

**U.S. ARMY CORPS OF ENGINEERS  
WALLA WALLA DISTRICT  
FISH FACILITIES WEEKLY REPORT  
#08-2018**

**Project: McNary**

Biologist: Bobby Johnson and Denise Griffith

Dates: April 20 to 26, 2018

**Turbine Operation**

Yes	No	Turbine Unit Status	Hard	Soft
	X	All 14 turbine units available for service. (See table & comments below for details).		
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS)

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
13	4/16	0610	4/25	0812	Headgate hydraulic leak.
14	4/20	0639	4/20	0701	Trash rack cleaning.
9	4/20	0704	4/20	0822	Trash rack cleaning.
6	4/20	0825	4/20	0938	Trash rack cleaning.
1	4/20	0938	4/20	1039	Trash rack cleaning.
1	4/23	0609	NA	NA	Cooling water strainer repair/Lubricant replaced.

Comments: The hard constraint began on April 1.

**Adult Fish Passage Facilities**

McNary fisheries biologists performed adult fishways measured inspections on April 22, 25 and 26. NOAA personnel performed their monthly inspection on April 24. Data from the temperature probes was downloaded on April 21. 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 very light to light near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as needed including the weekends.

On April 21 and 22, at the Oregon exit, weir 335 tripped an alarm and was reset.

On April 21, at the Washington exit, the regulating weir tripped an alarm and was reset. On April 23, a brief power outage occurred at the exit during switching. The ladder inspection points remained in criteria. Also, that day, a small log was removed from a stationary weir just downstream of the count station.

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 2.6 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: Washington ladder entrance weir WFE3 appeared to be out of calibration since April 22. The electrical staff has yet to determine the problem however, the weir remained in criterion.

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 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: There are no problems to report.

**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.
X			Trash rack differentials measured this week?	Everyday.
X			Trash rack differentials acceptable?	
X			Any debris seen in gatewells? (% coverage)	Large sticks.
X			Any oil seen in gatewells?	Hydraulic fluid in 13C slot.

Comments: The forebay debris load near the powerhouse remained minimal. New incoming debris was minimal. No debris has accumulated on the spillway.

The trash racks were cleaned at units 1, 6, 9 and 14 on April 20. There was 29 yards of woody material and tumbleweeds removed. No fish were observed in the debris.

On April 24, removal of hydraulic fluid from 13C slot was completed. The final estimate of gallons of hydraulic fluid lost has yet to be determined. During the week, large sticks and other woody material was removed from the 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: The brush cycle for the ESBS in 1C slot remained in timer mode. On April 20, the brush on the screen in 2A slot tripped an alarm and the brush cycle was reset. It appeared the brush cycles for screens in 2A and 2B slots were still incomplete. The issue was resolved for the screen in 2B slot on April 23. The brush cycle for the ESBS in 2A slot was switched to timer mode on April 26, resolving the issue. ESBS camera inspections will begin in mid-May.

VBS differential monitoring occurred daily.

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

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

Comments: On April 20, during the orifice exchange for trash rack cleaning, one high water alarm occurred, which quickly cleared. With the hydraulic fluid having been removed from 13C slot, on April 24, at 1530 hours, the orifice in 13A and 13B slots were opened. On April 25, at 0915 hours, the orifice in 13C slot was opened. Make up orifices were closed at unit 14 as required. Orifice attraction lights and operator air leaks were replaced and repaired as required.

On April 26, one unclipped steelhead smolt mortality was found on the side screen cleaner access platform. The “jump guard” was repositioned, which should resolve the problem.

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 April 22, at 1330 hours, the sample rate was switched from one to five percent to insure PNNL would have enough fish for tagging.

This week, 5,430 juvenile lamprey and 39,431 smolts were bypassed.

TSW Operations: The TSWs remain installed in spillbays 19 and 20. The hoist on crane 6 has been repaired. Hoist testing protocols have yet to be determined. 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
293.6	268.3	198.1	181.7	49.6	47.3	4.5	3.3

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

**Other**

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on May 1.

Avian Activity: Avian counts continued.

Table 3. McNary Project’s Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
April 20	Spill	2	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
April 21	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
April 22	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
April 23	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
April 24	Spill	25	0	0	0
	Powerhouse	0	0	0	0
	Outfall	7	0	0	0
April 25	Spill	10	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
April 26	Spill	15	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0

An occasional osprey, gull or small gull flock, pelican flock, small grebe flock, blue heron or cormorant was observed in the forebay. Two male loons were also noted. The outfall hazing water sprinklers have been operating well. The bird distress calls deployed along the navigation lock wing wall have been functioning well. The call frequency has been adjusted weekly. USDA Wildlife Services will begin a second shift on April 29 and boat hazing on April 30.

Invasive Species: The mussel station examinations on April 21 revealed no problems. No Siberian prawns were observed in the sample.

Fish Rescue/Salvage: None occurred.

Research: GBT monitoring continued twice a week. On April 23, PNNL collected 77 clipped and 11 unclipped steelhead smolts along with 38 clipped and 37 unclipped yearling Chinook smolts from the sample 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 April 27, the Yakima Nation will begin collecting juvenile lamprey from the sample for tagging off site.

