U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#15-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: June 10 – June 16, 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	6/30/22	N/A	Blade seals replaced
8	6/6	1002	7/29	N/A	9-year overhaul
2	6/13	0638	6/16	1052	Annual maintenance

Comments: The one percent peak efficiency constraint and unit priority are being followed per the 2022 Fish Passage Plan (FPP). In order to not exceed the total dissolved gas limit, units ran outside the one percent constraint on June 12 and 13. RTS dates are subject to change.

Adult Fish Passage Facilities

The McNary fisheries staff performed measured inspections of the adult fishways on June 10, 12 and 15. In person fish counting continued. Video review of nighttime lamprey passage began on June 15.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
	X	Oregon Exit	Head over weir 1.0’ to 1.3’	0.9’ to 1.0’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.2’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.0’
X		Washington Count Station Differential	0.0’ to 0.5’	0.1’ to 0.2’

Comments: Debris loads were very light near the Oregon exit and moderate to heavy near the Washington exit. Most of the new incoming debris was arriving along the Washington shoreline and would be considered moderate to heavy. The general maintenance staff cleaned both exits’ picketed leads as needed including the weekend and call outs. Count station back boards were also cleaned.

At the Oregon shore exit, the out of criterion point listed above was most likely due to a weir set point issue and occurred on June 15. Due to high turbidity, the count station back board was moved in on June 16.

At the Washington shore exit, multiple high picketed lead differential alarms came in and were reset after the leads were cleaned most of the week. Also, regulating weir and low water alarms come in were reset on June 10 to 12. These alarms were mostly due to rapid forebay elevation changes. The Washington shore ladder was oscillating

from side to side on June 14. The ladder appeared to be low, and the roving operator check the exit weirs immediately.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.6' to 2.0'
	X		NFEW2 Weir Depth	≥ 8.0'	7.6' to 9.5'
	X		NFEW3 Weir Depth	≥ 8.0'	Raised
	X		South Oregon Entrance Head Differential	1.0' – 2.0'	0.6' to 0.9'
	X		SFEW1 Weir Depth	≥ 8.0'	6.2' to 7.6'
	X		SFEW2 Weir Depth	≥ 8.0'	6.3' to 7.5'
	X		Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.0 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	1.0' to 1.3'
X			WFE2 Weir Depth	≥ 8.0'	8.5' to 9.7'
X			WFE3 Weir Depth	≥ 8.0'	8.6' to 9.8'

Comments: Most of 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. However, high tailwater elevations, spill turbulence, hydraulic gradients, and slight set point drifts may have contributed. NEFW3 was raised, SFEW1, SFEW2, the south Oregon entrance head differential, and the channel velocity were out of criteria all week. NFEW2 was found out of criterion due to a set point adjustment, which was corrected on June 12. The south Oregon entrance pool and tailwater elevation sensors were check and no issue was found on June 13. SFEW2 was found in manual mode on June 15. Operators stated this occur as the weir had reached its upper limit. Also, the weir had been in and out of manual mode during the week with tailwater elevation changes. The electrical staff has been notified.

Floating orifice gate slot W26 is currently closed. However, the gate in that slot is damaged and will need to be replaced, which we hope to do when fish pump 3 returns to service.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes		Yes		WA shore Wasco County PUD Turbine Unit
Yes	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. The Wasco County PUD unit returned to service on June 15 at 1048 hours. The bypass system functioned well during the outage.

Juvenile Fish Passage Facility

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

After regional discussion, TSW closure and removal will occur when river flows reach 300 kcfs.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to light
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 minimal to light near the powerhouse and light to moderate beside the spillway. New debris loads were minimal to heavy and arrived mostly along the Washington shoreline. The operators flushed much of this debris through the navigation lock this week.

The next trash rack cleaning is schedule for the week of June 22.

A few pieces of woody material were removed from the gatewell slots as needed.

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

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

Comments: ESBS's are installed in all units except unit 7, which remains out of service. The ESBS in 8A slot was removed so the emergency bulkhead could be installed on June 15. Unit 8 is out of service. Camera inspections did not occur this week.

