

**U.S. ARMY CORPS OF ENGINEERS  
WALLA WALLA DISTRICT  
FISH FACILITIES WEEKLY REPORT  
#26-2019**

**Project: McNary**

Biologist: Bobby Johnson and Denise Griffith

Dates: August 23 to 29, 2019

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 14 turbine units available for service. (See table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

Unit(s)	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	05/23	0943	10/31	NA	Turbine blade packing.
13	06/10	0610	09/30	NA	Turbine bearing.
14	08/19	1221	09/30	NA	Oil replacement and turbine bearing.
12	08/26	0711	09/26	NA	Annual and oil leaks.
7 & 8	08/27	0957	08/27	1046	ESBS camera inspections. Rotated through units.

Comments: Unit 14 was restarted on August 28 at 1415 hours. The unit was removed from service due to high turbine bearing temperatures on August 29 at 0836 hours. Unit 13 will remain out of service until it can be determined what occurred at unit 14. Both units had the same issue. The outage for unit 12 was extended due to oil leaks. All return to service dates are subject to change. The sawtooth unit priority will conclude with the summer spill season on September 1, at 0001 hours.

**Adult Fish Passage Facilities**

McNary fisheries biologists performed measured inspections of the adult fishways on August 23, 25 and 27. Adult fish counting and video review of night time lamprey passage continued.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
	X	Oregon Exit	Head over weir 1.0' to 1.3'	1.4' on August 25
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 near the Oregon exit and minimal near the Washington exit. Picketed leads were cleaned as required, including on Saturday. The general maintenance staff was called in to clean the Oregon ladder picketed leads on August 26 at 1729 hours.

At the Oregon ladder exit, the out of criterion point mentioned above was resolved by a set point adjustment. In the afternoon on August 26, for 30 seconds, there was a power outage due to bus switching. The exit weirs, count station and PIT tag system were briefly affected.

At the Washington ladder exit, one exit alarm came in and was reset on August 25.

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'	7.9' on August 23
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' on August 23
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
	X		SFEW2 Weir Depth	≥ 8.0'	7.9" on August 25
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.2 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: The out of criteria points listed above for the week are possibly due to calibration drifts and/or low tailwater elevations. The electrical staff calibrated the Oregon south entrance pool elevation sensor and flushed debris from the sensor still well on August 26.

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 December 31.
X			Oregon shore Fish Pump 2, Blade angle: 23 to 24°
X			Oregon shore Fish Pump 3, Blade angle: 25 to 26°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

**Juvenile Fish Passage Facility**

The sampling season consisting of alternating days of primary and secondary bypass continued. The schedule was not interrupted this week.

The full flow flume adult flush line valve remains open. The valve will be repaired during the winter maintenance season.

Daily water temperature monitoring and reporting throughout the juvenile passage facility will conclude on August 31. Until then, the smolt monitoring staff, Anchor, QEA, will publish results in a separate report, which includes any issues with the probes and weather station. An annual report will be published in September.

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. Aquatic vegetation has increased. The spillway debris load would be described as very light. Trash racks will be cleaned at slots 1A, 1B, 10A and 10B for the adult steelhead top spillway weir (TSW) passage efficiency study on September 3.

The emergency bulkhead was removed for slot 14A on August 28, which rewatered the slot.

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: After the emergency bulkhead was removed from slot 14A, as mentioned above, the ESBS was reinstalled in the slot on August 28. The brush cycles for the screens in units 6, 8, 10 and 13 remained in timer mode. The camera inspections in units 7 and 8 revealed no problems on August 27. The next day, the brush cycles for the screens in unit 7 were returned to automatic mode. The biologist found the brush cycles for the screens in unit 1 set for every one minute on August 25. The biologist asked the operators to return the cycle times to every 60 minutes. The cycle times were inadvertently set to one minute during a programming check August 22.

Daily VBS differential monitoring continued. No high differentials were recorded and no screens were cleaned.

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: Before the unit returned to service, the biologist opened the orifice in slot 14A and closed the makeup orifice in slot 13C on August 28. Orifice valve operators were repaired as required.

There are no problems to report.

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 issues with the full flow flume adult flush line is mentioned above in the opening of the Juvenile section.

This week, 116 juvenile lamprey and 388 smolts were bypassed during secondary bypass. Juvenile shad remained the predominant fish examined. Algae removal, flow adjustments and maintenance are ongoing.

TSW Operations: The two TSWs remained closed for the season.

