U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#35-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: October 20 – 26, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint concludes on November 1.

Yes	No	Turbine Unit Status
☐	☒	All 14 turbine units available for service throughout the week (see Table 1 for outage details below).
☒	☐	All turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
3	Oct 10 to Dec 8	60 days	9-year overhaul.
14	Oct 23 to 27	4.1 days	Annual maintenance.
9 & 10	Oct 24	49 minutes total	Extended-length submersible bar screens (ESBSs) camera inspections.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on October 22, 23 and 26. Visual fish counts will conclude on October 31, at which time, video review of adult passage will begin. The fisheries staff is exploring installing still wells at the water temperature monitoring locations.

Fish Ladder Exits:

Criteria met?

Yes	No	Location, Criteria and Measurements
☒	☐	Oregon Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Oregon Count Station Differential (Criteria – Differential 0.0’ to 0.5’)
☒	☐	Washington Exit (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	Washington Count Station Differential (Criteria – Differential 0.0’ to 0.5’)

Comments: The trash racks and picketed leads were cleaned as needed, including Saturdays, at both exits.

Debris loads at the Washington exit and along the shoreline were minimal. The Regulating weir set point was adjusted on October 22. While conducting a tour on October 25, the assistant biologist noted the count station differential was approximately 1.1 feet. The general maintenance staff was informed and the picketed leads were immediately cleaned.

At the Oregon exit and along the shoreline, debris loads were minimal. The encoder for tilting weir 339 has not been replaced. This weir rarely moves and will be adjusted manually. On October 22, the regulating weir set point was adjusted. On October 26, tilting weir 338 was in manual mode for 6.2 hours to insure the weir above water components could be safely painted. Due to a stable forebay elevation, the ladder remained in criteria.

The exit traveling screens debris trough continued to be cleaned as needed.

Fishway Entrances and Collection Channel:

Yes	No	Location, Criteria and Measurements
☒	☐	North Oregon Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	NFEW2 Weir Depth (Criteria – ≥ 8.0’)
☐	☒	NFEW3 Weir Depth (Criteria – ≥ 8.0’): 7.9’ on October 22.
☒	☐	South Oregon Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	SFEW1 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	SFEW2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	Oregon Collection Channel Velocities (Criteria –1.5 to 4.0 fps): Averaged 1.7 fps.
☒	☐	Washington Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	WFE2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	WFE3 Weir Depth (Criteria – ≥ 8.0’)

Comments: Entrance weir NFEW3 was out of criterion on October 22. That day, the biologist requested all operational Oregon ladder entrance weirs set points be lowered by approximately one tenth of an inch.

Auxiliary Water Supply System:

Yes	No	In Service?
☒	☐	Washington shore Wasco County PUD Turbine Unit.
☐	☒	Washington shore Wasco PUD Bypass. Service was not required.
☒	☐	Oregon Ladder Fish Pump 1: Blade angle was approximately 23 degrees.
☒	☐	Oregon Ladder Fish Pump 2: Blade angle was approximately 20 to 21 degrees.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was approximately 23 to 24 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: There are no problems to report.

Juvenile Fish Passage Facility

General Comments: Fall primary bypass season continues. Light maintenance, preparations for the winter work list, cleaning and partial winterization has begun at the facility and in the collection channel.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable?
☒	☐	Trash rack differentials measured? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☐	☒	Any debris seen in gatewells?
☐	☒	Any oil seen in gatewells?

Comments: Forebay debris loads near the powerhouse were moderate to heavy. Debris loads at the spillway were minimal. New incoming debris loads were minimal. No trash racks were cleaned.

ESBSs/Vertical barrier screen (VBSs):

Yes	No	Item
☒	☐	ESBSs deployed in all slots?
☒	☐	ESBSs inspected this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A
☒	☐	VBSs differentials checked this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A

Comments: The brush cycles for the screens in 1A, 1B, 3B, 7B, 8C, 12B, units 11 and 14 remained in timer mode. The ESBS brush on the screen in 1B slot continued to cycle more frequently than the brushes on the ESBSs in adjacent slots. On October 26, an electrician examined the brush control program again in an attempt to resolve the issue. Also, that day, though the cycle count was stable, the electrician switched the brush cycle for the screen in 13A slot from timer to automatic mode. ESBS camera inspections occurred in units 9 and 10 on October 24. No problems were found. Due to the camera having limited pan and tilt functions, we have limited the inspections to two units per week.