Daily VBS differential monitoring revealed no high differentials. One and three screens were cleaned on June 10 and 16, respectively. VBS's were also inspected in unit 6 on June 16. There were 113 juvenile lamprey mortalities observed during the cleaning and inspections on June 16. No smolt mortalities were noted.

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: There was no moisture in the temporary air supply line this week. However, we will continue to bleed off the line on every shift and orifice cycling will continue at the normal frequency. Orifices were adjusted for VBS cleaning and inspection as required. The orifice in 8A slot was closed and the 8B slot north orifice was open just before the emergency bulkhead was installed in 8A slot on June 15.

After heavy rains, racket balls were installed in the road drains above the channel control system, brushes, and valves to reduce the amount of water hitting these areas.

At times, the north side dewatering valve, one of two valves that regulate channel elevation, continued to be observed not running smoothly and will be monitored.

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, 106,000 juvenile lamprey and 111,605 smolts, mostly sub-yearling Chinook salmon, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

The facility PIT room air conditioning continued to trip offline. A new unit was ordered this week.

Top Spillway Weir (TSW) Operations: The TSW's in spillbays 19 and 20 remained open with both attached to a hoist. The TSW closer and removal date has been changed as described above.

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
458.2	396.6	319.8	268.0	56.3	54.9	4.0	1.0

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 summer spill program began on June 16 at 0001 hours. However, due to high flows, spill volume exceeded the 57 percent called for. Total dissolved gas levels continued to be monitored.

Project wide temperature monitoring began on June 15. The data will be published in separate daily and weekly reports by the smolt monitoring staff.

The two spillway cranes can no longer be operated remotely. A crane operator is required to open any gate attached to the cranes. Both cranes are in service and can be used in a limited bases for the spill program in locations where a hoist is not available.

The hoist in bay 6 has a failed gearbox. Due to this being a large contract and a specialty item, the hoist's return to service date could be as late as December. Therefore, bays 2, 6 and 16 have the gates dogged open and require a crane for adjustment. The spill pattern changes for these issues have been coordinated and the spill tables in the FPP have been updated.

The gates in bays 14 and 15 remained dogged of at six stops. No further testing has occurred for the hoist/gate issue. The "bad" hoist is in bay 14 and the "bad" gate is in bay 15.

Other

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

Avian Activity: Recording avian counts continued. These counts are reflected in the Table below.

McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
June 10	Spill	27	0	8	0	0
	Powerhouse	0	0	0	0	0
	Outfall	5	0	0	0	0
	Forebay	1	0	2	0	20
June 11	Spill	12	0	3	0	0
	Powerhouse	2	0	2	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	43
June 12	Spill	45	2	15	0	0
	Powerhouse	0	0	3	0	0
	Outfall	0	0	0	0	0
	Forebay	0	1	3	10	36
June 13	Spill	13	0	13	1	0
	Powerhouse	0	0	2	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	3	0	78
June 14	Spill	5	0	6	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	2	0	50
June 15	Spill	1	2	1	3	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	2	0	50
June 16	Spill	2	0	1	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	1	1	0	52

Due to high flows, the laser on the outfall pipe and the LRAD have not yet been programmed and solar panels have not yet to be installed, respectively.
The navigation lock wing wall laser, which is aimed at the outfall, remains in service along with the two large bird distress calls. USDA Wildlife Services daily shore hazing continued. Boat hazing trips were scheduled for three days a week. However, high flows may have limited the trips taken. The boat crew does contribute to shore hazing at times.

In the spillway zone, gull and tern numbers fluctuated. A few pelicans and cormorants were noted. The birds were feeding along the edges of the zone.

In the powerhouse zone, a few gulls and terns were noted feeding.

In the bypass outfall zone, the few gulls noted appeared to be passing by while feeding in the spill zone. High flows and water washing over the pipe discouraged roosting.

