U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#10-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 3 to 9, 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**
13	05/06	0733	05/08	1858	Transmission line 6 outage for BPA.
14	05/06	0739	05/08	1856	Transmission line 6 outage for BPA.
1	05/07	1044	05/07	1156	ESBS camera inspections.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on May 3, 5 and 7. The fish counting contractor began work on May 9.

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: At the Oregon shore ladder, the exit was in orifice flow from May 8 at 2326 hours to May 9 at 0430 hours. The exit was in automatic mode by 0515 hours. This was done to facilitate the exchange of the exit power supply from an old to a new system, which occurred from 0030 to 0430 hours. The new system will be much more reliable and future power outages will be much less likely.

Debris loads were light near both exits. At the Washington shore exit, a regulating weir alarm came in and was reset on May 7.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X			NFEW2 Weir Depth	≥ 8.0'	
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
X			SFEW2 Weir Depth	≥ 8.0'	
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.2 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: The Oregon shore south powerhouse entrance panel view cabinet had new heating/cooling fans installed on May 9. Both south entrances, SFEW1 and SFERW2, were reset after the work was completed.

Auxiliary Water Supply System:

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

*Comments: The Wasco County PUD was off line from May 6 at 0740 hours to May 8 at 1843 hours as part of the transmission line 6 outage request by BPA mentioned above. The bypass system functioned satisfactorily during the outage. Fish pump outages for the week are recorded in Table 2 below.

Table 2. Fish Pump Outages.

Pump	Date	Time	Outage Description
2	05/06	1044 to 1156	Electrical bus switch.
2	05/07	1143 to 1158	Tripped off line, exciter issue.
2	05/07	1436 to 1444	Electrical bus switch.
3	05/09	1508 to 1518	Pump tripped off line.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. There was one interruption in the schedule, with three interruptions in sampling this week. The B side sample gate failed with the gate in the closed position on May 4, at 2245 hours. The cylinder shaft and connector had disconnected from the bearing on the gate. The technician turned the gate off at 2300 hours. Sample collection on the A side continued with the system switched to primary bypass at 0700 hours as scheduled. Eight hours of sampling were missed on the B side at 1 percent. The next working day, May 6, the mechanic repaired the B side sample gate system thinking the issue was the shaft in the cylinder. Sample collection had begun at 0700 hours with a 1 percent sample rate. The B side gate was activated at 0744, resulting in only two samples being missed. Later that day, the technician on duty informed the biologist that the B side sample gate had failed again. This time, the gate was open and fish were being collected. Again, the cylinder shaft and connector had disconnected from the bearing on the gate. The gate was manually closed and turned off at 1345 hours. By examining the count record, it was determined the gate had been open from 1325 to 1345 hours, 20 minutes. The B side count went from 38 to 291, an increase of 253 fish in 20 minutes. There were 36 fish counts on the A side. At this time of year, PSMFC generally sets the sample rate to collect 300 fish. Adding both A and B counts together, there was an estimated 327 fish in the sample tanks. After

consulting PSMFC, the biologist determined it would be best to switch the system to primary bypass and collect no more fish for sampling. The system was switched to primary bypass at 1500 hours. The A side collected fish for one more hour. After this time, for the data day, 16 hours of sampling were missed. By 1700 hours, the bearing on the B side sample gate where the cylinder shaft attaches was replaced. Testing the gate occurred briefly and it appeared some adjustment was required. These adjustments and a complete inspection of the B sample gate system occurred the early the next day, April 7. The system was ready to collect fish for sampling on schedule on April 8, starting at 0700 hours. The sample was also examined on April 7. The combined number of smolts sampled was 372. With a general increase in smolt numbers, the sample rate has been reduced to 0.5 percent.

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 to light. There was minimal debris at the spillway. Debris coming in along the Washington shore line was passed through the navigation lock. Debris accumulating at the powerhouse while units 13 and 14 were out of service was passed through the spillway once the units returned to service. Also, some of the powerhouse debris was moved to the Oregon shoreline due to northeast winds. The debris load there would be described as light.

No trash racks were cleaned this week. The next schedule cleaning will begin the week of May 20. There were 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: ESBSs are installed in all units. The brush cycles for the screens in 6A, 8A, 8C and 13A slots remained in timer mode. Camera inspections in units 1, 13 and 14 revealed no problems on May 7. Camera inspections of Units 13 and 14 were performed during the BPA transmission line 6 outage.