**Project: Ice Harbor**

Biologist: Ken Fone

Dates: April 20 – April 26, 2018

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**Turbine Operation**

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
2	4/25/16	0606	---	---	Runner replacement
4	12/17/17	1342	---	---	Initially to investigate oil leak. Also fixing governor pump

Comments: None.

**Adult Fish Passage Facility**

Ice Harbor fish facility staff inspected the adult fishways on April 23, 25, and 26.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.3'	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.3'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head $\leq$ 0.3'	
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			South Shore Entrance (SFE-1) Weir Depth	$\geq$ 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	$\geq$ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0' – 2.0'	
	X		North Shore Entrance (NEW-1) Weir Depth	$\geq$ 8.0' or on sill	6.6'
	X		North Shore Channel/Tailwater Differential	1.0' – 2.0'	2.5'

Comments: Manually timed measurements of the velocity are being taken until the velocity meter can be calibrated.

The north shore entrance weir depth and channel/tailwater differential were out of criteria on April 25. The powerhouse operator was informed and he lowered NEW-1 weir to bring the readings into criteria. The weir is being operated in manual mode to reduce the wear and tear of the weir operating machinery trying to adjust to fluctuating tailwater levels from spill.

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)	4 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 to 12%
	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 with an average fork length of less than 120 mm in the Lower Monumental juvenile fish sample. STS's are not deployed in units that are out of service.

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 April 23 sample and six of the fish in the April 26 sample was attributed to birds.

Fish condition sampling results at Ice Harbor Dam:

Date: April 23

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	41	3	0	0
Chinook yearling unclipped	42	7	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	50	6	0	0
Steelhead unclipped	1	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	134	16	0	0

Date: April 26

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	39	2	0	1
Chinook yearling unclipped	19	2	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	78	10	0	3
Steelhead unclipped	13	2	0	2
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	149	16	0	6

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
103.5	91.2	91.9	81.6	52	49	3.6	2.8

\*Unit 1 scroll case temperature.

### Other

Inline Cooling Water Strainers: Unit 1, 5, and 6 cooling water strainers were inspected on April 24. There were 2 juvenile steelhead (1 clipped, 1 unknown), 3 juvenile lamprey, and 8 Siberian prawns (all mortalities) in the strainers.

Avian Activity: Gull, cormorant, and pelican numbers remained moderately high this week (see the table below). Most piscivorous birds were observed foraging downstream of the spillway, and roosting or flying by Eagle Island. Contracted land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing for 8 hours per day, 3 days per week, changed to 5 days per week starting on April 22. 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. The low bird numbers counted on April 25 coincided with the occurrence of boat-based hazing.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

<b>Date</b>	<b>Gulls</b>	<b>Cormorants</b>	<b>Caspian Terns</b>	<b>Grebes</b>	<b>Pelicans</b>
April 20	13	19	0	0	49
April 21	13	17	0	0	29
April 22	22	31	3	0	69
April 23	38	30	0	0	3
April 24	19	15	0	0	2
April 25	2	2	0	0	0
April 26	81	23	0	0	0

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. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are reported below.

<b>Date</b>	<b>Sample (euthanized)</b>	<b>Collection*</b>
April 23	0	0
April 26	0	0
Totals	0	0

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

Fish Rescue/Salvage: Unwatering activities that could involve fish rescue did not occur.

Research: On April 26, PNNL personnel began 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: April 20 - 26, 2018

**Turbine Operation**

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 1	12/10/2014		07/2018		Rehabilitation Overhaul
Unit 5	4/24/2018	1519	2/24/2018	1650	Aid Unit 6 stop log installation
Unit 6	4/23/2018	0705	5/11/2018		Annual maintenance / Blade seal

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 April 20, 21, 22 and 25.

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	$\geq$ 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		X	South Powerhouse Entrance (SPE-1) Weir Depth	$\geq$ 8.0' or on sill	
X		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		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: South Powerhouse Entrance weir (SPE-1) was on sill during the April 21, 22 and 25 inspections with readings of 7.7, 6.7 and 7.4 feet respectively.

South Powerhouse Entrance weir (SPE-2) was on sill during the April 21, 22 and 25 inspections with readings of 7.7, 6.7 and 7.5 feet respectively.

South Shore Entrance weir (SSE-1) was on sill during the April 21, 22 and 25 inspection with a reading of 7.7, 7.5 and 8.0 feet respectively.

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)	7 sq yd average
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?	

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:

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: Sampling for condition took place over 24 hour periods starting at 0700 on April 21. 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 230,099 fish were collected, of which 230,059 were transported from start of transport collection, April 23, to the end of 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
95.5	85.1	40.2	31.9	51.5	50.0	2.8	2.1

\*Scroll case temperatures.

### Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 14. Live fish included 3 juvenile steelhead and 2 juvenile lamprey. Mortalities included 39 juvenile salmon, 4 juvenile steelhead, 33 juvenile lamprey, 1 Siberian prawn and 7 unidentifiable fish.

