U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#27-2020

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: August 28 to September 3, 2020

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**
2	8/17	0754	9/15	NA	New top plate pump installed.
10	8/17	0700	9/3	1138	Annual & other maintenance.
3 & 4	8/31	0700	9/10	NA	Transformer, unit annual & doble testing.
5	9/2	0645	9/2	1713	Hub tapped.

Comments: The above dates are subject to change. The hard one percent peak efficiency constraint continued. The saw tooth unit priority pattern for temperature abatement was maintained as current river flow volumes allowed.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on August 28, 30 and September 2. Adult fish counting, and video review of nighttime lamprey passage continued.

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 minimal to moderate near the Oregon exit and minimal near the Washington exit. Aquatic vegetation continued to be an issue. The general maintenance staff cleaned the picketed leads frequently, including on weekend. The Oregon ladder picketed leads were cleaned three times on August 31. Each time the picketed lead differential alarm came in and the operator had to adjust the exit weirs’ set points. The general maintenance staff was called in to clean the Oregon ladder picketed leads during the early morning of September 3. Again, the operator had to adjust the weirs’ set points. Also, that afternoon, the general maintenance staff had to clean the Washington shore picketed leads for a second time. This exit’s weirs’ set points were also adjusted.

At both exits, there were indications the exit weirs were lying down out of sequence at times. At the Oregon exit, the weirs’ set points were adjusted on August 30. At the Washington exit, the regulating weir set point was adjusted on August 30 and September 2.

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'	7.9' on September 2.
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 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: The above out of criterion point was probably due to a calibration drift.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			WA shore Wasco County PUD Turbine Unit
	Yes		WA shore Wasco PUD Bypass
		Yes	Oregon shore Fish Pump 1, OOS to November 19.
Yes			Oregon Ladder Fish Pump 2, Blade angle: 24°.
Yes			Oregon Ladder Fish Pump 3, Blade angle: 24°.
Yes			OR North Powerhouse Pool supply from juvenile fishway

Comments: Repairs to fish pump 1 continued. There are no problems to report.

Juvenile Fish Passage Facility

The sampling season, consisting of alternating days of primary and secondary bypass, continued. There was one interruption in the schedule due to a channel side dewatering valve issue when the eight-hour sample was missed on August 29. This is discussed below in that section. As stated last week, due to increased sample tank mortality, sampling was reduced to eight hours a day. Sample collection occurred on August 31 and September 2, from 0030 to 0830 hours each day. The time frame was slightly adjusted from last week to accommodate shift changes better. The sample rate was 25 percent. Sample collection will return to 24 hours when the sample tank water temperature reaches 68.0 degrees F or less.

There was one sample tank mortality found this week. There were no sample recovery raceway mortalities.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Debris loads were minimal to very light near the powerhouse and minimal beside the spillway. Incoming debris loads were minimal to very light and consisted mostly of aquatic vegetation. The woody debris and aquatic vegetation continued to dissipate as it moved back and forth from the powerhouse to the Oregon shoreline with wind direction changes.

No trash rack cleaning or forebay debris removal occurred.

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: ESBS's remained deployed in all units. ESBS camera inspections in units 3 and 4, which were out of service, with no problems revealed.

Daily VBS differential monitoring continued. No high differentials were measured. A total of seven screens were cleaned on August 28, 31 and September 4. There were no mortalities observed.

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

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
	X		Were the dewaterer and cleaning systems operated satisfactory?	

Comments: Orifices were adjusted for VBS cleaning as required. Due continued concern for the two side dewatering valves, orifices cycling remained once a day except on August 28 and September 3, when it occurred twice due to miscommunication.

The functionality of both side dewatering valves remained a concern and both valves were monitored closely. The south dewatering valve actuator sent an alarm to the channel's control PLC some time on August 28 between 0430 to 0832 hours. However, the panel view stated the alarm came in at 0138 hours, which is odd. Dewatering valve alarms do not enunciate in the control room. The only way we knew there was an alarm was by reading the panel view. The cause of the alarm was suspected to be heat related. However, when we found the alarm, the valve was functioning, though the actuator was operating erratically and very hot. The alarm was cleared, and the fisheries staff continued to monitor the channel. After consideration of the valve issues, the project biologist decided to cancel the eight-hour sample scheduled for August 29, from 0000 to 0800 hours.

