U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#08-2021
April 16-22, 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	

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
13 & 14	4/19	0623	4/19	1647	Transformer T7 work

Comments: The hard one percent peak efficiency constraint and unit priority are being flowed per the 2021 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 18, 20 and 22. 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 were very light to light.

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'	1.0' to 1.6'
X			NFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2'
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' to 8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.6'
	X		SFEW1 Weir Depth	≥ 8.0'	7.7' to 8.2'
	X		SFEW2 Weir Depth	≥ 8.0'	7.7' to 8.2'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
X			WFE2 Weir Depth	≥ 8.0'	9.5' to 10.0'
X			WFE3 Weir Depth	≥ 8.0'	9.5' to 10.0'

Comments: The out of criteria points for the Oregon ladder entrance weirs NFEW3, SFEW1 and SFEW2 noted above were due to the inspection occurring just as fish pump 2 was being removed from service for repairs and the other fish pumps' blade angles were being increased on April 20. During this process, all Oregon ladder entrance weirs were in manual mode. All Oregon ladder inspection points were in criteria during two fish pump operation, which will be described below, on April 18.

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*		OOS	21° to 26°	Oregon Ladder Fish Pump 1
Yes*		OOS	21° to 26°	Oregon Ladder Fish Pump 2
Yes*			21° to 26°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump issues are outlined in Table 2 below. Two fish pumps were operational all week and operated with an increased blade angle when required. Other than a brief occasion as described above, the Oregon ladder inspection points remained in criteria.

Table 2. Fish Pump Issues.

	OOS		RTS		
Fish Pump	Date	Time	Date	Time	Outage Description
1	4/17	1600	4/17	1600	Pump tripped offline
1	4/18	0300	4/18	0304	Pump tripped offline
1	4/18	0308	4/20	1055	Grease pump failure
2	4/20	1100	4/20	1401	Air leak repair
3	4/20	1351	4/20	1353	Bus switch
1	4/21	1121	4/21	1453	Governor loop oil leak repair

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)	Minimal to very light
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to very light near the powerhouse. Debris loads beside the spillway and new debris loads were minimal.

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

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: All screens are in place except unit 5, which is OOS. No camera inspections occurred this week.

Unit 3's ESBS's currently cannot be controlled or communicated with from the control room. Parts have been ordered. For the most part, the unit has been in standby. ESBS brush operation will continue to be monitored when the unit does come online.

Daily VBS differential monitoring revealed no issues. However, the screens in 10A and 10B slots were cleaned on April 20 and 22, respectively. Also, all three screens in unit 14 were inspected, which includes cleaning, on April 20. No issues were found. No fish were observed during the cleaning and inspections.

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: Orifices were adjusted as required for VBS cleaning and inspections. Orifice operators were repaired as needed.

All systems operated satisfactorily. The channel hoist returned to service this week.

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.

This week, 80 juvenile lamprey and 11,800 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 bays 19 and 20 remained open. Crane 7 is attached to the TSW in bay 19. The TSW in bay 20 is attached to a hoist.

River Conditions

Table 3. 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
174.9	130.9	107.1	70.0	50.7	48.2	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 continues. Repairs to crane 6 are scheduled to be completed in late May or early June. Issues with the load limit indicator on crane 7 continue to be examined. With crane 7 attached to the TSW in bay 19 and with crane 6 still OOS, the gate in bay 2 remained dogged open at four feet.

To calibrate the gates in bays 5, 7 and 18 with GDAC's, each gate was briefly closed during the week.

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 4 below.

The laser on the outfall pipe was OOS until April 20. At which time, it was determined the batteries were not wired properly and the emergency stop button probably was not faulty. The laser was programmed that morning and inadvertently left on. The laser was turned off on April 21 to return it to the study plan. The laser will RTS on April 23.

The navigation lock wing wall laser still concerns the project biologist. Replacement bulbs are on order. The fisheries staff will continue to monitor this laser and ask for adjustments as required. The laser was turned off on April 19 per the study plan. The electrical staff examined the laser on April 20 and inadvertently left it on. Later that day, the fisheries staff turned the laser off when replacing the batteries. After discussion, larger batteries were installed on April 22. The laser will RTS on April 23.

Evaluation of the lasers will continue.

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. One osprey was observed. Bird numbers were relatively low.

