U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#01-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: March 1-10, 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
4	8/2/21	1018	3/14/22	N/A	Blade seals
7	10/4/21	0730	4/20/22	N/A	Blade seals
3	3/7/22	0909	3/7/22	1621	ESBS replacement A slot

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 winter outage for the Washington shore ladder occurred on January 3 to 6 with above water only maintenance done. The Oregon shore ladder outage occurred from January 13 to February 24. By using the powerhouse dewatering system, project personnel were able fully dewater the Oregon ladder by sections for the first time in over 25 years.

Picketed leads were lowered and fish counting by video review resumed on February 28 and March 1, respectively. The McNary fisheries staff performed measured inspections of the adult fishways on March 1, 3, 4, 6 and 9.

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’	0.2’ to 0.3’
	X	Washington Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.4’
X		Washington Count Station Differential	0.0’ to 0.5’	0.2’ to 0.5’

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

The Washington shore head over weir was out of criterion due to debris on the picketed leads and a set point adjustment being required on March 1. Also, weir 337 tripped an alarm and was reset on March 2.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.4' to 2.0'
X			NFEW2 Weir Depth	≥ 8.0'	9.5' to 9.8'
	X		NFEW3 Weir Depth	≥ 8.0'	Raised
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.2'
X			SFEW1 Weir Depth	≥ 8.0'	8.0' to 8.5'
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' to 8.4'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.0 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3' to 1.4'
X			WFE2 Weir Depth	≥ 8.0'	10.0 to 10.4'
X			WFE3 Weir Depth	≥ 8.0'	10.1' 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 is raised, SFEW2 was out of criterion on March 6 and the velocity is low.

Washington entrance weir W3 was in manual mode due to faulty control communication until March 3.

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 pump 3 remains out of service. Electrical parts are on order. During the winter outage, a faulty electrical pole was found on fish pump 2's rotor. Fish pump 3 will be repaired first. Return to service dates are subject to change.

The blade angle on fish pump 1 was reduced to zero degrees for maintenance on SFEW2 on March 1 from 1528 to 1631 hours.

Juvenile Fish Passage Facility

After winter maintenance, for early sample start up, the juvenile system was to return to service on February 22. However, frozen air lines and orifice valves in the channel prevented this. The lines and valves were thawed out and the system was switched to primary bypass on February 23. Unfortunately, the transition screen cleaning brush's electrical cable failed right after being returned to service. The system was switched to emergency bypass that afternoon so the cable could be replaced. The remainder of the day was spent thawing out water lines at the facility.

The electrical cable was replaced on February 24. However, the channel air lines, and orifice valves were frozen again. There was not enough time to switch the system to primary bypass, so part of the day was spent checking the facility for frozen lines and valves.

The main channel air line was thawed out the morning of February 25. Orifices were thawed out as they were closed and opened for the switch from emergency to primary bypass, which was completed. After, the facility systems were checked for frozen water lines and valves, which were thawed out. No major issues occurred in the channel or at the facility the remainder of February except the separator had to be dewatered so a faulty flume gasket could be removed.

The first sample collection began on March 1 at 0700 hours. However, a freeze drain outlet was found leaking and secondary bypass was concluded at 0720 hours. No fish were in the sample. One sample day was missed. The separator was dewatered, and the missing grout around the drain line was put in place that day. Every other day sample collection began on March 3 at 0700 hours. There were no other interruptions in that schedule.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Light 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 during the winter were light to moderate near the powerhouse. For the report week, debris loads were light 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.

Trash racks were cleaned in 18 slots from eight different units removing 26 yards of debris on January 11 and 12. This included units 13 and 14, which were out of service. Trash racks were again cleaned in three units and three additional slots removing 36 yards of debris on February 17. This included units 1 and 12. No fish were observed in the debris. The next trash rack cleaning is scheduled for the week of March 14.

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 were installed in units 1 and 12 on February 23 along with screens installed in units 13 and 14 on February 24. After installation, ESBS brush cycle alarms were reset as required. Camera inspections will resume in late March. ESBS maintenance continued.

The ESBS's in unit 12 had control issues that were resolved from March 1 to 3. The ground for the screen in 13A slot failed on March 7. The screen was replaced with the ESBS that was stored in 11C slot.

VBS differential monitoring resumed when ESBS were installed. No high differentials were recorded, and no screens were cleaned.

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

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

Comments: Orifices were opened on February 23. Frozen air lines are described above. Moisture in the lines continued to be an issue, with the moisture being bleed off on every shift. The main line, which is still rerouted for the headgate repair pit contractor, froze, and had to be thawed out before orifices could be cycled on March 10. Due to the temporary main line and moisture, orifices were only cycled once a day. During cold weather conditions, the

orifice gates function very sluggishly. A partial orifice blockage was removed from the orifice in 1A slot on March 2. No fish were noted. The south orifice on 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.

Area lighting was replaced as needed.