VBS differential monitoring continued. No high differential measurements were recorded. Four screens were cleaned on October 23. No mortalities were observed.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? 42 orifices were open.
☒	☐	Dewatering and cleaning systems operating satisfactory?

Comments: Orifices were adjusted as required for VBS cleaning. We continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle.

On October 22, from 0852 to 0921 hours, as part of the station service upgrades, the collection channel was without power. The outage resulted in no adverse effects.

Bypass Facility:

Yes	No	Item
☐	☒	Sample gates on? Fall bypass season continues.
☐	☒	Passive integrated transponder (PIT) tag system on? Fall bypass season continues.

Comments: During the fall primary bypass season, PIT tag detection occurs in the full flow pipe. All systems remained out of service. Light maintenance, cleaning and partial winterization continues.

River Conditions

General Comments: River conditions were provided by the control room and outlined in Table 2 below. The data period runs from 0000 to 2400 hours each day.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
94.0	61.8	0.0	0.0	58.0	57.0	6.0	5.8

Comments: There are no problems to report. Scheduled spillbay hoist maintenance continues.

Other

Inline Cooling Water Strainers: Regional discussion and agreement have moved the next cooling water strainer examinations to December.

Invasive Species: The next mussel station examinations will occur in early November.

Avian Activity: Casual avian observations continue while doing other inspections. Overall, gull and cormorant numbers appear to be fluctuating with the juvenile shad outmigration. A large number of gulls (estimates have reach 500 birds) were roosting on project inside and outside of the counting zones in multiple locations. Gulls and cormorants were feeding at the bypass outfall. Gulls were also feeding in the powerhouse flow. The birds in the spillway zone are roosting on the navigation lock wing wall and other structures.

In the forebay zone, an occasional gull, gull flock, cormorant or grebe was observed. A few gulls were occasionally observed on the rocks by the Washington shore boat dock.

Fish Salvage/Rescue: None occurred.

Research

Item: No onsite research is occurring at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 20 – October 26, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☐	☒	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: Unit 2 was taken out of service on April 25, 2016, at 0606 hours for the runner replacement. Unit 4 was removed from service at 1218 hours on March 6, 2017, when it tripped off due to a problem in the 115 kv section 2 bus. That problem was fixed. The unit 4 hub oil drain valve was replaced to address an oil leak. Annual maintenance was performed on the unit. Unit 4 was returned to service on October 26 at 1642 hours.

Unit 3 was noted to be operating a few megawatts below the 1% peak operating efficiency range on the October 24 fishway inspection. This was due to the GDACS program needing to be updated with the narrower operating efficiency range of unit 3 since it became a fixed-blade unit.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on October 23, 24, and 26.

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)

Comments: None.

Fishway Entrances and Collection Channel:

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

Comments: NSE-1 weir depth was out of criteria on October 24, with a depth of 7.0’ while the weir gate was not on sill. This was partly due to the electronic readout of the north shore tailwater elevation being out of calibration. This has been reported to the electricians for calibration.

Auxiliary Water Supply (AWS) System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	South Shore AWS Pumps. Six of the eight south shore AWS pumps were in service.
☒	☐	North Shore AWS Pumps. Two of the three north shore AWS pumps were in service.

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 87 square yards of debris was observed.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐N/A
☒	☐	Any debris seen in gatewells (i.e: over 10% coverage)? Surface coverage ranged from 0% to 35%.
☐	☒	Any oil seen in gatewells?

Comments: None.

STSs/VBSs:

Yes	No	Item
☐	☒	STSs deployed in all slots and in service?
☐	☒	STSs in continuous-run mode (If not, then STSs are in cycle-run mode)?
☐	☒	STSs inspected this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: STSs are in cycle-run mode. Unit 2 STSs are not installed since the unit will not be returned to service this year.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? How many are open and in service? 20.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: A high-differential alarm across the primary dewaterer inclined screen occurred on October 21, triggering the open orifices from 2A through 6C to automatically shut and the mechanical screen cleaner to cycle continuously. Upon immediate investigation, the water level in the channel and the differential were observed to be normal, so the orifices were opened back up. The automated systems for the orifices and screen cleaner were turned off to keep the orifices open and reduce the wear and tear on the screen cleaner. In the meantime, the screen cleaner was operated in manual mode as needed. On October 24, electricians looked at the water level sensors and found that the cause of the problem was a dirty sensor giving a false reading. Electricians cleaned the probe, and the systems were switched back to automatic operation on October 25.