Daily VBS differential monitoring continued. No high differentials were recorded. The VBS in 1B slot was cleaned on May 6. Also, the VBSs in unit 9 were inspected, which includes cleaning. The VBSs in 13C slot and unit 14 were inspected on May 9. No fish mortalities were noted.

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 operator rehabilaiton continued. Orifices were adjusted as required for VBS cleaning and VBS inspections as required.

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. Issues with the B side sample gate are recorded above in the Juvenile Fish Passage Facility section. The PIT tag system will remain out of service as there are no studies requiring its use.

This week, 5,337 juvenile lamprey and 76,019 smolts were bypassed during secondary bypass. Lighting repairs resumed at the facility.

TSW Operations: The two TSWs remained part of the spill pattern.

River Conditions

Table 3. 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
238.1	221.7	161.3	145.0	52.8	50.6	5.4	2.5

Comments: The above data is supplied by Anchor, QEA except water clarity, which is provided by the control room. The spring flex spill program continued.

Other

Inline Cooling Water Strainers: The cooling water strainer examinations occurred on May 7. At unit 1, 150 juvenile lamprey mortalities were removed. This was the only unit with lamprey mortalities. There were 27 live juvenile lamprey were removed from the other units with 26 from units 2 through 8. Many of these units were in standby for extended periods. A total of three juvenile sockeye moralities came from units 5, 6 and 7 which were also in standby at times.

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 numbers were lower and no other birds were observed. The gulls did appear to be feeding.

In the bypass outfall zone, most of the gulls were roosting on the full flow pipe. No other birds were observed. Due to the roosting, which was previously discouraged by bird wire, the outfall numbers may appear inflated compared to previous years. However, USDA Wildlife Services boat hazing greatly reduced the number of gulls roosting during the observations.

The laser being used to “haze” the outfall was on during all outfall observations. The laser patterns are programmed on at 0500 to 0800, 1030 to 1330 and 1500 to 2000 hours. Though observations are limited, the laser does appear to displace the birds that are within its range. Most of the gulls noted roosting on the outfall pipe were outside the laser’s range and in the section with no bird wire. When comparing the laser effectiveness using past bird counts, feeding birds will have to be considered.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited. USDA Wildlife Services continued working two shifts and boat hazing four days a week.

In the forebay zone, an occasional osprey or cormorant, along with grebes numbering from two to 40 birds were observed. Fairly large numbers of pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. Most birds appear to be staging at this time.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
May 3	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	5	0	0	0
May 4	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
May 5	Spill	3	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	0
May 6	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	3	0	0	0
May 7	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 8	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 9	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

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

Fish Rescue/Salvage**:** None occurred.

Research: The Yakima Nation removed nine juvenile lamprey from the sample for an offsite passage study on May 9. Gas bubble trauma (GBT) examinations occurred twice during the week. Two clipped steelhead smolts were observed with signs of GBT.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 3 – May 9, 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	---	---	Investigate for possible oil leak
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	5/7/19	0857	5/7/19	1356	Isolate and contain transformer TW-6 oil leak
2	5/9/19	0651	5/9/19	1508	Isolate and contain wicket gate servo valve oil leak

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 6, 7, and 9.

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	0.8, 1.4, 0.8 fps
X			North Powerhouse Entrance (NFE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The south shore channel velocity was below criteria on all three inspections. The higher tailwater and channel levels slowed the velocity of water entering the junction pool from the upper ladder, resulting in the lower velocity readings at the meter.

Auxiliary Water Supply (AWS) System:

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

Comments: South shore AWS pump #8 has been out of service since March 1, due to the pump needing an oil change and heater installation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	34.8 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-8%
	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: STSs operation was switched to cycle-run mode on May 7, because of the absence of subyearling chinook fry in the Ice Harbor and/or Lower Monumental juvenile fish samples.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

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

Fish Sampling: Sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. The cause of the descaling observed on eight of the fish in the May 6 sample and three of the fish in the May 9 sample was attributed to birds, fish, and lamprey.

Fish condition sampling results at Ice Harbor Dam:

Date: May 6

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	70	5	0	0
Chinook yearling unclipped	20	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	64	8	0	0
Steelhead unclipped	21	1	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	175	14	0	0

Date: May 9

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	60	1	0	0
Chinook yearling unclipped	14	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	58	1	0	0
Steelhead unclipped	10	4	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	142	6	0	0

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring. Spill gate #4 was out of service from 0001 hours on May 8 to 1634 hours on May 9, to replace a failed gear box. See MFR 17 IHR 07 for more details.

