U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#11-2018

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: May 11 to 17, 2018

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	**Date**	**Time**	**Date**	**Time**	**Outage Description**
3	5/7	0606	5/16	1255	Cooling water strainer repair/Lubricant replaced.
6	5/14	1036	5/14	1631	Governor issue.
13	5/15	1000	5/15	1030	ESBS camera inspections.
14	5/15	1030	5/15	1100	ESBS camera inspections.
4	5/16	0733	5/16	0954	Trash rack cleaning.
7	5/16	0955	5/16	1111	Trash rack cleaning.
8	5/16	1113	5/16	1300	Trash rack cleaning.
10	5/16	1302	5/16	1434	Trash rack cleaning.
5	5/17	1007	5/17	1254	Trash rack cleaning.
6	5/17	1258	5/17	1341	Trash rack cleaning.
9	5/17	1344	5/17	1517	Trash rack cleaning.
11	5/17	1517	5/17	1601	Trash rack cleaning.

Comments: On May 16, TMT request a reduction in spill in order to reduce the dissolved gas levels at McNary. This request allows units to operation throughout the entire 1% range, and hold reserves above 1%.

Adult Fish Passage Facilities

McNary fisheries biologists performed adult fishways measured inspections on May 12, 13 and 16. Data from the temperature probes was downloaded on May 12. 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'	1.8' on May 13 & 0.6' on May 16

Comments: Debris loads were minimal to very light near the Oregon exit and light to heavy near the Washington exits. Picketed leads were cleaned at the Washington exit by the general maintenance staff as needed, including nights and the weekend. The majority of the debris was tumbleweeds. The high count station differentials observed on May 13 and 16 where resolved by cleaning the picketed leads. New incoming debris loads along the Washington shore line was light to moderate. In order to reduce the debris load along shoreline, the roving operator flushed the debris down the navigation lock as often as possible.

At the Oregon exit, tilting weir 335 tripped an alarm three times and was reset on May 13. Multiple exit alarms were tripped and reset on May 16. The traveling screen debris trough was cleaned as required.

At the Washington exit, multiple exit alarms were reset on May 16.

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 1.4 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
	X		WFE2 Weir Depth	≥ 8.0'	7.8' on May 16
	X		WFE3 Weir Depth	≥ 8.0'	7.8' on May 16

Comments: On May 17, the biologist observed a large volume of flow over WFEW1, which was in standby and raised, due to the high tailwater levels. The operator raise WFEW1, which returned the other two weirs to criteria.

Auxiliary Water Supply System:

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

Comments: On May 14, at 0859 hours, the PUD unit was removed from service for exciter replacement. The unit is scheduled to return to service on May 22. The PUD bypass has been functioning well.

Juvenile Fish Passage Facility

The sampling season continued, with alternating 24 hour days of secondary and primary bypass.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: The forebay debris load near the powerhouse dissipated with trash rack cleaning. Much of the debris was noted going over the TSWs. New incoming debris was minimal except along the Washington shore line as mentioned above. Debris accumulation along the spillway was very light to light.

The trash rack cleaning at units 4 through 11 on May 16 and 17 removed 90 yards of debris, which was mostly woody material and tumbleweeds. No fish were observed.

There are no problems to report in the gatewell slots.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

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

Comments: The brush cycles for the ESBSs in 1C and 2A slots remained in timer mode. There are no problems to report. With the backup camera, ESBSs in units 13 and 14 were inspected on May 15. No problems were found.

VBS differential monitoring occurred daily. No high differentials were measured. On May 16 and 17, three total VBSs were cleaned in units 11 and 12. Also, the screens in the units C slots were inspected, which includes cleaning. No fish were observed.

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

Yes	No	NA	Item	Number of orifices in service
X			Orifices operating satisfactory?	42
X			Dewatering and cleaning systems operating satisfactory? See note below.	

Comments: Orifice attraction lights and operator air leaks were replaced and repaired as required. Orifices were adjusted for VBS and trash rack cleaning as needed.