Juvenile Fish Facility: The fish facility is in bypass operation.

Fish Sampling: Sampling is done for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done for the season.

River Conditions

River conditions during the week are outlined in Table 1 below.

Table 1. 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
28.9	12.0	0	0	59	56	7.2	6.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections for lamprey are no longer required from July to November.

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

Avian Activity: There were low numbers of piscivorous birds around the project, with most of them observed roosting on Eagle Island.

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: October 20 - 26, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint.

Constraint in effect: ☒ Hard ☐Soft. Hard constraint began at 0000 hour on April 1.

Comments: Unit 1 was removed from service on December 10, 2014 for Unit Rehabilitation with an estimated return to service date of May 31, 2018. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service of June 30, 2018. Unit 6 was removed from service at 1545 on October 4 due to an issue with the STS hanging over gatewell 6A and returned to service at 1545 on October 24. Unit 3 was removed from service at 0845 on October 20 for a digital governor installation with an estimated return to service of December 7, 2017.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on October 23, 25 and 26.

Fish Ladders:

Yes	No	Location, Criteria and Measurements
☒	☐	North Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	North Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.4’)
☒	☐	North Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☒	☐	South Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	South Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	South Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☒	☐	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐	☒	South Powerhouse Entrance (SPE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐	☒	South Powerhouse Entrance (SPE-2) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐		South Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐	☒	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0’ or on sill)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 6.0’ or on sill)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’

Comments: South Powerhouse Entrance weirs (SPE-1 and SPE-2) were on sill during all inspections. While on sill readings for both were 7.1, 6.6 and 6.9 feet. South Shore Entrance (SSE-1) was on sill during the October 23 and 25 inspections with readings of 7.9 and 7.8 feet.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☐	☒	AWS Fish Pump 1.
☒	☐	AWS Fish Pump 2.
☒	☐	AWS Fish Pump 3.

Comments: Pump 1 will be out of service throughout this season unless an emergency occurs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 278 square yards of debris observed in forebay.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☒	☐	Any debris seen in gatewells?
☐	☒	Any oil seen in gatewells?

Comments: Gatewell debris ranged from 0 to 20% during inspections.

STSs/VBSs:

Yes	No	Item
☒	☐	STSs deployed in all slots and in service?
☐	☒	STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
☐	☒	STSs inspected this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: STS's were operating on cycle mode due to CH0 lengths being over the 120 mm criteria point.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	Item
☒	☐	Orifices operating satisfactory? How many are open and in service? 18.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: None.

Collection Facility: Collection for transport ended at 0700 on October 1, at which time the facility was placed into primary bypass. The collection facility was dewatered on October 11.

Transport Summary: Transport season ended on October 1.

River Conditions

General Comments.

Table 1. 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
26.2	12.5	0	0	57.5	57.0	5.7	4.4

*Scrollcase temperatures.

Spill: The RSW spill was closed on August 18. Summer spill ended at 0000 on September 1.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 16. There were zero live fish. Mortalities included 14 Siberian prawns and 13 YOY American shad.

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

Avian Activity: Gulls and cormorants were the predominant piscivorous bird species observed during fish ladder inspections this week. Tailrace counts ended July 13.

Outfall pipe bird water cannons were shut down and dewatered on October 12.

Research: No onsite research is in progress at this time.

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: October 20-26, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see Table 1 for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Table 1. Little Goose Unit Outages

Unit	OOS Date	OOS Time	RTS Date	RTS Time	Outage Description
2	10-Oct	07:20	26-Oct	14:58	Unit Annual
4	16-Oct	14:11	20-Oct	16:05	Wicket Gate Packing Repair
5	14-Apr	14:11	28-Feb	17:00	Upper Guide Bearing Repair

Comments: None.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on October 22, 24 and 26.

Fish Ladder:

Yes	No	Location, Criteria and Measurements
☒	☐	Fish Ladder Exit Differential (Criteria – Head ≤ 0.5’)
☒	☐	Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3’)
☒	☐	Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0’ to 1.3’)
☐	☒	Emergency Ladder Exit Cooling Water Pumps in Service
☐	☒	Emergency Ladder Exit Cooling Water Pumps Operating Satisfactorily.

