U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#15-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 7 to 13, 2019

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	05/23	0943	08/15	NA	Turbine blade packing.
13	06/10	0610	06/20	NA	Governor and oil replacement.
4	06/10	0735	06/13	1547	Annual maintenance.
1, 2 & 3	06/11	1000	06/11	1100	ESBS camera inspections.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on June 7, 9 and 11. Adult fish counting continued. Video review of night time lamprey passage will begin on June 15.

Fish Ladder Exits:

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

Comments: Debris loads were very light to light near the Oregon and Washington exits. Picketed leads were cleaned as required, including on Saturday. The Washington shore leads being cleaned more often including a call in on June 10. Both count station back boards were cleaned on June 11.

At the Washington exit, tilting weir 339 was out of service from June 9 at 0115 hours to June 10 at 0818 hours due to excessive operation. The exit remained in criteria, the electrical staff resolved the issue and all alarms were cleared.

At the Oregon exit, a 15 minute power outage was scheduled on June 9. The outage was required to allow other systems to be tied into the new substation. Due to the duration of outage, adverse effects should have been nonexistent. The fish counting contractor and PSMFC (PIT tag) were both notified of the outage. However, the outage turned out to be 95 minutes (1.6 hours) at the count station, from 1120 to 1255 hours. The fish counter was able to hand count so no data was lost. PSMFC has not report any lost data at this time. From 1100 to 1300 hours,

the forebay elevation changed from 339.3 to 339.2 feet. At 1143 and 1410 hours, the biologist observed the exit in criteria. With a stable forebay elevation, no passage issues should have occurred. However, five minutes after the power outage (1125 hours), the window brush lowered and partially blocked passage until the power returned at 1255 hours. This would be 90 minutes (1.5 hours). With the window brush being in the lowered position, we observed Chinook salmon hesitating to pass the brush and its shaft. However, during the time frame of the outage, comparing June 8 to June 9 fish counts, overall passage appears to have been minimally effected. The electrical crew leader stated that the brush lowering during a power outage is a pneumatic issue. Therefore, the mechanical staff will examine the brush pneumatics to determine how best to resolve this problem and insure it does not occur in the future.

Also, at the Oregon shore exit, a total of three exit alarms were reset on June 11 and 12.

Fishway Entrances and Collection Channel:

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

Comments: There are no problems to report.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			WA shore Wasco County PUD Turbine Unit
	X		WA shore Wasco PUD Bypass
		X	Oregon shore Fish Pump 1, OOS to October 31.
X			Oregon shore Fish Pump 2, Blade angle: 21 to 22°
X			Oregon shore Fish Pump 3, Blade angle: 23 to 24°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: The Wasco County PUD unit tripped off line on June 7 from 0448 to 1319 hours. The bypass system functioned satisfactorily during the unit outage.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. There were no interruptions in the schedule this week. However, the full flow flume adult flush line failed to open again on June 11. When going to secondary bypass, the valve should have automatically opened to add water to the full flow flume. The fisheries staff manually opened the valve instead. The issue will continue to be monitored.

Water temperature monitoring throughout the juvenile passage facility began on June 9 and 10. Minor issues with the probes, the data file and weather station were resolved. There is a new digital thermometer installed in scrollcase cooling water line for unit 1. Daily temperature reporting will begin on June 15.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to very light.
X			Trash rack differentials measured this week?	Daily.
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: New incoming debris was minimal. The spillway debris load would be described as very light. Trash racks are scheduled to be cleaned on June 24. 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: The brush cycles for the screens in 6A, 8A and 8C slots, along with units 10 and 13 remained in timer mode. The camera inspections in units 1 through 3 revealed no problems on June 11.

Daily VBS differential monitoring continued. No high differentials were recorded. The VBSs in 1A and 1B slots were cleaned on June 11. No fish were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X			Orifices operating satisfactory?	42
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices were adjusted as required for VBS cleaning. There are no problems to report. However, there is some concern about the two side dewatering valves that control the channel elevation as their percentage open seems to be drifting. This raises questions about how these valves are programmed. The issue will continue to be monitored.

