U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#06-2017

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: March 31 – April 6, 2017

Turbine Operation

General Comments: The hard 1% peak efficiency constraint began on April 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
13	Oct 3 to Apr 14	6.4 months	Thrust bearing issue.
2	Mar 21 to Apr 21	31 days	Thrust bearing issue.
7 & 8	Apr 6 to Apr 20	2 weeks	Station service upgrades.
5 & 6	Apr 5	4.6 & 7.0 hours	Extended-length submersible bar screens (ESBSs) deployed.
1 & 3	Apr 6	4.9 & 4.8 hours.	ESBSs deployed.

Adult Fish Passage Facilities

General Comments: McNary fisheries biologists performed measured inspections of the adult fishways on March 31, April 2 and 4. Video review fish counts concluded on March 31. Visual fish counts began April 1. Water temperature probes were deployed at both ladder between March 31 and April 5. Water temperature probes will be deployed at the two new tailwater locations once river flow volume decrease.

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 were minimal to light at the Washington exit. Debris quantities varied along the Washington shoreline from light to heavy. The trash rack and picketed leads were cleaned multiple times during the week. Out of necessity the exit weirs were placed in manual mode for 29 minutes on April 5 for adjustments to safety handrails. Pacific States Marine Fisheries Commission (PSMFC) resolved the interference at the count station passive integrated transponder (PIT) detection system on April 4.

At the Oregon exit and along the shoreline, debris loads were minimal to light. The regulating weir set point was adjusted on April 2 and 4.
The Oregon exit traveling screens debris trough was cleaned as needed.

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’)
☒	☐	NFEW3 Weir Depth (Criteria – ≥ 8.0’)
☒	☐	South Oregon Entrance Head Differential (Criteria – 1.0’ to 2.0’)
☐	☒	SFEW1 Weir Depth (Criteria – ≥ 8.0’): 7.4 to 7.6’ all week.
☐	☒	SFEW2 Weir Depth (Criteria – ≥ 8.0’): 7.5 to 7.7’ all week.
☒	☐	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: Due to hydraulic gradients and high tailwater elevations, weir set points at the south powerhouse entrance (SFEW1 and SFEW2) ranged from 7.4 to 7.7 feet to maintain the pool differential criteria.

Auxiliary Water Supply System:

Yes	No	In Service?
☒	☐	Washington shore Wasco County PUD Turbine Unit: Unit was out of service for 24 hours.
☒	☐	Washington shore Wasco PUD Bypass: Operated satisfactorily from April 4 to 5.
☒	☐	Oregon Ladder Fish Pump 1: Blade angle was 24 degrees.
☐	☒	Oregon Ladder Fish Pump 2: Return to service date is June 15.
☒	☐	Oregon Ladder Fish Pump 3: Blade angle was 24 degrees.
☒	☐	Oregon North Powerhouse Pool supply from juvenile fishway.

Comments: The Wasco PUD turbine unit was out of service for scheduled maintenance from April 4 at 0659 hours to April 5 at 0700 hours.

Juvenile Fish Passage Facility

General Comments: The system remained in primary bypass until April 6 at 0700 hours, when the first day of secondary bypass for smolt sampling began. The fish passage season consists of alternating days of primary and secondary bypass modes, with the switch occurring at 0700 hours each morning.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? Although the debris load is acceptable, removal is prudent and will begin when the debris tug repairs are completed.
☒	☐	Trash rack differentials measured? If so, were differentials acceptable? ☒ Yes ☐ No ☐ N/A.
☐	☒	Any debris seen in gatewells?
☐	☒	Any oil seen in gatewells?

Comments: Heavy forebay debris loads near the powerhouse remain. A replacement water pump for the debris tug has arrived. Powerhouse debris removal will be attempted after the tug is repaired. Debris loads at the spillway remained light. Most incoming debris is now along the Washington shoreline where debris loads were variable. The operators are flushing the debris down the navigation lock as needed. Also, they are constantly monitoring the Washington ladder exit.

ESBSs/Vertical barrier screen (VBSs):

Yes	No	Item
☐	☒	ESBSs deployed in all slots and in service? Deployment began April 5 and will conclude by April 15.
☐	☒	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: ESBSs were deployed at units 1, 3, 5 and 6 this week. The screen in slot 5A tripped multiple alarms, which were reset and resolved on April 5. The screen in slot 1A tripped multiple alarms, which were resolved by switching the brush cycle from automatic to timer mode on April 6. ESBS controller wiring for units 7 and 8 will be replaced as part of the station service upgrades.

VBS differential monitoring began on April 6. No screens were found out of criteria. The VBSs in units 1 and 3 were inspected that day. No fish mortalities were noted.

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

Yes	No	Item
☒	☐	Orifices operating satisfactory? Yes, with 42 opened.
☒	☐	Dewaterer and cleaning systems operating satisfactory in automatic mode? Yes, no issues to report.

Comments: The south orifice valve in slot 8A was repaired on April 4 and the orifice was reopened. The north orifice was then closed. A partial blockage was removed from slot 5A orifice on April 5. No harm to fish was noted. Minor orifice valve operator issues were resolved by April 6. Orifices were adjusted as required during VBS cleaning. Orifice attraction lighting was replaced as required. One new light fixture was installed at the south orifice for slot 1A on April 5.