Comments: Emergency cooling pump permanent power is scheduled to be installed during the winter maintenance outage.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☒	☐	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0’)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 8.0’)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☐	☐	☒	North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: ≥ 7.0’ or on sill)
☐	☐	☒	North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: ≥ 7.0’ or on sill)
☒	☐		North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 6.0’ or on sill)
☒	☐	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 6.0’ or on sill)
☒	☐		North Shore Channel/Tailwater Differential (Criteria: 1.0’ – 2.0’)
☒	☐		Collection Channel Surface Velocity (Criteria: 1.5 – 4.0 fps)

Comments: Rickly velocity measurement was conducted on October 23 and averaged 2.98 fps.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	AWS Fish Pump 1 (operating).
☒	☐	AWS Fish Pump 2 (operating).
☒	☐	AWS Fish Pump 3 (operating).

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable.
☐	☒	Trash rack differentials measured this week? If so, were differentials acceptable? ☐ Yes ☐ No ☒ N/A.
☐	☒	Any debris seen in gatewells (i.e: over 10% coverage)?
☐	☒	Any oil seen in gatewells?

Comments: There is an estimated 1,800 square feet of floating woody debris in the immediate forebay.

Spillway Weir: Temporary spillway weir was closed for the season on July 19 at 09:00.

ESBS/VBS:

Yes	No	Item
☒	☐	ESBSs deployed in all slots and in service?
☒	☐	ESBSs inspected this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: Tested ESBS screens on October 26, all functioned satisfactorily.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	Item
☒	☐	Orifices operating satisfactory? How many are open and in service? 19 open.
☒	☐	Dewaterer and cleaning systems operating satisfactory? N/A

Comment: Orifices and primary dewatering structure are being back flushed every 8 hours.

Collection Facility: Juvenile Fish Facility is currently operating.

Transport Summary: The collection and transportation facility operated in criteria this report period. A total of 866 fish were collected and 795 were transported during this report period. The descaling and mortality rates were 3.0% and 0.3% respectively. This weekly report period saw 1 adult lamprey removed from the raceways or sample and released one mile above the Dam at Little Goose Landing.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
24.7	15.4	0	0	58.3	57.3	5.9	4.8

*Ladder temperature.

Comment: Spill ended at midnight August 31.

Other

Inline Cooling Water Strainers: Cooling water strainers will be inspected again starting in December.

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

Avian Activity: USDA bird hazing ended on June 25. See table 3 for USACE counts.

Table 3. Daily Piscivorous bird counts at Little Goose Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
10-20	13:30	79	31	0	0
10-21	08:00	44	40	0	0
10-22	13:50	177	15	0	0
10-23	13:50	219	42	0	0
10-24	08:00	60	22	0	0
10-25	13:30	41	23	0	0
10-26	10:00	94	57	0	0

Gas Bubble Trauma: Final GBT sampling for the season was conducted on August 21.

Research: No research is currently being conducted at this time.

Siberian Prawn: 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. There were 210 prawns collected in the sample and euthanized during this report period. Prawn numbers are outlined in Table 4 below.

Table 4. Daily Siberian prawn sample.

Date	Sample	Collection
10-20	18	18
10-21	36	36
10-22	20	20
10-23	7	7
10-24	13	13
10-25	76	76
10-26	40	40
Total	210	210

Project: Lower Granite
Biologists: Elizabeth Holdren and Stephen Hampton
Dates: October 20-26, 2017

Turbine Operation

Yes	No	Turbine Unit Status
☐	☒	All 6 turbine units available for service throughout the week (see comments below for outage details).
☒	☐	Available turbine units operated within 1% peak efficiency constraint. Constraint in effect: ☒ Hard ☐Soft.

Comments: Unit 1 remains out of service for blade/runner repair. Unit 2 currently has hydraulically locked blades that limit operation to the upper end of 1% peak efficiency constraint. Unit 3 remains out of service for annual maintenance.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists October 21, 23, 24, and 25.

Fish Ladder:

Yes	No	Location, Criteria, and Measurements
☒	☐	Fish Ladder Exit Differential (Criteria – Head ≤ 0.5')
☒	☐	Fish Ladder Picketed Lead Differential (Criteria – Head ≤ 0.3')
☒	☐	Fish Ladder Depth over Weirs (Criteria – Head over weir 1.0' to 1.3')
☐	☒	Ladder Temperature Pumps in Service.
☒	☐	Ladder Temperature Pumps Operating Satisfactorily.