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
114.3	104.7	81.1	76.4	53	52	4.8	3.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections for lamprey will occur later in May.

Avian Activity: There were low to high numbers of piscivorous birds counted around the project (see the table below). Most of the pelicans were observed around Eagle Island. Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing for 8 hours per day, 5 days per week, is occurring. Hazing has been effective in disrupting and dispersing gulls and cormorants that are foraging in the water on the north side of the navigation lock downstream guide wall and coffer cells. So far this season, the bird hazers have practically seen no birds attempting to forage below the juvenile fish bypass outfall pipe.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 3	12	29	0	2	21
May 4	---	---	---	---	---
May 5	16	94	0	0	42
May 6	9	27	0	0	24
May 7	0	29	0	0	26
May 8	1	0	0	0	8
May 9	15	0	0	0	15

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 PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Date	Sample (euthanized)	Collection*
May 6	1	1
May 9	0	0
Totals	1	1

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

Fish Rescue/Salvage: Unit 3 scroll case and draft tube were unwatered on May 3 and May 5, respectively. There was 1 catfish observed in the draft tube, but not removed. Because of the excessive water leakage coming into the unit through the bulkheads, the unit was immediately allowed to fill back up from leakage. The tailrace stop logs were removed on May 5 and no fish were observed stranded in the stop log ribbing. A different set of tailrace stop logs were installed to reduce the leakage. Unit 3 scroll case and draft tube were unwatered again on May 8. Three juvenile sturgeon were recovered from the draft tube and were released into the tailrace in good condition.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 3 - 9, 2019

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	5/07/2019	11:45	5/07/2019	14:30	STS Inspections
Unit 2	5/03/2019	07:03	5/03/2019	17:24	Fish guidance efficiency study head gate change
Unit 2	5/07/2019	07:00	5/07/2019	11:41	STS Inspections/Brush Cleaning
Unit 3	5/03/2019	11:58	5/03/2019	17:27	Fish guidance efficiency study head gate change
Unit 3	5/08/2019	10:43	5/08/2019	12:39	STS Inspections
Unit 4	5/08/2019	06:57	5/08/2019	10:38	STS Inspections
Unit 5	5/09/2019	07:15	5/09/2019	10:25	STS Inspections
Unit 6	5/08/2019	12:44	5/08/2019	14:30	STS Inspections

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 May 3, 4, 5 and 8.

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 Shore Entrance weir (SSE-1) was out of criteria during the May 3 inspection with a reading of 5.2 feet.
South Shore Channel/Tailwater Differential was out of criteria on the May 3 inspection with a reading of 2.4 feet.
The operators were informed of these discrepancies and adjusted the system to correct the issues.

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)	540 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 35%
	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?	19
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Three Sticks were seen across orifice 9 during STS camera inspection. Orifice 10 was opened until the sticks could be removed.

Collection Facility: Every other day fish condition sampling ended at 0700 on April 23. Collection into raceways for transport began at 1500 on April 23.

Transport Summary: A total of 368,100 fish were collected with 367,788 fish being transported and 200 fish bypassed back to the river during this reporting period. Bypassed fish numbers for this reporting period were projected from salmonid fry in the sample.

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

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
110.2	99.9	62.8	37.4	52.9	50.5	3.3	2.4

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 18. Live fish included 14 juvenile lamprey and 1 juvenile steelhead. Mortalities included 234 juvenile lamprey, 10 juvenile salmon and 3 juvenile steelhead.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/3/2019	1140	2	0	0	0	0
5/4/2019	1200	3	1	0	0	0
5/5/2019	1130	0	0	0	0	0
5/6/2019	1230	3	0	0	0	0
5/7/2019	1130	6	0	0	0	0
5/8/2019	1135	3	0	0	0	0
5/9/2019	1210	4	0	0	0	0

Comments: Bird hazing efforts by USDA personnel began on April 1.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on May 4.

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. No Siberian prawns were collected in the sample this reporting period.
Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

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

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: May 03 – May 09, 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	05/09/19	00:06	05/09/19	15:50	Water intrusion to turbine guide bearing oil system

Comments: Unit 1 was forced out of service from 00:06 until 15:50 on May 09 to filter and replace oil due to water intrusion in the turbine guide bearing oil system.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on April 28, 30 and May 02.