Bypass Facility:

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

Comments: The sample gates were operated only when in secondary bypass. The PIT tag system will remain out of service as there are no studies requiring its use. The issue with the full flow flume adult flush line are mentioned above. This week, 2,730 juvenile lamprey and 18,980 smolts were bypassed during secondary bypass.

TSW Operations: The two TSWs were closed and replaced with standard spillway gates from June 10, at 0728 hours, to June 12, at 1630 hours. All Fish Passage Plan spill patterns were followed before, during and after the TSW removal.

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
291.4	230.8	175.4	152.7	61.1	58.9	5.0	4.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The spring flex spill program continued through June 15. The summer spill program will begin on June 16, at 0001 hours at which time, 57 percent of the flow will be spilled.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 2.

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

There was very little activity in the powerhouse zone. In the spill zone, gull numbers fluctuated. Pelicans and terns numbers increased. All birds appeared to be feeding.

Table 3. McNary Project's Daily Tailwater Avian Counts.

Date	Zone	Gull	Cormorant	Tern	Pelican
June 7	Spill	40	0	2	6
	Powerhouse	0	0	0	0
	Outfall	20	0	0	0
June 8	Spill	15	0	0	8
	Powerhouse	0	0	0	0
	Outfall	5	0	0	0
June 9	Spill	16	0	0	7
	Powerhouse	0	0	0	0
	Outfall	5	0	0	0
June 10	Spill	3	0	0	8
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 11	Spill	4	0	3	6
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 12	Spill	5	0	3	10
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
June 13	Spill	0	0	3	30
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

In the bypass outfall zone, most of the gulls were roosting on the full flow pipe. Due to the roosting, which was previously discouraged by bird wire, the outfall numbers may appear inflated compared to previous years. However, when present, USDA Wildlife Services boat hazing greatly reduced the number of gulls roosting.

The replacement laser for bypass outfall hazing was installed on June 12. After sunset on June 13, the new laser was programmed. The first bird counts with the replacement laser will occur on June 14. The block study for evaluating the laser will begin on June 17. The new laser is programed to operate its patterns between 0330 and 2200 hours. The laser appear to displace the birds that are within their range. Most of the gulls noted roosting on the outfall pipe were outside the lasers' range and in the section with no bird wire.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited. A large bird distress call is also deployed at the end of the remaining outfall pipe walkway. Due to its late installation, it appears to be less effective. USDA Wildlife Services continued working two shifts and boat hazing four days a week. When high wind velocity does not allow for boat hazing, the boat crew assist the bank hazer.

In the forebay zone, grebes numbering from two to 40 birds were observed. Occasionally, an osprey, blue heron, cormorant or tern was observed. Also, a few pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line.

This week, three grebes entered the gatewell slots. One grebe was removed from a slot. Two birds passed to the juvenile channel and joined the grebe from last week. One of these grebes was removed from the channel. The other two grebes past to the separator where they were removed.

Invasive Species: The next mussel station examinations will occur in late June. So far this season, one Siberian prawn was removed from the sample and euthanized.

Fish Rescue/Salvage**:** No fish salvage operations occurred.

Research: The University of Idaho continued the adult lamprey passage study. Gas bubble trauma (GBT) examinations occurred twice. No smolts were observed with signs of GBT.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 7 – June 13, 2019

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**
4	9/20/18	1619	---	---	Replace blade packing to fix oil leak
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on June 10, 11, and 12.

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-1) 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	7.4’
	X		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.3’

Comments: On June 11, the north shore entrance weir depth was out of criteria and the north shore channel/tailwater differential was above criteria. The operator lowered NEW-1 entrance weir to bring those readings into criteria. NEW-1 is entrance weir is being operated in manual mode, instead of automatic mode, to reduce the wear and tear on the operating machinery from the weir constantly trying to adjust to the fluctuating tailwater elevations caused by spill.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
7 pumps	1 pump		Status of the 8 South Shore AWS Pumps
2 pumps	1 pump		Status of the 3 North Shore AWS Pumps

Comments: South shore AWS pump #8 was out of service from March 1 until the last week in May, due to the pump needing an oil change and heater installation.