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location, Criteria and Measurements
☒	☐	☐	South Shore Entrance (SSE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐	☐	South Shore Entrance (SSE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		South Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☐	☒	☐	North Powerhouse Entrance (NPE-1) Weir Depth (Criteria: ≥ 8.0' or on sill)
☐	☒	☐	North Powerhouse Entrance (NPE-2) Weir Depth (Criteria: ≥ 8.0' or on sill)
☒	☐		North Powerhouse Entrance Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☐	☒	☐	North Shore Entrance (NSE-1) Weir Depth (Criteria: ≥ 7.0' or on sill)
☐	☒	☐	North Shore Entrance (NSE-2) Weir Depth (Criteria: ≥ 7.0' or on sill)
☐	☒		North Shore Channel/Tailwater Differential (Criteria: 1.0' – 2.0')
☒	☐		Collection Channel Velocity (Criteria: 1.5 – 4.0 fps)

Comments: NSE-2 has been out of service since 2011 and remains set with a chain fall hoist in the closed position to improve channel/tailwater head differential. NPE 1 depth over weir was out of criteria October 25 with gate depth reading of 7.7 feet. NPE 2 depth over weir was out of criteria October 21 and 25 with gate depth readings of 7.3 feet and 7.5 feet. NSE 1 depth over weir was out of criteria on all inspections with gate depth readings of 6.7', 6.5', 6.7', and 6.3 feet. NSE 1 channel/tailwater head differential was out of criteria on October 24 with a reading of 0.9 feet. The fish ladder control system continues to be unable to maintain both depth over the weir and channel/tailwater head differential at the north shore during spill at current tailwater elevation. NSE depth over the

weir criteria is being sacrificed to achieve channel/tailwater head differentials. Electricians and operations continue to troubleshoot the fish ladder control system to address the issues during the winter maintenance outage.

Collection Channel Velocity: Collection channel velocities were in criteria on all inspections.

Auxiliary Water Supply System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	AWS Fish Pump 1 (operating).
☐	☒	AWS Fish Pump 2 (operating).
☒	☐	AWS Fish Pump 3 (operating).

Comments: AWS pump 2 is in standby mode. AWS pump 1 remains in fast operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? Debris was observed in the powerhouse forebay this week.
☒	☐	Trash rack differentials measured this week? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☐	☒	Debris in gatewells (i.e.: over 10% coverage)?
☐	☒	Oil in gatewells?

Comments: Forebay debris in front of the powerhouse averaged about 51.25 square yards this week.

ESBSs/VBSs:

Yes	No	Item
☐	☒	ESBSs deployed in all slots and in service?
☐	☒	ESBSs inspected this week? If so, were results acceptable? ☒ Yes ☐ No ☐ N/A
☐	☒	VBSs differentials checked this week? If so, were results acceptable? ☐ Yes ☐ No ☒ N/A

Comments: ESBS are dogged off in gatewell slots.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	Item
☐	☒	Orifices operating satisfactory? There are 18 orifices operating.
☐	☒	Dewaterer and cleaning systems operating satisfactory?

Comments: Dewatered.

Collection Facility: Dewatered.

Transport Summary: No transport is occurring.

River Conditions

General Comments.

Table 1: 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
22.8	17.5	3.6	3.5	55.6	53.9	5.0	4.8

Other

Adult Fish Trap Operations: The adult trap is in twenty-four hour operation seven days a week at a 20% sample rate. Collection for Lyons Ferry and Nez Perce hatcheries for female fall Chinook has concluded for the season. Both hatcheries are continuing to collect large male fall Chinook.

Inline Cooling Water Strainers: N/A

Invasive Species: No signs of mussels were present during the October 16 inspection.

Avian Activity: Piscivorous bird continue to be counted in the forebay and tailrace (Table 2).

Table 2. Daily piscivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
October 20	1300	2	14	0	0
October 21	1000	6	20	0	0
October 22	0807	1	5	0	0
October 23	1505	3	23	0	0
October 24	1530	3	1	0	0
October 25	1405	2	8	0	0
October 26	1445	4	0	0	0

Spill: Inflow is too low to maintain minimum generation with unit 2 operating and RSW spill as coordinated for early juvenile facility shut down as part of Phase 1a construction. Spill is being managed based on river flow with unit 4 in operation. If river flows drop below the minimum required to operate both unit 4 and the RSW, operation will shift to deep spill through spillbay 2 with two stops open at about 3.5 kcfs. Water will be pooled when possible to provide spill for fish and minimum generation.

Gas Bubble Trauma (GBT) Monitoring: N/A.

Research: N/A.