Fish Ladder:

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

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.7, 5.9
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.7, 5.9
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 spring spill. The May 02 and 09 inspections found both NSE weir depths out of criteria. Adjustments were made and the fishway is in criteria. Subsurface water velocity was measured near NPE on May 05 using a Rickly velocity meter and averaged 4.0 feet per second.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
		X	Any debris seen in gatewells (% coverage)	
		X	Any oil seen in gatewells?	

Comments: Trash rack differentials were measured on May 09 and were in criteria. There is approximately 8,000 square feet of floating woody debris inside the trash shear boom in the immediate forebay. Trash raking is scheduled for the week of May 13.

ESBS/VBS:

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

Comments: VBS differentials were measured on May 09 and were in criteria. VBS inspections are schedule in conjunction with trash raking for the week of May 13.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: The juvenile bypass system is currently operating. Daily collection for condition sampling and transport began on April 23 at 07:00 with the first barge departing on April 24.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 299,581 fish were collected, of which 299,286 were transported via barge. The descaling and mortality rates were 2.8% and 0.1% respectively. There were no adult lamprey removed from the separator or this report period.

Spillway Weir: Spring spill commenced on April 03 with the ASW in the high crest position. The ASW was adjusted to the low crest elevation on April 09.

Spillway 3 was out of service from 10:15 until 17:53 on May 03 due to a failed spillway motor contactor.

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
110.2	100.8	47.7	46.2	55.3	52.4	3.6	3.0

*Ladder temperature.

Other

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
5-3	0900	9	6	0	0
5-4	0800	6	1	0	0
5-5	0800	4	0	0	0
5-6	1300	0	1	0	0
5-7	1140	8	1	0	0
5-8	1204	5	1	0	0
5-9	0800	0	0	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: No Siberian prawns were collected in the sample for this reporting period.
Gas Bubble Trauma (GBT): Gas bubble monitoring began on May 06. Personnel examined 100 fish of which 8 had signs of GBT.

Fish Rescue/Salvage: N/A

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: May 2-9, 2019

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	

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fishways May 3, 4, 6, and 8.

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: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0'	7.5', 7.3'
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	7.5', 7.3, 7.9
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: Current spill and powerhouse operations result in variable tailwater elevations at fish ladder entrances, a strong counter clockwise eddy that extends from the south shore to spillway 1 down river to the outfall pipe, and a wall where the eddy meets the turbine unit discharge. These tailwater conditions may be impacting the fish ladder control systems ability to maintain criteria. The control system screen indicated the south shore entrances have been out of channel/tailwater head differential criteria this week. Electricians are looking into SSE out of criteria readings.

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: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average of ~ 124.8 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
X			Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

ESBSs/VBSs:

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

Comments: None.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The collection channel is operating with all 14" orifices open. Additional 10" orifices are used to maintain optimal flume flow. The north makeup water valve is in local control due to an automatic control motor hardware failure. The PDW north vertical screen cleaner brush arm failed to raise to the stored position May 5. A TR was submitted May 6 and screen cleaner was returned to service at 1209 hours May 7.

Collection Facility: Collection for transport continues.

Transport Summary: Every day barging continues.

Spillway Weir: Spring flex spill operation continues including the operation of the RSW.

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
112.3	103.4	42.1	40.6	54.0	49.0	4.9	3.7

*Cooling water intake temperature.

Other

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

Invasive Species: No Siberian prawns were collected in the sample or euthanized during this reporting period.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam began April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
3-May	1100	0	0	0	0
4-May	1920	0	0	0	0
5-May	0630	0	0	0	0
6-May	1900	1	0	0	0
7-May	1000	0	0	0	0
8-May	1125	1	2	0	5
9-May	1800	0	0	0	0

Gas Bubble Trauma **(**GBT**)** Monitoring: No signs of GBT were observed this week.

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

Fish Rescue/Salvage: No fish salvage operations occurred at Lower Granite this reporting period.

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples.

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

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

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

This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The goals are to characterize migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they

migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2018 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT-tag Chinook and steelhead smolts for their Survival Study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transporting Fish from the Snake River to Optimize Transportation Strategy:

This study aims to build on the current database of information on the seasonality of smolt-to-adult return rates (SARs). LWG biological staff began collection for the early non-transport season Monday April 1. Fish are being collected Monday and Tuesday for tagging on Tuesday and Wednesday with the barge departing LWG on Thursdays. Collection will occur Sunday-Thursday with fish being tagged Monday-Friday once general every day fish transport begins.

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

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

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

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.