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 at times. Cormorants were noted roosting on the juvenile bypass outfall pipe though their numbers did decrease somewhat. The cormorants continued to feed in low numbers at the outfall. One pelican was noted near the outfall. Spill flow does appear to reduce feeding and the one active laser may have contributed.
In the forebay zone, one grebe was observed. However, outside the zone, gulls, grebes, pelicans, loons, ospreys, and cormorants noted. The pelicans and gulls appeared to be staging.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 16	Spill	0	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	1	40	0	0	0
	Forebay	0	0	0	0	0
April 17	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	1	28	0	0	0
	Forebay	0	0	0	0	0
April 18	Spill	7	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	2	41	0	0	0
	Forebay	0	0	0	0	1
April 19	Spill	13	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	6	43	0	1	0
	Forebay	0	0	0	0	0
April 20	Spill	25	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	6	29	0	0	0
	Forebay	0	0	0	0	0
April 21	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	28	0	0	0
	Forebay	0	0	0	0	0
April 22	Spill	22	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	16	13	0	0	0
	Forebay	0	0	0	0	0

Invasive Species: The next mussel station examinations will occur on April 25.

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

Fish Rescue/Salvage: There is nothing to report.

Research: The two examinations for gas bubble trauma (GBT) for the week occurred on April 16 and 20. 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
6	4/19/21	0630	4/19/21	1305	STS inspection, hub tap
5	4/19/21	1310	4/19/21	1644	STS inspection, hub tap
4	4/20/21	0630	4/20/21	1606	STS inspection, hub tap
2	4/21/21	0733	4/21/21	1029	STS inspection
1	4/21/21	1032	4/21/21	1622	STS/VBS inspection

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on April 20 and 22. Only two fishway inspections were completed this week due to STS inspections, required training, and other scheduling conflicts occurring this week.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head $\leq$ 0.3’	
x		North Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head $\leq$ 0.3’	
x		South Ladder Picketed Lead Differential	Head $\leq$ 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	$\geq$ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	$\geq$ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	$\geq$ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: None.

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 5 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/VBSs inspected this week?
	x		STSs/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: STS inspections on units 6, 5, 4, 2, and 1 occurred on April 19, 20, and 21, using the underwater video camera. There were no significant problems found. Unit 1 VBSs were inspected on April 21. A hole that is estimated to be 1.5" x 2.5" was observed on the VBS in slot 1A. Unit 1 is scheduled to be out of service during the week of April 26 to unwater gatewell 1A so personnel can patch the hole.

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 currently be operated automatically because it does not have an analog controller input. A determination was made that this feature can be added to the actuator, so the part has been ordered. 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 dead chinook in the April 22 sample appeared to have already been dead for some time before coming into the facility.

Fish condition sampling results at Ice Harbor Dam:

Date: April 19

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	80	0	0	1
Chinook yearling unclipped	7	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	51	1	0	2
Steelhead unclipped	8	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	146	1	0	3

Date: April 22

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	81	2	1	0
Chinook yearling unclipped	11	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	70	2	0	1
Steelhead unclipped	12	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	174	4	1	1

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
53.2	46.3	33.7	29.3	51	48	6.5	5.5

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next turbine cooling water strainer inspections will occur in May.

Avian Activity: There were variable numbers of piscivorous birds observed around the project (see table below). The high number of pelicans observed on April 16 and 18 were counted early in the morning before bird hazing began for the day (pelicans are not actively hazed, but the noise from the hazing of other birds will sometimes cause them to leave). 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, occurred through April 17. Boat-based hazing for 5 days per week started on April 18. 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 16	0	3	0	0	119
April 17	0	12	0	0	1
April 18	12	10	0	0	130
April 19	0	5	0	0	0
April 20	0	0	0	0	0
April 21	14	3	0	0	0
April 22	0	5	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 19	0	0
April 22	0	0
Totals	0	0

*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
Unit 5	4/20/2021	0700	4/21/2021	1305	Track Rack Raking and Doble Testing

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on April 16, 17, 18 and 21.

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:
North Shore Entrance (NSE-1) weir depth was out of criteria on the April 21 inspection with a reading of 7.9 feet.
North Shore Entrance (NSE-2) weir depth was out of criteria on the April 21 inspection with a reading of 7.9 feet.
The automatic system corrected the weirs depths.
South Powerhouse Entrance (SPE-1) Weir was on sill during all inspections with readings of 5.6, 5.8, 5.6 and 5.8 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 5.6, 5.8, 5.6 and 5.8 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 5.7, 6.0, 5.7 and 6.0 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)	16 yds^2
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:

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.
VBS differential for Unit 1 was measured as a benchmark.

