U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#23-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 2 to 8, 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	09/15	NA	Turbine blade packing.
13	06/10	0610	TBD	NA	Turbine bearing.
14	08/05	0819	08/08	1433	Annual maintenance.
All	08/05	1724	08/05	2032	BPA substation bus failure.

Comments: On August 5, at 1724 hours, at the BPA substation, bus 1 failed resulting in transmission lines 1 through 5 tripping off and most McNary's turbine units being removed from service. Much of the flow was spilled as outline below in the River Conditions section. Unit 9 provide power for the project. By 2032 hours, all systems and units had been returned to service. There are no other problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on August 2, 4 and 7. Adult fish counting and video review of night time lamprey passage continued.

During the August 5th incident mentioned above in the Turbine Operation section, both ladders experienced a 10 minute or less power outage due to switching as systems were being restored. On August 4 and 5, all temperature stations solar panels were cleaned.

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 exit and minimal to light near the Washington exit. Picketed leads were cleaned as required, including on Saturday. Also, the count station back boards were cleaned.

There are no problems to report.

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'	Raised on August 7 per FPP
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	5.7' on August 7
	X		SFEW2 Weir Depth	≥ 8.0'	5.7' on August 7
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: During the BPA substation issue mentioned in the Turbine Operation section above, the Oregon ladder was out of criteria with about 0.3 feet differential at the south entrance pool and all four entrance weirs were switched to manual mode.

The out of criteria points listed above for August 7th were due to the fish pump 3 outage, which will be described in the Auxiliary Water Supply System section below. These were the only point out of criteria.

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

Comments: On August 5, from 1724 to 2032 hours, fish pumps 2 and 3 were out of service due to the BPA substation issue mentioned in the Turbine Operation section above.

On August 6, at 2224 hours, fish pump 3 tripped off line due to a high temperature alarm. The pump temperature monitoring device was displaying a wide range of pump temperatures. It was suspected the monitoring device was faulty but as a precaution, the pump was removed from service so all systems could be examined. The blade angle on fish pump 2 was increased to 31 degrees. On August 7, at 0608 hours, for one fish pump operation, NFEW3 was raised per FPP 3.3.2.4. iv. The ladder criteria was monitored and maintained as best as possible. (Fish pump 1 is still down for major overhaul.)

Fish pump 3 was thoroughly inspected. The temperature monitoring device was replaced. At 1525 hours, the pump was tested. From 1529 to 1558 hours, both pumps 2 and 3 had their blade angles set to zero so NFEW3 could be lowered. By 1605 hours, the ladder was back in criteria.

There are no other 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 BPA substation issue described in the Turbine Operation section above resulted in a 10 minute or less power outage in both the juvenile fish facility and the juvenile collection channel. These outages occurred so project systems could be restored. With the juvenile system in primary bypass, these outages had no adverse effect.

The full flow flume adult flush line valve continued to hesitate when opening. It has also begun to hesitate when closing. Operating the valve manually and in local mode continued. The electrical staff began to examine the valve this week and the issue will continue to be monitored.

Daily water temperature monitoring and reporting throughout the juvenile passage facility continued. The smolt monitoring staff, Anchor, QEA, published weekly results in a separate report, which includes any issues with the probes.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to 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. Depending on weather, the debris moved back and forth from the powerhouse to the Oregon shore line. There are no plans to clean trash racks. 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 units 6, 8, 10 and 13 remained in timer mode. Due to the BPA substation issue mentioned throughout this report, the ESBS brush cycles for the screens in units 8 and 13 had to be returned to timer mode on August 6. The ESBS brush cycles for the screens in unit 10 were returned to timer mode on August 7. Also, on August 6, communication between the control system and the ESBSs in unit 1 had to be reestablished. Finally, the camera inspections were cancelled due to minor electrical issues on project.

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: Orifice valve operators and area lighting were repaired as required.

The power outage on August 5 is mentioned above in the opening of the Juvenile section. There are no other 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 and the power outage on August 5 are mentioned above in the opening of the Juvenile section. Only minor systems had to be reset after the power outage.

This week, 64 juvenile lamprey and 2,612 smolts were bypassed during secondary bypass. Juvenile shad became the predominant species in the sample on July 24. Algae removal, flow adjustment and maintenance are ongoing. There are no other problems to report.

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
179.1	143.1	102.1	85.0	71.3	69.9	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 continued with 57 percent of the flow being spilled. However, the BPA substation issue mentioned throughout this report resulted in the spill recorded in Table 3 below.

Table 3. McNary Dam Discharge on August 5 during BPA Substation Issue.

Hour	Total	Power	Spill	% Spill
1600	148.4	59.0	84.7	57
1700	153.4	61.2	87.4	57
1800	134.9	24.6	105.6	78
1900	149.5	0.7	144.2	96
2000	145.9	21.5	119.8	82
2100	152.7	49.0	99.1	65
2200	144.8	57.6	82.5	57
2300	143.6	57.0	81.9	57

Other

Inline Cooling Water Strainers: The cooling water strainer examinations revealed four juvenile lamprey mortalities on August 6. The next strainer inspections will occur on December 3.

