U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#13-2021
May 21-27, 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.)	**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	6/15	N/A	Thrust bearing upgrades/Blade seals
1	5/25	1000	5/25	1030	ESBS camera inspections

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 May 23, 24 and 27. Fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’ to 1.2’
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’ to 0.3’

Comments: Debris loads near the both exits were minimal to very light.

At the Washington shore exit, a regulating weir, and a weir 337 alarm came in and was reset on May 23 and 27, respectively.

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'	1.3', 1.8'
X			NFEW2 Weir Depth	≥ 8.0'	8.0' to 8.2', 10.4'
	X		NFEW3 Weir Depth	≥ 8.0'	8.1' to 8.2', Closed
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.2', 1.2'
	X		SFEW1 Weir Depth	≥ 8.0'	8.1' to 8.2', 6.7
	X		SFEW2 Weir Depth	≥ 8.0'	8.1', 6.8'
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 1.4'
X			WFE2 Weir Depth	≥ 8.0'	8.9' to 9.7'
X			WFE3 Weir Depth	≥ 8.0'	8.9' to 9.7'

Comments: Fish pump 1 had been removed from service on May 25. That day, the Oregon ladder was adjusted for one operational fish pump according to the FPP (Chapter 5, MCN-25, 3.3.2.4.v.). NFEW2 was switched to manual mode on May 25 to ensure the north powerhouse pool differential remained in criterion. Due to only fish pump 2 being functional, the out of criteria points for the three Oregon ladder entrance weirs listed above occurred on May 27. Changes in tailwater elevation may have also had an effect.

Also, stoplogs were installed in all FOG's except W1, W3, W43 and W44 per the FPP on May 25. Fabrication of the six remaining floating orifice gates (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	24°, OOS	Oregon Ladder Fish Pump 1
Yes			23°, 30°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 remains out of service. No return to service date has been set at this time.

Fish pump 1 tripped offline due to an overcurrent alarm on May 25 at 0350 hours. The two resistive thermal detectors (RTD's) that monitor the lower bearing temperature had failed. These RTD's need to be replaced to ensure the bearing temperature can be monitored. Running the pump without the RTD's would risk major pump failure and overhaul. Unfortunately, to replace these RTD's the fish pump must be dewatered. Stoplogs that are installed in pump 3 must now be moved to pump 1. The current estimated outage time for pump 1 is two months. Fish pump 2's blade angle was adjusted to 30 degrees on May 25.

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 minimal beside the spillway.

The next trash rack cleaning is scheduled for late June.

A few pieces of woody material were removed from the gatewell slots on May 27. 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. Camera inspections in unit 1 revealed no problems on May 25.

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: Orifices were adjusted as required for VBS inspections and trash rack cleaning. Bulbs in orifice attraction lights were replaced as required.

All systems operated satisfactorily. One low water alarm occurred on May 17. The alarm was related to orifice operations during trash rack cleaning. Orifice exchange techniques will be reviewed with the fisheries staff.

A brief power outage during a bus switch had no ill effect on May 16. However, the screen cleaning brushes cycle sequence did reset, which continues to raise concern over the channel system program.

One clipped steelhead smolt mortality was found on the side screen cleaning brush access platform on May 17. The jump deterrents on the platform were examined.

Bypass Facility:

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

Comments: Bulbs for area lighting were replaced as required.

All systems operated satisfactorily. The screen cleaning brushes' cycle sequence appeared briefly out of time on May 26. We will continue to monitor the channel program.

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.

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
226.0	200.9	145.4	126.1	56.9	54.9	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 when electrical parts arrive on project, possibly late June. 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 21	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	2	0	0	0	1
May 22	Spill	33	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	26	0	0	0	0
	Forebay	0	0	0	0	0
May 23	Spill	57	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	93	1	0	0	0
	Forebay	2	0	0	0	12
May 24	Spill	40	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	0	0	0	0
	Forebay	1	0	0	0	137
May 25	Spill	120	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	68	1	0	0	0
	Forebay	0	0	0	0	98
May 26	Spill	68	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	76	0	0	0	0
	Forebay	0	0	0	0	40
May 27	Spill	16	0	0	1	0

	Powerhouse	0	0	0	0	0
	Outfall	36	0	0	0	0
	Forebay	0	0	0	0	14

The lasers on the outfall pipe and navigation lock wing wall remained off all week as part of the evaluation study plan. The outfall laser was checked on May 24. The laser stand was made more stable but there is still enough play to make the laser somewhat ineffective on roosting birds. Navigation lock laser bulb replacement will be scheduled for the near future.