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
4/20/2018	1300	11	0	0	0	0
4/21/2018	1100	10	2	0	0	2
4/22/2018	1130	7	0	0	0	1
4/23/2018	1100	10	0	0	0	0
4/24/2018	1300	2	0	0	0	0

Comments: Bird hazing efforts by USDA personnel began on April 2.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on April 1.

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 prawn were collected at Lower Monumental Dam for 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: April 20-26, 2018

**Turbine Operation**

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	04/14/17	14:11	07/31/18	17:00	Spider and upper guide bearing repair.
3	04/23/18	16:05	05/02/18	17:00	Forced out of service turbine guide bearing oil leak.

Comments: None.

**Adult Fish Passage Facility**

Little Goose fish facility and Anchor QEA staff inspected the adult Fishway on April 22, and 26.

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 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, 4, and 6 were taken on April 26 and were in criteria. There is approximately 300 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, 4, and 6 were taken on April 26 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: Primary dewatering structure weir elevation is currently operating in manual mode. 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 438,414 fish were collected. The descaling and mortality rates were 1.4% and 0.03% 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
93.2	83.9	36.3	26.6	53.3	50.6	3.2	3.1

\*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	1	0	0	0	0
Forebay count	17	5	0	0	0
Tailrace count	22	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 prawn were collected at Little Goose Dam for this reporting period.

Gas Bubble Trauma (GBT): GBT monitoring was performed on April 22. Personnel examined 100 fish of which, 2 were found to have symptoms of GBT.

Fish Rescue/Salvage: None.

Research: PNNL is currently installing temporary trolley pipes, hydrophones and associated equipment for an acoustic telemetry study.

**Project: Lower Granite**

Biologists: Elizabeth Holdren and Stephen Hampton

Dates: April 20-April 26, 2018

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**Turbine Operation**

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	

Comments: No unit outages to report.

**Adult Fish Passage Facility**

Lower Granite and Anchor QEA staff inspected the adult fishway on April 20, 21, 22, and 25.

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 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	$\geq$ 8.0'	
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0'	7.9
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
X		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	OOS
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: SSE-2 was out of criteria readings were due to fish ladder control system tailwater elevation sensor position measuring an area where unit 1 operation creates a boil about one foot higher than the actual tailwater elevation. Unit 1 sensor has been out of service since the fish ladder control system was installed.

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)	37.5 yd <sup>2</sup>
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	<1%
	X		Any oil seen in gatewells?	

Comments: None

ESBSs/VBSs:

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

Comments: None

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: Floor screen brushes and side screen brushes are being operated in manual mode due to mechanical issues with the new system that are being investigated and need to be repaired.

Collection Facility: Collection for transport began at 0700 hours April 23. The facility is also collecting for 24 hour condition sampling. Operational modifications continue as needed to address fish holding under the separator and the east sections of the porosity plate losing water flow. Granite biologists began making changes in flume flows by adjusting the secondary dewaterer when the problem was identified. Flows were increased using the secondary dewaterer to flush fish holding in the large eddy behind the east side of the hydraulic jump to the separator multiple times per day until the facility began 24/7 operation with the raised weirs on April 12. Flows were incrementally increased due to uncertainties of how quickly the new bypass system would respond to changes and the need to make operational changes outside hydraulic designs recommendations to flush fish through. Fish holding behind the east side of the hydraulic jump and the east side of the porosity plate losing flow are both issues that will require design, mechanical, and operational modifications for a permanent fix.



Transport Summary: Lower Granite general transport season began with the first transport barge departing Lower Granite April 24.

Spill/Spillway Weir: RSW spill operation began at 0001 hours March 25 to provide fish passage due to delay in JBS operation. Spring spill began at 0001 hours April 3 with spill 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
97.2	88.1	45.1	35.4	51.9	48.9	3.6	3.0

\*Cooling water intake temperature.

### Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected April 26. Mortalities included 24 juvenile lamprey and 10 unidentifiable salmonids.

Invasive Species: No mussels were present during the April 3 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
4/20/18	1400	19	0	0	0
4/21/18	1200	11	0	0	0
4/22/18	1500	16	0	0	0
4/23/18	1500	5	0	0	0
4/24/18	No Data Collected				
4/25/18	1421	3	2	0	0
4/26/18	1345	3	4	0	0

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 Study: NMFS staff is collecting and PIT-tagging Chinook salmon and steelhead smolts for their in-river survival study to compare smolt-to-adult returns of in-river migrating smolts to the smolt-to-adult returns of transported smolts.

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 Lower Granite Dam (LWG) Post Construction Evaluation of the Juvenile Bypass System at Lower Granite Dam: This evaluation includes travel times through the bypass system, determining condition of fish that have passed through the bypass, and testing the feasibility of using Sensor Fish in future bypass evaluations. Yearling Chinook raised at PNNL from Leavenworth hatchery were released into gateway slots 1a and 5a and allowed to move through the system. This evaluation began April 5 and concluded April 12.

PNNL System Survival Study: This study is evaluating 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 for tagging yearling Chinook and juvenile steelhead for this study at Lower Granite began April 15.