U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#18-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: June 23 – 29, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint continues.

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
5 & 6	June 15 to 29	Two weeks	Station service upgrades.
1, 2, & 9 to 14	June 23	38 minutes	Units tripped off line.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on June 23, 25 and 28. National Oceanic & Atmospheric Administration (NOAA) fisheries personnel performed their monthly inspection on June 26. Visual fish counts and video review of lamprey passage continue. Temperature data was collected on June 28.

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: Debris loads at the Washington exit and along the shoreline were light to minimal. The trash rack and picketed leads were cleaned as needed, including weekends. No solution has been found for the count station passive integrated transponder (PIT) system interference. The regulating weir tripped two alarms and was reset on June 28. The regulating weir set point was adjusted June 28.

At the Oregon exit and along the shoreline, debris loads were minimal. The regulating weir set point was adjusted on June 25.

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’): 7.9’ on June 28.
☒	☐	NFEW3 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	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 1.9 fps.
☒	☐	Washington Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☒	☐	WFE2 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	WFE3 Weir Depth (Criteria – ≥ 8.0’)

Comments: The Oregon ladder was out of criteria point on June 28 possibly due to one of eight discharge logs having been removed from fish pump 2 and high tailwater elevations creating unfavorable hydraulic gradients. The issue with slack forming in the cables of entrance weirs NFEW2 and NFEW3 appears to be resolved.

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: Testing occurred on June 26 to 28 with the blades flat.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 28 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: Fish pump 2 vibration testing has been delayed into next week due continued work on the blade governor. The seven remaining discharge logs are tentatively scheduled for removal on July 6. A fish pump alarm tripped and was reset on June 29. Later that day, the alarm was repaired.

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, 400 juvenile lamprey and 109,801 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 remained heavy. New incoming debris decreased to light. On June 23, an emergency spill (see MFR 17 MCN 12**)** was used to remove the spillway debris, which decreased the debris load from very heavy to lightly moderate. Operators continue to flush debris down the navigation lock as needed. No trash racks were cleaned.

Extended-length submersible bar screens (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, 12B, 14A slots and in unit 11 remained in timer mode. On June 26, after multiple alarms, the brush cycle for the ESBS in 8C slot was switched to timer mode. ESBS camera inspections did not occur this week due to the unit outages inadvertently being cancelled.

VBS differential monitoring continued. Two high differential measurements were recorded this week. These screens and 33 others were cleaned on June 23 to 24 and 26 to 29. During the VBS cleaning, one juvenile lamprey and four smolt mortalities were observed. The majority of the VBS were cleaned after severe thunderstorm on June 26.

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

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

Comments: Orifices were adjusted as required for VBS cleaning.

When the eight units tripped off line on June 23, the result was a brief high water alarm at 1053 hours. The alarm was reset, all channel systems were checked and all screen cleaning devices were run and no debris blockages occurred.

We continued to operate the transition screen cleaning brush manually to insure it completes a full cleaning cycle. No issues have occurred recently. The new solenoid has not yet arrived.

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.

The multiple unit outage on June 23 resulted in severe debris loads accumulating on the perforated plate. On June 29, the perforated plated again became obstructed with fine debris. Both times, the biologist on duty had the plate immediately cleaned and reminded the technician of proper procedures.

Algae removal from the flumes and tanks continued.

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. The targeted spill level

during the summer fish passage season is 50% of river flow spilled. Spill in excess of powerhouse capacity occurred part of the week with 50 to 52 percent of flow spilled.

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
310.1	259.1	159.5	129.8	64.0	60.9	3.9	3.4

Comments: Debris had again accumulated across spillbays 1 through 18. An emergency debris spill occurred on June 23, from 0750 to 1315 hours (see MFR 17 MCN 12). We estimate the debris load spilled on June 23 was similar to that spilled on June 8. The project staff used spillbays 1 and 11, operated in split leaf mode, which expedites debris removal from slots 1-3 and 9 - 13. Adjacent bays were closed, which drew the debris to the split leaf bay and passes it to the tailwater. Each bay was opened to approximately 18 feet and passing approximately 18 kcfs. On average, each bay was split leaf with adjacent bays closed for 45 minutes.

On June 26, spillbay 1 was closed from 0734 to 1047 hours for hoist repairs.

The two top spillway weirs (TSWs) in bays 19 and 20 were closed on June 26 at 1233 hours. Spill Table MCN-10 from the Fish Passage Plan (FPP) was used during the TSW removal. After installation of standard spillgates in bays 19 and 20, the spill pattern was changed to Table MCN-9 of the FPP at 1628 hours on June 29.

