U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#16-2022

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: June 17 – June 23, 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
1, 3 & 10	6/22	0704	6/22	1341	Trash rack cleaning, rotated through units

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 June 17, 19 and 22. In person fish counting and video review of nighttime lamprey passage continued.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.0’
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 1.1’
X		Washington Count Station Differential	0.0’ to 0.5’	0.2’ to 0.4’

Comments: Debris loads were minimal to moderate near the Oregon exit and light to moderate near the Washington exit. Most of the new incoming debris was arriving along both shorelines at times and would be considered moderate. 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, a low water alarm came in and the exit weirs were adjusted on June 22.

At the Washington shore exit, high picketed lead differential, exit weir and high flow alarms came in and were reset after the leads were cleaned on June 19.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.6' to 1.8'
X			NFEW2 Weir Depth	≥ 8.0'	8.1' to 8.2'
	X		NFEW3 Weir Depth	≥ 8.0'	Raised
	X		South Oregon Entrance Head Differential	1.0' – 2.0'	0.5' to 0.9'
	X		SFEW1 Weir Depth	≥ 8.0'	6.2' to 6.6'
	X		SFEW2 Weir Depth	≥ 8.0'	6.2' to 6.9'
	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 1.5'
X			WFE2 Weir Depth	≥ 8.0'	9.6' to 10.5'
X			WFE3 Weir Depth	≥ 8.0'	8.9' to 10.1'

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. SFEW2 was in and out of manual mode on June 17. The weir had reached its upper limit. With tailwater elevation lowering, the electrical staff will adjust the limit at a later date. Also, lower tailwater elevations, should improve the south Oregon entrance head differential.

By comparing the dial and digital readouts, it was determined WFE3 was out of calibration on June 19. However, the entrance cannot be recalibrated until the spill season concludes. At this time, the weir remains in criterion.

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				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. Return to service dates are subject to change.

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 moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to moderate near the powerhouse and moderate beside the spillway. New debris loads were minimal to moderate and arrived across the forebay. Much of the debris was woody material and aquatic vegetation. The operators continued to flush debris through the navigation lock.

The trash rack cleaning occurred in units 1, 3 and 10 with 37 yards of debris removed on June 22. No fish were observed.

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 and 8A slot. Both units remain out of service. The emergency bulkhead remains in 8A slot. Camera inspections did not occur this week.

Daily VBS differential monitoring revealed no high differentials. One screen was cleaned on June 18. There were no fish observed.

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, and trash rack cleaning as required. The orifice in 8A slot remained closed and the 8B slot north orifice remained open due to the emergency bulkhead installed in 8A slot.

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, 41,400 juvenile lamprey and 251,404 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 and be reset.

One juvenile lamprey mortality was removed from under the primary/secondary bypass gate 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
436.8	398.8	315.6	255.9	57.4	53.3	2.0	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 continued. 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 continued. 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 17	Spill	15	0	15	1	0
	Powerhouse	0	0	10	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	19
June 18	Spill	25	0	12	0	0
	Powerhouse	5	0	35	2	0
	Outfall	0	0	0	0	0
	Forebay	0	0	5	0	40
June 19	Spill	0	0	13	10	0
	Powerhouse	0	0	23	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	1	0	26
June 20	Spill	0	2	3	7	0
	Powerhouse	3	0	22	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	2	0	35
June 21	Spill	0	0	11	12	0
	Powerhouse	0	0	19	0	0

	Outfall	0	0	0	0	0
	Forebay	0	0	2	0	7
June 22	Spill	0	0	10	12	0
	Powerhouse	0	0	18	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	10
June 23	Spill	0	0	5	14	0
	Powerhouse	0	0	12	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	6

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. Also, it is feared the wave action may have damaged both units.

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. Boat hazing concludes July 9.

In the spillway zone, gull numbers declined. Tern and pelican numbers increased. A few cormorants were noted. The terns feed in the basin and the pelicans feed along navigation lock wing wall. We assume the pelicans are feeding on adult shad and sockeye. Some of the pelicans observed were in flight.

In the powerhouse zone, tern numbers increased. Flow volume, turbidity or some other factor moved some of the terns from the spillway to the powerhouse zone to feed on subyearling Chinook salmon. Also, few gulls and pelicans were noted.

In the bypass outfall zone, no birds were observed. High flows and water washing over the pipe discouraged roosting and feeding.

In the forebay zone, grebe and tern numbers were stable with most birds feeding. Outside the zone, gulls and pelicans were noted along the Washington shoreline. Also, a few cormorants, blue herons, and osprey were observed.