Avian Activity: Avian observations continued. The counts are reflected in Table 4 below.

There was very little activity in the powerhouse zone. In the spill zone, gull, tern and pelican numbers were low except for a couple of peak days. It could be assumed this was migrating birds. All birds appeared to be feeding with some roosting occurring. No cormorants were noted in the spill zone.

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. At times, a few gulls or cormorants were attempting to feed. Also, a small number of pelicans were noted feeding regularly at the outfall.

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. Preparations to purchase the second laser are almost completed.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has occurred but 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. The calls are being monitored weekly.

Table 4. McNary Project's Daily Tailwater Avian Counts.

Date	Zone	Gull	Cormorant	Tern	Pelican
August 2	Spill	0	0	1	1
	Powerhouse	0	0	0	0
	Outfall	6	1	0	0
August 3	Spill	0	0	0	8
	Powerhouse	0	0	0	0
	Outfall	5	0	0	2
August 4	Spill	0	0	0	5
	Powerhouse	0	0	0	0
	Outfall	6	0	0	3
August 5	Spill	7	0	0	6
	Powerhouse	0	0	0	0
	Outfall	16	3	0	1
August 6	Spill	12	0	0	6
	Powerhouse	0	0	0	0
	Outfall	18	4	0	2
August 7	Spill	12	0	21	17
	Powerhouse	0	0	0	0
	Outfall	8	11	0	5
August 8	Spill	100	0	10	3
	Powerhouse	0	0	0	0
	Outfall	2	4	0	1

In the forebay zone, grebes numbered from 0 to 13 birds. The grebe distress call appears to have promise. Occasionally, an osprey, pelican, cormorant or a small group of juvenile gulls was observed. Also, small numbers of pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. Finally, gull flocks have been staging around the project.

No pelicans were observed inside the ladders and no grebes were observed elsewhere on project.

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

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

Research: The University of Idaho continued the adult lamprey passage study. Due to low fish numbers, no gas bubble trauma (GBT) examinations occurred this week. The last examinations for the season were on July 29.

Project: Ice Harbor
Biologist: Ken Fone
Dates: August 2 – August 8, 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
1	8/6/19	0812	---	---	TJ0 transformer replacement

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on August 6, 7, and 8.

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-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.5’

Comments: Daily cleaning of filamentous algae off of the south ladder picketed leads is needed to keep the differential in criteria.

The north shore entrance channel/tailwater differential was above criteria on the August 6 inspection. When using NEW-2 as the north shore entrance, the channel elevation is obtained from upstream of NEW-1. The reading on August 6 was obtained closer to NEW-1, where it was later noticed that water in the channel seems to be pooling up

against the closed entrance. The water elevation taken approximately 20' upstream of NEW-1 appears to be more representative of the water level in the channel before it flows to the entrance. This location was used on subsequent inspections to obtain the channel elevation.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
7	1		Status of the 8 South Shore AWS Pumps
2	1		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)	No debris observed
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.

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?	20-21
	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.

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
35.1	30.8	10.5	9.8	70	69	8.1	7.8

*Unit 1 scroll case temperature.

Other

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

Avian Activity: There were moderate to high numbers of gulls and pelicans observed around the project Most of the birds were seen roosting on Eagle Island and foraging in the tailrace. The avian wire array has been effective at deterring these birds from feeding in zones close to the dam.

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 newly installed lamprey entrance structure at the south adult fish ladder (SFE2). They will monitor via 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 2 - 8, 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	7/25/2019	05:31	8/02/2019	14:47	Doble Testing
Unit 1	8/07/2019	13:40	8/07/2019	18:00	STS Inspection and swap
Unit 2	7/15/2019	07:20	1/11/2020	ERTS	Annual Maintenance/Draft Tube Liner Repair
Unit 3	7/25/2019	05:31	8/02/2019	14:47	Doble Testing
Unit 3	8/06/2016	07:15	8/06/2016	10:25	STS Inspection
Unit 4	7/08/2019	07:20	8/24/2019	ERTS	Annual Maintenance
Unit 5	8/02/2019	05:27	8/02/2019	18:01	Doble Testing
Unit 5	8/07/2019	07:45	8/07/2019	10:27	STS Inspections
Unit 6	8/02/2019	05:33	8/02/2019	17:47	Doble Testing
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 2, 3, 4 and 7.

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: An adult unclipped Chinook mortality was found on the North Ladder walkway at the switchback, elevation 528 feet, on August 5.

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: South Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 5.3, 5.5, 5.5 and 6.0 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 5.3, 5.5, 5.5 and 6.0 feet respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 5.5, 6.4, 6.2 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)	1 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 15 %
	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 Continuous-Run mode until 1230 on July 11 when they were changed to Cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.
The STS screen in gatewell 1B was found not rotating during August 7 inspection. The STS was swapped out with a spare screen.

