U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#23-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: July 28 – August 3, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint and the saw tooth unit priority for warm water temperature abatement continue.

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 & 4	Jul 24 to 28	4 days	Transformer 2 annual maintenance.
13	Jul 31 to Aug 3	4 days	Unit annual maintenance.
10 & 11	Aug 1	1.2 hours total	Extended-length submersible bar screens (ESBSs) camera inspections.
6	Aug 2	8.2 hours	Hub tapped.
14	Aug 3	9.4 hours	Ground issue.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on July 28, 30 and August 2. Visual fish counts and video review of lamprey passage continue. Temperature data was collected on August 2.

Fish Ladder Exits:

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 weekends, at both exits.

Debris loads at the Washington exit and along the shoreline were minimal. The interference issue with the count station passive integrated transponder (PIT) system was resolved on July 26. The regulating weir tripped an alarm and was reset on July 30.

At the Oregon exit, debris loads were minimal to moderate. Along the shoreline, debris loads were minimal to heavy. Scheduled maintenance was performed on the exit weirs and the traveling screens on August 1 and 2, respectively.

Fishway Entrances and Collection Channel:

Criteria Met?

Yes	No	Location, Criteria and Measurements
☒	☐	North Oregon Entrance Head Differential (Criteria – 1.0' to 2.0')
☐	☒	NFEW2 Weir Depth (Criteria – ≥ 8.0'): 7.4' on July 30 and 7.5' on August 2.
☐	☒	NFEW3 Weir Depth (Criteria – ≥ 8.0'): 7.4' on July 30 and 7.6' on August 2.
☒	☐	South Oregon Entrance Head Differential (Criteria – 1.0' to 2.0')
☐	☒	SFEW1 Weir Depth (Criteria – ≥ 8.0'): 7.4' on July 30 and 7.4' on August 2.
☐	☒	SFEW2 Weir Depth (Criteria – ≥ 8.0'): 7.4' on July 30 and 7.5' on August 2.
☒	☐	Oregon Collection Channel Velocities (Criteria –1.5 to 4.0 fps): Averaged 2.1 fps.
☒	☐	Washington Entrance Head Differential (Criteria – 1.0' to 2.0')
☒	☐	WFE2 Weir Depth (Criteria – ≥ 8.0')
☒	☐	WFE3 Weir Depth (Criteria – ≥ 8.0')

Comments: With the loss of fish pump 2 and low tailwater elevations, Oregon ladder criteria was difficult to maintain.

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 26 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Blade angle was 11 or 22 degrees when in service.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 26 to 27 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: On July 28, at 1114 hours, fish pump 2 was removed from service for electrical systems switching. Initially, the outage would have been brief, just a few minutes. However, during restart, over excitation occurred. The pump remained out of service for electrical evaluation. After a completed systems check, relay replacement, settings verification and programming examination, the fish pump returned to service on August 3 at 0730 hours with a blade angle of 22 degree. On August 3, from 1235 to 1313 hours, fish pumps 1 and 2 were out of service for back flow preventer testing.

Juvenile Fish Passage Facility

General Comments: The fish passage season consists of alternating days of primary and secondary bypass modes, with the switch occurring at 0700 hours each morning. No schedule deviations occurred. This week, 200 juvenile lamprey and 43,031 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? Removal would be prudent.
☒	☐	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 minimal to light. Debris loads at the spillway were moderate to heavy. Variable winds continued to move the debris as it slowly dissipates. New incoming debris loads were minimal to very light. No trash racks were cleaned.

Woody debris was removed from 14C slot on July 30. An adult unclipped sockeye was removed from 11A slot on August 1.

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, 3B, 7B, 8C, 12B, 14A slots and in unit 11 remained in timer mode. ESBS camera inspections occurred in units 10 and 11 on August 1. No problems were found.

VBS differential monitoring continued. No high differential measurements were recorded. Four VBSs were cleaned on August 3. 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. On July 28, at about 1600 hours, a ten second power outage for electrical switching occurred. No problems were observed in the channel. We continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only.
☐	☒	PIT tag system on? The system remains off unless a study is occurring. The facility bypass lines provide a superior route for the fish over the PIT tag sample release lines downstream of the PIT tag sample gates.