The south valve actuator motor continued to be very hot at times and operate erratically. The north valve appeared to only occasionally slightly slip when closing. The south valve was turned off on August 30, from 0849 to 1512 hours. The object was to test how well the north valve responded if the south valve would happen to trip offline. The north valve ran rather smoothly other than slight slipping at times. The valve actuator was not taxed by over adjustments and the motor did not overheat. This does raise the question of why the control program over operates one valve and not the other. The decision was made to return to eight-hour sampling, which occurred on August 31 from 0030 to 0830 hours. The biologist was informed that the south side dewatering valve actuator had sent an alarm to the control PLC at 0640 hours on August 31, which was while the sample collection was occurring. The panel view indicated the alarm occurred at 0433 hours but there is no way to verify this time is accurate. The valve was functioning, and one of two alarm screens was cleared. The technician at the separator noted no flow issues. If the south valve had tripped offline briefly, the north valve appeared to have regulated the channel elevation adequately.

The south valve actuator motor was very hot and operating very erratically. Also, a slight popping noise was noted, possibly the coupler that links the motor to the valve shaft. The electrical and mechanical staffs were notified. Both crew leaders examined the valve actuator. The electrical crew leader turned the south valve off at 1040 hours. The electrician verified there were alarm indicators in the valve actuator but none of them activated the indicator light. We assume the alarm was related to high motor temperature. The electrician found a response to channel elevation changes setting in the actuator. They increased the response time to 10 seconds. It was also found that both

actuators had the previously had the same response setting, yet the south valve actuator responded much more often than the north valve. The south valve was returned to service at 1310 hours.

The valves were monitored overnight and by start of day shift on September 1, it was clear that the south valve was operating smoothly, with much slower responses and cooler motor temperatures. The north valve operated just as well except for a brief time of slippage. Both valves motors were only slightly warm at times. The previous south valve actuator alarms appeared to happen in the early morning when units were going in and out of standby. There were no issues this morning even with the spill season ending. Eight-hour sampling continued September 2. However, we still have concern for the control program and the wear the valves have experienced this season.

With no access to the control program and a limited supply of limit switches, the transition screen cleaning brush will remain out of service. Until issues with this brush can fully be resolved, attempting to run it risk more problems than the benefit. The air burst system's zone 5 keeps the transition screen clean.

The end of spill season had no adverse effect and did not increase debris loads on September 1.

Some of the channel debris grating, which blocks forebay material from washing into the channel during storms, was removed in order to prepare for future trash rack work on August 31.

Bypass Facility:

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

Comments: The sample gates were only operated on secondary bypass days. Eight-hour sample collection continued except on August 29 due to the dewatering valve issues mentioned above. Normal scheduled 24 hours sampling will resume when the sample tank water temperature is at or below 68.0 degrees F. The PIT-tag system remained out of service as there are no studies requiring its use.

This week, 12 juvenile lamprey and 96 smolts were bypassed during secondary bypass. Juvenile shad were the predominate species examined in the sample.

TSW Operations: The TSW's continued out of service. Standard gates remained in bays 19 and 20. However, a TSW will be installed and attached to a hoist in bay 20 on September 8 to 10. The TSW will be ready for the adult steelhead top spillway weir (TSW) passage efficiency study and as required by the new Biological Opinion.

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
145.3	94.5	20.2	0.0	69.5	69.1	6.0	6.0

Comments: The above data was supplied by the smolt monitoring staff except water clarity, which came from the control room. The summer spill program, with a spill volume of 20 kcfs, concluded on September 1 at 0001 hours. Spill in excess of powerhouse capacity occurred on September 3.

Water temperature monitoring concluded on August 31 at about 0900 hours. The smolt monitoring staff published the last weekly report and has begun to prepare the annual temperature report.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 1.

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

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
August 28	Spill	9	0	0	0
	Powerhouse	29	0	0	0
	Outfall	13	20	0	0
August 29	Spill	46	2	0	1
	Powerhouse	2	0	0	0
	Outfall	4	34	0	0
August 30	Spill	13	0	0	0
	Powerhouse	22	1	0	0
	Outfall	15	21	0	0
August 31	Spill	115	2	0	0
	Powerhouse	7	0	0	0
	Outfall	24	39	0	0
Sept 1	Spill	21	0	0	0
	Powerhouse	4	0	0	0
	Outfall	30	10	0	0
Sept 2	Spill	10	8	0	1
	Powerhouse	3	0	0	0
	Outfall	24	9	0	0
Sept 3	Spill	163	0	0	0
	Powerhouse	0	0	0	0
	Outfall	22	29	0	0

No terns were observed in the tailwater area.

