U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 12 to 18, 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**
2	04/12	0625	04/12	0950	Semi-annual maintenance & ESBS installation.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 12, 14 and 16. Adult fish counting continued by video review. The fish count data is being faxed to the Fisheries Field Unit.

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 near the Oregon and Washington exits. On April 17 and 18, respectively, scheduled maintenance was performed on the Oregon exit crane and weirs. Due to reduced water clarity, the Oregon count station back board was moved in on April 12.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			North Oregon Entrance Head Differential	1.0' – 2.0'	
X			NFEW2 Weir Depth	≥ 8.0'	
	X		NFEW3 Weir Depth	≥ 8.0'	7.9' on April 14.
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
X			SFEW1 Weir Depth	≥ 8.0'	
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' on April 14 and 16.
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 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 ladder was out of criteria points listed above could be due to calibration drifts. The control system panel view by the south powerhouse entrances was replaced this week but has not yet been activated.

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

*Comments: On April 18, from 2040 to 2210 hours, the Wasco County PUD unit was off line due to a temperature issue. The bypass functioned satisfactorily during this outage.

Juvenile Fish Passage Facility

The sampling season consisting of alternating days of primary and secondary bypass continued. There were no interruptions in the schedule.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to very 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. There was minimal debris at the spillway. No trash racks were cleaned. On April 15, woody material (a few sticks) was 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: On April 12, ESBSs were installed in unit 2, completing installation. On April 17 and 18, the brush cycle for the screen in 13A slot was reset multiple times. Finally, the cycle was switched to timer mode. The ESBS brush cycle program was evaluated this week. Camera inspections will begin in about month.

Daily VBS differential monitoring continued. No high differentials were recorded and no screens were cleaned.

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 rehabilitation continued. Area lighting was repaired as required. There are no issues with the channel systems to report.

Bypass Facility:

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

Comments: The sample gates were operated on secondary bypass days. The PIT-tag system will remain out of service as there are no studies requiring its use. The electrical staff continued to resolve lighting issues. The full flow flume covers behind the separator were repainted and the flume barriers used during primary bypass were rebuilt.

This week, 57,100 juvenile lamprey and 64,350 smolts were bypassed during secondary bypass.

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

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
273.4	200.2	170.0	128.6	48.5	47.7	4.0	1.0

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

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on May 7.

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

There was very little activity in the powerhouse zone. In the spill zone, cormorants and pelicans were observed in very low numbers and gulls were gradually increasing.

In the bypass outfall zone, most of the gulls were roosting on the full flow pipe, though some were feeding. Occasionally, cormorants and pelicans were observed.

The laser being used to "haze" the outfall was on during all outfall observations except on April 15 and 16. These off days were to be part of a block study. However, restarting the laser turned out to be a problem so the decision was made to leave the laser on as 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.

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited. USDA Wildlife Services will begin the first hazing shift on April 21.

In the forebay zone, an occasional osprey, tern or blue heron along with small groups of grebes, cormorants, gulls or pelicans were observed. Fairly large numbers of pelicans, cormorants and gulls were noted roosting outside the zone along the Washington shore line. Most birds appear to be staging at this time.

Table 3. McNary Project's Daily Tailwater Avian Counts.

Date	Zone	Gull	Cormorant	Tern	Pelican
April 12	Spill	3	1	0	2
	Powerhouse	2	0	0	0
	Outfall	2	1	0	0
April 13	Spill	6	0	0	0
	Powerhouse	0	0	0	0
	Outfall	6	0	0	0
April 14	Spill	12	0	0	1
	Powerhouse	0	0	0	0
	Outfall	10	0	0	1
April 15	Spill	1	0	0	0
	Powerhouse	0	0	0	0
	Outfall	11	1	0	0
April 16	Spill	9	0	0	0
	Powerhouse	0	0	0	0
	Outfall	22	0	0	1
April 17	Spill	40	0	0	1
	Powerhouse	0	0	0	0
	Outfall	21	0	0	0
April 18	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	11	0	0	0