Bypass Facility:

Yes	No	Item
☒	☐	Sample gates on? Yes, during secondary bypass only. No issues to report.
☐	☒	PIT tag diversion system on? Pit tag 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 to the river. PIT tag detection occurs in the full flow pipe during primary bypass and in the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days. There are no issue to report.

The gate direct indicator switch, which is part of the PIT-tag system, at the bypass/barge loading gate was replaced on April 4. Walkway lights were switched to LED and the wet lab floor was sealed this week.

River Conditions

General Comments: River conditions were provided by the McNary control room and are outlined in Table 2 below. The data period runs from 0000 to 2400 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
434.1	383.8	285.7	244.2	46.0	44.0	2.9	1.4

Comments: Spill in excess of powerhouse capacity occurred all week. The top spillway weirs (TSWs) were installed in bays 19 and 20 on April 1. The TSWs were opened on April 3 at 1640 hours. Final adjustments were made on April 4. A spillway crane is attached to the TSW in bay 19 and a spillway hoist is attached to the TSW in bay 20.

Other

Inline Cooling Water Strainers: The cooling water strainers were inspected on April 4. Live fish included 1 juvenile lamprey. Mortalities included 467 juvenile lamprey and one clipped steelhead. The next inspections are scheduled for May 2.

Invasive Species: Mussel stations will be examined in late April.

Avian Activity: Avian counts resumed on April 1. Gulls and cormorants were noted in low numbers with birds seen occasionally in the forebay and spillway. Gulls were infrequently observed at the juvenile bypass outfall. Ospreys and blue herons were noted regularly on project. A tern was observed once.

Due to high tailwater elevation, the outfall water sprinklers were not returned to service until April 5. One of the sprinklers appears damaged. Also, several of the bird distress calls on the outfall walkway appear damaged. Repairs will not occur until lower river flow and tailwater elevation allow safe access to the end of the outfall pipe.

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

Research

Item: No onsite research is occurring at this time. Pacific Northwest National Laboratory may begin to collect juvenile lamprey at McNary for a tagging study if their primary site trap effort does not produce the study target numbers within the study schedule.

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 31 – April 6, 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, 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. Unit 3 was routinely operated a little above the 1% peak operating efficiency range during the reporting period, 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 April 3, 4, and 5.

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: The water surface above the fish ladder exits were clear of debris and the bubblers were 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: SFE-1 weir gate depth was out of criteria on April 5, with a depth of 7.5’. The SFE-1 channel/tailwater differential was out of criteria on April 4, with a differential of 2.2’. NFE-2 weir gate depth was out of criteria at 7.8’ on April 4. NFE-2 channel/tailwater differential was out of criteria on April 4, with a differential of 2.1’. NSE-1 channel/tailwater differential was out of criteria on April 4, with a reading of 2.3’. The operating weir gates are in manual control to reduce the wear and tear on the gate machinery from trying to auto-adjust to the widely fluctuating tailwater levels from spill, and to prevent the gates from raising up too far and becoming stuck from the water

pressure against the gates. With the gates in manual control, the operator must monitor the electronic readouts to detect any out of criteria readings and operate the gates to maintain criteria. The electronic readouts may differ from the staff gauge readings due to the difficulty in obtaining accurate readings of widely fluctuating water levels.

The south shore channel velocity was out of criteria on April 3 and 4, with readings of 0.9' and 1.0', respectively. These readings can most likely be attributed to the high tailwater levels backing up into the collection channel and fish ladder.

Auxiliary Water Supply (AWS) System:

Yes	No	In Service and Operating Satisfactory?
☒	☐	South Shore AWS Pumps. Seven 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: South shore pump #4 was removed from service on April 5 when it tripped off due to a lubrication system problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 31 square yards of debris was observed.
☐	☒	Trash rack differentials measured this week? If so, were differentials acceptable? ☐ Yes ☐ No ☒N/A They were not measured due to an oversight.
☒	☐	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)? Yes.
☐	☒	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 were switched to continuous run mode on April 4 due to the presence of subyearling chinook measuring less than 120 mm in the Lower Monumental juvenile fish sample.

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 operated in bypass, except when fish sampling operations are occurring.

Fish Sampling: Sampling operations began on April 3 and will occur on Monday and Thursday each week. See Table 1 below for a summary of the sampling results. Descaling attributed to birds was observed in the April 3 sample, but not in the April 6 sample.

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

April 3:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	10	1	0	1
UC-CH	12	1	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	74	7	0	6
UC-SH	29	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	125	9	0	8

April 6:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	41	0	0	0
UC-CH	51	1	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	25	1	0	0
UC-SH	8	0	0	0
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
TOTAL	125	2	0	0

Removable Spillway Weir (RSW): Involuntary spill continued this week, including spill through the RSW, due to high river flows. Voluntary spill for fish passage began on April 3.

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* (ºF)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
182.3	145.9	126.1	93.2	48	46	1.5	1.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on March 16. A total of 1 dead chinook fry, 80 dead juvenile lamprey, and 4 live juvenile lamprey (released to the river) were found.

