U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#09-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 26 to May 2, 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**
4	04/28	0729	04/29	1321	DC ground issue.
2	04/29	0719	04/29	0753	Trash rack cleaning.
10	04/29	0753	04/29	0814	Trash rack cleaning.
11	04/29	0814	04/29	0827	Trash rack cleaning.
12	04/29	0827	04/29	0852	Trash rack cleaning.

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on April 26, 28 and 30. Adult fish counting continued by video review. The fish count data is being faxed to the Fisheries Field Unit. The fish counting contractor will begin work on May 9.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
	X	Oregon Exit	Head over weir 1.0’ to 1.3’	0.9’ on April 30.
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. On April 26, the general maintenance staff cleaned the Oregon exit picketed leads as the count station differential was 0.5 feet.

At the Oregon exit, on April 28, exit weir 335 tripped an alarm and was reset. On April 29, there was a brief power outage for an electrical feed exchange for 10 minutes at 1000 hours. The low head over weir reading reported on April 30 may have been related to this outage. The operators immediately reset the exit.

At the Washington shore exit, on April 28, an exit alarm came in, which was reset.

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 26.
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 2.0 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: The Oregon shore north powerhouse entrance was out of criterion point reported on April 26 may have been due to calibration drifts.

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: There are no problems to report.

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. Trash racks were cleaned in 2A, 10A, 11A and 12A slots on April 29. There were 2.5 yards of debris removed and no fish mortalities noted.

There were no problems to report.

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

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

Comments: ESBSs are installed in all units. The brush cycles for the screens in 6A, 8A, 8C and 13A slots remained in timer mode. On April 29, the ESBS controller panel view for unit 10 read "no nodes found". The control room operator immediately resolved the issue. On April 30, the brush cycles for the screens in 1A, 6A and 13A slots were reset after tripping alarms. Camera inspections will begin on May 7.

Daily VBS differential monitoring continued. No high differentials were recorded. On April 29, one VBS was cleaned in 11C slot. Also, the VBSs in units 10 and 12 were inspected, which includes cleaning. No fish mortalities were noted.

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

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

Comments: Orifice valve operator rehabilaiton continued. Orifices were adjusted as required for trash rack cleaning, VBS cleaning and VBS inspections as required. During the orifice exchanges, low water alarms occurred. Proper orifice operation procedures were revived with the staff.

There are no problems to report.

Bypass Facility:

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

Comments: The sample gates were operated only when in secondary bypass. The PIT tag system will remain out of service as there are no studies requiring its use.

This week, 14,800 juvenile lamprey and 90,300 smolts were bypassed during secondary bypass.

On May 1, the drive cover for the B side sample tank crowding device was repaired and the facility weather station was deployed.

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
320.2	253.1	180.3	165.9	51.6	50.4	2.6	1.6

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, gull numbers were fluctuating and only an occasional pelican was observed. A loon or merganser may have been present. The gulls did appear to be feeding.

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

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

The bird distress calls remained deployed along the navigation lock wing wall. Roosting on the wall has been very limited. USDA Wildlife Services began the second hazing shift on April 28. The first of four boat hazing trips during the week occurred on April 29.

In the forebay zone, an occasional osprey or pelican, along with small groups of grebes or cormorants 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 26	Spill	30	0	0	0
	Powerhouse	0	0	0	0
	Outfall	30	0	0	0
April 27	Spill	5	0	0	0
	Powerhouse	0	0	0	0
	Outfall	10	0	0	0
April 28	Spill	22	0	0	0
	Powerhouse	0	0	0	0
	Outfall	34	0	0	0
April 29	Spill	3	0	0	5
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0
April 30	Spill	1	0	0	0
	Powerhouse	0	0	0	0
	Outfall	14	0	0	0
May 1	Spill	0	0	0	0
	Powerhouse	0	0	0	0
	Outfall	0	0	0	0
May 2	Spill	1	0	0	0
	Powerhouse	0	0	0	0
	Outfall	1	0	0	0

Invasive Species: The mussel station examinations on April 28 revealed no problems. 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. On April 29, the Yakima Nation removed 32 juvenile lamprey from the sample for an offsite passage study. Gas bubble trauma (GBT) examinations occurred twice during the week. No signs of GBT were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 26 – May 2, 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	5/2/19	1400	Runner replacement
4	9/20/18	1619	---	---	Investigate for possible oil leak

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on April 29, 30, and May 1.