Comments: During the bypass season, primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

On July 28, water heavy with sediments was noted coming from the supply lines at both sample holding tanks. The sample was examined without issue. After other duties were completed, Pacific States Marine Fisheries Commission (PSMFC), Anchor and project personnel removed the supply lines diffuser screens and flushed the sediment out of the sampling system. All other facility systems were also flushed. One unclipped subyearling Chinook mortality was noted. No interrupts in operations occurred. Daily monitoring, weekly flushing and diffuser screen cleaning every quarter have been scheduled. The wet lab floor will be resealed on August 4.

On July 30, even with low fish numbers, when switching to primary bypass, approximately 100 subyearling Chinook salmon were stranded on the perforated plate. All fish were removed from the plate and released into the separator. We estimated ten smolts were stressed enough that they may not have recovered. A hydraulic jump was located upstream of the perforated plate. We suspect the subyearling Chinook were holding in this jump before the system was switched to primary bypass. When the switch occurred, these fish were flushed onto the now dry perforated plate. Also, just before the switch occurred it is possible the rectangular screen brush or air burst system in the channel could have evacuated these fish into the transport flume so they arrived upstream of the separator just as the switch was occurring. The fisheries staff has been reminded to chase fish from the hydraulic jump before switching and be aware procedures along with system operations. Anchor personnel have been asked to monitor the perforated plate when the switch to primary bypass occurs.

River Conditions

General Comments: River conditions were provided by the biological services contractor, Anchor QEA and are outlined in Table 2 below. Water clarity was provided by the McNary control room. The data period runs from 0700 to 0700 hours each day. Routine summer spill in support of fish passage continues. Fifty percent of river flow is spilled in the summer season.

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
179.2	139.2	89.8	69.8	71.4	70.5	6.0	6.0

Comments: The crane attached to the gate in spillbay 2 began to have issues with slack cable on July 28. The crane was examined on July 31 and August 2. All bays were tested on July 30. The crane at bay 20 was examined on July 31. The only issue found was with the crane at bay 2, which has not been fully resolved.

Anchor QEA continued daily temperature reports. On July 28, from 1100 to 1900 hours, the B side sample tank probe was out of the water for the cleaning of the sample tank diffuser screen. Form July 29 to 30, the forebay probe by unit 1 was out of service due to possible human error. Weekly data will be reported separately from the smolt monitoring report.

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 late August. No Siberian prawns have been observed at McNary so far this season.

Avian Activity: Overall, bird numbers appear greatly reduced so far this season. Avian counts continued and tailwater numbers are recorded in Table 3 below. Observations were made every morning. Currently, pelicans and terns are the predominant species in the tailwater area.

In the spill zone, the pelicans were along the navigation lock wing wall. The terns, gulls and cormorants were feeding in the spill flow. The gulls were roosting on the wing wall. In the powerhouse zone, the pelicans were feeding along the Oregon shoreline below the separator observation building and terns were occasionally noted during the day. Night herons were also observed. In the outfall zone, pelicans along with cormorants and terns have been observed feeding. We also suspect the pelicans may be cooling themselves by utilizing the outfall sprinkler.

In the forebay zone, juvenile gulls and grebes were the predominate species. Osprey, pelicans and cormorants were noted occasionally. The gulls appear to be scavenging. A few gulls, pelicans and cormorants were observed on the rocks by the Washington shore boat dock.

No grebes entered the gatewell slots and no pelicans or cormorants were noted in the ladders this week.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued working one shift seven days a week. On July 28, USDA–APHIS–WS personnel hazed the outfall area, which were very effective, during the release of smolts from the sample recovery raceway and is planned to be implemented as a routine protocol beginning next season. Hazing concluded on July 29.

PSMFC personnel continued daily observations of pelican behavior at the outfall. The project fisheries staff continued counting and recording adult shad fallbacks at the separator. Observation protocols were discussed with the Washington State Department of Fish and Wildlife on July 28.

Table 3. McNary Project's Daily Tailwater Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
July 28	Spill	2	1	0	9
	Powerhouse	0	0	0	6
	Outfall	0	5	1	7
July 29	Spill	5	1	0	1
	Powerhouse	0	0	0	0
	Outfall	0	0	0	4
July 30	Spill	0	0	0	12
	Powerhouse	0	0	0	0
	Outfall	0	0	0	4
July 31	Spill	0	0	2	6
	Powerhouse	0	0	0	0
	Outfall	0	0	0	4
Aug 1	Spill	13	0	2	7
	Powerhouse	0	0	0	0
	Outfall	0	1	1	6
Aug 2	Spill	0	4	9	3
	Powerhouse	0	0	0	3
	Outfall	0	3	2	9
Aug 3	Spill	3	0	8	10
	Powerhouse	0	0	0	0
	Outfall	0	3	9	11

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

Research

Item: No onsite research is occurring at this time.