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: Dewaterer mechanical screen cleaning brush was taken out of service at 1630 on April 19 due to brush arm lift failure. Brush arm is currently hanging out of the water and repair is awaiting parts. With current low debris load, pneumatic system will be able keep the incline screen free of debris.

Collection Facility: Collection for condition sampling occurred from 0700 to 0700 on April 15 – 16, 17 – 18, 19 - 20 and 21 - 22. A total of 22,079 fish were collected with 22,076 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
52.2	45.1	36.5	32.3	49.5	48.5	5.0	4.1

*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**
4/16/2020	1215	3	0	0	0	0
4/17/2020	1255	2	0	0	0	0
4/18/2020	1230	3	0	0	0	0
4/19/2020	1230	3	0	0	0	0
4/20/2020	1300	2	0	0	0	0
4/21/2020	1250	2	0	0	0	0
4/22/2020	1150	0	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

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, Environmental Assessment Services (EAS) and Oregon Department of Fish and Wildlife (ODFW) staff inspected the adult fishway on April 16, 17, 19, 20 and 22.

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’	7.7
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.7
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		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	4.9
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.4
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.1

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 hydroranger for the NSE1 weir and is currently awaiting parts. The SSE weir depths were found out of criteria on April 16 and NSE weir depths were found out of criteria April 17. The surface velocity near the SSE was found out of criteria on the April 19 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		Any debris seen in gatewells (% coverage)	
X			Any oil seen in gatewells?	

Comments: There was approximately 945 square feet of floating woody debris inside the trash shear boom. 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 Units 2 and 3 on April 16 and on Units 1 and 2 on April 22 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 Units 2 and 3 on April 16 and on Units 1 and 2 on April 22 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 17,065 fish were collected, of which 17,598 were bypassed back to the river. The descaling and mortality rates were 0.4% and 0.04%, 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
46.1	38.0	27.1	22.1	50.6	49.0	6.0	4.2

*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
4-16	8:00	6	5	0	0
4-17	8:30	0	2	0	0
4-18	10:00	0	5	0	0
4-19	9:30	0	0	0	19
4-20	10:00	0	0	0	0
4-21	8:40	1	2	0	0
4-22	8:50	1	0	0	0

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

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

Date	Sample	Collection*
4-16	11	55
4-17	N/A	N/A
4-18	40	800
4-19	N/A	N/A
4-20	4	50
4-21	N/A	N/A
4-22	4	50
Totals	59	955

Gas Bubble Trauma (GBT): GBT monitoring was performed on April 1. Of the 100 fish examined, 1 fish had signs of GBT.

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

Comments:

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway April 16, 17, 19, and 21.

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’	7.9’, 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’	0.9’, 0.8’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.8’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.7’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’
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 engineers to find a permanent solution to the ongoing channel/tailwater criteria discrepancies along with control system programing issues.

Auxiliary Water Supply System:

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

Comments: AWS pumps 2 and 3 are in operation. AWS pump 1 thrust bearing repairs were completed April 20. An MOC requesting an outage to bring the pump 1 online has been submitted to FPOM.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 47.9 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: Collection for transport is scheduled to begin April 23.

Transport Summary: The first every day barge is scheduled to depart LWG April 24.

Spillway Weir: Spring flex spill continues. A total of 33,014 PIT tagged smolts have been detected over the RSW this season (7,806 Chinook, 3 Coho and 25,205 steelhead) compared to a total of 4,018 smolts detected in the juvenile system. A total of 148 adult PIT tagged steelhead have been detected at the RSW this season compared to 46 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
50.9	44.0	32.1	27.4	50.5	46.5	5.0	4.5

*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 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 there were 67 counted loafing on the island downstream of the dam April 22.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 16	1032	0	1	0	0
April 17	1150	0	0	0	0
April 18	1201	0	0	0	0
April 19	0815	16	0	0	1
April 20	1034	3	0	0	0
April 21	1040	1	0	0	0
April 22	0700	1	2	0	1

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred April 22 with 100 smotls 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: N/A

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 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.

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 began April 21 and will continue Monday-Friday until the middle of June. Tagged fish were released to the river the following day.

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. Collection for this study began April 21.