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: PDW mechanical screen brush failed to complete its cycle on June 29. This failure appears to show at approximately the same time every year and may be temperature related. Separator operators have been manually running the mechanical screen brush four times per day to ensure debris is not collecting on the screen.

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 356 fish were collected with 35 fish being transported and 193 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. 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
34.7	29.7	17.3	16.9	69.0	68.4	5.8	4.9

*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 and pelicans were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
8/02/2049	14:00	1	0	0	0	1
8/03/2019	09:00	5	0	0	0	2
8/04/2019	08:15	7	0	0	0	0
8/07/2019	09:20	8	0	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections

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*
8/02/2019	18	18
8/03/2019	134	134
8/04/2019	4	4
8/05/2019	72	72
8/06/2019	1	1
8/07/2019	22	22
8/08/2019	5	5
Totals	256	256

*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 02 - 08, 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
1-4	08/05/19	08:27	08/08/19	16:52	Doble/T1 transformer maintenance
1	08/08/19	18:07	08/09/19	11:19	ESBS 1C screen brush fault
3	08/08/19	19:40	08/09/19	14:30	ESBS 3A and 3B screen brush fault

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 04, 05 and 08.

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: The adult ladder cooling pump was out of service from August 05 at 04:40 through August 08 at 17:30 due to Doble/T1 transformer maintenance. Additional details can be found in MFR 19 LGS 09.

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	5.9
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	5.9
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9
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 NSE channel/tailwater differential was found out of criteria during the August 04 inspection. The NSE weir depth was found out of criteria on the August 08 inspection. Subsurface water velocity was measured near NPE on July 11 using a Rickly velocity meter and averaged 3.4 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 July 28 and was in criteria. Project staff were unable to measure differentials during this report period due to Doble testing. There is approximately 300 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: Multiple issues occurred with ESBS brushes during this report period. ESBS 6C cleaning brush was out of service from August 05 at 18:25 through August 06 at 08:44 (MFR 19 LGS 09). Additionally, ESBS cleaning brushes on Unit 1 and Unit 3 had PLC related issues on August 8 forcing the Units out of service. VBS differential for Unit 1 was measured on July 28 and was in criteria. Project staff were unable to measure differentials during this report period due to Doble testing.

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. 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 7,975 fish were collected, of which 6,950 transported via truck. Due to truck capacity, Lower Granite picked up fish at Little Goose on August 05 and 07. The descaling and mortality rates were 1.6% and 0.4% respectively. There were 10 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

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
36.0	30.0	22.1	10.5	68.9	68.8	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
8-2	1310	11	0	0	0
8-3	0800	22	1	0	1
8-4	1300	50	5	0	0
8-5	1137	40	3	0	0
8-6	1250	31	7	0	0
8-7	1300	5	2	0	0
8-8	1200	22	4	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*
8-2	927	927
8-3	554	554
8-4	280	280
8-5	247	247
8-6	398	398
8-7	336	531
8-8	226	452
Totals	2968	3389

*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 2-8, 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 Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
4	08/02	0700			Annual Maintenance

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder August 2, 3, 5, and 7.

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: 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	≥ 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	≥ 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'	
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 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.

Current 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 particularly at the NSE channel/tailwater head differentials.

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)	<1%
	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 sixteen of the 14" orifices and two 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.

Collection Facility: The facility is in collection mode.

Transport Summary: Every-other-day truck transport continues. The semi-truck departed was loaded at Lower Granite and picked up fish at Little Goose August 5 and 7 due to Little Goose exceeding the midi-tank capacity on 150 pounds.

Spillway Weir: Summer spill operation continues. The RSW was closed at 1306 hours August 6 will spill being distributed through traditional spillways 2-8 according to LWG-8. This operational change was in response to increased surface water temperatures. The RSW is currently scheduled to return to normal summer spill operation at 2359 hours August 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
34.4	31.8	18.8	18.4	66.0	64.0	5+	5+

*Cooling water intake temperature.

Other

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

Invasive Species: There were 8,799 Siberian prawns collected in the sample this week. Of these, 6,877 were live collected and euthanized and 1,922 were mortalities when sampled.

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

Date	**Time**	**Gulls**	**Cormorants**	**Caspian Terns**	**Pelicans**
2-Aug	0915	1	15	0	0
3-Aug	1129	1	21	0	0
4-Aug	1115	2	16	0	0
5-Aug	1630	5	15	0	0
6-Aug	1520	1	3	0	2
7-Aug	0930	1	0	0	0
8-Aug	1315	1	0	0	0

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

Adult Fish Trap Operations: The adult trap is operating Monday-Friday at a 28% sample rate. Brood stock collection for transport to LFH and NPT hatcheries began August 7.

Fish Rescue/Salvage: No fish salvage operations 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.