U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#12-2021
May 14-20, 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, 10, 11 & 12	5/17	0745	5/17	0958	Rotated through units for trash rack cleaning
10 & 11	5/18	1000	5/18	1100	Rotated through units for 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 16, 18 and 20. Fish counting continues.

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 to very light.

At the Oregon exit, a brief power outage occurred during a bus switch on May 15. Exit criteria were unaffected.

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' to 1.5'
	X		NFEW2 Weir Depth	≥ 8.0'	7.8' to 8.2'
	X		NFEW3 Weir Depth	≥ 8.0'	7.8' to 8.1'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.3'
	X		SFEW1 Weir Depth	≥ 8.0'	7.6' to 8.2'
	X		SFEW2 Weir Depth	≥ 8.0'	7.5' to 8.1'
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'	9.0' to 9.2'
X			WFE3 Weir Depth	≥ 8.0'	9.0' to 9.2'

Comments: The out of criteria points for the four Oregon ladder entrances occurred May 16. Fish pump 3 had been removed from service on May 14 and the other two fish pumps' blades angles were adjusted as needed until the entrances met criteria. Changes in tailwater elevation may have also had an effect.

Fabrication of the six remaining floating orifice gates 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			23° to 24°	Oregon Ladder Fish Pump 1
Yes			23° to 24°	Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump 3 tripped offline on May 14 at 0100 hours. The mechanics were able to track the issue down that morning and found a thrust bearing cooler oil leak. The engineering staff has determined repairs will need to be quite extensive. No return to service date has been set at this time. Blade angles on the other two fish pumps were adjusted as need to return the entrances to criteria.

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.

Trash racks were cleaned in units 1, 10, 11 and 12 with ten yards of debris removed and no fish observed in the debris on May 17.

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 unit 5, which is OOS. The brush cycles for the ESBS's in unit 10 were reset on May 16. Camera inspections in units 10 and 11 revealed no problems on May 18. Unit 3's ESBS's control and communication issue from the control room was resolved on May 19. The ESBS's for unit 5 were examined by electricians on May 20.

Daily VBS differential monitoring revealed no issues and no screens were cleaned. VBS's in units 2 and 4 were inspected, with no issues found, on May 19. No fish were observed.

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: 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, no juvenile lamprey and 301,108 smolts were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

A brief power outage during a bus switch had no ill effect as the system was in primary bypass on May 15.

There are no 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.

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
232.9	211.1	153.7	136.6	56.1	53.7	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. The spring spill program continues. Repairs to crane 6 are scheduled to be completed in late May or early 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 14	Spill	65	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	50	0	0	0	0
	Forebay	0	0	0	0	1
May 15	Spill	53	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	29	0	0	0	0
	Forebay	0	0	0	0	11
May 16	Spill	90	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	47	0	0	0	0
	Forebay	0	0	0	0	0
May 17	Spill	16	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	25
May 18	Spill	200	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	100	0	0	0	0
	Forebay	0	0	0	0	35
May 19	Spill	170	0	0	3	0
	Powerhouse	0	0	0	0	0
	Outfall	115	1	0	0	0

	Forebay	0	0	0	0	105
May 20	Spill	300	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	54	0	0	0	0
	Forebay	0	0	0	0	37

The lasers on the outfall pipe and navigation lock wing wall returned to service as part of the evaluation study plan on May 15. Both lasers were removed from service on May 20. The outfall laser was checked on May 20. The laser stand could be more stable, and we will investigate this issue. 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.

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 and possibly spill volume. Pelican numbers remained relatively low.

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 mostly roosting on the pipe; however light feeding did occur once. The gulls would also pass by while feeding in the spill flow or circling to roost. One cormorant was noted roosting on the juvenile bypass outfall pipe. The lasers may have contributed to the low feeding activity, but they appeared to be only slightly effecting roosting.

In the forebay zone, roosting or feeding grebes were noted. More grebes were noted in the spillway than in past years. Most of the grebes appeared to be staging. However, outside the zone, gulls, pelicans, ospreys, and night herons were noted. The pelicans and gulls appeared to be staging. The gulls may be roosting between feeding sprees in the spillway.

Invasive Species: The next mussel station examinations will occur 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 14 and May 18. 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	5/128/21	0957	---	---	Governor problems

Comments: Units 6, 5, 4, 2, and 1 were taken out of service one at a time for STS inspections on May 18 and 19.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 17, 19, and 20.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	7.9’
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
	x		North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	0.7’
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.2’

Comments: The south shore entrance weir depth was slightly below criteria on May 19. The north shore channel/tailwater differential was below criteria on May 19. Both values may have resulted partly from turbulent tailwater conditions from spill making it difficult to get accurate tailwater elevation readings. The north powerhouse channel/tailwater differential was below criteria on May 19. The powerhouse operator was informed, and he raised NFE-2 AND NEW-1 by approximately 1’ to increase the north powerhouse and north shore channel/tailwater differentials.

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 1 square yard
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-3%
	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: STSs are in continuous-run mode due to the presence of subyearling chinook and sockeye in the sample with average fork lengths of less than 120 mm. Unit 6, 5, 4, 2, and 1 STSs and unit 2 VBSs were inspected on May 18 and 19. There were no significant problems found.