In the forebay zone, grebe numbers were stable with about half the birds feeding. Terns in low numbers were also feeding regularly. Occasionally, a gull, cormorant or pelican flock was noted passing by. Outside the zone, gulls and pelicans were noted along the Washington shoreline and appear to be staging. Also, a few cormorants and osprey were observed.

Nine grebes entered and seven birds were removed from the gatewell slots this week. The two remaining grebes passed to the collection channel joining the one grebe from last week. One of these grebes was removed from the channel leaving two grebes by week's end.

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

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

Fish Rescue/Salvage: No fish rescue occurred this week.

Research: For a CRITFC study, there were tissue samples removed from 81 juvenile lamprey collected at the facility this week. For the season, a total of 505 juvenile lampreys have been sampled. All fish were returned to the river unharmed.

Gas bubble trauma examinations occurred on June 13. Fish are recorded on the next data day. For the report week, two smolt were observed with signs of trauma.

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
1	6/13/22	1110	6/13/22	1515	1B STS motor failure – replace STS with spare
5	6/16/22	1600	6/16/22	1647	Intermittent exciter problem on startup

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on June 13, 14, and 15.

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	7.4’
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’, 0.4’

Comments: The south shore entrance weir depth was out of criteria on June 13 but was in criteria the next day when the tailwater elevation increased. The entrance weir is in manual control to reduce the wear and tear on the hoist machinery from the PLC constantly adjusting the weir while in automatic control, in response to fluctuating tailwater elevations caused by spill.

The north shore channel/tailwater differential was below criteria on the June 14th and 15th inspections. These readings may have resulted from the difficulty in obtaining an accurate tailwater elevation with the large amount of

turbulence caused by spill. The PLC readouts taken at almost the same times as the staff gauge readings showed channel/tailwater differentials greater than 2'.

The powerhouse operator noticed that the north fish ladder upper diffuser valve (diffuser #10) has been 90% open in automatic mode to meet the water depth criteria over the stationary weirs. The diffuser is normally at 30-40% open to meet the criteria. Diffuser #10 was shut off from 0001 hours to 0200 hours on June 16 to allow any debris on the trash rack to fall off. The diffuser is now at 60% open, so some of the debris must have cleared off. However, the trash rack will have to be lifted out with the crane to do a more thorough cleaning.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
4-6 pumps	1-2 pumps	1-2 pumps	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 and repair of the pump intake trash rack. South shore AWS pumps #4 and #7 were taken out of service one at a time from June 13 to June 16 to replace the lower seal.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

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

Comments: The gatewell drawdown on unit 1, measured on June 14, was within criteria but was an increase of 0.3' from the baseline reading. Unit 1 intake trash rack will be raked on June 23 to eliminate a possible source of fish descaling/injury.

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 STS in gatewell slot 1B was replaced with a spare STS on June 13 due to a failed motor.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	19-20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The actuator for the water regulating weirs in the collection channel is in local control due to a problem with the automatic control function. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

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

Fish Sampling: Fish condition sampling is occurring on Mondays and Thursdays of each week. See the tables below for a summary of the sampling results. Six fish in the June 13 sample exhibited body injuries. Four subyearling Chinook salmon had a small laceration or small puncture wound, and two steelhead had a gash near the dorsal fin. Unit 1 trash rack will be raked to remove any debris buildup that could be affecting fish condition.

Fish condition sampling results at Ice Harbor Dam:

Date: June 13

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	1	0	0	0
Chinook yearling unclipped	1	1	0	0
Chinook subyearling clipped	50	1	0	0
Chinook subyearling unclipped	51	1	0	0
Steelhead clipped	14	2	0	0
Steelhead unclipped	8	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	1	0	0	0
Coho unclipped	0	---	---	---
Total	126	5	0	0

Date: June 16

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	2	0	0	0
Chinook yearling unclipped	3	0	0	0
Chinook subyearling clipped	27	0	0	0
Chinook subyearling unclipped	31	0	0	0
Steelhead clipped	4	0	0	0
Steelhead unclipped	0	---	---	---
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	67	0	0	0

Removable Spillway Weir (RSW): Spring spill for fish passage is occurring.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
211.1	148.5	142.8	106.6	55	54	3.0	2.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 turbine cooling water strainers were checked for fish on June 8. A total of 110 juvenile lamprey mortalities were found.