No grebes entered the gatewell slots this week. Two grebes remained in the collection channel until June 21. That day, one was removed, and one passed to the separator where it was also removed.

Invasive Species: The next mussel station examinations will occur on June 26.

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 60 juvenile lamprey collected at the facility this week. For the season, a total of 565 juvenile lampreys have been sampled. All fish were returned to the river unharmed.

Gas bubble trauma examinations occurred on June 17, 21, and 23. 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
6	6/21/22	0631	6/21/22	1027	Hub tap – check for oil loss
5	6/21/22	1031	6/21/22	1341	Hub tap – check for oil loss
4	6/22/22	0740	6/22/22	1533	Hub tap – check for oil loss
1	6/23/22	0713	6/23/22	1115	Rake unit intake trash rack

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on June 21, 22, and 23.

Fish Ladders:

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

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
x			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
x			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
	x		South Shore Channel Velocity	1.5 – 4.0 fps	1.3 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: On June 21, the water velocity in the south shore junction pool was below criteria. The higher tailwater and channel levels cause the water to back up in the ladder upstream of the junction pool, resulting in lower junction pool velocities.

The powerhouse operator noticed that the north fish ladder upper diffuser valve (diffuser #10) had 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 was shut off again from 2202 hours to 2345 hours on June 22. Afterwards the diffuser was at 60% open, so some of the debris must have cleared off. On June 29, the diffuser was turned off from 0705 hours to 0805 hours so the trash rack could be lifted out with the crane to do a more thorough cleaning. Diffuser #10 is now at 40% open in automatic mode. See MOC 22 IHR 05 for more information.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply (AWS) System
5 pumps	1 pump	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 pump #7 remains out of service 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 50 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-8%
	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 racks were raked on June 23 to eliminate a possible source of fish descaling/injury. Approximately 8 cubic yards of debris were removed.

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 were scheduled to be inspected with the underwater video camera during the reporting week. The turbid water conditions prevented the inspections from occurring. The next monthly inspections will be in July.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: 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. Seven steelhead and three yearling Chinook salmon exhibited fin hemorrhaging that was not associated with fin injuries and was more likely symptomatic of disease.

Fish condition sampling results at Ice Harbor Dam:

Date: June 20

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

Date: June 23

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	0	---	---	---
Chinook yearling unclipped	4	1	0	0
Chinook subyearling clipped	34	0	0	1
Chinook subyearling unclipped	59	0	0	1
Steelhead clipped	43	0	0	3
Steelhead unclipped	7	0	0	0
Sockeye clipped	1	0	0	0
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	148	1	0	5

Removable Spillway Weir (RSW): Spring spill for fish passage ends June 20, with summer spill beginning June 21.

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
141.7	98.7	111.5	42.3	54	53	2.6	1.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The next monthly turbine cooling water strainer inspections will occur in July.

Avian Activity: There were low numbers of piscivorous birds observed around the project (see table below). Land-based hazing of piscivorous birds is occurring for 8 hours per day.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 17	2	6	3	0	10
June 18	3	6	0	0	4
June 19	1	8	1	0	9
June 20	0	2	0	0	6
June 21	4	3	0	0	7
June 22	1	3	0	0	19
June 23	0	4	0	0	3

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

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

Date	Sample (euthanized)	Collection*
June 20	51	51
June 23	5	5
Totals	56	56

*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 1	6/23/2022	1539	6/23/2022	1717	Bad Nexus Board
Unit 3	6/16/2022	1500	6/21/2022	1202	Annunciator Breaker Tripping
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 17, 18, 19 and 22.

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 18 inspection with a reading of 7.4 feet. Powerhouse operator was informed that the digital readout did not match the mechanical gauge at the weir and they changed setpoints to bring the weir back into criteria. A trouble report was created. 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)	55 yds^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 40%
	X		Any oil seen in gatewells?	

Comments: Debris was dipped out of gatewells on June 21 and June 22 from several slots.

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. On June 21, there were three partially plugged orifices cleared in the JCC. On June 22, another orifice was noted as partially plugged. No mortality was noted either day.

Collection Facility: The collection facility was in secondary bypass throughout this reporting period.

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 33,059 fish were collected with 33,053 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 ended, and summer spill began at 0000 on June 21.