Gulls and one cormorant were observed feeding in the powerhouse zone. Also, some of the gulls were roosting. The gull feeding activity occurred very quickly.

In the spillway zone, an occasional pelican was observed. Gull numbers continued to fluctuate. The gulls were roosting on the navigation lock wing wall along with feeding in the spill flow, especially during the spill on September 3. Again, feeding activity was very short. A few cormorants were present as they were observed roosting and feeding.

At the juvenile bypass outfall, gulls and cormorants were noted attempting to feed. Most of the gulls and cormorants were roosting on the bypass pipe.

In the forebay zone, an occasional gull, cormorant or osprey was observed. Also, a few cormorants and gulls were noted on the roosting rocks along the Washington shoreline. Finally, a flock of gulls was observed outside the counting zone, at times. No grebes were observed.

The lasers on the navigation lock wing wall and on the juvenile bypass outfall walkway remained on. When the new laser for the outfall location arrives, we may again attempt an evaluation study. The wing wall laser did appear to reduce feeding at the outfall and roosting along the lock wall. However, more deterrent may be required along the wing wall. Hopefully, the new laser will discourage roosting on the outfall pipe.

The bird distress calls deployed along on the navigation lock wing wall appeared to be somewhat successful, but roosting continued to increase at times. The second large distress call was deployed on the juvenile facility barge loading dock on September 3 to tests its effects on powerhouse feeding.

There is no active hazing program currently.

The LRAD test has been scheduled for September 8.

Invasive Species: The next mussel station examinations will occur in late September. No Siberian prawns were observed in this week's samples. The yearly total is two prawns.

Fish Rescue/Salvage: None occurred this week.

Research: Pacific Northwest National Laboratory (PNNL) continued to prepare for the adult steelhead TSW passage efficiency study. They replaced their camera in spillbay 20 on September 2.

Project: Ice Harbor
Biologist: Ken Fone; Maintenance Worker: AJ Chavez
Dates: August 28, 2020 – September 3, 2020

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	8/10/20	0712	8/26/20	1107	Annual maintenance
1	9/1/20	2255	9/2/20	1450	Governor blade response issue – fixed linear variable differential transducer

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on August 31, September 1, and September 2.

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-2) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: None.

Auxiliary Water Supply System (AWS):

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
6 pumps	2 pumps		Status of the 8 South Shore AWS Pumps
2 pumps	0-1 pump	0-1	Status of the 3 North Shore AWS Pumps

Comments: Three of the operating south shore AWS pumps and both operating north shore AWS pumps loss power on September 1 at 2255 hours when unit 1 tripped off. The south shore and north shore pumps were restarted on September 1 at 2315 hours and 2340 hours, respectively.

North Shore AWS pump #3 was out of service for repair from 1017 hours to 1338 hours on September 3. Electricians replaced faulty contactors that were causing the pump to trip off right after start-up.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average of 3 square yards
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 for available units?
	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 Juvenile Fish Facility is operating in primary bypass mode.

Fish Sampling: Fish sampling is done for the year at Ice Harbor Project.

Removable Spillway Weir (RSW): Voluntary spill for fish passage ended on September 1 at 0001 hours. Spill through the RSW was already shut off due to low river flows.

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
25.5	20.9	8.0	0	69	69	8.0	6.6

*Unit 1 scroll case temperature.

Comments: None.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey will resume in December.

Avian Activity: There were low numbers of piscivorous birds seen around the project. Most of the birds were observed in the vicinity of Eagle Island.

Invasive Species: No new exotic species have been discovered.

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: August 28 – September 3, 2020

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	9/02/2020	0942	9/02/2020	1345	STS Inspection
Unit 2	7/15/2019	0720	9/25/2020	ERTS	Annual, Draft Tube Liner
Unit 3	9/02/2020	0659	9/02/2020	0937	STS Inspection
Unit 4	8/10/2020	0730	9/25/2020	ERTS	Annual, Blade Seals, Headcover Pump
Unit 5	9/01/2020	1215	9/01/2020	1415	STS Inspection/Hub Tapping
Unit 6	9/01/2020	0718	9/01/2020	0915	STS Inspection

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and EAS/Anchor QEA biologists on August 28, 29, 30 and September 2.

