U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#05-2021
March 26-April 1, 2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith

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**
5	12/7	0643	5/30	N/A	Thrust bearing upgrades/blade seals

Comments: The soft one percent peak efficiency constraint continues per the 2021 Fish Passage Plan (FPP) page MCN-27. Also, unit priority is being followed per the FPP. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 28, 30 and April 1. Picketed leads were lowered, and fish counting resumed on March 31 and April 1, respectively.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.0’ to 0.2’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.2’

Comments: Debris loads were minimal near both exits.

At the Washington shore exit, weir 336 encoder tripped an alarm on March 30. The issue was resolved the next day.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0’ – 2.0’	1.3’ to 1.6’
	X*		NFEW2 Weir Depth	≥ 8.0’	7.8’ to 8.3’
	X*		NFEW3 Weir Depth	≥ 8.0’	7.9’ to 8.3’
X			South Oregon Entrance Head Differential	1.0’ – 2.0’	1.5’ to 1.9’
X			SFEW1 Weir Depth	≥ 8.0’	8.0’ to 8.3’
	X*		SFEW2 Weir Depth	≥ 8.0’	Slack, 8.2’ to 8.3’
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.9 fps
X			Washington Entrance Head Differential	1.0’ – 2.0’	1.3’
X			WFE2 Weir Depth	≥ 8.0’	9.7’ to 10.0’
X			WFE3 Weir Depth	≥ 8.0’	9.6’ to 9.9’

*Comments: For the Oregon ladder entrances out of criteria points noted above, all occurred on March 28. SEFW2's cables were slack. The weir was jammed shallow and was reset by the roving operator. NFEW2 and NFEW3 both measured 7.8 and 7.9 feet, respectively. All entrance weirs' set points were adjusted.

At the Washington shore entrance, controls on WFE1, which is in standby, were replaced.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes			21° to 22°	Oregon Ladder Fish Pump 1
Yes			22°	Oregon Ladder Fish Pump 2
Yes			22°	Oregon Ladder Fish Pump 3
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: To adjust SFEW2 as mentioned above, the operator had to briefly reduce all three fish pumps' blade angles to zero degrees on March 28.

The juvenile system was switched to primary bypass on March 26, which does supply flow to the Oregon ladder north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system was switched to primary bypass on March 26 after the rectangular screen brush returned to service with installation of a new drive clutch bearing, which helps to raise and lower the brush. Normal sampling season will begin on time on April 2. The first sample examination will occur April 3.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were moderate near the powerhouse and minimal beside the spillway. New debris loads were minimal. The debris consisted mostly of woody material.
The next round of trash rack cleaning is scheduled for late April.

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: ESBS's are installed in units 1, 10, 13 and 14. ESBS maintenance continued this week. The remaining ESBS's will be installed from April 5 to 15. Camera inspections in units 1 and 10 revealed no problems on March 30.

Daily VBS differential monitoring revealed no issues.

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

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
X*			Dewatering and cleaning systems operating satisfactory?	

*Comments: The system was switched from emergency to primary bypass on March 26 at 1400 to 1700 hours. All systems returned to automatic mode.

The drive clutch bearing for the rectangular screen brush arrived on March 26 at 1030 hours. The part was installed, and the brush tested by 1330 hours. The system was switched to primary bypass and the brushes cycle sequence was set at every three hours.

The channel was monitored overnight. The rectangular screen brush tripped a timing alarm at 1830 hours. The brush was not completely lowering. This stoppage resulted in a transition screen brush timing alarm as the brushes cycle sequence was broken. The technician on duty was able to reset the rectangular brush, which then allow the transition brush to operate. The both night shift technicians were then able to keep the rectangular brush functional through the night.

The biologist asked for an electrician to come in on March 27 at 0730 hours. The electrician arrived on project at 0845 hours. The electrician with the help of a mechanic was able to determine the issue was a limit switch, which required adjustment. The rectangular brush was returned to service at 1200 hours. No further issues occurred, and the brushes cycle sequence was set to every four hours on March 30.

Orifice attraction and area lighting bulbs were replaced during the week. Also, a faulty limit switch, which will be replaced, was found on one of the two channel hoists. Finally, a program was installed in the control system on April 1, which will monitor the movement of the two side dewatering valves that regulate the channel elevation.

No future juvenile lamprey issues were noted before to the switch to primary bypass. However, during the switch, three unclipped steelhead smolts, one unknown chinook smolt and two juvenile lampreys were stressed. Fortunately, all fish recovered.