On May 15, the electrical staff installed a piece of metal on the transition screen brush beam to widen and lengthen the area required for the proximity switches to "find" the beam, which moves the brush between the four zones. On May 16, the transition brush was inadvertently parked wrong after testing resulting in a rectangular screen brush zone overlap alarm. The biologist felt the transition brush parked home to hard and was still concerned with the proximity switches finding the beam. With air zone 5 adequately keeping the screen surface clean, the transition brush will remain out of service.

Bypass Facility:

Yes	No	NA	Item
X			Sample gates on?
		X	PIT-tag sampling system on? (Remain off unless a study is occurring.)

Comments: The sample gates are only on during secondary bypass for sample collection. On May 12 and 16, the B side sample rate was set at 2.0 and 4.0 percent, respectively, to insure PNNL would have enough fish for tagging. The A side rate remained at 0.5 percent.

On May 14, the water leak below the B side PIT tag slide gate was plugged. The gate is not currently in use and will remain out of service until repairs can occur next winter. On May 17, a flume gasket just upstream of the B PIT tag gate was trimmed.

This week, 81,650 juvenile lamprey and 455,428 smolts were bypassed.

TSW Operations: The TSWs remain installed in spillbays 19 and 20. The hoist on crane 6 has been repaired. Hoist testing will occur on May 22. This is the crane normally attached to the TSW in bay 19.

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
497.6	435.1	371.8	281.8	54.3	52.6	3.2	3.0

Comments: Due to only one spillway crane being available, bay 2 remains dogged open at 4 stops. On May 12, it was noted in the FPP that MCN Table 7 required expansion for the flows that were occurring. The control room received an expanded table on May 15. As mentioned above, on May 16, TMT request a reduction in spill.

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

During the May 12 fish ladder inspection, the biologist found an unclipped yearling Chinook mortality on the deck near spillbay 1. This is the second year a mortality has been found in this location.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on June 5.

Avian Activity: Avian counts continued and are recorded in Table 3 below. Gulls appear to be feeding later in the day. Due to the high flow volumes, gulls and a large group of pelicans were noted outside the counting zones. Gulls observed at the outfall maybe actually feeding in the spill flow.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
May 11	Spill	3	0	0	0
	Powerhouse	0	0	0	0
	Outfall	10	0	0	0
May 12	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 13	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 14	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 15	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 16	Spill	3	0	0	0
	Powerhouse	0	0	0	0
	Outfall	2	0	0	0
May 17	Spill	3	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

An occasional osprey, gull, grebe flock or pelican was observed in the forebay. As many as 22 grebes have been observed. Pelicans, cormorants and gulls were roosting on the rocks by the Washington shore boat dock. The outfall hazing water sprinklers remain off due to high flows, which are currently cresting over the outfall pipe. On May 16, a new water sprinkler supply pump was installed. The bird distress calls deployed along the navigation lock wing wall have been functioning well. The calls have been adjusted weekly. USDA Wildlife Services continued with two shifts. Also, boating hazing occurred Monday through Thursday. Due to the flow volume, the boat has remained below the outfall pipe. Some afternoon boat hazing will begin next week.

Invasive Species: The next mussel station examinations will occur on May 20. No Siberian prawns were observed in the sample.

Fish Rescue/Salvage**:** On May 16, navigation lock tainter valve 1 was dewatered for contractor inspection. No fish were observed.

Research: GBT monitoring continued twice a week. The fish sampled on May 10 were reported on May 11. Two smolts exhibited signs of GBT. Both were collect May 10. On May 11, 13, 15 and 17, PNNL removed smolts from the samples, with the focus on steelhead. On May 12, they removed steelhead from the GBT sample. A total of 64 clipped and 48 unclipped steelhead smolts along with 100 clipped and 17 unclipped yearling Chinook smolts were collect for tagging as part of the spill to gas cap evaluation. The fisheries staff monitored the fish while they were being held at McNary. On May 11 and 13, the Yakima Nation removed 83 juvenile lamprey from the sample for tagging off site. The Yakima biologist has completed lamprey collection for this year.

