U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 10 to 16, 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**
10	05/14	0952	05/14	1016	ESBS camera inspections.
11	05/14	1019	05/14	1041	ESBS camera inspections.
12	05/14	1042	05/14	1102	ESBS camera inspections.
3	05/14	0957	05/14	1414	Transmission line 2 outage for BPA.
4	05/14	0957	05/14	1414	Transmission line 2 outage for BPA.
9	05/15	0903	05/15	1415	Station service tie in.
10	05/15	0905	05/15	1416	Station service tie in.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on May 10, 12 and 15. Adult fish counting 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 light near both exits with picketed leads being cleaned as required.

At the Oregon shore ladder exit, the general maintenance staff was called in to clean the picketed leads on May 11. The exit was in manual mode due to weir calibration issues from May 15 at 2033 to May 16 at 0900 hours.

At the Washington shore exit, a regulating weir alarm came in and was reset on May 10.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
	X		NFEW2 Weir Depth	≥ 8.0'	7.9' on May 10
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' on May 10 & 12
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 2.6 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 north powerhouse entrance was out of criteria points listed above may have been due to calibration drifts. The biologist asked for weir set point adjustments on May 14.

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.
X			Oregon shore Fish Pump 2, Blade angle: 22 to 24°
X			Oregon shore Fish Pump 3, Blade angle: 24 to 26°
X			OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pump outages for the week are recorded in Table 2 below.

Table 2. Fish Pump Outages.

Pump	Date	Time	Outage Description
3	05/13	1703 to 1713	Electrical bus switch.
3	05/15	0602 to 0611	Electrical bus switch.
2	05/15	0623 to 0636	Electrical bus switch.
2	05/15	1751 to 1756	Electrical bus switch.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. There were no interruptions in the schedule this week. Two power outages at the juvenile channel and facility for bus switching has no adverse effect on May 13 from 1703 to 1713 hours and May 15 from 0602 to 0611 hours.

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. 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. Large sticks were removed from the gatewell slots as needed.

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. The brush cycles for the screens in 6A and 13A slots were reset after alarms were tripped on May 13. The brush cycle for the screen in 10A slot was in and out of timer mode from May 12 to 15 due to multiple alarms. However, the brush cycle now remains in timer mode. Camera inspections in units 10, 11 and 12 revealed no problems on May 14.

Daily VBS differential monitoring continued. No high differentials were recorded. The VBSs in 9C and 9A slots were replaced on May 13 and 15, respectively. The unit was in standby or out of service during the replacements. The VBS in 1A slot was cleaned on May 16. Also, the VBSs in unit 4 were inspected, which includes cleaning. Only one smolt mortality was noted during these operations.

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 replacement, cleaning and inspections as required. Repairs to orifice attraction light were made as needed.

Though functional, the rectangular screen brush's raised limit switch was repositioned on May 15, with the brush out of service for approximately eight hours. The next day, the brush was out of service for approximately two hours for final adjustments and testing. The air burst system functioned satisfactorily during these outages.

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.

This week, 1,800 juvenile lamprey and 56,620 smolts were bypassed during secondary bypass.

Two sticks were removed from the "wye" at the junction of the secondary bypass line and the sample return to river line on May 10. No harm to fish was noted.

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
329.0	249.9	180.4	163.2	55.7	53.3	5.3	4.3

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.

Project engineers performed spillbay hoist inspections on May 14. At bay 1, the engineers found cracks in the hoist pillow block around the bolts. The request to remove the hoist from service occurred at 1337 hours. The bay was closed by 1430 hours. Project staff estimated it would take 13 weeks to buy a replacement block. However, the engineers believe the broken part can be braced. The bracing would be completed within the next couple of scheduled working days. Until then, after discussion with district personnel, the gate in bay 1 will be dogged off on the 5th stop. This operation was completed on May 15 at 1520 hours. With the current flow volume, this setting should closely match FPP spill patterns. Bay 1 was closed for a little over one day with the other bays making up the difference.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on June 4.

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 fluctuated and only a few pelicans were observed. The gulls did appear to be feeding.

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

Date	Zone	Gull	Cormorant	Tern	Pelican
May 10	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 11	Spill	0	0	0	1
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
May 12	Spill	18	0	0	1
	Powerhouse	0	0	0	1
	Outfall	23	0	0	0
May 13	Spill	23	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 14	Spill	1	0	0	1
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 15	Spill	7	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 16	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

In the bypass outfall zone, most of the gulls were roosting on the full flow pipe. 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 along with grebes numbering from one to 28 birds were observed. Moderate 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.