Invasive Species: The next mussel station examinations will occur in late April. 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. Gas bubble trauma (GBT) examinations occurred on April 12 and 16. During the examinations on April 12, injuries were noted on about 20 percent of the fish examined. On April 15, two new fittings were installed in the separator to wet lab transport line. During the next examination, no further injuries were noted. No signs of GBT were observed this week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 12 – April 18, 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**
2	4/25/16	0606	---	---	Runner replacement
4	9/20/18	1619	---	---	Investigate for possible oil leak
6	4/17/19	1000	4/17/19	1408	STS inspection
6	4/18/19	1128	4/18/19	1531	Repair TW6 transformer cooler #2
5	4/18/19	1230	4/18/19	1350	Tap the hub to check for oil
5	4/18/19	1802	4/18/19	1824	Improperly positioned interlock device

Comments: Unit 3 was noted to be operating a few megawatts above the 1% peak operating efficiency range on the April 15 fishway inspection. 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 April 15 and 18. However, the lower south fish ladder was not inspected, since all of the south shore AWS pumps were shut off to support the repair of diffuser valve #12 (see below).

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’	0.2’

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
---	---	---	South Shore Entrance (SFE-1) Weir Depth	$\geq$ 8.0’ or on sill	
---	---		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
---	---		South Shore Channel Velocity	1.5 – 4.0 fps	
---	---	---	North Powerhouse Entrance (NFE-1) Weir Depth	$\geq$ 8.0’ or on sill	
---	---		North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-1) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The depth over the weirs in the upper south fish ladder was discovered to be well below criteria on April 14. The upper diffuser valve #12 would not operate to provide more water. In order to access diffuser valve #12, the upper ladder was unwatered on April 16. The operating stem was found to have become detached from the valve. Repairs were made and the south fish ladder was returned to full operation on April 19 at 1530 hours. See the document MFR 19 IHR 06 for more details about the event.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
0 pumps	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: All of the south shore AWS pumps were shut off on April 14 at 0655 hours in preparation for unwatering the upper south fish ladder for the diffuser valve #12 repair. On April 19, at 1530 hours, the pumps were turned on to return the ladder to normal operation.

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)	3 square yards
	X		Gatewell drawdown measured this week?	Staff unavailable due to unwatering upper south fish ladder
		X	Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-5%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
	X		STSs deployed in all slots and in service?
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: STS inspections were attempted on April 17. However, the STS could not be seen at all with the underwater video camera because of the high water turbidity. Deploying the video camera with the extremely poor visibility puts the camera at risk for becoming entangled in the rotating STS. With the continued turbid water conditions, STS inspections will not be attempted again until the next scheduled inspection in May.

STS operation was switched to continuous-run mode on April 18, because of the presence of a subyearling chinook fry in the April 18 fish sample.

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.

Fish condition sampling results at Ice Harbor Dam:

Date: April 15

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	27	0	0	0
Chinook yearling unclipped	12	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	87	0	0	0
Steelhead unclipped	7	0	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	133	0	0	0

Date: April 18

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	52	1	0	0
Chinook yearling unclipped	28	0	0	0
Chinook subyearling clipped	---	---	---	---
Chinook subyearling unclipped	1*	---	---	---
Steelhead clipped	80	2	0	0
Steelhead unclipped	16	3	0	0
Coho clipped	---	---	---	---
Coho unclipped	---	---	---	---
Sockeye clipped	---	---	---	---
Sockeye unclipped	---	---	---	---
Total	177	6	0	0

*Fry in the sample are not examined.

Removable Spillway Weir (RSW): Voluntary spill for fish passage 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
147.1	108.9	94.2	79.8	48	47	2.0	0.5

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey will occur later this month.