Bypass Facility:

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

Comments: All bypass facility systems remain out of service until secondary bypass for sample collection begins on April 2 at 0700 hours. The fisheries staff continued to prepare for the sampling season. A leak in the A flume near the separator was repaired. The electrical staff replaced outlets along the separator walkway.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 remains closed until April 10 at 0001 hours. The TSW in bay 20 is being used for the adult steelhead TSW passage efficiency study and as required by the Biological Opinion. The TSW will be opened per the study plan.

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
123.4	108.3	1.5	0.0	46.0	44.0	6.0	6.0

Comments: The above data comes from the control room. The data day is 0000 to 0000 hours. The spill recorded is due to the TSW study. Repairs to cranes 6 and 7 are continuing. The spring spill program begins on April 10 at 0001 hours.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on April 6.

Avian Activity: Casual avian observations until avian counts began on April 1. However, since this was just one day, a table will not be included in this report.

The laser on the outfall pipe was installed and examined on March 31. A faulty emergency stop button was found on April 1. The manufacturer will provide a new button in approximately one week. The laser is not functional currently. The navigation lock wing wall laser's program was checked on April 1. The laser appears to be functioning properly.

Two large bird distress calls remain installed on the navigation lock wing wall. The faulty call was repaired on March 30.

No terns or grebes were observed on project. Approximately 40 cormorants were noted roosting on the juvenile bypass outfall and occasionally feeding around the project, including at the outfall. One to three pelicans noted feeding in the tailwater area. Once, they were observed near the outfall. Finally, a few gulls were occasionally observed around the project, mostly near the forebay, though a couple passed by the outfall. A loon and a couple of ospreys were also noted at the edges of the forebay zone.

Invasive Species: The next mussel station examinations will occur in late April.

Siberian Prawn: Removing and euthanizing Siberian prawns will resume with sampling.

Fish Rescue/Salvage: For this week, there is nothing to report.

Research: The spring phase of the Pacific Northwest National Laboratory (PNNL) adult steelhead TSW passage efficiency study continues until April 9. That afternoon, the cameras near the TSW in bay 20 will be removed.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

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	x

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
5	3/28/21	1838	3/29/21	0920	86GT delayed shutdown lockout – system was reset
1	3/30/21	0705	3/30/21	1652	Push debris down trash rack and install STSs

Comments: Units 6, 5, 4, and 2 were taken out of service one at a time on March 29 to push debris down to the bottom of the unit trash racks. Unit 1 was out of service on March 30 to push debris down the trash rack and install STSs. Units 2, 6, 4, and 5 were taken out of service one at a time on March 31 to install STSs. Debris on the unit trash racks was not lifted off with the trash rake because of recently discovered structural deficiencies of the rake (see MFR 21 IHR 05 for more details).

Unit 2 was noted to be operating a few MWs above the 1% operating efficiency range on March 31. Unit 2 MW loading was recorded shortly after the unit returned to service following STS installation. Units 4 and 6 were operating a few MWs below the operating efficiency range on April 1. The operating efficiency range is different with STSs installed versus with no STSs installed. The powerhouse operator was informed and is looking into the reason the units were ran outside the operating efficiency range.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on March 29, 31, and April 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	7.9’
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
	x		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9’, 0.5’

Comments: Picketed leads were installed on March 31and adult fish counting began on April 1.

SFE-1 weir depth was observed to be slightly under criteria on March 31 and April 1. Operations has SFE-1 weir on automatic control, and the powerhouse operator was asked to increase the set point for the weir depth to bring it into criteria.

The north shore channel/tailwater differential was below criteria on March 31 and April 1. The operator was informed, and he raised NEW-1 weir to bring the differential into criteria while keeping the weir depth in criteria.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	2 pumps	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 is out of service to replace worn seals in the lower gearbox.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 40 square yards
x			Gatewell drawdown measured this week?	Baseline readings obtained
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-13%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

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

Comments: The STSs (except for unit 3) were installed on March 30 and 31. STSs were switched to continuous-run mode on April 1 due to the presence of small juvenile sockeye in the fish sample. The sockeye were later classified as kokanee by the Fish Passage Center, so the STSs were switched back to cycle-run on April 5.

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: Orifices were cycled and backflushed once per day through March 31. Starting April 1, orifices are backflushed three times a day. There were no debris obstructions observed at the orifices, as indicated by reduced

flow through the orifices. There were a few larger sticks that came into the separator on April 1, but not when the orifices were being backflushed.