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	≥ 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 (SPE-1) Weir was on sill during all inspections with readings of 6.7, 6.5, 6.5 and 7.0 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 6.7, 6.5, 6.5 and 7.0 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 7.5, 7.4, 7.2 and 8.1 feet respectively.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	16 yds^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 cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm. STS's were inspected from September 1 and 2. All were in good working order.

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: The Juvenile collection facility was watered up at 10:00 on March 26.
Collection into raceways for transport ended at 1500 on June 21. The facility went into secondary bypass with daily condition sampling at that time.
A total of 390 fish were collected during this reporting period with total of 389 bypassed back to the river.

Transport Summary: Alternate day barge transport ended June 21.

Spillway Weir: Summer spill ended on August 31 at 23:59:59.

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
24.2	19.0	7.1	0	69.2	68.0	5.8	3.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 10. No live fish or mortalities were recovered.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
8/28/2020	1520	11	1	0	0	0
8/29/2020	1000	30	0	0	0	0
8/30/2020	1330	15	2	0	0	0
9/02/2020	0900	6	4	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections*

Comments: Bird hazing efforts by USDA personnel ended June 2, 2020.

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*
8/28/2020	66	132
8/29/2020	46	92
8/30/2020	22	44
8/31/2020	27	54
9/01/2020	63	126
9/02/2020	104	208
9/03/2020	48	96
Total	376	752

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

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: August 28 – September 3, 2020

Turbine Operation

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

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
5	04/14/17	14:11	03/31/21	17:00	Spider and upper guide bearing repair.
4	08/10/20	03:00	09/17/20	17:00	Unit Annual and 6-year overhaul
6	08/06/20	17:32	09/25/20	17:00	T2 neutral bushing

Comments: T2 remains out of service after Doble testing, forcing Unit 6 out of service. A bad neutral bushing was found which will need replaced before returning T2 to service.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on August 30, September 01 and 03.

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 Pumps Operating Satisfactorily		

Comments: Adult ladder cooling pump was started on June 22 at 1035. The cooling pump is currently operating satisfactorily.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
	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 struggled to maintain entrance criteria at the NSE during Spring spill. The fish control system still has a faulty I/O module for the NSE weirs and which is scheduled to be repaired after spill ends. Subsurface water velocity was measured on August 8 and averaged 2.5 feet per second. NSE channel to tailwater was found at 0.9 on September 01.

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		Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: There is approximately 20 square feet of floating woody debris currently inside the trash shear boom in the forebay. Drawdowns were performed on August 27 on Unit 1 and were in criteria.

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
	X		VBSs differentials checked this week?
		X	VBSs differentials acceptable?
	X		VBSs inspected this week?

Comments: VBS differentials were performed on August 27 on Unit 1 and were in criteria.

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: The airline for the backflush system on orifice 1C1 was found broken and will need repaired once the juvenile channel is dewatered for winter maintenance (MFR 20 LGS 12). During prior ESBS/VBS inspections, an issue with the orifice liner in 6C2 was observed (MFR 20 LGS 14) and will need repaired during winter maintenance.

Collection Facility: Collection for condition sampling began on April 1. The facility continues to collect for daily sample and was placed in secondary bypass on June 21. Collection for every other day truck transport began on August 01 with the first truck leaving LGS on August 03.

Transport Summary: The JFF began collecting for truck transport on August 01. The collection and transportation facility operated within criteria this report period. A total of 2,001 fish were collected which includes 447 fish which will be transported on 9/4. Of the fish collected, 46 were sample or facility mortalities, 01 were by-passed and 1,507 were transported by truck to release site near Bonneville Dam. The descaling and mortality rates were 0.2% and 2.72%, respectively. There were no adult lamprey removed from the separator this report.

Spillway Weir: Summer spill operations began on June 21. The ASW was closed for the season on August 07. Spill operations ended on September 01.