Avian Activity: There were relatively low numbers of piscivorous birds counted around the project, except on April 14 (see the table below). Land-based hazing of piscivorous birds for 16 hours per day is occurring. Boat-based hazing is occurring for 8 hours per day, 3 days per week. Hazing has been effective in disrupting and dispersing gulls and cormorants that are foraging in the water on the north side of the navigation lock downstream guide wall and coffer cells.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 12	6	9	0	2	6
April 13	3	5	0	0	1
April 14	31	98	0	1	40
April 15	4	11	0	0	0
April 16	18	10	0	0	0
April 17	---	---	---	---	--
April 18	13	12	0	0	0

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Date	Sample (euthanized)	Collection*
April 15	2	2
April 18	1	1
Totals	3	3

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

Fish Rescue/Salvage: During the unwatering of the upper south fish ladder for the repair of diffuser #12, most of the fish were evacuated down to tailwater level in the ladder. SFE-1 and NFE-1 entrances were left open so fish could volitionally leave the lower ladder. Approximately 50 smolts (mostly steelhead) were netted out of the count station pool when the water level got too low to safely hold them there, and they were released to the river via the juvenile fish bypass pipe. There were at least 75 smolts (mostly steelhead) that died from the stress of the ladder unwatering and fish evacuation/rescue operation (see MFR 19 IHR 06).

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: April 12 - 18, 2019

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 1	4/16/2019	11:02	4/16/2019	13:15	Fish guidance efficiency equipment replacement dive
Unit 1	4/17/2019	12:00	4/17/2019	12:00	Trash rack cleaning
Unit 2	4/16/2019	11:02	4/16/2019	13:15	Fish guidance efficiency equipment replacement dive
Unit 2	4/17/2019	07:00	4/17/2019	13:30	Trash rack cleaning
Unit 3	4/16/2019	11:02	4/16/2019	13:15	Fish guidance efficiency equipment replacement dive
Unit 3	4/17/2019	12:10	4/17/2019	15:50	Trash rack cleaning
Unit 3	4/18/2019	09:45	4/18/2019	16:30	Trash rack cleaning
Unit 4	4/17/2019	12:10	4/17/2019	15:50	Trash rack cleaning
Unit 4	4/18/2019	09:45	4/18/2019	16:30	Trash rack cleaning

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

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on April 12, 13, 14 and 17.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.5’	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head $\leq$ 0.5’	
X		South Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

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

Comments:
South Shore Entrance weir (SSE-1) was out of criteria during the April 13 and 14 inspections with readings of 7.9 and 5.8 feet respectively. The operator was informed and adjusted the system.
South Shore Channel/Tailwater Differential was out of criteria during the April 12, 13 and 17 inspections with readings of 2.3, 2.1 and 2.3 feet respectively. This was caused by an automation error due to high tail water and spill levels.

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: AWS Fish pump 1 was out of service for seized Wicket Gate Bushings. The pump returned to service at 1630 on April 9.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	255 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 50%
	X		Any oil seen in gatewells?	

Comments: Gatewells 2B, 2C and 3A were dipped to remove woody and wheat stack debris on April 15.
Trash racks for Units 1, 2, 3 and 4 were cleaned on April 17 and 18.

STSs/VBSs:

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

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: Every other day fish condition sampling began at 0700 on March 8. A total of 256,000 fish were collected with 255,998 fish bypassed back to the river during this reporting period.

Transport Summary: No transport at this time.

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

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
136.4	101.7	41.7	40.6	48.3	46.1	1.4	0.2

*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
4/12/2019	1215	2	0	0	0	0
4/13/2019	1225	2	0	0	0	0
4/14/2019	1245	2	0	0	0	1
4/15/2019	1230	1	0	0	0	0
4/16/2019	1300	0	0	0	0	0
4/17/2019	1230	0	0	0	0	0
4/18/2019	1200	2	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 April 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 at Lower Monumental Dam for this reporting period.

