U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#14-2021
May 28 – June 3, 2021

Project: McNary
Biologist: Bobby Johnson

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

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

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	6/30	N/A	Blade seals and hub oil replacement

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 biologist performed a measured inspection of the adult fishways on May 30. Only one inspection occurred due to illness. Fish counting continues. Video review of adult lamprey night passage will begin on June 15.

Fish Ladder Exits:

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

Comments: Debris loads near the both exits were minimal though an increase in debris along the Washington shoreline was noted.

At the Oregon shore exit, the count station window brush was repaired on May 29. The brush had been stalled in the bottom of the window. Due to low flow, the exit’s set points were adjusted on June 3.

There are no other problems to report.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		North Oregon Entrance Head Differential	1.0' – 2.0'	2.1
X			NFEW2 Weir Depth	≥ 8.0'	9.4'
	X		NFEW3 Weir Depth	≥ 8.0'	Closed
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3'
	X		SFEW1 Weir Depth	≥ 8.0'	6.5'
	X		SFEW2 Weir Depth	≥ 8.0'	6.5'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.6 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.6'
X			WFE2 Weir Depth	≥ 8.0'	9.0'
X			WFE3 Weir Depth	≥ 8.0'	9.0'

Comments: With fish pumps 1 and 3 being OOS, the Oregon ladder is adjusted for one operational fish pump according to the FPP, page MCN-25, 3.3.2.4.v. NFEW2 remained in manual mode to ensure the north powerhouse pool differential remained in or close to criterion. Gradients and changes in spill volume have made it very difficult for the control room operator to maintain pool differential criterion at the north powerhouse entrance. The other out of criteria points for the Oregon ladder listed above are due to only fish pump 2 being functional. Changes in tailwater elevation may have also had an effect.

Stoplogs remain installed in all floating orifice gates (FOG's) except W1, W3, W43 and W44 per the FPP. Fabrication of the six remaining FOG's continued. Six gates have been rehabilitated to this point. The remaining gates will be replaced.

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		Oregon Ladder Fish Pump 1, RTS date is July 30
Yes			30°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is September 30
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pumps 1 and 3 remained out of service. Return to service dates are subject to change.

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: Current and incoming debris loads were minimal to very light near the powerhouse and beside the spillway.

The next trash rack cleaning is scheduled for the week of June 21.

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

Daily VBS differential monitoring revealed no issues and no screens were cleaned.

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 until June 3. A transition screen brush alarm came in at 1515 hours. The fisheries staff found the rectangular screen brush had jammed on the transition brush. After the rectangular brush was parked, the electrician found a failed limit switch on the transition brush, which caused the issue and was replaced. Both brushes were back in service by about 1645 hours.

What appeared to have happen is the limit failed on the transition brush but did not trip an alarm of any type. After the next brush cycle sequence began about six hours later, the rectangular brush jammed on the transition brush, which had not parked the previous cycle sequence. For whatever reason, this tripped the transition brush alarm that was received in the control room. The electrical staff believes this is a programming issue they can resolve.

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, 190 juvenile lamprey and 20,890 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

A sag in the gas bubble trauma (GBT) separator to wet lab line was removed on June 1. There are no other problems to report.

Top Spillway Weir (TSW) Operations: The TSW's 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. The TSW's will be closed and replacement with standard gates will begin on June 7 and 8, respectfully.

In order for crane 6 to be moved to bay 18 and tested, the TSW in bay 19 was dogged open and crane 7 moved north of bay 18 on June 3 from 0842 to 1053.

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
240.3	198.6	158.2	125.3	58.4	56.7	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. Water temperature monitoring throughout the juvenile system will begin June 15.

The spring spill program continues. The summer spill program, with 57 percent of flow being spilled will begin June 16 at 0001 hours.

Repairs to crane 6 are scheduled to be completed when electrical parts arrive on project, possibly late June. Bay 18 was dogged open and crane 6 was moved in place and tested with stored spill gate sections on June 3 from 1036 to 1053 hours. Both crane 6 and 7's load limit indicators continue to be an issue.