Anchor QEA has all temperature probes deployed except at the bypass outfall due to high river flows. On June 28, the data probe in gatewell slot 8B was found to have failed and was replaced. Daily temperature data reports continue. Weekly temperature data will be reported separately from the smolt monitoring report.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 11.

Invasive Species: The mussel station examinations on June 25 revealed no problems.

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.

In the spill zone, the pelicans were along the navigation lock wing wall. The terns and gulls were feeding in the spill flow. In the powerhouse zone, the pelicans were feeding along the Oregon shoreline below the separator observation building and begun to feed in the outfall zone.

In the forebay zone, zero to five grebes were observed along with an occasional osprey, cormorant, pelican, gull, blue heron and tern. Grebe numbers have continued to decline. A fair numbers of pelicans along with a few terns, gulls and cormorants were observed on the rocks by the Washington shore boat dock.

No grebes entered the gatewell slots this week.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued working two shifts seven days a week. Hazing from a boat was scheduled to occur four days a week this season. Due to low bird numbers in the tailwater area, the boat crew instead continues to assist with hazing from the shore. Wave action at the bypass outfall has not allowed for hazing from the outfall walkway, which has not been needed due to low bird numbers.

The hazing sprinkler supply line crack was repaired on June 26 and returned to service at 1300 hours. The missing grating clips and supply line clamps will be replaces as soon as possible. The supply line section will be replaced in the coming fall or winter.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican
June 23	Spill	4	0	0	10
	Powerhouse	0	1	0	0
	Outfall	0	0	0	0
June 24	Spill	0	0	0	18
	Powerhouse	0	0	0	1
	Outfall	0	0	0	0
June 25	Spill	8	0	0	17
	Powerhouse	0	0	0	0
	Outfall	0	1	0	1
June 26	Spill	0	0	9	29
	Powerhouse	0	0	0	7
	Outfall	0	0	0	0
June 27	Spill	0	0	7	47
	Powerhouse	0	0	0	5
	Outfall	0	0	0	5
June 28	Spill	0	0	18	25
	Powerhouse	0	0	0	4
	Outfall	0	0	0	5
June 29	Spill	0	0	0	15
	Powerhouse	0	0	4	1
	Outfall	0	0	0	1

Fish Salvage/Rescue**:** None occurred.

Gas bubble trauma (GBT) Monitoring: GBT monitoring continues and will occur twice a week during the spill season. During this reporting period no fish exhibited signs of GBT.

Research

No onsite research is occurring at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 23 – June 29, 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, but personnel are also investigating the source of a possible oil leak from unit 4.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 26, 27, and 28.

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 Entrance 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 175 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 25%.
☐	☒	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 have been in continuous run mode since April 4 due to the presence of subyearling Chinook and\or sockeye with average fork lengths of less than 120 mm in the Lower Monumental and/or Ice Harbor juvenile fish samples.

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: Five orifices were found to be partially to totally plugged with debris on the morning of June 26 (see MFR 17 IHR 10 for details).

Juvenile Fish Facility: The fish facility is operated in bypass, except when fish sampling operations are occurring.

Fish Sampling: Sampling operations occur on Monday and Thursday each week. See Table 1 below for a summary of the sampling results. The two mortalities in the June 26 sample probably died from being caught in debris that was obstructing orifices (see MFR 17 IHR 10 for details).

Removable Spillway Weir (RSW): Voluntary spill for fish passage is occurring, including spill through the RSW.

Table 1. Fish condition sampling results at Ice Harbor Dam.

June 26:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	3	0	1	0
UC-CH	1	0	0	0
C-CH-O	41	1	0	0
UC-CH-O	79	0	1	0
C-SH	6	1	0	0
UC-SH	0	---	---	---
C-SOCK	1	0	0	0
UC-SOCK	1	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	132	2	2	0

June 29:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	0	---	---	---
C-CH-O	3	0	0	0
UC-CH-O	7	0	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	11	0	0	0

River Conditions

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

Table 2. River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
116.6	82.2	70.2	40.3	63	59	2.9	2.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on June 20 and 21. A total of 1 juvenile lamprey and 1 Siberian prawn mortalities were found.

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

Avian Activity: There were moderate to low numbers of piscivorous birds counted around the project (Table 3 below). There were almost no gulls observed, and cormorant numbers remained low this week. By the end of the week, there were 34 pelicans observed foraging just downstream of the outfall of the juvenile fish bypass pipe. Contracted land-based hazing of piscivorous birds (but not pelicans) occurred for 8 hours per day.

Table 3. Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 23	0	6	0	0	30
June 24	1	15	0	0	10
June 25	0	6	0	0	14
June 26	0	0	0	0	29
June 27	0	1	0	0	19
June 28	---	---	---	---	---
June 29	0	1	0	0	41

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: June 23 - 29, 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 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 1205 and returned to service at 1343 on June 27 to investigate a thrust bearing low oil level alarm.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on June 23, 24, 25, 27 and 28.