The screen cleaning brush cycle sequence was set for very two hours from February 25 to 27. Then, the sequence was set to very four hours until March 3, at which time, it was set to every six hours. A 20-minute power outage had no ill effect on March 8.

A transition screen cleaning brush alarm came in on March 9 at 2130 hours. We could not determine if the brush cycle sequence did not complete or if the sequence was late in completion. The roving operator cleared the alarm at 0050 hours on March 10. No other issues occurred, and the brush cycle sequence continued uninterrupted.

During the switching mentioned above in February, four steelhead smolts, four juvenile lamprey, three juvenile bass, one juvenile walleye and four other small fish were observed.

Bypass Facility:

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

Comments: All bypass facility systems became fully functional on February 25. All systems operated satisfactorily during the week report week. The only issues were the flume gasket removal and the freeze drain outlet leak mentioned about. The sample gates were only on during secondary bypass. The PIT-tag system gates remained off as there is no need for that system. As mentioned above, one day of sampling was missed.

The temperature probes were installed in the B side sample tank and the sample recovery raceway on March 1. For most of the week, area lighting was replaced, and the outside phone system was down.

This week, 2,180 juvenile lamprey and 204 smolts, mostly Chinook fry, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report. Interestingly, 18 walleye adults were removed from the separator this week. We have never seen walleye numbers like this at McNary.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 remains closed. The TSW in bay 20 was in place before March 1. It is being used as required by the Biological Opinion and is opened per the schedule released by RCC.

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
181.0	147.2	0.9	0.0	40.3	38.1	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. Load limit tests and electrical maintenance will be completed this month 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. A spill pattern change has been requested per FPP change form, 22MCN002.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections in January, February and March reveal 21, 24 and 25 juvenile lamprey mortalities, respectively. One live juvenile lamprey was removed in February. Juvenile shad mortalities were observed in January and February. No other fish were noted.

Avian Activity: Casual avian observations continued. Over winter, cormorants, gulls, grebes, pelicans, mergansers, and bald eagles were noted. Avian counts will begin April 1.

For the report week, no terns, pelicans, or grebes were observed on project. Cormorants were noted roosting on the juvenile bypass outfall or the navigation wing wall and occasionally feeding around the project. A small gull flock was noted occasionally around the forebay area.

The two large bird distress calls and one laser were installed the navigation lock wing wall along with the other laser installed on the outfall pipe on February 14. The lasers were programmed that evening. The laser on the outfall pipe was rebooted on March 7. When functional, the two lasers have been effective at discouraging roosting on the outfall pipe.

Invasive Species: No invasive species were noted during the winter maintenance season. Mussel station examinations will resume in late March.

Siberian Prawn: No Siberian prawns were removed from the sample this week.

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. The 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: On March 1, unit 5 was operated out of priority ahead of unit 6 from 0556 hours to 0940 hours, due to human error. Unit 5 was operated out of priority ahead of unit 6 from 0937 hours to 1050 hours on March 2 to conduct reactive limit testing on unit 5.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on March 1, 3, 7, 8, and 10.

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: Deteriorated fish jump-netting near the south fish ladder upper diffuser area was replaced with plastic fencing material during the 2022 winter maintenance period.

A dislodged lamprey plate was re-installed onto diffuser #6 grating in the south fish ladder when the ladder was unwatered during the winter maintenance period. Other lamprey plates had some missing j-bolts that were replaced, but the plates were not loose from the grating.

The upper diffuser valve #10 in the north fish ladder was unwatered and inspected during the maintenance period. The valve and drive shaft assembly looked good, with no deficiencies found.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
7 pumps	0 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 #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 107 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	STSs partially blocking view into slots
	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: The STSs are removed for annual maintenance.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		x	Orifices operating satisfactory?	0
		x	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish channel is unwatered for annual maintenance.

Juvenile Fish Facility: The fish facility is unwatered for annual maintenance.

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 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
53.4	27.7	1.7	0	40	39	11.2	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 turbine cooling water strainer inspections took place on March 1. A total of nine dead juvenile lamprey and one live juvenile lamprey were recovered.

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	03/02/2022	0730	03/05/2022	15:35	Annual, Draft Tube Liner

Comments: None

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on March 1, 2, 3, 7, 9 and 10.

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	7.6
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		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’ or on sill	
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: North Shore Entrance (NSE-1) Weir depth was out of criteria on the March 2 inspection with a reading of 7.6 feet. The weir position readings at the control box did not match those seen on the digital readings. Powerhouse personnel were informed, and the system was calibrated. South Powerhouse Entrance Weir SPE-1 was on sill during all inspections with readings of 6.5, 7.2, 6.6, 6.8, 6.7 and 6.6 feet respectively. South Powerhouse Entrance Weir SPE-2 was on sill during all inspections with readings of 6.5, 7.2, 6.6, 6.8, 6.7 and 6.6 feet respectively. South Shore Entrance Weir SSE-1 was on sill during the March 1, 3, 7 and 10 inspections with

readings of 7.3, 7.2, 7.9 and 8.0 respectively. South Shore Entrance Weir SSE-2 was out of criteria on the March 7 inspection with an opening of zero feet. The weir had been closed all the way by powerhouse operators. It was closed after Fish Pump 1 went out of service on March 3 at 1615. The weir was placed back into its normal operating position March 7 at approximately 0930.