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.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections are scheduled to occur on June 8.

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

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 28	Spill	12	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	19
May 29	Spill	4	0	0	3	0
	Powerhouse	0	0	0	0	0
	Outfall	3	0	0	0	0
	Forebay	0	0	0	0	236
May 30	Spill	9	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	8	0	0	0	0
	Forebay	0	0	0	0	164
May 31	Spill	8	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	108

June 1	Spill	42	0	0	4	0
	Powerhouse	0	0	0	0	0
	Outfall	30	5	0	0	0
	Forebay	0	0	0	0	27
June 2	Spill	NA	NA	NA	NA	NA
	Powerhouse	NA	NA	NA	NA	NA
	Outfall	NA	NA	NA	NA	NA
	Forebay	0	0	0	0	30
June 3	Spill	23	1	0	8	0
	Powerhouse	0	0	0	0	0
	Outfall	18	0	0	0	0
	Forebay	0	0	0	0	30

The lasers on the outfall pipe and navigation lock wing wall were turned on and off, on May 28 and June 3, respectively, as part of the evaluation study plan. Improving effectiveness of both lasers is still under consideration.

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

USDA Wildlife Services daily shore hazing continues. Boat hazing will occur on Monday, Wednesday, and Friday each week. The Wednesday boat trip starts later in the day.

In the spillway zone, gulls, a few pelicans and one cormorant were observed. The birds were feeding in the spill flow. Gull numbers remained relatively low. Pelican numbers increased slightly. Two ospreys were also noted roosting.

In the powerhouse zone, no birds were observed.

In the bypass outfall zone, gull numbers were relatively low. They were roosting on the pipe and no outfall feeding was observed this week. Cormorants were noted roosting on the juvenile bypass outfall pipe once. The lack of feeding may have more to do with flow than the lasers.

In the forebay zone, loafing or feeding grebes were noted. Most birds were loafing. Grebe numbers appear to have increased greatly. Outside the zone, gulls in low numbers, several pelicans, a few ospreys, and cormorants were observed. The pelicans appeared to be staging. One grebe was removed from 11A gatewell slot and released safely back into the river on May 31.

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

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

Fish Rescue/Salvage: There is nothing to report.

Research: The two GBT examinations reported for the week occurred on May 28 and June 1. No smolts showed signs of trauma.

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

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

*All available turbine units are operated in accordance with App. 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
6	5/29/21	0832	6/1/21	1420	6B STS tripping breaker – replace STS with spare

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 31, June 1, and June 2.

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	
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	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: None.

Auxiliary Water Supply (AWS) System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 2 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-1%
x			Any oil seen in gatewells?	6A – residual oil sheen

Comments: Oil sheens were observed in 6A and 6C head gate and gatewell slots on May 24. Approximately 1 cup of hydraulic oil is estimated to have leaked past the head gate cylinder seals after unit 6 head gates were closed on May 18. Oil absorbent socks were deployed on May 24 and the appropriate agencies were notified of the oil spill.

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	STS/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: STSs are in continuous-run mode due to the presence of subyearling chinook in the sample with average fork lengths of less than 120 mm.

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 light for orifice 4BN was found to be out on May 29. Orifice 4BS was opened in place of orifice 4BN until the light ballast was replaced on June 2.

The recently installed actuator for the water regulating weirs could not be operated automatically because it did not have an analog controller input. An analog controller input was added to the actuator, but it still must be programmed to function properly. 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 two tables below for a summary of the sampling results. The subyearling chinook mortality in the May 31 sample did not exhibit any external maladies. The steelhead mortality was found after sampling was completed on May 31 in the

unwatering pipe coming into the lab from the anesthetizing basket. The unwatering pipe is routinely checked with a flashlight for straggling fish after each batch of fish are flushed from the basket to the lab, but the fish must have got stranded after the dewatering pipe was last checked that day. Sampling personnel will be extra vigilant to check the pipe multiple times after each flush of fish. Three fish in the May 31 sample had small lacerations. The two bodily injuries observed in the June 3 sample were scrapes from birds. Overall fish condition improved from the previous week.