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 in 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. There were eight incidences of eye hemorrhages and seven cases of pop-eye observed mostly on clipped chinook in the May 17 sample, but there were only two fish with this type of malady in the May 20 sample. Six clipped steelhead and one unclipped steelhead in the May 20 sample had minor bodily injuries. The cause of the descaling observed in one of the fish in the May 20 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: May 17

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	90	8	0	1
Chinook yearling unclipped	20	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	1	0	0	0
Steelhead clipped	22	0	0	0
Steelhead unclipped	4	0	0	0
Sockeye clipped	5	0	0	0
Sockeye unclipped	3	0	0	0
Coho clipped	1	0	0	0
Coho unclipped	0	---	---	---
Total	146	8	0	1

Date: May 20

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	91	2	0	0
Chinook yearling unclipped	8	0	0	0
Chinook subyearling clipped	1	0	0	0
Chinook subyearling unclipped	2	0	0	0
Steelhead clipped	44	4	0	1
Steelhead unclipped	9	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	2	0	0	0
Coho clipped	1	0	0	0
Coho unclipped	0	---	---	---
Total	158	6	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
91.4	62.8	66.8	39.9	56	55	7.4	6.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections on units 1, 2, 4, 5, and 6 occurred on May 11. A total of 3 juvenile lamprey mortalities were found.

Avian Activity: There were variable 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, 5 days per week. 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. The hazing of white pelicans is not allowed because they are a species of concern in Washington.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 14	68	17	0	0	196
May 15	6	0	0	0	58
May 16	235	5	0	0	19
May 17	52	0	0	0	1
May 18	62	0	0	0	11
May 19	40	0	0	0	7
May 20	41	3	0	0	6

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 17	3	3
May 20	3	3
Totals	6	6

*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 14, 15, 16, and 19.

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 6.4, 5.6, 7.0 and 7.7 feet, respectively. The south powerhouse entrance weir (SPE-2) was on sill during all inspections with readings of 6.4, 5.6, 7.0 and 7.7 feet, respectively. The south shore entrance weir (SSE-1) was on sill during all inspections with readings of 6.7, 6.3, 6.6 and 8.1 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: 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 - 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.

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. After examination by the fish facility mechanics, a work order was placed to have the powerhouse examine the leak to see if the water can be detoured by a gutter system until the winter maintenance period occurs. There are no other problems to report.

Collection Facility: Collection into the raceways for transport began at 0700 on April 23.

Transport Summary: Every-day barge transport ended on May 17 and alternate day transport began. A total of 30,920 fish were collected with 25,094 fish being transported and 120 fish bypassed back to the river during this reporting period. The 120 fish bypassed back to the river were estimated based on 6 fry being collected for condition sampling at a 5% sample rate.

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
88.6	60.8	60.8	41.6	55.0	53.8	5.9	4.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 5. Live fish included 1 Siberian prawn. Mortalities included 1 juvenile lamprey and 2 juvenile salmon.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/14/2020	1245	6	0	0	0	14
5/15/2020	1220	6	0	0	0	24
5/16/2020	1230	11	0	0	0	19
5/17/2020	1215	8	0	0	0	22
5/18/2020	1245	5	0	0	0	5
5/19/2020	1200	20	0	0	0	10
5/20/2020	1200	5	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*
5/14/2020	0	0
5/15/2020	0	0
5/16/2020	0	0
5/17/2020	0	0
5/18/2020	0	0
5/19/2020	0	0
5/20/2020	0	0

*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 16, 19 and 20. The inspection completed on May 19 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’	
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	4.7
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	4.7
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.47

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. The south shore channel velocity fell just short of criteria at 1.47 fps. NSE1 and NSE2 weirs fell out of criteria on May 19 during gas cap spill. Subsurface water velocity was measured on May 4 at NPE and averaged 3.3 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 is currently no 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. Slight sheen detected in slot 6C resultant from the T2 transformer explosion. Gatewell drawdowns for Units 1 and 2 were conducted on May 13 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 20 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 27,957 fish were collected, of which 22,894 were transported via barge and 49 were sample or facility mortalities. The descaling and mortality rates were 2.2% and 0.18%, respectively. No adult lamprey removed from the separator 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
85.1	56.3	56.5	34.3	55.7	55.3	5.6	4.3

*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
5-14	8:30	1	2	0	0
5-15	8:30	17	1	0	0
5-16	9:00	2	0	0	3
5-17	9:00	85	0	0	3
5-18	8:30	64	0	0	0
5-19	9:00	39	0	0	1
5-20	8:10	58	1	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*
5-14	0	0
5-15	0	0
5-16	0	0
5-17	0	0
5-18	1	10
5-19	2	20
5-20	1	10
Totals	4	40

Gas Bubble Trauma (GBT): GBT monitoring was performed on May 17. Of the 100 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 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			Governor Processor Card Failed

Comments:

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway May 14, 15, 17, and 19.

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’	0.8’
	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’	7.9’, 7.8’
	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’
		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’, 0.5’, 0.3’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	5.2’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9’, 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 12.4 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 41% 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 206,499 PIT tagged smolts have been detected over the RSW this season (100,814 Chinook, 3,422 Coho, 82,521 steelhead, and 19,742 sockeye) compared to a total of 10,077 smolts detected in the juvenile system. A total of 491 adult PIT tagged steelhead and 7 Chinook have been detected at the RSW this season compared to 65 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
89.8	62.2	57.1	39.3	54.5	51.0	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 3 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
May 14	1156	2	0	0	2
May 15	1050	11	0	0	4
May 16	1420	65	0	0	5
May 17	1154	0	0	0	16
May 18	1545	56	0	0	27
May 19	1259	0	1	0	4
May 20	1931	14	0	0	34

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred May 20 with 28 smolts sampled with 1 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 9 steelhead (0 hatchery and 9 wild) and 2,009 Spring Chinook (1,717 hatchery and 292 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.