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	1.1, 0.8, 1.3 fps
X			North Powerhouse Entrance (NFE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
X			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.8

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

The north shore channel/tailwater differential was below criteria on April 29. The main cause was the NEW-1 entrance weir being in manual mode and needing to be partially raised to compensate for the higher tailwater elevation.

Auxiliary Water Supply (AWS) System:

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

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

North shore AWS pump #2 tripped off on overload on April 27 at 1108 hours, due to the impeller becoming jammed up with debris. North shore AWS pump #3 was started in place of pump #2 at 1115 hours on April 27. The debris was cleared out and pump #2 was returned to service at 1244 hours on April 30

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	28 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-5%
X			Any oil seen in gatewells?	6C

Comments: An oil sheen was observed in gatewell 6C on May 2. The amount of oil was estimated to be less than 1 cup. Oil absorbent socks were deployed in the gatewell slot. The appropriate agencies were notified about the incident. The source of the sheen is being investigated.

STSs/VBSs:

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

Comments: STSs are operating in continuous-run mode, because of the presence of subyearling chinook fry in the Ice Harbor and/or Lower Monumental juvenile fish samples.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: None.

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

Fish Sampling: Sampling is occurring on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. The cause of the descaling observed on five of the fish in the April 29 sample was attributed to birds, fish, and lamprey.

Fish condition sampling results at Ice Harbor Dam:

Date: April 29

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	81	4	0	0
Chinook yearling unclipped	13	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	35	4	0	0
Steelhead unclipped	12	1	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	141	9	0	0

Date: May 2

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	67	1	0	0
Chinook yearling unclipped	33	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	44	3	0	0
Steelhead unclipped	12	0	0	0
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Total	156	4	0	0

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
158.9	111.4	105.3	73.7	53	52	3.0	1.6

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey occurred on April 25. A total of 123 juvenile lamprey, 1 juvenile chinook, 2 juvenile steelhead, and 79 Siberian prawns were found, all of which were mortalities except for two of the lamprey. The two live lamprey were released to the river in good condition.

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

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 26	10	11	0	2	16
April 27	---	---	---	---	---
April 28	25	29	0	0	41
April 29	0	8	0	0	16
April 30	0	3	8	0	5
May 1	0	22	0	0	2
May 2	4	15	0	0	19

Invasive Species: No new exotic species have been found.

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

Fish Rescue/Salvage: None.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: April 26 – May 2, 2019

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	4/26/2019	07:03	4/26/2019	12:09	Fish guidance efficiency study head gate change
Unit 3	4/26/2019	06:56	4/26/2019	12:09	Fish guidance efficiency study head gate change

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 26, 27, 28 and May 2.

Fish Ladder:

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

Comments:

Fishway Entrances and Collection Channel:

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

Comments:
South Shore Entrance weir (SSE-1) was out of criteria during the April 26, 27 and May 2 inspections with readings of 7.6, 7.8 and 7.0 feet respectively. The operators were informed.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			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)	1230 yd^2
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?	

Comments: Gatewells were dipped for debris on April 30.

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 ended at 0700 on April 23. Collection into raceways for transport began at 1500 on April 23.

Transport Summary: A total of 656,700 fish were collected with 654,864 fish being transported and 1,394 fish bypassed back to the river during this reporting period. On April 27th, the B side of the facility was switched to secondary bypass for one hour from 0500-0600 due to a stuck raceway loading valve and inability to switch raceways to avoid going over the holding capacity.