Project: Ice Harbor
Biologist: Ken Fone
Dates: May 11 – May 17, 2018

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
2	4/25/16	0606	---	---	Runner replacement
4	12/17/17	1342	---	---	Investigate oil leak.

Comments: Units 6, 5, 3, and 1 were taken out of service one at a time for STS inspections on May 15 and 16. Unit 3 was noted to be operating a few megawatts above the 1% peak operating efficiency range on the May 16 and 17 fishway inspections. This was due to the GDACS program needing to be updated with the narrower operating efficiency range of unit 3 since it became a fixed-blade unit.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on May 14, 16, and 17.

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 (AWS) System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	38 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 to 5%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

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

Comments: The STSs remained in continuous-run mode due to the presence of sockeye and/or subyearling chinook with average fork lengths of less than 120 mm in the Ice Harbor juvenile fish sample. Unit 6, 5, 3, and 1 STSs were inspected on May 15 and 16. The STS mesh in gatewell slot 6B was found to be torn through the fasteners along one of the seams, creating a 4' long gap where the seam was separating. This STS was immediately removed and replaced with a spare STS. Fortunately, there were no fish found inside the torn STS.

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 three of the fish in the May 14 sample and five of the fish in the May 17 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: May 14

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	55	4	0	2
Chinook yearling unclipped	5	0	1	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	1	0	0	0
Steelhead clipped	73	5	0	5
Steelhead unclipped	22	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	1	0	0	0
Coho clipped	0	---	---	---
Coho unclipped	2	0	0	0
Total	159	9	1	7

Date: May 17

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	50	1	0	0
Chinook yearling unclipped	7	1	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	4	0	0	0
Steelhead clipped	51	8	0	5
Steelhead unclipped	26	3	0	2
Sockeye clipped	1	0	0	0
Sockeye unclipped	1	0	0	0
Coho clipped	0	---	---	---
Coho unclipped	2	0	0	0
Total	142	13	0	7

Removable Spillway Weir (RSW): Voluntary spill for fish passage, including spill through the RSW, is occurring.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
155.8	119.9	101.5	79.8	55	54	4.9	3.1

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The turbine cooling water strainers were inspected on May 15. A total of 4 clipped dead juvenile steelhead, 1 clipped dead juvenile chinook, 1 decaying juvenile chinook, 2 unidentifiable decaying fish, 1 live juvenile lamprey, 47 dead juvenile lamprey, 1 dead juvenile catfish, and 18 dead Siberian prawns were found.

Avian Activity: Cormorant and pelican numbers remained moderately high this week, while gull numbers were generally lower, with high variability in the numbers counted (see the table below). Most piscivorous birds were observed foraging downstream of the spillway and around Eagle Island. Contracted 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. The land-based hazing has been effective at moving birds out of zones adjacent to the dam. Boat-based hazing has been effective at dispersing birds out of downstream spillway zones.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
May 11	7	26	0	0	58
May 12	0	52	0	0	83
May 13	20	54	3	0	22
May 14	5	18	0	1	46
May 15	11	18	0	0	28
May 16	10	11	0	0	44
May 17	31	30	0	0	17

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. No Siberian prawns were collected in the Ice Harbor Dam sample for this reporting period.

Fish Rescue/Salvage: The one live lamprey recovered from the cooling water strainers was returned to the river in good condition.

Research: PNNL personnel continue trapping and tagging adult chinook ascending the south fish ladder by using the adult fish trap. The fish are being released back to the river at Levey Park and their movements tracked further upstream for a Little Goose Dam fish passage study.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: May 11 -17, 2018

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	12/10/2014		08/2018		Rehabilitation Overhaul
Unit 2	5/15/2018	0839	5/15/2018	1203	STS Inspections
Unit 3	5/15/2018	1208	5/15/2018	1453	STS Inspections
Unit 4	5/16/2018	0820	5/16/2018	1100	STS Inspections
Unit 5	5/16/2018	1245	5/16/2018	1430	STS Inspections
Unit 6	4/23/2018	0705	5/11/2018	11:18	Annual maintenance
Unit 6	5/14/2018	0817	5/15/2018	0831	CO2 Discharge During Relay Testing

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

There was an inadvertent CO2 discharge in Unit 6 during relay testing caused by a faulty Differential trip on May 14.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on May 11, 12, 13 and 16.