Fish condition sampling results at Ice Harbor Dam:

Date: May 31

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	6	0	0	0
Chinook yearling unclipped	1	0	0	0
Chinook subyearling clipped	6	0	0	0
Chinook subyearling unclipped	14	0	1	0
Steelhead clipped	6	0	1	1
Steelhead unclipped	3	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	1	0	0	0
Total	37	0	2	1

Date: June 3

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	5	0	0	1
Chinook yearling unclipped	2	0	0	0
Chinook subyearling clipped	11	0	0	0
Chinook subyearling unclipped	21	0	0	0
Steelhead clipped	8	0	0	1
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	2	0	0	0
Coho clipped	1	0	0	0
Coho unclipped	3	0	0	0
Total	53	0	0	2

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
84.3	68.6	56.8	44.5	58	57	7.0	7.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly cooling water strainer inspections will occur the week of June 7.

Avian Activity: There were low to moderate 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 is occurring for 8 hours per day, 3 days per week. Land-based hazing has generally been effective at dispersing birds away from the dam, except for the spillway tailrace zones. The shooting of pyrotechnics from the north shore is no longer allowed because of the danger of starting a grass fire. Boat-based hazing has been effective at moving birds out of all the tailrace zones, except when turbulent river conditions from spill make it unsafe for the boat to go into the middle tailrace zones to haze birds.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 28	21	14	0	0	22
May 29	8	3	0	0	16
May 30	3	2	0	0	10
May 31	14	43	0	0	25
June 1	0	12	0	0	13
June 2	12	14	0	0	9
June 3	12	9	0	0	14

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*
May 31	0	0
June 3	2	2
Totals	2	2

*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: Denise Griffith and Raymond Addis

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
Unit 1	6/02/2021	0715	6/02/2021	0950	STS Inspections
Unit 2	7/15/2019	0720	9/02/2021	ERTS	Annual, Draft Tube Liner
Unit 3	6/01/2021	0710	6/01/2021	0905	STS Inspections
Unit 4	6/01/2021	0910	6/01/2021	1105	STS Inspections
Unit 5	6/01/2021	1115	6/01/2021	1250	STS Inspections
Unit 6	6/01/2021	1300	6/01/2021	1445	STS Inspections

Comments: There are no problems to report.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on May 28, 29, 30 and June 2.

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: There are no problems to report.

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: The south powerhouse entrance weir (SPE-1) was on sill during all inspections with readings of 6.6, 6.7, 6.5 and 7.1 feet, respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 6.6, 6.7, 6.5 and 7.1 feet, respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 7.0, 6.2, 6.8 and 6.8 feet, respectively. There are no other problems to report.

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: There are no problems to report.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	29 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: There are no problems to report.

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. STS were inspected on June 1 and 2. There are no problems to report.

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: There are no problems to report.

Collection Facility: Collection into the raceways for transport continues.

Transport Summary: Alternating days of transport continues. A total of 7,271 fish were collected with 6,471 fish being transported and 69 fish bypassed back to the river during this reporting period. The 69 fish bypassed back to the river were estimated based on 14 fry being collected for condition sampling.

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
81.0	62.8	56.2	44.2	57.0	53.5	6.9	4.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on May 5. Next inspections will take place in June.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/28/2021	1200	14	0	0	0	4
5/29/2021	1230	6	0	0	0	1
05/30/2021	1245	0	0	0	2	0
5/31/2021	1245	0	0	0	0	0
06/01/2021	1200	2	0	0	0	0
06/02/2021	1230	0	0	0	0	1
06/03/2021	1100	0	0	0	0	8

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 May 2. Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
5/28/2021	0	0
5/29/2021	10	80
5/30/2021	12	60
5/31/2021	2	10
6/01/2021	4	20
6/02/2021	6	24
6/03/2021	53	106
Total	87	300

*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: No research is occurring currently.