## 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
148.4	96.0	84.7	40.5	70.9	70.3	6.0	6.0

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The summer spill program with 57 percent of the flow being spilled will conclude on September 1, at 0001 hours. Due to low flows and the requirement to have 50 kcfs pass through the powerhouse, the spill volume did go below 57 percent at times. Also, spill adjustments for navigation were done as required.

### Other

Inline Cooling Water Strainers: The cooling water next strainer inspections will occur on December 3.

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 and cormorant numbers remained high. Pelican numbers continued to decline. No terns were observed. All birds were feeding with large numbers of gulls and cormorants roosting on the navigation lock wing wall. It could be assumed we were observing migrating birds. Also, juvenile shad have increased in size, which may be attracting more birds. Finally, many of the gulls and cormorants were juveniles.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
August 23	Spill	105	3	0	7
	Powerhouse	0	0	0	0
	Outfall	9	5	0	1
August 24	Spill	248	9	0	2
	Powerhouse	0	0	0	0
	Outfall	14	6	0	1
August 25	Spill	258	5	0	7
	Powerhouse	0	0	0	0
	Outfall	43	4	0	0
August 26	Spill	151	16	0	7
	Powerhouse	0	1	0	0
	Outfall	27	7	0	0
August 27	Spill	157	0	0	5
	Powerhouse	0	0	0	0
	Outfall	35	5	0	2
August 28	Spill	195	3	0	1
	Powerhouse	0	0	0	0
	Outfall	36	6	0	1
August 29	Spill	120	0	0	0
	Powerhouse	0	0	0	0
	Outfall	15	6	0	0

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. At times, a fair number of gulls, a few cormorants and pelicans were noted feeding.

The laser for bypass outfall hazing remained in place and functional. The laser does seem to deter the birds in flight. However, birds roosting are more difficult to haze with the laser. A second laser has been ordered.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has increased but this seems to correspond to the juvenile shad outmigration. A large bird distress call is also deployed at the end of the remaining outfall pipe walkway. Its effectiveness has also decreased. The calls are being monitored weekly.

In the forebay zone, an occasional osprey was observed. The grebe distress remains deployed. No grebes were observed on project. A small numbers of cormorants and gulls were noted roosting outside the zone along the Washington shore line. Increasingly larger gull flocks have been staging around the project. Finally, no pelicans were observed inside the ladders.

USDA Wildlife Services had a lethal take total for their season of 13 cormorants and 93 gulls.

Invasive Species: The mussel station examinations revealed no problems on August 25. This week, one Siberian prawns was removed from the sample and euthanized. This brings the total to nine prawns for the season.

Fish Rescue/Salvage: No fish rescue occurred this week.

Research: The University of Idaho continued the adult lamprey passage study.

**Project: Ice Harbor**

Biologist: Ken Fone

Dates: August 23 – August 29, 2019

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Ice Harbor Unit Outages (OOS) and Return to Service (RTS):

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	8/14/19	0743	---	---	Annual maintenance and overhaul
4	8/17/19	0700	---	---	TWO transformer replacement

Comments: None.

**Adult Fish Passage Facility**

Ice Harbor fish facility staff inspected the adult fishways on August 27, 28, and 29.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SFE-1) Weir Depth	$\geq$ 8.0' or on sill	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			South Shore Channel Velocity	1.5 – 4.0 fps	
		X	North Powerhouse Entrance (NFE-1) Weir Depth	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Shore Entrance (NEW-2) Weir Depth	$\geq$ 8.0' or on sill	
	X		North Shore Channel/Tailwater Differential	1.0' – 2.0'	2.1', 2.2'

Comments: The north shore channel/tailwater head differential was out of criteria on August 27 and 28. This may have resulted from the difficulty in obtaining an accurate reading of the fluctuating tailwater level while spill is occurring.

Auxiliary Water Supply (AWS) System:

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

Comments: On August 26, from 0936 hours to 1352 hours, the south shore AWS pumps #4 and #8 were taken out of service one at a time to check the circuits for the pump cooling fans.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	2 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-2%
	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: None.

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.

Fish Sampling: Sampling has ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring. The RSW was closed on August 11 at 2347 hours, because the daily average project outflow dropped below 30 kcfs and has remained below 30 kcfs almost every day.

## 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
28.0	23.5	8.4	7.1	71	70	8.6	8.2

\*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey ended in June and will start again in December.

Avian Activity: Low numbers of gulls and pelicans were observed around the project. Most of the birds were seen roosting on Eagle Island.

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, frozen and properly disposed of in a landfill. Sampling is done for the year.