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 and a few pelicans were observed. The gulls were feeding in the spill flow. Gull numbers appeared to fluctuate with hazing activity, their own regional movements and possibly spill volume. Pelican numbers remained relatively low. One osprey was also noted roosting.

In the powerhouse zone, no birds were observed.

In the bypass outfall zone, gull numbers fluctuated with hazing and roosting activity along with possibly spill volume. They were roosting on the pipe and no outfall feeding was observed this week. The gulls would pass by while feeding in the spill flow or circling to roost. Two cormorants were noted roosting on the juvenile bypass outfall pipe. The lasers were not on this week.

In the forebay zone, loafing or feeding grebes were noted. Most birds were loafing. Also, more grebes were noted in the spillway than in past years. Grebe numbers appear to have increased. A few gulls and osprey were also noted in the zone. However, outside the zone, gulls in large numbers, approximately 20 pelicans, a few ospreys, cormorants, and night herons were observed. The pelicans and gulls appeared to be staging. The gulls may be roosting between feeding sprees in the spillway.

One grebe was removed from 11A gatewell slot and released safely back into the river on May 21.

Invasive Species: The next mussel station examinations revealed no problems on May 23.

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 May 20 and May 24. One smolt showed 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	5/18/21	0957	5/27/21	1222	Replace faulty governor oil check valve
2	5/24/21	1002	5/24/21	1500	Failed motor on 2A STS

Comments: Unit 4 was observed to be operating a few megawatts above the 1% operating efficiency range on the May 26 fishway inspection. Units 5 and 6 were noted to be operating a few megawatts below the 1% operating efficiency range on May 27. The reason for some of the units to be occasionally operating slightly above or below the operating efficiency range is being investigated.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 25, 26, and 27.

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’	2.3’
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south shore entrance weir depth was slightly below criteria on May 25. The south shore channel/tailwater differential was above criteria on May 25. The powerhouse operator was informed and increased the set point for the SFE1 weir depth.

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, 6C

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. On May 24, electricians determined that the STS in slot 2A had a failed motor. The bad STS was removed and replaced with a spare STS on May 24.

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 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 one mortality in the May 24 sample exhibited external signs of bacterial kidney disease. There were five incidences of eye hemorrhages and five cases of pop-eye observed on yearling chinook in the May 24 sample. In the May 27 sample, there were six incidences of pop-eye observed mostly on yearling chinook. Five fish in the May 24 sample had minor bodily injuries. There have not been consistent patterns of occurrence regarding which side of the fish has the eye or bodily injuries. However, yearling chinook have had more of these eye injuries than other species groups.

Fish condition sampling results at Ice Harbor Dam:

Date: May 14

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	32	5	0	0
Chinook yearling unclipped	24	0	1	0
Chinook subyearling clipped	11	0	0	0
Chinook subyearling unclipped	24	0	0	0
Steelhead clipped	40	2	0	1
Steelhead unclipped	13	1	0	0
Sockeye clipped	1	0	0	0
Sockeye unclipped	2	0	0	0
Coho clipped	3	0	0	0
Coho unclipped	0	---	---	---
Total	150	7	1	1

Date: May 27

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	7	0	0	0
Chinook yearling unclipped	2	1	0	0
Chinook subyearling clipped	26	1	0	0
Chinook subyearling unclipped	33	0	0	0
Steelhead clipped	9	0	0	1
Steelhead unclipped	10	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	0
Coho clipped	2	0	0	0
Coho unclipped	1	0	0	0
Total	90	2	0	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
74.3	59.2	50.1	39.2	57	56	7.0	6.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly cooling water strainer inspections will occur in June.

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 was occurring for 8 hours per day, 5 days per week, but changed to 3 days per week on May 23. Land-based hazing has generally been effective at dispersing birds away from the dam, except for the spillway tailrace zones on windy days. Winds blowing from the south or southwest prevent the shooting of pyrotechnics from the north shore 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 21	15	12	0	0	2
May 22	6	1	0	0	6
May 23	68	4	0	0	16
May 24	2	1	0	0	5
May 25	12	0	0	0	6
May 26	20	0	0	0	6
May 27	0	7	0	0	12

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 24	0	0
May 27	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 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:

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: There are no problems to report.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on May 21, 22, 23 and 26.