Avian Activity: There were low to moderate numbers of piscivorous birds observed around the project (see table below). The number of gulls, cormorants, and terns counted on June 10 and 11 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). These birds were not concentrated in any particular avian observation zones but were spread out among all the zones. Gull, cormorant, and tern numbers were below the threshold number for the rest of the reporting week. Land-based hazing of piscivorous birds for 16 hours per day changed to 8 hours per day on June 12. Boat-based hazing for 8 hours per day, 3 days per week, ended on June 11.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 10	8	13	8	0	34
June 11	20	9	12	0	22
June 12	0	7	4	0	4
June 13	0	9	3	0	46
June 14	5	1	0	0	40
June 15	0	9	2	0	46
June 16	1	8	0	0	2

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*
June 13	5	5
June 16	71	71
Totals	76	76

*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: 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 5	06/13/2022	0805	7/28/2022	ERTS	6 Year Overhaul

Comments: None.

Adult Fish Passage Facility

The adult fishways were inspected by Army Corps and EAS biologists June 10, 11, 12 and 15.

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: North Shore Entrance (NSE-1) weir depth was out of criteria during the June 12 and 15 inspections with readings of 7.2 and 7.5 feet respectively. South Shore Entrance (SSE-1) weir depth was out of criteria during the June 12 inspection with a reading of 7.8 feet. The automatic system has issues keeping all criteria points within criteria during high river water levels with high flows and spills during this reporting period. South Powerhouse tailwater staff gauge’s, SG9N, frame was found loose on the April 13 inspections. If the gauge remains unreadable, readings will be taken from the digital readings. There has been an order placed for new staff gauges and the project plans to install them during the winter maintenance period.

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)	206 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 60%
	X		Any oil seen in gatewells?	

Comments: Debris was dipped out of gatewells on June 15.

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: The STSs were operating on Continuous-Run mode due to average sub-yearling Chinook salmon and sockeye salmon lengths being less than 120 mm.

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 air bubbler, zone 3, stopped functioning on April 1. The mechanics examined the bubbler and found it needed a solenoid replacement. Zone 3 is currently OOS until the electrical powerhouse staff can complete the work.

Collection Facility: The collection facility went into secondary bypass at 1300 on June 11.

Transport Summary: For safety of personnel and equipment due to high river levels and flows, since June 11 barge transport was canceled at Lower Monumental Dam. The fish collected from June 10 onward were bypassed back to the river. A total of 110,101 fish were collected with 110,067 fish bypassed back to the river during this reporting period. Bypass fish also included GBT sampled fish and sub-yearling Chinook salmon fry.

Spillway: Spring spill is occurring.

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
210.3	147.2	112.1	70.9	54.9	53.5	2.0	1.2

*Scrollcase temperatures.

Other

Cooling Water Strainers: The cooling water strainers will be examined again in July.

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
6/10/2022	1110	17	5	0	2	0
6/11/2022	1630	0	1	0	0	0
6/12/2022	1345	2	2	0	0	5
6/13/2022	1730	7	3	0	4	0
6/14/2022	1110	14	7	0	8	7
6/15/2022	1030	4	0	0	2	7
6/16/2022	1100	2	4	0	0	3

Comments: Piscivorous bird observations are occurring daily. The outfall bird cannon functioned efficiently this week. USDA hazing has ended for the season.

Invasive Species: The zebra/quagga mussel traps will be inspected in July.

Fish Rescue/Salvage: A fish rescue for the Unit 5 scrollcase took place on June 14. No fish were observed.

Research: GBT examinations occurred on June 14. A total of 39 clipped, 35 unclipped subyearling Chinook salmon, 3 clipped 2 unclipped yearling Chinook salmon and 20 clipped and 1 unclipped steelhead smolts were examined. Gas bubble trauma was detected on the fins of 1 clipped subyearling Chinook salmon and 1 clipped steelhead smolt.