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’	

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 Channel/Tailwater Differential was out of criteria on the May 11 inspection with a differential reading of 0.7 feet. The powerhouse operator checked the system and found South Shore Entrance Weir SSE-1 had been left in manual operation mode. Returning the weir to automatic mode returned differential readings back into criteria.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
No		X	AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS Fish pump 1 is out of service for seized Wicket Gate Bushings. There is no current return to service estimate date.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	313 sq yd average
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 45%
	X		Any oil seen in gatewells?	

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 during this reporting period due to average sub-yearling Chinook and sockeye lengths being less than 120 mm.

Additional STS inspections were performed this week to recheck screen clips due to failures of STS screens found during the prior week's inspections.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: Collection into raceways for transport began at 0700 on April 23.

GBT monitoring sampling began on April 10.

Transport Summary: Every-day barge transport began on April 24. A total of 316,700 fish were collected, of which 316,577 were transported during this reporting period.

Spillway Weir: RSW went into service when Spring Spill began 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
151.4	112.8	72.0	30.4	53.0	52.2	3.7	2.0

*Scroll case temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 10. No live fish were recovered. Mortalities included 44 juvenile salmon, 3 juvenile steelhead, 28 juvenile lamprey and 1 smallmouth bass.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
5/11/2018	1100	0	0	0	0	0
5/12/2018	1300	1	0	0	0	0
5/13/2018	1230	2	0	0	0	1
5/14/2018	1215	0	0	0	0	0
5/15/2018	1230	2	0	0	0	0
5/16/2018	1245	1	0	0	0	0
5/17/2018	1200	1	0	0	0	0

Comments: Bird hazing efforts by USDA personnel began on April 2. Peak season extended hazing began on May 6.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on May 5.

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 during this reporting period.

Fish Rescue/Salvage: No fish rescue during this reporting period.

Research: No onsite research is in progress at this time.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: May 11-17, 2018

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	07/31/18	17:00	Spider and upper guide bearing repair.
6	05/14/18	08:27	05/14/18	08:42	Forced OOS unit 86 lockouts during P/H switching.
2	05/14/18	08:27	05/14/18	08:42	Forced OOS unit 86 lockouts during P/H switching.

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult Fishway on May 13, 14 and 17.

Fish Ladder: None.

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		

Fishway Entrances and Collection Channel: None.

Yes	No	Sill	Location	Criteria	Measurements
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	

Comments: Adult fishway cooling pump is currently operating in accordance to MOC 18 LGS 04. Adult fishway control system is currently operating in manual mode.

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: Gatewell drawdown differential measurements on units 1, 2, 3, 4 and 6 were taken on May 17 and were in criteria. There is approximately 225 square feet of floating woody debris currently inside the trash shear boom in the 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?
X			VBSs inspected this week?

Comments: VBS differential measurements on units 1, 2, 3, 4 and 6 were taken on May 17 and were in criteria.

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: Increased debris loads caused orifices 1A1 and 1A2 to plug, killing 226 juvenile salmon and steelhead (MFR 18 LGS 06). The limitorque motor that automatically adjusts weirs for water elevation failed upon watering up the juvenile fish collection system. A new limitorque has been ordered and is expected to be installed upon delivery.

Collection Facility: Juvenile fish facility is currently operating. Every day fish collection for daily condition monitoring and transport operations commenced on April 23.

Transport Summary: Daily barging commenced on April 24. The collection and transportation facility operated within criteria this report period. A total of 704,241 fish were collected, of which a total of 703,205 were transported via barge. The descaling and mortality rates were 1.3% and 0.2% respectively.

Spillway Weir: Spring spill operations began on April 03 in accordance to the Fish Passage Plan. Adjustable spillway weir crest height was set to the low crest elevation at 16:00 on April 08.