During the winter outage at the south ladder, diffuser 7 had the grating lifted and it was cleaned of debris. In addition, 1 8-foot piece of grating was replaced near the north side entrance of the south ladder. In addition, a new I-beam was added for support of the grating.

At the north ladder, the grating inspection occurred, and no issues were found. In addition, an ROV inspection occurred of the diffuser supply water and no issues were found.

Auxiliary Water Supply System:

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

Comments: Fish pumps returned to service at 23:59:59 hours on February 28 after winter maintenance was completed. Fish pump 1 went out of service at 1615 on March 3 and returned to service at 0850 on March 10. It had been taken out of service for high bearing temperatures. The RPMs of the other two fish pumps had been increased to keep the system within criteria.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	1403 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: STS's are still hanging over gatewells.

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: STSs are not yet deployed for the 2022 season. STS pre-deployment inspections are scheduled for March 16. Deployment of STSs is schedule to take place the week of March 21.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices are closed and Primary Dewaterer is OOS for winter maintenance. During winter maintenance, the brush system was refurbished with a new sprocket, chain, and cable attachment. In addition, a large chunk of concrete was removed from the ceiling of the JCC near the powerhouse dewatering valve that had been caused from channel erosion.

Collection channel is scheduled to be watered up on the week of March 21.

Collection Facility: Over the winter a new raceway tailscreen hoist was installed. Collection for condition sampling is scheduled to begin on April 1. Collection for transportation is schedule to begin on April 23.

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

Spillway Weir: RSW scheduled to go 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
55.8	20.7	1.4	0.0	39.4	37.5	6.7	2.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 10. Living fish included 1 juvenile lamprey. Mortalities included 48 juvenile lamprey, 1 Siberian prawn, 1 American shad and a juvenile walleye.

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
11/15/2021	1330	36	10	0	12	0

Comments: Piscivorous bird observations are scheduled to begin on April 1. Bird hazing by USDA personnel is schedule to begin on April 3.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on November 8.

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: 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	17:00	Spider and upper guide bearing repair.

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult Fishway on March 2, 8, 9 and 10.

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	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	
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 30,715ft² - Low 16,875ft²
		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 ranged approximately 30,715 to 16,875 square feet of floating woody debris inside the trash shear boom in the forebay. The high of 30,715 square feet occurred during the inspection of March 8, and the low of 16,875 square feet occurred during the inspection of March 10. Fluctuations were due to the timing and nature of weather conditions during the scheduled ASW spill operations for steelhead overshoots.

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 are scheduled to be installed the week of March 21.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system is currently dewatered for winter maintenance.

Collection Facility: The juvenile collection facility is currently dewatered for winter maintenance.

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
51.8	28.7	1.4	0.0	39.9	38.6	6.0	5.6

*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
3	02/14	0705	03/10	1524	Annual Maintenance, DC low voltage switchgear, Bearing Temperature Upgrades

Comments: None.

Adult Fish Passage Facility

The adult fishway was watered up with gravity flow January 26. AWS pumps 2 and 3 were returned to service at 0924 hours February 8. The electrical crew resolved an issue with diffuser 14 elevation sensor and the ladder was returned to fish passage criteria February 17. Lower Granite staff inspected the adult fishway on March 2, 3, 7, 8, and 9, and 10.

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’	7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’
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	6.9’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.9’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8’, 0.8’, 0.9’, 0.9’, 0.8’, 0.9’
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 did not 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)	
	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 8-11.

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?	
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: The emergency bypass hoist system for the primary dewatering structure was replaced during the winter maintenance outage. Dry testing was completed March 10 and wet testing will be completed March 15. The juvenile bypass system will remain in service in primary bypass after testing has been completed.

Collection Facility: Collection condition sampling is scheduled to begin at 0700 March 25 with the first sample worked up March 26. Collection for transport is scheduled to begin April 23.

Transport Summary: The first research trip is scheduled for April 14.

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 32 adult and 2 juvenile PIT tagged steelhead detected at the RSW and 1 juvenile PIT tagged chinook detected over the RSW spillway March 1-10.

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
49.0	24.0	1.8	0.0	40.0	36.5	5+	1.1

*Cooling water intake temperature.

Other

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

Invasive Species: No zebra/quagga muscles were detected on the trap substrate.

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

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 will be transporting 6000-7000 juvenile fish from the Clearwater hatchery to the LWG juvenile fish facility March 15. These fish will be tagged March 15-16 and released through pipes attached to the LWG RSW 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.