The actuator for the water regulating weirs was found to be without power on April 1. Electricians determined that the actuator is failing and is tripping the disconnect. A spare actuator will be installed in its place. In the meantime, the water level in the collection channel is being monitored and the actuator can be operated manually to adjust the weirs.

Juvenile Fish Facility: The Juvenile Fish Facility is operating in primary bypass mode except when collecting sample fish.

Fish Sampling: Fish condition sampling began on April 1 and will occur on Mondays and Thursdays each week. See the table below for a summary of the sampling results.

Fish condition sampling results at Ice Harbor Dam:

Date: April 1

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	74	0	0	0
Chinook yearling unclipped	23	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	0	---	---	---
Steelhead unclipped	1	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	98	0	0	0

Removable Spillway Weir (RSW): Voluntary spill through the RSW is periodically occurring for the downstream passage of adult steelhead that may have strayed into the Snake River. The RSW will be operated from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays, from March 1 to March 31.

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
48.1	41.0	1.8	0	45	44	6.0	5.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: No inline cooling water strainer inspections occurred this week.

Avian Activity: There were very few piscivorous birds observed around the project (see table below). Land-based hazing of piscivorous birds for 8 hours per day began on April 1.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 1	0	0	0	0	3

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 the fish sampling contractor, 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.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
April 1	3	3
Totals	3	3

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

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis

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	7/15/2019	0720	4/01/2021	ERTS	Annual, Draft Tube Liner
Unit 4	3/30/2021	0921	3/30/2021	1210	STS Motor Failure

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on March 29, 30 and 31.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.5’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.5’	
X		South Ladder Picketed Lead Differential	Head ≤ 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	≥ 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 Powerhouse Entrance (SPE-1) Weir was on sill during all inspections with readings of 7.0, 7.0 and 6.8 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 7.0, 7.0 and 6.8 feet respectively.
South Shore Entrance (SSE-1) Weir was on sill during all inspections with readings of 8.1, 8.0 and 7.1 feet respectively.

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: Fish pumps returned to service at 1200 hours on February 25 after winter maintenance was completed.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	120 yds^2
X			Gatewell drawdown measured this week?	
		X	Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Gatewell drawdowns benchmark measurements were taken for Units 1, 3 and 6 on March 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: STS's were inspected on the deck March 18 and deployed from March 22 - 24.
The STS's are running in Cycle-run mode until condition sampling begins and average smolt lengths are calculated.
STS deployed in gatewell 4B had a motor failure on March 30 and was replaced.

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: Primary Dewaterer returned to service and orifices were opened at 1045 on March 25.

Collection Facility: Fish collection for condition sampling began at 0700 April 1.

Transport Summary: No transport currently.

Spillway Weir: Per 2021 Fish Operations Plan, limited spill through the RSW for adult steelhead passage began on March 1 and will end on March 31. RSW is scheduled to open for juvenile salmonid passage 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
45.4	39.2	2.6	0.0	45.0	44.0	4.8	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers:

Avian Activity: Highest counts of foraging piscivorous birds in tailrace (SWT1+PH1+PH2) at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
March 26 – April 1		1	1	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections.

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

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

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

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John

Turbine Operation

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

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	04/14/17	14:11	03/31/2022	17:00	Spider and upper guide bearing repair.
6	03/18/21	14:17	03/31/2022	17:00	T2 ground
1	11/30/20	08:00	04/08/2021	17:00	6-year overhaul

Comments: Little Goose experienced a T2 transformer ground on March 18 at 14:17. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be conducted. Little Goose operated out of Unit priority for a short time on April 1 (MFR 21 LGS 04).

Adult Fish Passage Facility

Little Goose fish facility and Environmental Assessment Services (EAS) staff inspected the adult Fishway on March 29, 30 31 and April 1.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.9, 7.3
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.9, 7.3
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	5.7,5.1
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	5.7,5.0
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was returned to service on February 10, with AWS pumps 1 and 2 returning to service on February 23. The SSE and NSE weir depth were found out of criteria on March 31 and April 1. The NSE channel to tailwater differential was found out of criteria on the March 30 inspection. Subsurface water velocity was measured on March 17 at NPE and averaged 1.8 fps.

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: Fish pumps 1 and 2 were returned to service on February 23. Fish pump 3 remains out of service as staff await parts.

