U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#04-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: March 25-31, 2022

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 14 turbine units available for service? (See table & comments below for details.)

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

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

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
7	10/4/21	0730	4/20/22	N/A	Blade seals

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2022 Fish Passage Plan (FPP). RTS dates are subject to change.

Adult Fish Passage Facilities

The McNary fisheries staff performed measured inspections of the adult fishways on March 26, 27, and 30. Fish counting by video review concluded March 31. In person counting begins April 1. District personnel are scheduled to check the ladders' temperature monitoring system on April 1 to 3.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.1'
X		Oregon Count Station Differential	0.0' to 0.5'	0.2' to 0.3'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.0' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.2' to 0.3'

Comments: Debris loads were minimal to very light near the Oregon exit and minimal near the Washington exit.

At the Washington shore exit, a low water alarm came in and was reset on March 26. Also, the regulating weir's south hoist was found with slack cable on March 30. This condition was reported to the general maintenance staff.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.8' to 2.0'
X			NFEW2 Weir Depth	$\geq$ 8.0'	9.4' to 9.6'
	X		NFEW3 Weir Depth	$\geq$ 8.0'	Raised
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
	X		SFEW1 Weir Depth	$\geq$ 8.0'	7.4' to 7.5'
	X		SFEW2 Weir Depth	$\geq$ 8.0'	7.4' to 7.6'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.2 fps.

X			Washington Entrance Head Differential	1.0’ – 2.0’	1.2’ to 1.5’
X			WFE2 Weir Depth	≥ 8.0’	9.9’ to 10.3’
X			WFE3 Weir Depth	≥ 8.0’	9.8’ to 10.3’

Comments: The above out of criteria points were due to the Oregon ladder operating with only one functional fish pump under the configuration as outlined in the FPP. NEFW3 was raised, SFEW1 and SFEW2 were out of criteria, and the velocity was low all week.

Floating orifice gate slot W26 is currently closed. However, the gate in that slot is damaged and will need to be 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			28°	Oregon Ladder Fish Pump 1
		Yes		Oregon Ladder Fish Pump 2
		Yes		Oregon Ladder Fish Pump 3, RTS date is October 29
Yes				OR North Powerhouse Pool supply from juvenile fishway

Comments: Fish pumps 2 and 3 remain out of service. Fish pump 3 will be repaired first. Return to service dates are subject to change.

Juvenile Fish Passage Facility

Every other day sample collection continued with no interruptions in the schedule.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Moderate to heavy
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 to heavy near the powerhouse and minimal beside the spillway. New debris loads were minimal to very light. Weather systems moved the debris to the Oregon shore and back.

No trash racks were cleaned this week. The next scheduled cleaning is the week of April 18. There is nothing more 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: For early sample start up, ESBS's are installed in units 1 and 12 through 14. ESBS maintenance was completed this week. Installation of the remaining ESBS's will begin on April 4. Camera inspections will resume on April 12.

Daily VBS differential monitoring revealed no high differentials, and no screens were cleaned.

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: Moisture in the temporary supply line continued to be an issue, with the moisture being bleed off on every shift. With this main line, which is still rerouted for the headgate repair pit contractor, orifices were only cycled once a day. The south orifice in 8A slot remains closed, with the north orifice open. With an ESBS stored in the slot, we have yet to determine if the orifice has a blockage or not.

The rectangular screen cleaning brush stalled briefly when lowering on March 30, at 0900 hours. However, the stall was long enough to cause one transition screen cleaning brush timing alarm. The electrical staff examined the rectangular brush and determined the gearbox which lowers the brush was slipping. The mechanical staff determined the slippage was due to slack in the rectangular brush's two retracting cables. Due to this slack, the limit switch that triggers the brush to move downstream was would not be fully engaged at times. The cable issue was resolved, and the brush returned to service at 1415 hours.

Bypass Facility:

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

Comments: All bypass facility systems functioned well. The sample gates were only on during secondary bypass. The PIT-tag system gates remained off as there is no need for that system.

This week, 564 juvenile lamprey and 1,572 smolts, mostly clipped yearling Chinook salmon, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Another five walleye adults were removed from the separator this week. We have never seen walleye numbers like this at McNary.

The GBT transport pipe flush pump was installed, and area lighting was repaired on March 30.

Top Spillway Weir (TSW) Operations: Bay 19 remains closed and the TSW was installed this week. The TSW in bay 20 remains in place and was being used as required by the Biological Opinion until its last operational day on March 30. Both TSW's will be ready for the spring spill season starting April 10.

River Conditions

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
170.9	134.8	0.9	0.0	45.4	43.1	6.0	6.0

Comments: The above data is provided by the smolt monitoring staff except water clarity, which comes from the control room. The data day runs from 0700 to 0700 hours. The spill recorded is due to the TSW.

Cranes 6 and 7 are both back in service and will be ready for limited use during the spill program beginning on April 10. Load limit tests will be completed in April on both cranes. The hoist in bay 6 has a failed gearbox. The hoist's return to service date has yet to be fully finalized. The spill pattern changes are in the current FPP.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on April 5.

Avian Activity: Casual avian observations concluded. Recording avian counts will begin April 1.