All of the north shore AWS pumps were shut off from 0118 hours to 0310 hours on June 11 to stop the flow across the pump intake trash racks and allow debris to fall off. The debris had accumulated on the trash racks and caused the pumps to have high amperage readings. See MFR 19 IHR 09 for more details.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	63 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

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 STSs are being operated in continuous-run mode, because of the presence of subyearling chinook with an average fork length of under 120 mm in the Ice Harbor juvenile fish sample.

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: None.

Juvenile Fish Facility: The fish facility is being operated in primary bypass, except when collecting fish for sampling.

Fish Sampling: Sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. The cause of the descaling observed on the steelhead in the June 13 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: June 10

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	1	0	0	0
Chinook subyearling clipped	39	0	0	0
Chinook subyearling unclipped	63	2	0	0
Steelhead clipped	3	0	0	0
Steelhead unclipped	2	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	2	0	0	0
Total	110	2	0	0

Date: June 13

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	0	---	---	---
Chinook subyearling clipped	7	0	0	0
Chinook subyearling unclipped	7	0	0	0
Steelhead clipped	1	1	0	0
Steelhead unclipped	3	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	18	1	0	0

Removable Spillway Weir (RSW): Voluntary spill with the RSW 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
135.5	82.4	84.2	58.0	60	58	6.7	6.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for juvenile lamprey will occur later in June.

Avian Activity: There were low to moderate numbers of piscivorous birds counted around the project (see the table below). Most of the pelicans were observed in the spillway tailrace zones. Contracted land-based hazing of

piscivorous birds for 16 hours per day changed to 8 hours per day on June 9. Boat-based hazing for 8 hours per day, 3 days per week, ended on June 8. The land-based hazing has been effective at moving birds out of zones adjacent to the dam. Boat-based hazing has been effective at dispersing gulls and cormorants out of downstream spillway and powerhouse zones.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 7	0	4	0	0	84
June 8	0	1	0	0	89
June 9	---	---	---	---	---
June 10	5	6	0	0	31
June 11	1	3	0	0	5
June 12	0	1	0	0	5
June 13	0	0	0	0	14

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor QEA, 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.

Date	Sample (euthanized)	Collection*
June 10	1	1
June 13	0	0
Totals	1	1

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

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: June 7 - 13, 2019

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	5/28/2019	06:58	7/12/2019	ERTS	Digital Governor Installation
Unit 2	6/07/2019	07:03	6/07/2019	17:25	Fish guidance efficiency study head gate change
Unit 3	6/07/2019	07:08	6/07/2019	17:25	Fish guidance efficiency study head gate change
Unit 4	6/10/2019	07:28	6/11/2019	14:30	Distribution Valve Modification
Unit 5	6/11/2019	06:58	6/13/2019	11:26	Distribution Valve Modification
Unit 6	6/12/2019	12:00	6/12/2019	13:30	Headgate Cylinder Relocation
Unit 6	6/13/2019	06:15	6/13/2019	15:00	Governor Work

Comments: Units went into Hard Restraint at 0001 on April 1.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on June 7, 8, 9 and 12.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.5’	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head $\leq$ 0.5’	
X		South Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X		X	South Powerhouse Entrance (SPE-1) Weir Depth	$\geq$ 8.0’ or on sill	
X		X	South Powerhouse Entrance (SPE-2) Weir Depth	$\geq$ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X		X	South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 6.0’	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: South Powerhouse Entrance weirs (SPE-1) and (SPE-2) were on sill during the June 12 inspection with a reading of 6.9 each.
South Shore Entrance weir (SSE-1) was on sill during the June 9 and 12 inspections with readings of 7.7 and 7.1 feet respectively.
South Shore Channel/Tailwater Differential was out of criteria during the June 12 inspection with a reading of 0.9 feet. Powerhouse operator was informed and the system was adjusted.