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 on the June 27 inspection with readings of 7.6 and 7.7 feet respectively. South Shore Entrance weir (SSE-1) was out of criteria on the June 28 inspection with a reading of 7.6 feet. The reading returned to criteria later during inspection. Powerhouse operator was informed. South Shore Channel/Tailwater differential was out of criteria during the June 23, 24 and 25

inspections with readings of 0.3, 0.2 and 0.3 feet respectively. Out of criteria readings were due to high spill levels. This differential fell back into criteria when the spill returned to normal summer bulk spill pattern on June 26.

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 96 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 woody debris was removed on June 27 and 29.

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)? STS's were placed in continuous-run mode on March 30 due to heavy debris loads.
☐	☒	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: None

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: Due to high debris levels in the forebay, the orifices were checked every two hours during this reporting period. Orifice 31 was found open with a burnt out light on the June 25 inspection. Powerhouse operator closed the orifice and switched to orifice 32. Orifice 15 was observed with low flow on June 26. Orifice 17 was observed with low flow in June 27. In both cases, the powerhouse operator was informed and cleared blockages without impacting fish passage.

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 30,040 fish were collected, of which 32,794 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
111.4	79.4	36.1	16.5	64.4	62.4	3.1	2.1

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 6. No live fish were recovered. Mortalities included 15 juvenile salmon.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on June 2.

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

Table 2. Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
6/23/2017	1130	0	2	0	0	1
6/24/2017	1230	0	0	0	0	0
6/25/2017	1230	0	0	0	0	0
6/26/2017	1245	0	0	0	0	0
6/27/2017	1300	0	0	0	0	0
6/28/2017	1140	2	0	0	0	1
6/29/2017	1300	0	0	0	0	1

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: June 23 – June 29, 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: All turbine units were available for service throughout this report period, except unit 5. Unit 5 remains Out of Service (OOS) due to excessive vibration. Hard constraints of 1% peak efficiency criteria took effect on April 01.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists and Anchor QEA staff on June 23, 25 and 29.

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: No comments.

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: NSE weir depth measured 5.9 feet on June 29. Both weirs have been manually adjusted and the fishway is operating within criteria.

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 18,000 square feet of floating woody debris currently in the forebay. Trash raking was completed on June 19 for units 1 and 2. Trash raking is scheduled again for July 10 on all units. Trash rack differentials were measured on June 29 for units 1, 2, 3 and 4 and were in criteria.

Spillway Weir: Temporary spillway weir crest height was adjusted from SW-Lo to SW-Hi position on June 29.

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: ESBS brushes were manually run to check operation. Brushes are running satisfactorily. VBS differentials were measured on units 1, 2, 3 and 4 on June 29 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: Due to large amounts of debris, orifices have been backflushed and/or rotated every two hours, 24 hours a day. The dewatering structure is being cleaned every two hours during daytime operating hours.

Collection Facility: Juvenile Fish Facility is currently operating.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 39,502 fish were collected and 43,514 were transported. Transportation total includes fish collected on June 22. Barge transportation occurs every other day. The descaling and mortality rates were 0.5% and 0.1% respectively.

River Conditions

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

Table 1. River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (ºF)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
111.5	79.2	33.6	23.8	65.9	61.9	3.4	2.1

*Ladder temperature.

Comment: None.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 24. No fish mortality was observed.

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

Avian Activity: USDA bird hazing began on April 03. See table below for USACE counts.

Table 2. Daily Piscivorous bird counts at Little Goose Dam.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
06-23	13:30	0	0	0	0
06-24	12:30	0	0	0	0
06-25	09:00	0	1	0	0
06-26	11:30	0	0	0	0
06-27	13:00	0	0	0	0
06-28	13:00	0	0	0	0
06-29	12:00	0	0	0	0

Gas Bubble Trauma (GBT): GBT sampling was conducted on June 19. There were 100 fish examined, no signs of GBT were seen.

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

Project: Lower Granite
Biologists: Elizabeth Holdren
Dates: June 23 - 29, 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 with an expected return to service date of August 18. Units were rotated out of service June 25-26 for ESBS/VBS inspections.

Adult Fish Passage Facility

General comments: Adult fish facilities were inspected by Corps or Anchor QEA biologists June 23, 24, 26, and 28. June 22 at 0900 hours two adult Chinook were observed swimming in the adult trap recirculation chamber below the supply manifold. Corps biological staff coordinated a rescue June 23-24 following trap dewatering for weekend ladder passage operation. June 23 at 1500 hours a 73 cm coded wire tagged unclipped adult Chinook was rescued. June 24 at 15:00 a 78 cm an untagged unclipped Chinook was rescued from the recirculation chamber.