For the report week, no terns or grebes were observed on project. Three pelicans, one loon, and a couple of ospreys were noted. Cormorants were noted roosting on the juvenile bypass pipe and occasionally feeding at the outfall. Gulls in slightly increasing numbers were noted roosting around the project.

The two large bird distress calls and one laser remain deployed. The outfall laser was reinstalled on March 29. The laser was then programmed and turned on the morning of March 30. However, the bracket still appears not to be stable enough. An attempt to install bird wires on top of the outfall pipe was cancelled on March 28 due to high flows and will be rescheduled for the fall. Solar panels for the LRAD will be ordered soon so it can be deployed on the outfall pipe.

Invasive Species: Mussel station examinations revealed no problems on March 27.

Siberian Prawn: No Siberian prawns were removed from the sample this week. None have been seen this year.

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

Research: For a CRITFC study, there were tissue samples removed from 40 juvenile lamprey collected at the facility this week. For the season, 156 juvenile lampreys have been sampled. All fish were returned to the river unharmed.

Project: Ice Harbor
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).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

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
4	2/28/22	0800	---	---	Line 2 maintenance

Comments: Units 6, 5, 2, and 1 were taken out of service one at a time on March 28, 29, and 30 to install STSs.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on March 29, 30, and 31.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head ≤ 0.3’	
x		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head ≤ 0.3’	
x		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
x			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
x			South Shore Channel Velocity	1.5 – 4.0 fps	
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: Comments: Picketed leads were installed on March 31. The worn window-cleaning brush at the north fish counting station was replaced with a new brush on March 31.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
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 #1 is out of service for unwatering and investigation of a cavitation/vibration problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 237 square yards
x			Gatewell drawdown measured this week?	Obtained baseline readings
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-15%
	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 that are in service?
	x		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
		x	STSs/VBSs inspected this week?
		x	STS/VBS inspection results acceptable?
		x	VBS differentials checked this week?
		x	VBS differentials acceptable?

Comments: Unit 6, 5, 4, 2, and 1 STSs were installed on March 28, 29, and 30.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	18-20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish bypass was watered up on March 24. The actuator for the water regulating weirs in the collection channel was placed in local control during the reporting period due to a problem with the automatic control settings. The weirs will be operated at the actuator to adjust the water level as needed until electricians fix the problem.

Three burned out north orifice lights were replaced during the week. The south orifice in each of the affected gatewells was operated until the lights were replaced. A couple of orifices were found to be partially obstructed by debris early in the reporting week. Backflushing of orifices increased from once a day to three times per day to keep orifices clear.

Juvenile Fish Facility: The raw water supply to the fish facility was opened on March 31.

Fish Sampling: Sampling begins on April 4.

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 is being operated to pass steelhead from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays in March. Involuntary spill also occurred during the week.

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
59.5	42.0	8.6	0	42	44	4.4	3.3

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next turbine cooling water strainer inspections for fish will occur in April.

Avian Activity: There were very few piscivorous birds seen around the project.

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 will be humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

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: Denise Griffith and Raymond Addis

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

* All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

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

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
Unit 2	3/28/2022	0020	3/28/2022	1524	2B STS Failure

Comments: See STSs/VBSs comments.

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on March 28, 29 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: 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 Powerhouse Entrance Weir SPE-1 was on sill during all inspections with readings of 7.2, 7.3 and 8.1 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with 7.2, 7.3 and 8.1 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: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	950 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 12%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed and in service in operating and available units?
	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: There was an STS failure in gatewell 2B at 0020 on March 28. The STS was swapped out with a working spare. The STSs are running in cycle-run mode until an average length of sub-yearling Chinook salmon and sockeye salmon can be determined.

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?	

Collection Facility: The collection facility was watered up on March 29. Collection for condition sampling is scheduled to begin on April 1. Collection for transportation is schedule to begin on April 23.

Transport Summary: Barge transport is scheduled to begin on April 24.

Spillway Weir: Adult steelhead spill began March 1 and continues through March 30. The spill is through the RSW only and occurs Wednesday, Thursday, and Sunday for 4 hours per day. Spring spill is scheduled to begin 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
58.5	41.3	1.3	0	46.0	44.4	4.5	3.5

*Scrollcase temperatures.

Other

Cooling Water Strainers: The next cooling water strainers examination will occur in the month of April.

Avian Activity: Highest daily counts of piscivorous birds in all zones combined at Lower Monumental Dam are reported
in the table below.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans

Comments: Piscivorous bird observations are scheduled to begin on April 1. Bird hazing by USDA personnel is schedule to begin on April 3. The outfall bird cannon functioned efficiently this week.

Invasive Species: The next examinations for zebra or quagga mussels will occur in April.

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

Research: No research is occurring currently. GBT examinations will begin April 9.

Project: Little Goose
Biologists: Chuck Barnes and Deborah Snyder

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service (see table & comments below for details).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

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	12/31/2022	ERTS	Spider and upper guide bearing repair.
3	03/24/22	06:11	03/25/2022	17:26	Packing gland water line leak

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult Fishway on March 28, 30 and 31.