One grebe was removed from the gatewells at 11C slot.

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: None is occurring at this time. The University of Idaho with return to project in the near future to resume the adult lamprey passage study. The Yakima Nation removed four juvenile lamprey from the sample for an offsite passage study on May 11. Gas bubble trauma (GBT) examinations occurred twice during the week. No signs of GBT were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 10 – May 16, 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
1	5/15/19	1446	---	---	STS inspection and STS/VBS repair

Comments: Units 6, 5, 2, and 1 were removed from service one at a time for STS inspections on May 14 and 15.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 13, 14, and 16.

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	0.3, 0.6, 1.1 fps
	X		North Powerhouse Entrance (NFE-1) Weir Depth	≥ 8.0’ or on sill	7.3’
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.

The north powerhouse entrance weir depth was out of criteria on May 13, when the tailwater elevation was not as high as it had been. The tailwater level increased by the next day to bring the weir depth back into criteria. NFE-1

is in manual control to reduce the wear and tear on the operating machinery from the weir gate constantly adjusting to the fluctuating tailwater from spill.

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)	20 square yards
	X		Gatewell drawdown measured this week?	Not done due to time constraints
		X	Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-10%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
	X		STSs deployed in all slots and in service?
X	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)? 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 continuous-run mode on May 16, because of the presence of subyearling chinook with an average fork length of under 120 mm in the Ice Harbor juvenile fish sample.

Slot 3A STS was removed on May 7 after unit 3 was taken out of service, and one of the seams on the STS was found to be completely pulled apart. There were no fish seen inside the STS.

Unit 6, 5, 2, and 1 STSs and unit 1 VBSs were inspected on May 14 and 15. Slot 1B STS was observed to have a tear in the mesh and was separating substantially at one of the seams. 1A VBS was found to have numerous holes and tears in the mesh, in the bottom panel of the VBS. Unit 1 remained out of service after the inspection, and into the next reporting period, to accomplish the repairs. No fish were seen inside the damaged STS and VBS.

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 two of the fish in the May 13 sample and three of the fish in the May 16 sample was attributed to birds and fish.

Fish condition sampling results at Ice Harbor Dam:

Date: May 13

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	23	9	0	0
Chinook yearling unclipped	4	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	105	5	1	0
Steelhead unclipped	15	1	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	147	15	1	0

Date: May 16

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	31	1	0	0
Chinook yearling unclipped	6	0	0	0
Chinook subyearling clipped	2*	---	---	---
Chinook subyearling unclipped	2*	---	---	---
Steelhead clipped	78	7	0	0
Steelhead unclipped	26	0	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	145	8	0	0

*Fry in the sample are not examined

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring with the RSW operating..

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
142.1	106.9	103.8	76.8	56	53	4.8	4.4

*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 downstream of the spillway and powerhouse. Wildlife Specialists hazed the occasional cormorant 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 10	2	11	0	0	3
May 11	18	104	0	0	48
May 12	8	98	0	0	79
May 13	3	15	0	0	34
May 14	1	2	0	0	10
May 15	---	---	---	---	---
May 16	13	21	0	0	42

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. No Siberian prawns were collected in the sample at Ice Harbor Dam for this reporting period.

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 10 - 16, 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 2	5/10/2019	07:04	5/10/2019	11:40	Fish guidance efficiency study head gate change
Unit 3	5/10/2019	07:11	5/10/2019	11:40	Fish guidance efficiency study head gate change
Unit 6	5/10/2019	08:27	5/14/2019	12:29	Top Plate Pump Failure/Hub Oil Removal

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

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on May 10, 11, 12 and 15.

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:

Fishway Entrances and Collection Channel:

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

Comments: None.

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)	1275 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 30%
	X		Any oil seen in gatewells?	

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

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
X			STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	X		STSs inspected this week?
		X	STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: STS's were operating in cycle mode until 1500 on May 16 at which time they were changed to continuous-run mode due to average sub-yearling Chinook and sockeye lengths being less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

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

Transport Summary: Due to low fish numbers, every-day barge transport ended with the May 15 barge and alternate day barging began.

A total of 282,700 fish were collected with 236,322 fish being transported during this reporting period.