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
136.1	96.7	84.1	18.6	56.5	53.5	2.7	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
6/17/2022	1030	4	1	0	0	5
6/18/2022	1530	5	0	0	0	0
6/19/2022	1430	7	4	0	0	5
6/20/2022	1330	0	0	1	1	8
6/21/2022	1540	0	0	0	0	1
6/22/2022	1115	2	1	0	0	0
6/23/2022	1030	4	3	0	0	0

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

Research: GBT examinations occurred on June 21. A total of 26 clipped, 33 unclipped subyearling Chinook salmon, 1 clipped yearling Chinook salmon and 34 clipped and 5 unclipped steelhead smolts were examined. Gas bubble trauma was detected on the fins of 3 unclipped 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 3 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: 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 ODFW staff inspected the adult Fishway on June 18, June 20, June 22, and June 23.

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	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	6/18-6.1; 6/20-6.3
X	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	6/18-6.4; 6/20-6.6
X	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	6/18-2.3; 6/20-2.2
		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	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	6/18-2.2
X	X		North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	6/18-4.0; 6/20-3.7
X	X		North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	6/18-3.7; 6/20-3.7
X	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	6/18-2.4; 6/20-2.3
X	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	6/22-S-0.9

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, NPE and NSE channel/tailwater differentials failed criteria during the first half of inspections for this report period due to emergency high volume spill operations for reservoir flood control measures. USACE staff manually repositioned SSE and NSE weirs post the June 20 inspection upon determination that emergency flood control flows had peaked and were in decline. The June 20 adjustments became effective for the June 22 and June 23 inspections. 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 5,005ft² - Low 10ft²
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 22. 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 53,571 fish were collected, 18,999 were bypassed, 63,118 were transported via barge, and there were 273 sample or facility mortalities. The descaling and mortality rates were 1.8% and 0.46%, respectively. One adult lamprey was 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. Barge transportation for the season ended with the final barge departure of June 19.

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. Summer spill operations began as scheduled on June 21.

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
130.0	98.4	73.9	29.8	58.3	53.5	2.6	1.7

*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
6-17	13:40	0	0	0	0
6-18	8:30	0	0	0	0
6-19	8:30	0	0	0	0
6-20	8:30	0	0	2	0
6-21	8:30	1	0	0	3
6-22	8:30	0	0	0	2
6-23	12:40	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
6-17	0	0
6-18	10	500
6-19	10	250
6-20	0	0
6-21	0	0
6-22	1	20
6-23	0	0
Totals	21	770

Gas Bubble Trauma (GBT): GBT monitoring occurred June 22. Of the 101 fish examined, 1 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

Comments: A rolling unit outage was scheduled for June 21. VBS in unit 5 gatewells were inspected with no identifiable damage. The inspection of remaining units was called off due to turbidity. ESBS and VBS inspections are scheduled for June 26-27.

Adult Fish Passage Facility

Lower Granite Biologists and Anchor QEA staff inspected the adult fishway on June 17, 18, 20, and 22.

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: The fish ladder temperature probes and system were upgraded over the winter outage season. NWW and NWD is working on resolving the issue with being able to automatically upload the data to the temperature website. Temperature data from HOBO deployed in all ladder locations are in Figure 1 at the end of this report.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.6’, 7.8’, 7.5’, 7.5’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.6’, 7.8’, 7.4’, 7.4’
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
	X		North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	7.8’
	X		North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	7.8’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.4’, 0.8’, 0.4’
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	0.9’
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)	53.3 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: ESBS and VBS inspections are scheduled for June 26-27. A piece of what seems to be VBS screen was removed from the juvenile separator June 10. LWG will perform full VBS inspections to attempt to identify the source of the screen during the scheduled ESBS inspections June 26-27.

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 every-other-day barge transport ended June 19. Collection for NOAA in river verses transport study ended June 16 with the last day of tagging June 17. The juvenile collection facility was changed to secondary bypass mode at 0700 hours June 19. There were 22,124 fish bypassed to the river this week.

Transport Summary: A total of 37,145 fish were collected and transported on barges departing LWG every-other-day this week. Recovered NOAA fish that were PIT tagged as part of the ongoing study were transported every-other-day. The last barge of the season departed LWG June 19.

Spillway Weir: Summer spill started at 0001 hours June 21. There were 102,217 juvenile and 154 PIT-tagged adult Chinook salmon, 72,617 juvenile and 473 adult PIT-tagged steelhead, 10,815 juvenile sockeye salmon, and 4,062 juvenile coho salmon detected over the RSW spillway since March 1. There have been 34,766 juvenile and 11 adult Chinook salmon, 18,005 juvenile and 80 adult steelhead, 2,112 juvenile sockeye salmon, and 950 juvenile coho salmon JBS full flow PIT tag detections since March 14 (DART).

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
134.2	102.0	78.3	20.0	56.0	53.7	4.2	1.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There was 2 Siberian prawn in the condition sample this report week.

