daily piscivorous bird counts at Lower Granite Dam March 1. Bird hazing began April 1. American White Pelicans are present in the tailrace and loafing on the island downstream of the dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 9	1330	22	0	0	0
April 10	1030	4	2	0	0
April 11	1238	0	0	0	1
April 12	1315	0	0	0	0
April 13	1406	7	0	0	0
April 14	0631	0	0	0	0
April 15	0656	0	1	0	4

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred April 15 with 76 smolts sampled and no symptoms of GBT observed.

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

Fish Rescue/Salvage: A fish rescue occurred in unit 5 scrollcase from 1107-1200 hours April 13. Three live crawdads were recovered. No other fish were present.

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples.

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 April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult Sort by Code 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.

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

NMFS PIT-tag Chinook and steelhead smolts for their Survival Study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace. Collection for this study occurred April 6 and 7. Fish tagged were released to the river the following day.

Idaho Fish and Game (IDFG) *O. nerka* Genetic Stock Identification

Substantial numbers of *Oncorhynchus nerka* were collected at the Lower Granite Dam juvenile fish facility (JFF) during March 2021. These fish are likely kokanee released from Dworshak Reservoir during drawdown spill. IDFG began collecting genetic samples from *O. nerka* collected at the LWG juvenile facility April 1 to determine if some of these fish may be the progeny of Columbia River sockeye that passed Lower Granite Dam over the past few years. Samples are taken from 10-15 individuals per day until a total of 100 samples are collected. This work concluded April 12.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transporting Fish from the Snake River to Optimize Transportation Strategy:

This study aims to build on the current database of information on the seasonality of smolt-to-adult return rates (SARs). LWG biological staff began collection for the early non-transport season Monday April 1. Fish are being collected Monday and Tuesday for tagging on Tuesday and Wednesday with the barge departing LWG on Thursdays. Collection will occur Sunday-Thursday with fish being tagged Monday-Friday once general everyday fish transport begins.