Fish Rescue/Salvage: None.

Research: Blue Leaf is conducting research on the recently installed lamprey entrance structure at the south adult fish ladder (SFE2). They are monitoring via Didson camera for adult lamprey movement and adult salmonid fish interactions with the lamprey entrance.



**Project: Lower Monumental**

Biologists: Chuck Barnes and Raymond Addis

Dates: August 23 - 29, 2019

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 2	7/15/2019	07:20	1/10/2020	ERTS	Annual Maintenance/Draft Tube Liner Repair
Unit 4	7/08/2019	07:20	8/29/2019	11:15	Annual Maintenance
Unit 6	8/05/2019	12:20	9/27/2019	ERTS	6 Year maintenance

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 August 23, 24, 25 and 28.

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	South Powerhouse Entrance (SPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		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	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 weir (SPE-1) was on sill during all inspections with readings of 5.9, 5.8, 6.0 and 6.2 feet, respectively.

South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 5.9, 5.8, 6.0 and 6.2 feet, respectively.

South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 6.5, 6.8, 7.0 and 6.9 feet, respectively.

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)	4 yd <sup>2</sup>
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 5 %
	X		Any oil seen in gatewells?	

Comments: None.

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 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: None.

Collection Facility: Collection into raceways for transport began at 1500 on April 23. Loading fish into raceways for barge transport ended at 1500 on July 30. The facility went to 100% sample for truck transport at that time.

Transport Summary: Every-other day barging transport ended with the July 30 barge. Every-other day truck transport began with the August 1 truck. A total of 175 fish were collected with 192 fish being bypassed during this reporting period. Per 2019 Fish Passage Plan, the Lower Monumental trucking schedule is contingent upon fish

numbers. Saturday, August 3 was the third consecutive day with less than 50 smolts collected, therefore trucking was ceased after the second trip. Bypassed fish numbers reflect the end of truck transport.

Spillway Weir: RSW went into service at 00:01:00 on April 3. The RSW was removed from service at 0630 on August 8 due to low river flows. Summer Spill began at 00:00:00 on June 21.

### 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
25.1	22.3	12.0	9.5	69.9	68.9	5.7	4.1

\*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, cormorants and pelicans were the predominant piscivorous bird species observed in the tailrace during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
8/23/2019	14:00	0	4	0	0	1
8/24/2019	12:00	33	1	0	0	2
8/25/2019	12:00	3	7	0	0	0
8/28/2019	09:00	7	1	0	0	0

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2. Daily bird hazing effectiveness tailrace observations ended with the June 30 observation.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on August 2.

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*
8/23/2019	55	55
8/24/2019	12	12
8/25/2019	19	19
8/26/2019	18	18
8/27/2019	11	11
8/28/2019	32	32
8/29/2019	25	25
Totals	172	172

\*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 took place during this reporting period.

**Project: Little Goose**

Biologists: Scott St. John and Richard Weis

Dates: August 23 - 29, 2019

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

**Little Goose Unit Outages (OOS) and Return to Service (RTS)**

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	04/21/17	00:54	03/31/21	17:00	Spider and Upper Guide Bearing Repair
4	08/13/19	14:46	09/06/19	18:00	Unit Annual, VBS/ESBS Inspections

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 August 25, 27, and 29.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head $\leq$ 0.5'	
X			Fish Ladder Picketed Lead Differential	Head $\leq$ 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: Cooling pumps tripped their beaker on two occasions. Pumps were off for a short period and restarted. Electricians are looking into a solution (see 19LGS12 MFR).

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 7.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 7.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
	X		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 6.0' or on sill	NA
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0' or on sill	NA
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 spill. The equipment used to measure NSE weir depth was found out of service on the August 11 inspection. Little Goose has the components in stock and will conduct the repair once spill ceases to

reduce the risk of damaging electrical components. Subsurface water velocity was measured near NPE on August 27 using a Rickly velocity meter and averaged 3.2 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 differential for Units 1 was measured on August 15 and was in criteria. There is approximately 100 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 differential for Unit 1 was measured on August 15 and was in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	21
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. The last every other day barge departed on July 30 and every other day truck transport commenced on August 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 1,152 fish were collected, of which 1,363 transported via truck. The descaling and mortality rates were 1.1% and 2.3% respectively. There were 4 adult lamprey removed from the separator, raceways, and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir (ASW) was closed on July 23 at 15:17 per the guidance outlined in the Columbia Basin Teletype (CBT). The ASW will remain closed for the season.