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

Research: PNNL is installing equipment needed for the Fish Guidance Efficiency Study, which is scheduled to begin approximately April 20, 2019.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: March April 12-18, 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
3	04/13/19	22:40	04/14/19	10:30	ESBS Brush Fault

Comments: Little Goose turbine operating range hard constraint began on April 01. An ESBS cleaning brush in Unit 3 failed on April 13. The Unit was forced out of service until repairs were made on April 14.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on April 14, 16 and 17.

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’	7.9
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	1.2

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. The April 16 inspection found SSE-1 weir depth out of criteria, measuring 7.9 feet. Surface velocity measurements were 1.2 fps at the south shore area on April 17. Adjustments were made and the fishway is in criteria. Subsurface water velocity was measured near NPE on March 19 using a Rickly velocity meter and averaged 2.8 feet per second.

Auxiliary Water Supply System:

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

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

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

Comments: Trash rack differentials were measured on April 18 and were in criteria. There is approximately 8,300 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 were measured on April 18 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

Collection Facility: The juvenile bypass system is currently operating. Collection for condition sampling began on April 01 at 07:00. Sampling is occurring every other day with the first sample on April 02.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 447,351 fish were collected, of which 447,290 were by-passed back to river. The descaling and mortality rates were 0.2% and .01% respectively. There were no adult lamprey removed from the separator this report period. Collection for fish transport will begin on April 23 with the first barge departing Little Goose on April 24.

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
132.8	100.8	48.4	47.1	49.4	46.8	1.7	0.7

*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
4-12	0830	4	1	0	0
4-13	0730	15	1	0	0
4-14	0800	9	2	0	0
4-15	1330	11	6	0	0
4-16	1230	0	0	0	0
4-17	0800	0	6	0	0
4-18	0730	0	2	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: N/A

Date	Sample	Collection*
4-12	1	100
4-13	0	0
4-14	0	0
4-15	0	0
4-16	0	0
4-17	0	0
04-18	0	0
Totals	1	100

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

Gas Bubble Trauma (GBT): Gas bubble monitoring began on April 15. Personnel examined 100 fish of which only 1 had signs of GBT.

Fish Rescue/Salvage: N/A

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: April 12-18, 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 Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
6	15-Apr	0700	16-Apr	1045	Governor relay repair valve leak
1	17-Apr	0659			Head cover issues

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fishways April 6, 7, 8, 10, and 11.

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'	Diff. 14 issues
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: The failed relay timer for Diffuser 14 was repaired April 16 with the gate returned to auto mode.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 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: Out of criteria reading were likely due to fish ladder control systems inability to adjust to tailwater conditions.

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: Fish pump 1 is OOS for lower guide repair. Fish pump 3 shutdown between 2243-2250 April 9 due to restricted cooling water flow as a result of river water turbidity and debris. Potable water was used as cooling water to return pump 3 to operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	~ 60.7 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials 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: The collection channel is operating with 18 orifices open. The north makeup water automatic control is being operated in local due to a valve motor hardware failure.

Collection Facility: The collection facility is in secondary bypass mode with daily 24-hour condition sample occurring.

Transport Summary: The second research barge departed LWG April 18 with about 40,124 smolts transported as part of NMFS transport study.

Spillway Weir: Spring flex spill operation continues.

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
135.0	102.2	45.8	41.7	48.0	44.5	2.5	0.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not inspected this reporting period.

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
12-Apr	1554	10	0	0	0
13-Apr	1350	28	1	0	0
14-Apr	1330	32	0	0	0
15-Apr	1838	27	0	0	0
16-Apr	1305	9	0	0	0
17-Apr	1249	18	0	0	0
18-Apr	1320	10	0	0	0

Gas Bubble Trauma (GBT) Monitoring: First GBT sample was collected from the fish entering the separator April 18 with no signs of GBT observed.

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

Fish Rescue/Salvage: No fish salvage occurred during 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.