Collection for the Nez Perce steelhead kelt study and rehabilitation began in early April once the tank was set up fully. A total of 10 steelhead kelts were collected during this reporting period.

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	4/14/2017	14:11	12/31/2022	ERTS	Spider and upper guide bearing repair.
6	4/18/22	5:10	12/31/2022	ERTS	Rooftop replacement / BUS work replacement

Comments: Recent updated reports from operations as to the OOS and RTS dates and times of the unit 6 outage conflicts with previously reported outage data for the same unit. Further investigation clarified previously reported Unit 6 RTS date of 4/21/2022 pertained to station service only, the anticipated RTS for regular service is 12/31/2022.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on June 11, June 13, and June 16.

Fish Ladder:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	6/13-7.9; 6/16-7.1
X	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	6/16-7.4
X	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	6/11-0.8
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 7.0’ or on sill	6/16-6.7
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 7.0’ or on sill	6/16-6.7
X	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	6/13-2.1
X	X		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 6.0’ or on sill	6/16-4.9
X	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	6/16-4.4
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 Fish System Control (FSC) was recommissioned on May 5 with NSE weir reading anomalies. Both SSE weir and NSE weir locations as well as SSE and NPE channel/tailwater differentials failed criteria during some of the inspections for this report period due

to emergency high volume spill operations for reservoir flood control measures. High Tailrace conditions peaked on June 11 with total river outflow at 243 kcfs. Weirs SSE-2, NSE-1, and NSE-2 sustained moderate damage due to elevation changes in tailrace conditions. Weir targets to NSE-1 and NSE-2 were bent, and the SSE-2 weir target was lost. Weir targets are essential for the range finder readings hence function of the FSC computing system. High emergency spill conditions persisted throughout this reporting period, with tailrace conditions continuing to fluctuate at a minimum of 1.5 ft. between spill regimes. The weirs were manually adjusted to the high spill / tailrace conditions to avoid further damage. The Fish Ladder Exit Cooling Water Pump was replaced, installed, and readied for service on April 23.

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 6,600ft² - Low 115ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: The forebay had minimal floating debris inside the trash shear boom.

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. Units 1, 2, 3, and 4 differentials were checked on June 16. ESBS and VBS camera inspections initially scheduled during this period of emergency flood control releases were rescheduled for July 5 through July 7.

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. Every other day collection for condition monitoring in conjunction with secondary bypass commenced on April 1 with the first sample being conducted on April 2. Everyday collection began April 23 coinciding with every other day barge transportation. A total of 120,577 fish were collected, 6 were bypassed, 90,759 were transported via barge, and there were 993 sample or facility mortalities. The descaling and mortality rates were 1.5% and 0.89%, respectively. No adult lamprey were removed from the separator during this report period. The collection and transport facility operated within criteria this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging transitioned to every day barging on May 16 due to an increase in fish numbers. Every other day barging resumed on May 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 on Tuesday, Thursday and Sunday each week, through March 31. Spring spill operations began as scheduled on April 3 with the ASW in high crest. The ASW was positioned in low crest on May 28.

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
203.7	146.1	131.2	70.9	55.3	52.9	2.1	1.1

*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 began April 1 with hazing beginning on March 29.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
6-10	14:40	0	0	0	0
6-11	12:40	0	0	0	0
6-12	12:45	0	0	0	0
6-13	8:30	0	0	0	0
6-14	13:45	1	0	0	0
6-15	8:30	0	0	0	0
6-16	16:40	0	0	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 listed below.

Date	Sample	Collection
6-10	1	50
6-11	0	0
6-12	0	0
6-13	0	0
6-14	4	200
6-15	0	0
6-16	1	50
Totals	6	300

Gas Bubble Trauma (GBT): GBT monitoring occurred June 15. Of the 100 fish examined, 0 fish exhibited signs of GBT.