### River Conditions

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
26.5	24.1	9.0	8.6	69.6	68.9	6.0	6.0

\*Ladder temperature.

### Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on July 3 with no lamprey being observed. Inspections will resume in December per the Fish Passage Plan.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-23	1030	17	3	0	0
8-24	0730	2	2	0	2
8-25	1345	0	13	0	0
8-26	0800	3	0	0	0
8-27	1130	4	11	0	0
8-28	1200	7	11	0	0
8-29	1200	2	9	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: 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*
8-23	149	149
8-24	1,091	1,091
8-25	187	187
8-26	57	57
8-27	63	63
8-28	89	89
8-29	167	167
Totals	1,803	1,803

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

Gas Bubble Trauma (GBT): The last gas bubble monitoring occurred on July 15.

Fish Rescue/Salvage: None.

Research: N/A

**Project: Lower Granite**

Biologists: Elizabeth Holdren

Dates: August 23-28, 2019

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 6 turbine units available for service (see table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
1-6	08/26	0558	08/26	1656	Forced outage due to transformer nitrogen leak
2	08/26	1710	08/29	1315	VBS repair in gateway slot 2C

Comments: Unit 1-6 were forced out of service due to a required 500KV line outage to repair a transformer nitrogen leak.

**Adult Fish Passage Facility**

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder August 23, 24, 26, and 28.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head $\leq$ 0.5'	
X			Fish Ladder Picketed Lead Differential	Head $\leq$ 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: Fish ladder temperature control pumps remain in operation.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0' or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Since May 4 the fish ladder control system screen and local reading for the south shore channel/tailwater and depth over the SSEs have been inconsistent. SSE gates remain in local operation until Operation and District engineering can resolve the control system issues.

NPE channel velocity sensor readings have consistently read below 1.5 fps and has been reading 0.82 fps for several weeks. Surface velocity is being verified using tape measure and stopwatch and found to be in criteria. Surface velocities and/or NSE velocities will be used until the fish ladder control system NPE velocity issues are resolved.

Spill and powerhouse operations result in variable tailwater elevations at fish ladder entrances. Tailwater conditions may be impacting the fish ladder control systems ability to maintain criteria in addition to control system issues.

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 remains in slow speed.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
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:

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: ESBSs and VBSs were inspected on units 1-3 August 26. The VBS in gatewell slot 2C was missing all four bottom bars that secure the VBS to the frame. Unit 2 was forced out of service from 1710 hours August 26 to 1315 hours August 29 to repair the screen. No fish mortalities were observed and no fish rescues involved with the VBS repair.

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 fifteen of the 14” orifices and three 10” orifices open to maintain optimal flume flow at current forebay elevation. The north makeup water valve remains in local control due to an automatic control motor hardware failure. Intermittent issues with local and remote operation of orifices for back flushing continue to be observed. Problems are reported to operations when they are identified.

Hours Collection Facility: The facility is in collection for transport mode at a 100% sample rate.

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

Spillway Weir: Summer spill operation continues. Spill is being distributed with no RSW according to Table LWG-8.

### 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
26.8	24.4	12.5	9.0	66.0	64.0	5+	5+

\*Cooling water intake temperature.

### Other

Inline Cooling Water Strainers: Unit 1-6 cooling water strainers were inspected August 29. No live lamprey were recovered. Mortalities included 3 juvenile lamprey and 3 crawdads.

Invasive Species: There were 7,951 Siberian prawns collected in the sample this week. Of these, 7,041 were live collected and euthanized and 910 were mortalities when sampled. No signs of Zebra/Quagga mussels were found on submerged substrates.

Avian Activity: Bird wires were removed from the spillway tailrace area August 29 for crane barge access to spillway 1 for PIT-tag detection array install. Biologist daily piscivorous bird counts at Lower Granite Dam are listed below.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
08/23	1045	1	19	0	0
08/24	1130	0	1	0	0
08/25	0950	2	17	0	0
08/26	0955	5	26	0	0
08/27	1235	1	3	0	0
08/28	1116	3	13	0	0
08/29	1620	1	15	0	0

Gas Bubble Trauma (GBT) Monitoring: GBT Monitoring has ended for the year.

Adult Fish Trap Operations: Adult operation was changed to 24 hours 7 day a week operation for brood stock collection for transport to LFH and NPT hatcheries continues.

Fish Rescue/Salvage: No Fish salvages occurred this reporting period.

Research:

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 incidentally collected as part of the normal adult trap daily sample as well as the recaptured previously PIT tagged using adult SbyC system. 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.