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 7.0, 6.5, 6.5 and 6.6 feet, respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 7.0, 6.5, 6.5 and 6.6 feet, respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 7.5, 6.1, 7.0 and 6.6 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)	11 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 - 7%
	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. Monthly inspections of the STS will occur June 1-2.

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: A leak from the PDS was reported on May 20. The mechanics stated the leak is coming from a rubber gasket inside the PDS which will have to be repaired during the winter maintenance period. There are no other problems to report.

Collection Facility: Collection into the raceways for transport continues. Electricians worked on the barge lighting on May 25.

Transport Summary: Alternating days of transport continues. A total of 19,126 fish were collected with 24,661 fish being transported and 122 fish bypassed back to the river during this reporting period. The 122 fish bypassed back to the river were estimated based on 9 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
71.1	56.1	49.2	39.1	55.9	55.0	6.3	4.2

*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
5/21/2021	1245	6	0	0	0	20
5/22/2021	1135	5	0	0	0	10
5/23/2021	1255	10	0	0	0	25
5/24/2021	1130	5	0	0	0	10
5/25/2021	1400	5	0	0	0	15
5/26/2021	1235	11	0	0	0	19
5/27/2021	1100	12	0	0	0	5

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*
5/21/2021	0	0
5/22/2021	0	0
5/23/2021	0	0
5/24/2021	0	0
5/25/2021	1	10
5/26/2021	0	0
5/27/2021	2	16
Total	3	26

*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 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 May 23, 25 and 27. The inspection completed on May 25 occurred during gas cap spill, all others 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’	7.50
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.60
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	4.90
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	4.90
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 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. NSE1, NSE2, SSE-1 and SSE-2 weirs fell out of criteria on May 25 during gas cap spill.

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)	0-10 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: 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 12,376 fish were collected, 17,336 (includes fish collected on May 20) were transported via barge and there were 44 sample or facility mortalities. The descaling and mortality rates were 2.1% and 0.41%, 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
65.9	52.7	41.7	32.4	55.8	53.9	6.0	4.8

*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
5-21	8:00	36	0	0	0
5-22	8:00	0	0	0	0
5-23	9:30	1	0	0	0
5-24	8:00	4	0	0	0
5-25	10:45	0	0	0	1
5-26	10:00	0	0	0	2
5-27	11:00	0	1	0	5

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*
5-21	2	20
5-22	2	20
5-23	0	0
5-24	1	5
5-25	2	10
5-26	3	15
5-27	5	20
Totals	15	90

Gas Bubble Trauma (GBT): GBT monitoring was performed on May 24. None of the 37 fish examined showed 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 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**
2	05/20	1422	05/26	0700	Governor Processor Card Failed
1-6	05/23	0901	05/23	1631	VBS/ESBS Inspection

Comments:

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway May 21, 22, 24, and 26.

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: 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’	7.7’
	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	≥ 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’	-0.2’, 0.7’, 0.9’, 0.6’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	5.4’, 6.1’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	5.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.3’, 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 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:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 15.0 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:

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 continues. About 44% of the total facility collection have been anesthetized and handled as part of research projects this season.

Transport Summary: Transport shifted to every other day barging on May 19.

Spillway Weir: Spring flex spill continues. A total of 213,972 PIT tagged smolts have been detected over the RSW this season (104,123 Chinook, 3,702 Coho, 86,401 steelhead, and 19,744 sockeye) compared to a total of 10,282 smolts detected in the juvenile system. A total of 549 adult PIT tagged steelhead and 12 Chinook have been detected at the RSW this season compared to 66 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
73.5	59.4	47.4	38.1	52.0	50.0	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 4 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 21	1300	9	0	0	19
May 22	1110	13	0	0	1
May 23	1300	2	0	0	0
May 24	1405	3	0	0	14
May 25	1100	1	0	0	10
May 26	1010	0	0	0	6
May 27	1300	0	0	0	11

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred May 27 with 26 Chinook salmon smolts sampled with none showing symptoms of GBT.

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 4 steelhead (0 hatchery and 4 wild) and 1,725 Spring Chinook (1,408 hatchery and 317 unclipped).

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.