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: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	169 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 25%
	X		Any oil seen in gatewells?	

Comments: Gatewells have been being dipped for debris removal on Fridays.

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: STS's were operating in cycle mode until 1500 on May 16 when they were changed to continuous-run mode due to average sub-yearling Chinook and sockeye lengths being less than 120 mm.
STS's were inspected June 4 – 6 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	19
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: Collection into raceways for transport began at 1500 on April 23.

Transport Summary: Due to low fish numbers, every-day barge transport ended with the May 15 barge and alternate day barging began. A total of 45,147 fish were collected with 42,841 fish being transported and 100 fish bypassed

back to the river during this reporting period. Bypassed fish numbers for this reporting period were projected from salmonid fry in the sample.

Spillway Weir: Spring spill began and the RSW went into service at 0001 on April 3.

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
128.5	77.7	53.5	36.7	62.3	59.1	4.5	2.8

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 11. Live fish included 2 juvenile lamprey. Mortalities included 10 juvenile lamprey and 9 juvenile salmon.

Avian Activity: Gulls were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/7/2019	1145	6	0	0	0	0
6/8/2019	1115	10	0	0	0	2
6/9/2019	1200	7	0	0	0	1
6/10/2019	1100	8	0	0	0	1
6/12/2019	1100	0	0	0	0	0

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on June 1.

Siberian Prawn: 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. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
6/07/2019	0	0
6/08/2019	2	50
6/09/2019	0	0
6/10/2019	0	0
6/11/2019	2	50
6/12/2019	0	0
6/13/2019	1	10
Totals	5	60

*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: PNNL is continuing to collect data from units 2 and 3 for the Fish Guidance Efficiency.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: June 07 – June 13, 2019

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	04/21/17	00:54	03/31/21	17:00	Spider and Upper Guide Bearing Repair
6	06/13/19	10:15	06/13/19	10:21	PH switching

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on June 09, 11 and 13.

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 Pump in Service		
X			Fish Ladder Exit Cooling Water Pump Operating Satisfactorily		

Comments: The adult ladder cooling pump began operating on June 12 at 07:22.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
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	0.7

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The June 13 inspection found the surface water velocity at the SSE at 0.7 fps, however the surface velocity at the NPE and NSE were 3.2 fps and 3.6 fps, respectively. Subsurface water velocity was measured near NPE on June 03 using a Rickly velocity meter and averaged 4.2 feet per second.

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: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
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: Trash rack differentials for Units 1 and 6 were measured on June 13 and were in criteria. There is approximately 8,000 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

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?

Comments: VBS differentials for Units 1 and 6 were measured on June 13 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	22
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: The juvenile bypass system is currently operating in criteria. Daily collection for condition sampling began on April 23 at 07:00. Every day barge transport ended on May 15 and the first every other day barge departed on May 17.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 71,640 fish were collected, of which 68,846 were transported via barge. The descaling and mortality rates were 2.9% and 0.14% respectively. There were 4 adult lamprey removed from the separator, raceways, or sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: Spring spill commenced on April 03 with the ASW in the high crest position. The ASW was adjusted to the low crest elevation on April 09. The adjustable spillway weir was operated in accordance to the most recent Columbia Basin Teletype (CBT) for adult passage during this report period.

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
130.6	81.7	49.3	43.7	59.6	59.1	3.6	3.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers are currently being inspected every other week and results are sent to district for FPOM distribution.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam will started on April 01.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-7	0800	1	0	0	0
6-8	1150	0	0	0	0
6-9	1410	0	1	0	0
6-10	1300	0	2	0	0
6-11	0740	0	0	0	0
6-12	0745	0	0	0	0
6-13	1200	0	0	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: No Siberian prawns were collected in the sample this reporting period.
Gas Bubble Trauma (GBT): Gas bubble monitoring occurred on June 10. Personnel examined 100 fish of which there were no signs of GBT.