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

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on April 1.

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
1	6/10	1204	6/10	1412	VBS Inspection

Comments: VBS inspection to find the source of a 24" x 8" chunk of VBS screen that washed down the JBS to the juvenile fish separator. Water clarity was poor due to high flow conditions. The inspection of Unit 1 did not locate the source. Water clarity decreased overnight and the inspection of the other 5 units was called off until flows recede and water clarity increases.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway on June 11, 13, and 15.

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'	7.4', 7.1', 7.6'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.5', 7.0', 7.6'
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'	0.5'
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'	
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 both entrance gates are operating, the north shore has not consistently met 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)
	X		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)	24.4 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: Gatewells are inspected for foreign substances and debris quantity and removal daily.

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 juvenile bypass system was switched from secondary bypass to general collection for transport at 0700 hours April 23.

Collection Facility: Collection for general transport began at 0700 hours April 23. Collection for NOAA in river verses transport study is occurring Sunday-Thursday. Fish are tagged and sent to a recovery tank or raceway the following day.

Transport Summary: Every-other-day transport began April 24. A total of 60,106 fish were collected and transported this week. Recovered NOAA fish in the raceway were transported every-other-day. Transport from Lower Granite was suspended for June 13 due to high spill levels creating rough tailrace conditions at the barge loading dock. The fish collected for transport on June 13 were released to the river. Collection for transport continued as normal anticipating improved conditions. Transport from Lower Granite resumed June 15.

Spillway Weir: Spring spill continues. There were 66,730 juvenile and 461 adult PIT-tagged steelhead, 100,402 juvenile and 140 adult PIT-tagged Chinook salmon, 10,815 juvenile sockeye salmon, and 4,050 juvenile coho salmon detected over the RSW spillway since March 1. Since the juvenile bypass system was watered up on March 14, PIT detection within the JBS has detected 34,849 juvenile and 9 adult Chinook salmon, 18,364 juvenile and 72 adult steelhead, 2,263 juvenile sockeye salmon, and 952 juvenile soho salmon. LWG performed an emergency debris spill from 1400 to 1510 hours June 15.

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
205.3	151.0	99.0	59.6	54.0	50.5	2.8	0.6

*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 17 Siberian prawn in the condition sample.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
June 10	1630	1	0	0	19
June 11	1045	0	0	0	0
June 12	1503	0	0	0	27
June 13	1430	0	0	0	61
June 14	1355	0	1	0	10
June 15	1020	2	0	0	2
June 16	1320	0	0	0	34

Gas Bubble Trauma (GBT) Monitoring: GBT sampling occurred June 16 with 100 smolts sampled with no symptoms of GBT.

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

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. 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. Since March 24, 473 juvenile lamprey have been collected for the study, 342 were tagged and released at Blyton Landing upstream of LWG. There were no lamprey tagged and released during this report week.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 1000 juvenile and 500 larval Pacific lamprey, not to exceed 20 juvenile or larvae daily, during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate the tribal Pacific lamprey programs efficacy and assist with guiding future management. There have been 508 macrophthalmia (juvenile) and 796 ammocoete (larval) lamprey samples have been collected this season.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT-tag Chinook Salmon and Steelhead smolts for their Survival Study April through early June to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LWG tailrace. Collection and tagging for this study ended June 18.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transporting Fish from the Snake River to Optimize Transportation Strategy:

This study aims to build on the current database of information on the seasonality of smolt-to-adult return rates (SARs). LWG biological staff began collection for the early non-transport season Monday April 1. Fish are being collected Monday and Tuesday for tagging on Tuesday and Wednesday with the barge departing LWG on Thursdays. Collection occurred Sunday-Thursday with fish being tagged Monday-Friday during the barge transport season. Collection and tagging for this study ended July 18 with the last barge departing July 19.

Idaho Power Hells Canyon Sturgeon Recruitment:

LWG Corps bio techs continue collecting passage and estimated lengths and of White Sturgeon prior to removing them from the separator in support of Idaho Power Sturgeon program.