Gas bubble trauma (GBT) monitoring – GBT continues and will occur twice a week during the spill season. For the last two weeks, fish have be hanging up in the flex hose that transports them from the separator to the wet lab. Each week, the fisheries maintenance staff has examined the flex hose and found no significant depressions that may hold fish. On August 2, three decomposed unclipped subyearling Chinook mortalities came into the wet lab while GBT examinations were occurring. We assume these fish were from the GBT examinations done on July 31. The project biologist reviewed GBT collection procedures with the PSMFC biologist on duty.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 28 – August 3, 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 is now being performed on the unit.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 1, 2, and 3.

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: A few sticks are visible at the water surface above the north fish ladder exit, against the bulkhead. The debris may extend down into the ladder exit trash rack, as it could not be pulled free by hand. Repairs are currently being made to the lifting beam so that the bulkheads and trash rack can be removed for cleaning. The bubblers are operating satisfactorily.

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: None.

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 17 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 10%.
☐	☒	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: Unit 2 STSs are not installed since the unit will not be returned to service this year. STSs are in cycle-run mode due to the average fork length of subyearling chinook in the Lower Monumental juvenile fish sample being over 120 mm.

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: None.

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 occurring, including spill through the RSW.

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
42.5	38.2	32.3	28.2	71	71	8.2	7.9

*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 moderate numbers of piscivorous birds counted around the project (Table 2 below). Most of the gulls were observed roosting on Eagle Island and on the buoys in the forebay. Bird observation counts ended for the year on July 31.

Table 2. Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
July 28	---	---	---	---	---
July 29	---	---	---	---	---
July 30	---	---	---	---	---
July 31	52	5	0	0	7

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: July 28 – August 3, 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 February 28, 2018. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service of March 31, 2018. Unit 6 was removed from service at 0710 on July 5 for annual maintenance and to install a digital governor with an estimated return to service of August 19, 2017. Unit 2 was removed from service at 1606 on August 2 to investigate blade seals; currently there is no estimated return to service date. Units 2, 3 and 4 were rotated out of service for STS inspections on August 1 – 2.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on July 28, 29, 30 and August 2.

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: North Shore Entrance weir (NSE-2) was out of criteria on the July 28 inspection with a reading of 7.8 feet. Powerhouse operator was informed that the weir gauge reading did not match the digital weir reading. South Powerhouse Entrance weirs (SPE-1 and SPE-2) were on sill during all inspections. While on sill readings were 5.9,

5.7, 5.1 and 6.0 feet. South Shore Entrance weir (SSE-1) was on sill during all inspections. While on sill, SSE-1 readings were 6.4, 6.5, 5.7 and 7.0 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 0 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 10% 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? 19 or 20.
☐	☒	Dewaterer and cleaning systems operating satisfactory?

Comments: Orifice checks were conducted every six hours during this reporting period.

Primary dewatering incline screen brush has been observed stopping during its return cycle. It has been worked on by powerhouse electricians and the problem has been corrected. Resetting the system corrected the stoppages. Separator techs watched for more malfunctions and the air bubbler system operated with an interval of 10 minutes to make up for any brush malfunctions until the problem was corrected.

Collection Facility: Collection into raceways for transport began at 0700 on May 1.

Transport Summary: Every-day barging changed to alternate day barging on May 26. A total of 936 fish were collected, of which 864 were transported during this reporting period.

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
40.5	36.5	17.0	16.5	71.9	70.4	6.6	4.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 3. Live fish included 1 juvenile lamprey. Mortalities included 1 juvenile lamprey.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on July 1. During this reporting period, SMP personnel euthanized 448 Siberian prawns with a total weight of 463 grams.

Avian Activity: Gulls, cormorants and pelicans were the predominant piscivorous bird species observed during fish ladder inspections this week.

Tailrace counts of foraging piscivorous birds at Lower Monumental Dam ended on July 13 for the year.