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
26.1	20.2	7.3	0	68.7	67.6	6.0	5.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers were inspected and results submitted to district operations every other week for FPOM distribution through mid-June per Fish Passage Plan (FPP) requirements.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
8-28	0800	21	0	0	0
8-29	0800	27	1	0	0
8-30	1300	18	7	0	0
8-31	1130	24	19	0	0
9-1	1135	20	11	0	0
9-2	1000	15	4	0	0
9-3	0815	16	8	0	0

Invasive Species: No invasive species have been observed on the mussel station.

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*
8-28	650	650
8-29	641	641
8-30	1,024	1,024
8-31	1,199	1,199
9-1	1,163	1,163
9-2	963	963
9-3	3,728	3,728
Totals	9,368	9,368

Gas Bubble Trauma (GBT): GBT monitoring has finished for the season.

Fish Rescue/Salvage: None.

Research: The Nez Perce Tribe (NPT) ended steelhead kelt collection on June 25.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: August 28-September 3, 2020

Turbine Operation

Yes	No	Turbine Unit Status		
X		All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
		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	Aug 24	0700			Annual Maintenance
2	Aug 30	1337	Aug 30	1519	ESBS/VBS Inspections
3	Aug 31	0750	Aug 31	1044	ESBS/VBS Inspections
5	Aug 30	1110	Aug 30	1325	ESBS/VBS Inspections
6	Aug 30	0843	Aug 30	1054	ESBS/VBS Inspections

Comments: None.

Adult Fish Passage Facility

Lower Granite ODFW and EAS/Anchor QEA staff inspected the adult fishway August 28, 29, 31, and September 2.

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: Adult fish ladder temperature control system remains in operation.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.8, 7.8
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8, 7.8
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	6.2, 5.8, 6.0
			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	1.2, 1.3

Comments: FOGs 1 and 10 are in operation. The issue with the control system reading being in sync with local readings requires the electrical crew investigation of programming.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
No		OOS guide bearing	AWS Fish Pump 3

Comments: AWS pump 3 remains in standby until LWG mechanical is able to perform standard testing that requires all AWS pumps be removed from service for 4 hours while stoplogs are swapped.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris has not created any fish passage issues this season. Some woody debris observed in the forebay this season is likely due to the failure in the upriver two sections of the forebay debris boom. Though this has not created a problem, repairs are recommended to prevent further damage to the boom and potential for additional debris in the powerhouse forebay and on unit trashracks.

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: Gatewell differentials were measured on August 30.

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: The ESBS is dogged off in gatewell slot 4A during the annual maintenance outage.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18-24
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Juvenile collection channel water level and flow is being adjusted using 10” orifices depending on forebay elevations. The 14” orifice in gatewell slot 4C was removed from service June 10 to prevent fish injury due to a damaged flange. The 10” orifice remains in operation and with no issues. A bulkhead was installed, and the orifices were closed in slot 4A to facilitate the unit 4 annual maintenance. July 30 LWG electrical crew updated the orifice gallery control system to ensure program solenoid outputs don't exceed manufacturer’s maximum that was causing them to overheat and short. They also repaired the issue that was preventing valves from being controlled if a limit switch failed. All alarms remain the same and the program will prevent orifices from operating in HMI or Auto mode if a problem occurs.

Collection Facility: The sample rate is being adjusted daily based on fish passage numbers. Collection for truck transport began at 0700 hours August 1.

Transport Summary: Truck transport for the week of August 22-September 3 totaled 528 fish transported in three trips.

Spillway Weir: Summer spill ended 0001 hours on September 1.

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
25.6	19.6	6.9	0.0	65.0	63.0	5.0	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 37,654 Siberian prawns collected in the sample and euthanized for disposal. This was the highest number of Siberian prawns collected during a single report week recorded at Lower Granite.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
Aug 28	1610	3	13	0	0
Aug 29	1115	7	0	0	0
Aug 30	0935	2	29	0	0
Aug 31	0850	5	4	0	0
Sept 1	1040	2	27	0	0
Sept 2	1353	0	19	0	0
Sept 3	1315	0	30	0	0

Adult Fish Trap Operations: Adult trap sample rate was reduced from 80% to 18% at 1400 hours on September 1 to accommodate adult chinook brood stock collection for the NPT and LFH. LWG Project Biologist are providing oversight while NOAA personnel resume daily operation of the adult trap. The total number of fall Chinook trapped and transported during this report week were 1,300 (717 to LFH and 583 to NPT).

Fish Rescue/Salvage: N/A

Research:

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.