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’	
X			South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	Sill – 3/30, 3/31
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	Sill – 3/30, 3/31
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was returned to service on February 8 with AWS pumps returning to service on February 24. The NSE channel/tailwater differential and NSE weir depths were manually measured, adjusted, and monitored into criteria from February 24 through March 1. The fishway met criteria during all inspections for this report period.

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, 2, and 3 were returned to service February 24.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 20,575ft² - Low 14,283ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	Gatewells dipped 03/22; 03/23
	X		Any oil seen in gatewells?	

Comments: There ranged approximately 20,575 to 14,283 square feet of floating woody debris inside the trash shear boom in the forebay. The high of 20,575 square feet occurred during the inspection of March 28, and the low of 14,283 square feet occurred during the inspection of March 30. Fluctuations were due to scheduled trash raking activities.

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: Installation of ESBS's began March 21 with most units completed on March 22. Differentials on available units 1 through 4 were completed March 31.

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: The juvenile bypass system was watered up March 23.

Collection Facility: The juvenile collection facility completed water up activities on March 29.

Transport Summary: Fish transportation is scheduled to begin in April.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation is occurring three days each week on non-consecutive days for

four hours in the morning and will continue to occur on Tuesday, Thursday and Sunday each week, through March 31. Spring spill operations are scheduled to begin 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
55.4	42.8	1.2	0.0	46.6	44.9	4.0	3.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 9, 2021. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam will begin on April 1 with hazing beginning on March 29.

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

Siberian Prawn: Juvenile fish collection begins 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 not applicable.

Gas Bubble Trauma (GBT): GBT monitoring is not being conducted at this time.

Fish Rescue/Salvage: No fish salvage operations 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).

*All available turbine units are operated in accordance with App. C of the Fish Passage Plan.

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

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
2	3/15	0655			Annual Maintenance, DC low voltage switchgear

Comments: None.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway on March 25, 26, 28, and 30.

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’	
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	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’, 0.8’
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. Although there is no spill and both entrance gates are operating, north shore have not consistently meet channel/tailwater head differential criteria which seems to be related to the operations of all four FOGs.

Auxiliary Water Supply System:

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

Comments: AWS pump 1 remained out of service for maintenance.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	26.7 yds²
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: Unit trash racks were raked February 21-24.

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: Units 1 and 3-6 were rolled out of service for ESBS installation March 21-23. ESBSs were installed in unit 2 March 29. Gatewell drawdown baselines were completed for Units 1 and 3-6 March 25.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: The juvenile bypass system is in secondary bypass from March 25 through April 23.

Collection Facility: Collection for condition sampling began at 0700 hours March 25 with the first condition sample processed on March 26. Collection for transport is scheduled to begin April 23.

Transport Summary: Research trips are scheduled for April 14 and 21. Regular season barging is scheduled to start April 24.

Spillway Weir: The RSW is operating from 0500-0900 hours Sundays, Tuesdays, and Thursdays March 1 through March 30 to facilitate adult steelhead passage. There were 51 adult and 4 juvenile PIT-tagged steelhead and 2,011 juvenile PIT-tagged Chinook salmon detected over the RSW spillway since March 1. Of the 2,011 juvenile Chinook salmon detected, 1,919 were research fish released at the RSW as part of NOAA fisheries detection efficiency

evaluation for the spillway PIT array. Since the juvenile bypass system was watered up on March 14, PIT detection within the JBS has detected 443 juvenile Chinook salmon, 527 juvenile and 8 adult steelhead, and 1 adult Chinook salmon.

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
58.4	45.9	1.6	0.0	46.5	43.0	4.8	3.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 24.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 5 Siberian prawns in the condition sample that were euthanized and disposed of.

Avian Activity: Biologist daily piscivorous bird counts and hazing begin April 1 at Lower Granite Dam. Some gulls and cormorants are present in the tailrace.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap was watered up February 28 and started sampling at 1400 hours on March 1 at a 25% (18% /week) sample rate. Collection for sampling will be conducted Monday through Friday until broodstock collection starts August 18.

Fish Rescue/Salvage: N/A

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook salmon and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook salmon 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 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.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival at Lower Granite:

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system.
PNNL deployed telemetry cable in forebay, performed accuracy survey, install receiver trolleys at powerhouse and spillway forebay, and installed a receiver in the south March 7-10.

NOAA RSW PIT Tag Detection Efficiency Evaluation:

NOAA fisheries transported 6000-7000 juvenile fish from the Clearwater hatchery to the LWG juvenile fish facility March 15. These fish will be tagged March 16 and released through pipes attached to the LWG RSW March 17 to determine the PIT detection efficiency of the RSW array that was installed and operational in 2020. USGS will also be tagging about 1000 of these fish to determine detection efficiency using 8mm PIT tags. A total of 5,549 fish with 8mm, 9mm, or 12mm PIT tags were releases over the RSW March 17. Total number of unique detections for those fish were 1,919. Detection efficiencies were very different between tag sizes and varied between locations with the 8 mm and 9 mm tags detected at lower rate than 12 mm-tagged fish. NOAA will complete a preliminary report in the next month.