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
150.7	113.7	64.9	29.0	54.0	51.5	2.6	2.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted every other week.

Avian Activity: Average daily piscivorous bird counts by zone for the report period at Little Goose Dam.

Zone	Gull	Cormorant	Tern	Pelican	Grebe
Unmodified boat barrier	0	0	0	0	0
Modified boat barrier*	0	0	0	0	0
Forebay debris	0	0	0	0	0
Trash/shear boom	0	0	0	0	0
Forebay count	3	0	0	0	0
Tailrace count	0	0	0	0	0

*modified boat barrier section has weights and bird spikes removed.

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. No Siberian prawns were collected in the sample at Little Goose Dam for this reporting period.

Gas Bubble Trauma (GBT): GBT monitoring was performed on May 13. Personnel examined 100 fish of which, 2 were found to have symptoms of GBT.

Fish Rescue/Salvage: None.

Research: PNNL is currently monitoring hydrophones and associated equipment for an acoustic telemetry study.

Project: Lower Granite
Biologists: Elizabeth Holdren and Stephen Hampton
Dates: May 11-May 17, 2018

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**

Comments: None.

Adult Fish Passage Facility

Lower Granite and Anchor QEA staff inspected the adult fishway on May 11, 12, 13, and 16.

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 Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.2, 7.4, 7.5, 7.6
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.3, 7.3, 7.5, 7.5
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	
X		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	OOS
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: SSE-1 and SSE-2 out of criteria readings are being investigated.
Auxiliary Water Supply System:

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

X			AWS Fish Pump 3

Comments: AWS pump 2 is out of service for drive shaft bearing repair.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	159 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown 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: Primary dewaterer floor screen brushes, side screen brushes, and the pneumatic screen cleaners are being operated in manual mode by powerhouse operators due to mechanical and programing issues with the new system. Overflow weirs were returned to auto operation May 9. Problems are being investigated and troubleshooting the system for needed repairs is ongoing.

Collection Facility: Operational modifications continue as needed to address fish holding under the separator booth and the east sections of the porosity plate loosing water flow.

Transport Summary: Every day barge transport continues.

Spill/Spillway Weir: Spring spill operation continues at court ordered gas cap levels.

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
155.4	118.9	51.3	31.1	54.0	49.8	2.5	1.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A.

Invasive Species: No mussels were present during the May 6 inspection.

Siberian Prawn: No Siberian prawns were observed this week.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
5/11/2018	16:45	9	0	0	10
5/12/2018	14:00	1	0	0	1
5/13/2018	14:15	1	0	0	0
5/14/2018	13:30	0	0	0	0
5/15/2018					
5/16/2018	14:15	1	10	0	0
5/17/2018	17:18	2	1	0	10

Gas Bubble Trauma (GBT) Monitoring: Fish are collected from the separator and examined for GBT Thursdays. No symptoms of GBT were observed this week.

Adult Fish Trap Operations: Adult trap is operating Monday through Friday with a 28% sample rate.

Fish Rescue/Salvage: N/A

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification
Fish collected as part of the Lower Granite 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
Collection of adult steelhead kelt from Lower Granite juvenile separator for NPT rehabilitation program began April 1 with the first collection being worked up April 2. 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 2017 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 LGR tailrace.

National Marine Fisheries Service (NMFS) Transportation Study: NMFS staff is collecting and PIT-tagging yearling Chinook salmon and steelhead smolts for the Transportation Evaluation Study to compare smolt-to-adult returns of transported smolts to the smolt-to-adult returns of in-river migrating smolts.

PNNL System Survival Study

This study will evaluate the effects of increased spill on the passage and in-river survival of yearling Chinook salmon and juvenile steelhead migrating through the Snake and Columbia River hydro-system. The study will also evaluate the effects of increased spill on the passage of adult Chinook salmon and steelhead at Little Goose Dam during 2018 spring gas cap spill. Collection of yearling chinook and juvenile steelhead at Lower Granite began April 15.