Project: Little Goose
Biologists: Chuck Barnes

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

*All available turbine units are operated in accordance with App. 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	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 performed.

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 May 28, 30 and June 3. All inspections took place during performance spill operations.

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			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during gas cap spill. The fish control system still has a faulty hydroranger for the NSE1 weir and is currently awaiting parts. Additionally, NSE2 is giving erroneous readings during gas cap spill, but both NSE1 and NSE2 are in criteria according to physical measurements taken during performance standard spill. Collection channel surface velocity at South Shore was just under the criteria point on May 30 with a reading of 1.4 ft/sec.

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)	0 ft^2
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 is currently minimal floating woody debris inside the trash shear boom. Gatewell drawdowns for Units 1, 2 and 3 were conducted on May 26 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 for Units 1, 2, and 3 were conducted on May 26 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 began daily collection for transportation on April 23.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Every other day collection and sampling occurred through April 22. Daily collection for transportation began on April 23 with the first daily barge departing on April 24. The collection and transport facility operated within criteria this report period. A total of 5,128 fish were collected, 3,774 were transported via barge and there were 22 sample or facility mortalities. The descaling and mortality rates were 2.4% and 0.47%, respectively. No adult lamprey were removed from the separator during this report period.

Transport Summary: Daily fish transportation via barge began on April 24. Every other day barge transportation began May 18.

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
76.9	60.2	50.5	37.5	58.8	53.9	6.0	5.0

*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
5-28	10:40	0	0	0	0
5-29	9:00	0	0	0	0
5-30	8:30	2	1	0	5
5-31	8:30	2	0	0	3
6-01	8:30	0	0	0	4
6-02	11:15	0	0	0	0
6-03	8:30	6	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*
5-28	6	24
5-29	10	40
5-30	7	14
5-31	29	58
6-01	22	44
6-02	23	46
6-03	53	106
Totals	150	332

Gas Bubble Trauma (GBT): GBT monitoring was performed on May 31. Of the 47 fish examined, 2 fish had signs of GBT.

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

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection on May 3.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	06/03	1332	06/03	1534	Forced outage. Turbine Bearing Low Oil alarm

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway May 28, 29, 31, and June 2.

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’	0.9’
X			Fish Ladder Cooling Water Pumps in Service		
X			Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: Forebay temperatures reached 64.5º F during the 1500 hours June 2. The adult fish ladder cooling pumps were brought online at 0846 hours June 3.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8’, 7.6’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’, 7.7’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9’, 0.8’, 0.9’
		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’	0.3’, 0.7’, 0.4’, 0.2’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.6’, 6.8
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.5’
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
NA		Yes	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)	Weekly average 17.0 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: None.

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: None.

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: None.

Collection Facility: Collection for transport continues. About 44% of the total facility collection have been anesthetized and handled as part of research projects this season. Over the four day tagging window this report week 95.6% of all juvenile fish collected at LWG were handled and anesthetized.

Transport Summary: Every-other-day barging continues.

Spillway Weir: Spring flex spill continues. A total of 220,626 PIT tagged smolts have been detected over the RSW this season (108,111 Chinook, 3,869 Coho, 88,901 steelhead, and 19,745 sockeye) compared to a total of 10,716 smolts detected in the juvenile system. A total of 614 adult PIT tagged steelhead and 18 Chinook have been detected at the RSW this season compared to 70 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
83.8	66.0	53.8	43.0	56.5	52.0	5.0	5.0

*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 2 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.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
May 28	1533	0	0	0	13
May 29	1100	0	0	0	5
May 30	1050	0	0	0	7
May 31	1238	0	0	0	8
June 1	1020	0	2	1	9
June 2	1201	1	0	0	8
June 3	0845	0	0	0	6

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred June 3. No GBT symptoms were observed.

Adult Fish Trap Operations: The adult trap is in operation Monday through Friday at a 25% (18% /week) sample rate. Total sample for the report week was 1 hatchery steelhead and 1,063 Spring Chinook (809 hatchery and 254 unclipped). One bulltrout measuring 40 cm was collected at the trap this week.

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.