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: There is approximately 65,000 square feet of floating woody debris currently inside the trash shear boom in the forebay. Little Goose conducted spill operations to remove forebay debris through the ASW (MOC 21 LGS 01), but was not as successful as planned. Gatewell drawdowns were conducted on April 1 for Unit 2 and were in criteria.

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: ESBS's were installed in Units 2, 3 and 4 on March 22 and 23. VBS differentials were conducted on April 1 for Unit 2 and were in criteria.

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: The juvenile bypass system was watered up on March 22 and is currently alternating between primary bypass and secondary bypass to facilitate collection for condition monitoring.

Collection Facility: Collection for condition monitoring in conjunction with secondary bypass commended on April 1 with the first sample being conducted on April 2. The juvenile fish facility is alternating to primary bypass on non-collection days. No adult lamprey were removed from the separator this report period.

Transport Summary: Fish transportation is scheduled to begin on April 24.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week on non-consecutive days for four hours in the morning through March 30, with an additional makeup day on April 1 (MFR 21 LGS 04). Spring spill operations will begin on April 3.

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
43.5	38.3	2.0	0.0	45.9	45.3	4.2	3.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13. Inspections will continue in accordance to the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam began on April 1. USDA hazing actives began on March 29.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-1	8:23	2	6	0	0

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile fish collection began on April 1. 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. Daily and total Siberian prawn counts at Little Goose Dam for this reporting period are reported below.

Date	Sample	Collection*
4-1	N/A	N/A
Totals	N/A	N/A

Gas Bubble Trauma (GBT): GBT monitoring will begin on April 5.

Fish Rescue/Salvage: No fish rescues occurred during this report period.

Research: No research activities occurred during this report period.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
		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**
5	4/1	0713	4/1	1339	Replace ESBS/VBS
6	03/01				DC and low voltage switchgear

Comments: Units were rolled out of service for ESBS/VBS inspections March 29-31.

Adult Fish Passage Facility

Lower Granite and Anchor QEA staff inspected the adult fishway on March 26, 27, 29, and 31.

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: Operation of diffuser 14 will remain in manual for the season due to an issue with the elevation sensor.

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’	0.9
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.4, 6.8
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.4, 6.8
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.7, 0.7, 0.5
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North shore and north powerhouse channel/tailrace head differentials are unable to be maintained withing the criteria range under current operation. The Project is working with hydraulic engineers to improve collection channel conditions and find a permanent solution to the ongoing channel/tailwater criteria discrepancies.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 is being operated in slow mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 161 yds^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments:

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: The VBS in gatewell slot 6A is being replaced while the unit is out of service for low voltage switchgear install.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17-18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices in gatewell slot 6A are closed to support VBS replacement during the low voltage switchgear upgrade.

Collection Facility: A total of 4,222 juvenile salmonids were bypassed through the juvenile facility March 26-April 1. Sockeye/Kokanee continue to be considered incidental species and will not be included as part of the SMP sample until further notice from NOAA. IDFG is looking into collecting sample for genetic stock assessment of the early Sockeye/Kokanee collected in the sample at LWG to better understand their origin.

Transport Summary: No transport.

Spillway Weir: The RSW is operating from 0500-0900 hours Sundays, Tuesdays, and Thursdays March 2 through March 30 to facilitate adult steelhead/overshoot passage. There was a total of 39 adult steelhead, 6 juvenile steelhead, and 2 juvenile Chinook detected at RSW since spill began. Of the adult steelhead detected at the RSW 30 were tagged/released from the adult trap.

There were 5 adult PIT tagged steelhead detected going over the RSW this report week. Of the adult steelhead detected this week 1 were tagged at Bonneville in 2020, 1 was from tagged at Lyons Ferry and released in the Tucannon River in 2018, and 3 were tagged at LWG adult trap fall of 2020.

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
48.1	37.4	1.2	0.0	44.5	42.0	4.6	3.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were no Siberian prawns collected in the condition sample.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
March 26	1225	5	2	0	0
March 27	1230	0	6	0	0
March 28	1412	4	3	0	0
March 29	1545	0	3	0	0
March 30	1035	0	1	0	0
March 31	1307	1	4	0	0
April 1	1050	9	10	0	1

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap is in operation Monday through Friday at a 25% (18% /week) sample rate.

Fish Rescue/Salvage: N/A

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.

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.

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 Sort by Code 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.