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: July 28 – August 03, 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
5	14-Apr	14:11	ERTS Feb 2018	17:00	Forced: Excessive Vibration
6	10-Jul	7:32	01-Aug	13:45	Scheduled: Unit Annual

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on July 28, 30 and August 03.

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: None.

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 50 square feet of floating woody debris currently in the forebay. Track rack differentials on units 1 and 2 were measured on July 27 and were in criteria.

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: VBS screens in gatewell slot 6A were replaced and screens in 6B were repaired during unit annual maintenance. VBS differentials were measured on units 1 and 2 on July 27 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comment: Orifices and primary dewatering structure are being backflushed and cleaned every 4 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 8,080 fish were collected and 7,437 were transported during this report period. Barge transportation occurred every other day. The descaling and mortality rates were 2.3% and 2.2% respectively. This weekly report period saw 22 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
40.2	37.2	11.9	11.0	73.6	71.6	5.8	4.9

*Ladder temperature.

Comment: None.

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
07-28	08:00	30	4	0	4
07-29	08:30	28	5	0	6
07-30	08:00	28	4	0	4
07-31	08:30	22	1	0	0
08-01	13:00	19	9	0	2
08-02	13:00	10	6	0	0
08-03	07:30	24	1	0	4

Gas Bubble Trauma: GBT sampling was conducted on July 31. There were 100 fish examined, no signs of GBT were seen.

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 315 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
07-28	38	380
07-29	32	320
07-30	49	392
07-31	23	184
08-01	44	220
08-02	41	164
08-03	78	312
Total	305	1972

Project: Lower Granite
Biologists: Elizabeth Holdren and Stephen Hampton
Dates: July 28 – August 3, 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 4 was removed from service at 0705 hours July 31 for annual maintenance. Units were rotated out of service for ESBS August 1-3. Unit 3 was forced out of service at 1044 hours August 3 due to a stuck ESBS in gatewell slot 3A.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists July 28, 29, 30, and August 2.

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: The fish ladder temperature control system pumps remain in operation.

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: NSE2 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. NPE1 and NPE 2 remain out of service in the sill position until in water

work repairs are coordinated. An ROV inspection is needed to determine requirements for repairing the gates. Cotter pins on all gates are scheduled to be replaced during the 2017-2018 winter adult fishway outage.

Collection Channel Velocity: August 2 channel velocity was out of criteria with a reading of 1.4 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: AWS pump 2 is in standby mode.

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 15.5 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 were removed August 1-3 as part of early dewatering for Phase 1a bypass construction upgrades. Screens were inspected for fish following removal. No fish were observed.

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: Collection channel was dewatered for Phase 1a bypass construction upgrades at 1230 hours August 3. Collection channel fish rescue took place from 1507 hours to 1750 hours August 3. Salmonids included 1 clipped and 1 unclipped steelhead, one clipped juvenile steelhead, and one unclipped adult chinook. There were 124 incidental fish including 66 adult carp, 1 sucker, 14 smallmouth bass, 42 peamouth, and 1 channel catfish. Mortalities recovered included 1 unclipped adult chinook, 1 clipped adult steelhead, and 4 peramouth.

Collection Facility: Collection for condition sampling and transport ended at 0700 hours August 2. Juvenile facility was changed to secondary bypass at 0700 hours August 2 and deawatered at 0930 hours August 3.

Transport Summary: Lower Granite barge transport ended August 2. Barge transport from Little Goose and Lower Monumental on even number days will continue through August 14.

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
41.0	38.9	18.2	18.0	69.0	68.0	5.0	5.0

*Cooling water intake temperature.

Other

Adult Fish Trap Operations: The adult trap operated Monday through Friday at a 27% sample rate.

Inline Cooling Water Strainers: N/A.

Invasive Species: The Zebra mussel trap was inspected July 30. No signs of mussels were present. This week 19 Siberian Prawns collected in the sample were euthanized by SMP.

Avian Activity: N/A

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
July 28	14:10	1	12	0	0
July 29	15:55	1	24	0	0
July 30	12:55	4	12	2	0
July 31	10:10	2	12	0	1
August 1	12:45	1	3	1	0
August 2	13:10	1	14	0	0
August 3	13:20	0	16	0	0

Spill: The RSW remains closed due to forebay surface water temperature. Lower Granite is operating according to Fish Passage Plan Table LWG-9.

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

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