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 Temperature Control System: The fish ladder temperature control system auxiliary pumps are in standby mode.

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. Cotter pins on all gates are scheduled to be replaced during the 2017-2018 winter adult fishway outage. June 23 and 24 SSE-2 weir depth was out of criteria with depth reading of 6.7' and 6.5 feet. The powerhouse operator adjusted the gate into criteria when the problem was reported June 24.

Collection Channel Velocity: Channel velocity was in criteria this week.

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 177 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/VBS inspections were completed this week. No issues that impact fish passage were discovered.

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: Orifices continue to be checked and back flushed for debris every one to three hours depending on debris load.

Collection Facility: The facility is in collection for transport mode.

Transport Summary: Every other day transport is occurring with barges departing on odd days.

River Conditions

General Comments: River conditions at Lower Granite Dam during this reporting period are reported in Table 1.

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
116.2	83.1	27.6	18.2	63.3	60.5	2.4	1.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected June 26. Mortalities included 1 sub-yearling clipped Chinook and 31 juvenile lamprey.

Invasive Species: The Zebra mussel trap was inspected June 25; no signs of mussels were present.

Avian Activity: Daily hazing is occurring.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
June 23	16:20	0	0	0	27
June 24	13:30	0	0	0	6
June 25	14:00	0	0	0	3
June 26	14:20	2	0	0	2
June 27	13:45	0	0	0	6
June 28	14:47	1	0	0	0
June 29	13:50	1	0	0	0

Spill: Debris in the forebay continues to accumulate in front of the spillway and powerhouse. Large logs wedged between the RSW and debris boom resulting in mats of debris is a reoccurring problem. The Project will continue to implement emergency debris spills when debris accumulates in front of the RSW as described in FPP (LWG-31 5.2. Emergency Debris Spills) to prevent obstructions to fish passage.

Gas Bubble Trauma (GBT) Monitoring: Fish are being sampled from the separator for GBT Thursdays. Among the 100 fish sampled during this reporting period no symptoms were observed.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification

IDFG continue working up fish collected as part of Lower Granite condition sample. This study aims to enumerate and characterize natural production of yearling Chinook and juvenile steelhead above LWG with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 genetic samples from yearling Chinook and juvenile steelhead.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

Collection of steelhead from Lower Granite juvenile separator for NPT began March 26 with the first sample being worked up March 27. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Granite are transported to Nez Perce Tribal Hatchery for reconditioning as part of this study.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The goals are to characterize migration timing and estimate parr-to-smolt survival to LWG of wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2016 in natal streams and are diverted to the Sort-By-Code tanks at LWG.

National Marine Fisheries Service (NMFS)-Seasonal Effects of Transport
About 3,000-6,000 unclipped spring/summer Chinook salmon, unclipped steelhead and clipped steelhead at PIT tagged each week during the outmigration. Corps biologist load the PIT tagged fish with the other raceways at Lower Granite onto the juvenile transport barges. Fish are transported through the FCRPS and released below Bonneville Dam. SAR rates of barged and in-river fish (collected and tagged at Granite) are used to determine juvenile transport strategies for the various salmonid populations

National Marine Fisheries Service (NMFS) In-River Survival: NMFS PIT tags about 20,000 each of unclipped spring/summer Chinook salmon, unclipped steelhead, and clipped steelhead smolts April through June. Fish are collected into raceways, PIT-tagged, and then held for 24 hours before being bypassed to the LWG tailrace. Fish travel times between dams and through the FCRPS are monitored. Fish are recaptured at Bonneville to understand FCRPS passage effects. These fish also serve as in-river controls for Seasonal Effects of Transport Research above.

USGS Describing PIT-tag Efficiency and Stable Isotopes of Migrating Juvenile Fall Chinook Salmon: To estimate 8-mm PIT detection efficiency at LWG bypass system a target of 322 subyearling fall Chinook were collected from facility sample June 12. USGS PIT tagged 319 subyearling Chinook June 13 and released 310 into the upwell area to volitionally pass through LWG PIT-tag detection system June 14. There were 3 mortalities prior to tagging and 6 mortalities after tagging. Subsequent detection data will be queried from PTAGIS. A target of 50 subyearling mortalities per week will be collected May 22 through August 1 from Lower Granite raceways and holding tanks, placed in plastic bags, labeled, and frozen for later analysis. Stable isotope signatures from mortalities will be used to explore the possibility of using stable isotopes to distinguish hatchery from natural-origin subyearlings.