Spillway Weir: Spring spill began and the RSW went into service at 0001 on April 3.
The RSW was closed for barge loading at approximately 1700 hours on May 11 and remained closed until approximately 0800 on May 12. The issue appeared to be a miscommunication between operators during the shift change. For more details, see FPOM document, 19 LMN 06 MFR – Delayed Opening of RSW.

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
135.9	100.3	38.8	37.4	57.1	56.0	5.4	3.0

*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: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam. Gulls were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/10/2019	1245	0	0	0	0	0
5/11/2019	1205	0	0	0	0	0
5/12/2019	1215	0	0	0	0	0
5/13/2019	1230	10	0	0	0	1
5/14/2019	1300	6	0	0	0	0
5/15/2019	1130	4	0	0	0	0
5/16/2019	1215	12	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. Daily and total Siberian prawn counts at Lower Monumental Dam for this reporting period are reported below.

Date	Sample (euthanized)	Collection*
05/12/2019	1	199
Totals	1	199

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

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

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

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: May 10 – May 16, 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	05/13/19	07:18	05/13/19	13:40	Trash raking & VBS inspection
2	05/13/19	10:41	05/13/19	16:51	Trash raking & VBS inspection
3	05/13/19	13:43	05/13/19	17:01	Trash raking & VBS inspection
3	05/14/19	08:56	05/14/19	11:26	Trash raking
4	05/14/19	08:58	05/14/19	13:22	Trash raking
6	05/14/19	13:25	05/14/19	16:02	Trash raking
2	05/15/19	08:59	05/15/19	16:11	Brake maintenance

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on May 12, 14 and 16.

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 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	$\geq$ 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	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	4.6

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The May 14 inspection found the surface velocity near NPE at 4.6 fps, however the surface velocity near the SSE was 2.2 fps. 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 for Units 1, 2, 3, 4 and 6 were measured on May 16 and were in criteria. There is approximately 8,000 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

ESBS/VBS:

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

Comments: VBS differentials for Units 1, 2, 3, 4 and 6 were measured on May 16 and were in criteria. VBS/ESBS camera inspections on Units 1, 2 and 3 were conducted on May 13, no issues were seen.

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 in criteria. Daily collection for condition sampling began on April 23 at 07:00. Every day barge transport ended on May 15 with the first every other day barge departing on May 17.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 250,875 fish were collected, of which 232,779 were transported via barge. The descaling and mortality rates were 2.1% and 0.14% respectively. A total of 2 adult lamprey were removed from the separator, raceways, or sample and released one mile above the Dam at Little Goose Landing.

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

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
137.6	103.1	53.4	46.5	56.3	55.0	4.0	2.8

*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**
5-10	0800	0	0	0	0
5-11	1120	0	2	0	0
5-12	1345	0	1	0	0
5-13	1300	0	0	0	0
5-14	0730	0	0	0	0
5-15	0730	0	0	0	0
5-16	1200	0	1	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: No Siberian prawns were collected in the sample during this reporting period.
Gas Bubble Trauma (GBT): Gas bubble monitoring occurred on May 13. Personnel examined 100 fish of which 5 had signs of GBT.

Fish Rescue/Salvage: N/A

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: May 10-16, 2019

Turbine Operation

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

Comments: All units remained in service.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fishways May 11, 13, 15, and 16.

Fish Ladder:

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

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.7', 7.6', 7.5', 7.3'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.8', 7.6',7.6', 7.9
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: 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 extending down 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 head criteria. The control system screen indicated the south shore entrances have been out of channel/tailwater head differential criteria this week but the staff gauge reading say the opposite. A TR was put in for the electricians to investigate and correct the suspected calibration issue resulting in SSE out of criteria readings over the last couple weeks.

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 ~ 284 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: An unknown substance that did not test as a petroleum product has be intermittently observed in gatwell slot 6C.

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.

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

Transport Summary: The last every day barge departed Lower Granite May 15 with the first every-other-day barge departing May 17.

Spillway Weir: Spring flex spill operation continues and includes operation of the spillway weir.

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
145.0	109.2	46.3	41.2	53.5	52.2	4.2	3.8

*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 or euthanized in the sample this week.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
10-May	1650	0	0	0	0
11-May	1115	0	0	0	0
12-May	1315	0	0	0	0
13-May	1305	1	0	0	1
14-May	1445	0	0	0	0
15-May	1150	0	1	0	1
16-May	1255	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.