Fish Rescue/Salvage: N/A

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: June 7-13, 2019

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	

Comments: No units were out of service during this reporting period.ne

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder June 7, 8, 11, and 12.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5'	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3'	
X			Fish Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.9', 7.7'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.9', 7.7'
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'	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	Closed
	X		North Shore Channel/Tailwater Differential	1.0'–2.0'	2.2', 2.5'
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.4 and 1.1 fps

Comments: Current spill and powerhouse operations result in variable tailwater elevations at fish ladder entrances. A strong counter clockwise eddy that extends across the tailrace from the south shore to spillway 1 and extends down to the outfall pipe results in a wall where it converges with turbine unit discharge and spillway flow. These tailwater conditions may be impacting the fish ladder control systems ability to maintain criteria.
Since May 4 the fish ladder control system screen has indicated the channel/tailwater head differential was out of criteria and SSEs depth over the weir was in criteria. Local south shore readings taken during the inspections indicated channel/tailwater was in head differential criteria and depth over the SSEs was out of criteria. It is suspected fish ladder control system SSE sensor issues are resulting in these inconsistencies between local readings and the control system. A similar issue was observed with the SSE control system tailwater sensor from March 29 to May 29 in 2018. The problem has been reported to electricians and operations and the Project is waiting for engineering support. District hydraulic and electrical engineers were on Project June 5 and are looking into the fish

ladder issues. SSE gates were changed to local operation with operators making adjustments in weir depth as the tailwater elevation changes.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 is in fast speed.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average of ~ 92.5 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
X			Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: 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: The collection channel is operating with all 14" orifices open. Additional 10" orifices are used to maintain optimal flume flow. The north makeup water valve is in local control due to an automatic control motor hardware failure. Orifices in unit 3 gatewell slots were indicating they were closed on the HMI screen. The orifice gates were not able to operate in local or with the HMI. The solenoids on all three 14" orifices were hot indicating an issue at the valve.

Collection Facility: The facility is in collection for transport and condition sampling mode.

Transport Summary: Every-other-day barge transport continues.

Spillway Weir: Spring flex spill operation with the RSW operational continues.

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
134.1	84.5	42.7	39.8	58.0	56.0	4.1	3.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not inspected this reporting period.

Invasive Species: There was 1 Siberian prawn mortality in the sample this week. No live Siberian prawns were collected or euthanized in the sample this week.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam are listed below.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
7-Jun	1215	3	0	0	20
8-Jun	1330	0	0	0	23
9-Jun	1130	0	0	0	9
10-Jun	1030	3	0	0	16
11-Jun	1610	0	0	0	12
12-Jun	0617	0	1	0	8
13-Jun	1215	1	0	0	20

Gas Bubble Trauma **(**GBT**)** Monitoring: SMP did not perform GBT sampling this week and has ended GBT sampling for this season.

Adult Fish Trap Operations: The adult trap is operating Monday-Friday at a 28% sample rate.

Fish Rescue/Salvage: No fish salvage/rescues were conducted this reporting period.

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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Granite are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook:

This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The goals are to characterize migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2018 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

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.

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 every day fish transport begins.

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.

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring:

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

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.

Juvenile Fish Scale Patterns University of Washington and NOAA Fisheries:

This study is a collaborative effort to determine a non-lethal index of biological condition to relate to survival across life stages of spring/summer Chinook salmon. The objectives are to test for relationships between fish length, growth, and conditions experienced to fish scale patterns. Sample collection will occur April 17, May 8, and May 29. A target of 120 individual scale samples from spring/summer Chinook salmon collected at LWG for NOAA Fisheries survival studies listed above. Samples collected at Lower Granite Dam included 101 on April 17, 120 on May 8, and a maximum 120 on May 29.