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
150.2	104.3	48.3	36.4	51.4	51.0	2.2	1.3

*Scrollcase temperatures.

Other

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

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
4/26/2019	1230	2	0	0	0	0
4/27/2019	1100	5	0	0	0	0
4/28/2019	1100	20	0	0	0	0
4/29/2019	1230	5	0	0	0	1
4/30/2019	1100	0	0	0	0	0
5/1/2019	1230	1	0	0	0	0
5/2/2019	1130	4	0	0	0	0

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

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on 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 daily sample at Lower Monumental Dam for this reporting period.
Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: PNNL started collecting data for their Fish Guidance Efficiency study 20 April.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: April 26 – May 02, 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

Comments: None.

Adult Fish Passage Facility

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

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head $\leq$ 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’	7.1, 7.3, 6.5
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.6, 7.7, 6.9
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	5.9
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during spring spill. All inspections found SSE weir depth out of criteria. The May 02 inspection found NSE-2 weir depth out of criteria. 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 May 02 and were in criteria. There is approximately 9,000 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

ESBS/VBS:

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

Comments: VBS differentials were measured on May 02 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. Daily collection for condition sampling and transport began on April 23 at 07:00 with the first barge departing on April 24.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 762,977 fish were collected, of which 762,084 were transported via barge. The descaling and mortality rates were 2.2% and 0.1% respectively. There were no adult lamprey removed from the separator or this report period.

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

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
150.5	105.8	61.5	46.6	51.1	50.6	2.6	1.8

*Ladder temperature.

Other

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-26	0930	10	4	0	0
4-27	0800	3	4	0	0
4-28	1115	32	5	0	0
4-29	1315	6	8	0	0
4-30	0800	5	0	0	0
5-1	1224	15	7	0	0
5-2	1224	8	0	0	0

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: No Siberian prawns were collected in the sample during this reporting period
Gas Bubble Trauma (GBT): Gas bubble monitoring began on April 29. 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 26- May 2, 2019

Turbine Operation

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

Comments: Units were rotated out of service April 28, 29, and 30 for ESBS inspections.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fishways April 26, 28, and 29. The adult fish ladder was dewatered from 1200-1615 hours May 2 for fish count window backboard bracket repair. Diffuser 14 was left open to provide about 0.5 feet of flow down the ladder during repairs.

Fish Ladder:

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

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
X			South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	Reading of 7.9'
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	
			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: None.
Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
No		Lower guide repair	AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS pumps were removed from service from 1230 hours May 1 until 1624 hours May 2 for fish count window backboard bracket repair.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average of ~ 166.3 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 all 14" orifices open and an additional three 10" orifices open in unit 6 gatewells. The north makeup water valve is in local control due to an automatic control motor hardware failure.

Collection Facility: Collection for transport continues.

Transport Summary: Every day barging continues.

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
157.2	103.4	52.0	41.2	50.0	49.0	3.9	2.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: The turbine unit cooling water strainers were inspected on April 30 and a total of 21 salmonids and 123 juvenile lamprey were removed.

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

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
26-Apr	1230	0	3	0	0
27-Apr	1402	16	0	0	0
28-Apr	1313	0	0	0	4
29-Apr	1500	11	0	0	4
30-Apr	1310	6	0	0	0
1-May	1404	0	7	0	6
2-May	1600	5	4	0	1

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

Adult Fish Trap Operations: The adult trap is operating Monday-Friday at a 28% sample rate. The adult trap was dewatered after working up the morning sample May 2 in preparation for dewatering the ladder for backboard repair.

Fish Rescue/Salvage: There were no live adult fish in the ladder during dewatering. There were 12 clipped juvenile Chinook removed from the fish ladder exit and released below Lower Granite. Mortalities included 1 clipped juvenile chinook and 3 decomposed clipped steelhead.

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.