Avian Activity: Biologist daily piscivorous bird counts and hazing continues at Lower Granite Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
June 17	1310	1	0	0	19
June 18	1120	0	0	0	0
June 19	1314	0	0	0	27
June 20	1215	0	0	0	61
June 21	1245	0	1	0	10
June 22	1349	2	0	0	2
June 23	0905	2	0	0	9

Gas Bubble Trauma (GBT) Monitoring: GBT sampling ended June 16.

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. A total of 473 juvenile lamprey were collected for this study with 342 tagged and released at Blyton Landing upstream of LWG. Collection for the study has ended.

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 516 macrophthalmia (juvenile) and 836 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 June 18 with the last barge departing June 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.

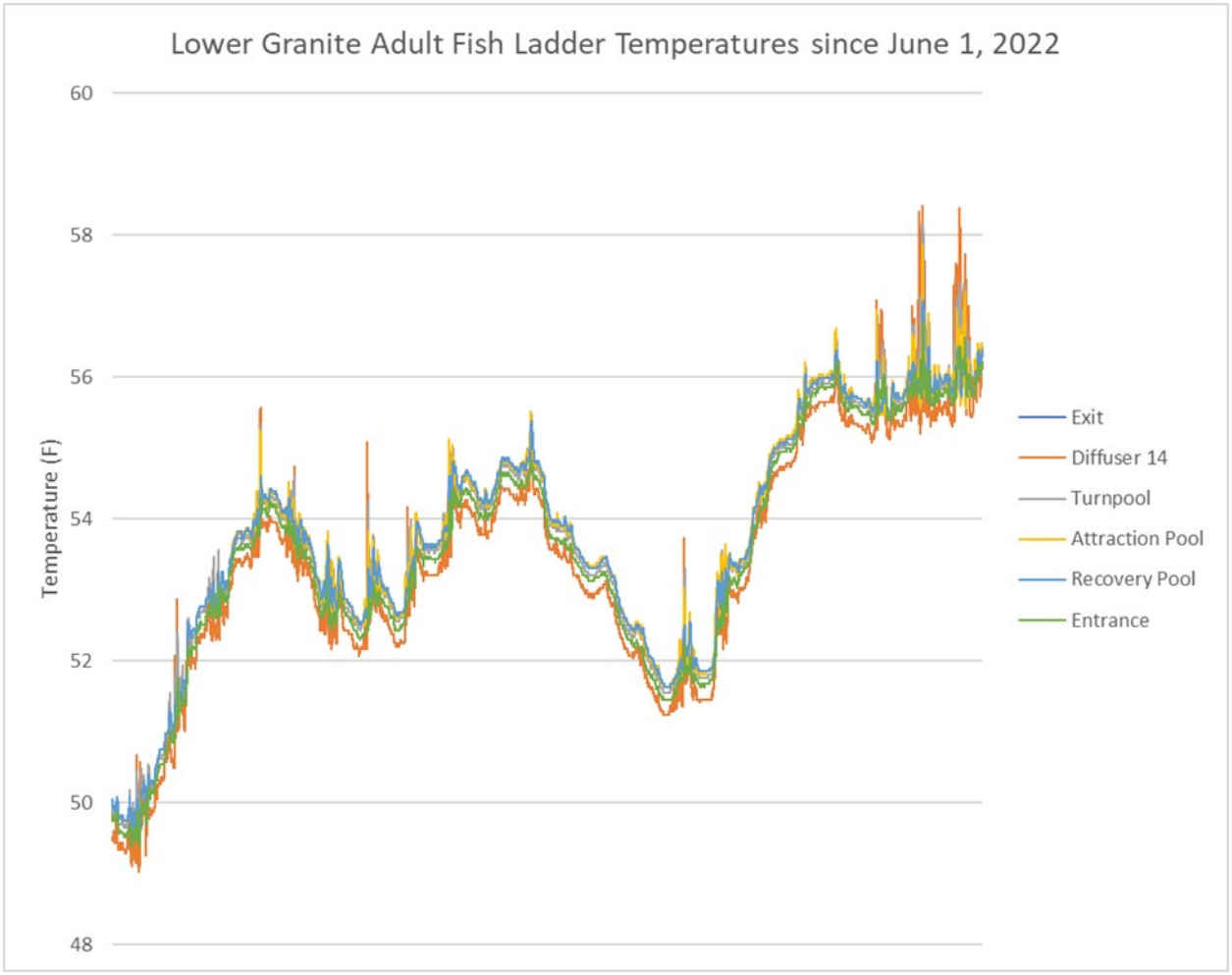

Figure 1. Lower Granite Dam adult fish ladder temperatures since June 1, 2022.