Invasive Species: No exotic species have been found.

Avian Activity: There were relatively low numbers of piscivorous birds seen around the project (Table 3 below). Contracted land-based hazing of piscivorous birds began on April 1 for 8 hours per day. Hazing was generally effective at keeping birds out of the zones immediately adjacent to the dam. Hazing was repeatedly necessary to keep a small group of cormorants out of the forebay area adjacent to the south fish ladder exit.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 1	1	22	0	0	0
April 2	0	8	0	0	0
April 3	4	23	0	0	0
April 4	0	9	0	0	0
April 5	1	9	0	0	0
April 6	10	3	0	0	0

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

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: March 31 – April 6, 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 October 3, 2017. Unit 5 was removed from service on January 17, 2017 due to a turbine oil leak with an estimated return to service of July 30, 2017. Unit 2 was removed from service from 1445 to 1640, unit 3 was removed from service from 1124 to 1640, and unit 4 was removed from service from 0825 to 1430 on March 31 to clean trash racks. Hard constraint began at 0000 hour on April 1.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on March 31, April 1, 2, 4 and 5.

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 (NSE-2) was out of criteria on the April 2 inspection with a reading of 7.3 feet due to the high level of the tailwater caused by elevated river flows. North shore channel/tailwater differentials were out of criteria on the April 4 inspection with a differential of 0.9 feet due to the high level of the tailwater caused by elevated river flows. South powerhouse entrance weirs (SPE-1 & SPE-2) head were out of criteria on the April 2, 4 and 5 inspections due to the high level of the tailwater caused by elevated river flows. While out of criteria SPE-1 readings were 7.8, 7.2 and 6.8 feet respectively and SPE-2 readings were of 7.5, 7.3 and 6.8 feet respectively. South Shore Entrance (SSE-1) was out of criteria on the April 5 inspection with a reading of 7.6 feet due to the high level of tailwater caused by elevated river flows.

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 674 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? Debris was removed from gatewells throughout the reporting period due to high debris in the forebay.
☐	☒	Any oil seen in gatewells?

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 deployed from March 21 to 23 and are now in service on all available units. STS's were placed in continuous-run mode on March 30 due to heavy debris loads.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	Item
☐	☒	Orifices operating satisfactory? How many are open and in service? 18 - 19.
☒	☐	Dewaterer and cleaning systems operating satisfactory?

Comments: Orifice 17 had a blockage during the April 2 inspection and a piece of woody debris could not be dislodged at the time and the adjacent Orifice to the south (number 18) would not open. The project cleared the blockages and returned Orifices 17 and 18 back to normal operation.

Collection Facility: Sampling for condition took place over 24 hour periods starting at 0700 on April 1, 3 and 6.

Transport Summary: Transport is not occurring.

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
180.6	141.6	112.7	63.5	48	47	1.9	1.6

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 7. Live fish included 10 juvenile lamprey. Mortalities included approximately 1100 juvenile lamprey and 1 banded killifish.

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

Avian Activity: Gulls 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
3/31/2017	1115	0	0	0	0	0
4/1/2017	1215	2	0	0	0	0
4/2/2017	1230	0	0	0	0	0
4/3/2017	1245	0	0	0	0	0
4/4/2017	1100	0	0	0	0	0
4/5/2017	1255	0	0	0	0	0
4/6/2017	1105	3	0	0	0	0

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

Project: Little Goose
Biologists: Scott St. John & Richard Weis
Dates: March 31 – April 06, 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 for units 3. Unit 3 was out of service from 1000 to 1515 on April 03 to repair an ESBS brush. Hard constraints of 1% peak efficiency criteria took effect on April 01.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on April 02, 04 and 06.

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: No comments.

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: No comments.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable. Estimated 30,000 sq. ft. floating woody debris in forebay.
☐	☒	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 29,000 square feet of floating woody debris currently in the forebay. Trash raking was last completed on February 13 and is scheduled again for May 02 through May 04.

Spillway Weir: Weir was opened in the low crest position on March 22.

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: ESBSs and VBSs were inspected on April 3 and 4 for units 3 and 4, respectively. It was determined that a cleaning brush in slot 3a was not functioning properly. Mechanical and electrical crews were able to fix the brush and return it to operation. All VBSs were in satisfactory condition.

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: No comments.

Collection Facility: Juvenile Fish Facility is currently operating. Collection began on April 1 and is taking place every other day. During non-collection days, the facility is operating in primary bypass.

Transport Summary: No fish transportation is currently taking place.

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
169.0	139.0	54.9	41.6	48.1	47.4	1.9	1.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 30. Total strainer mortality include 99 juvenile lamprey and one Salmonid.

Invasive Species: No invasive species have been observed on the mussel station or during winter maintenance.

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
03-31	None	---	---	---	---
04-01	1230	70	9	0	0
04-02	1230	86	9	0	0
04-03	1245	106	19	0	0
04-04	0800	32	4	0	0
04-05	1230	45	11	0	0
04-06	1251	18	23	0	0

Gas Bubble Trauma: GBT sampling will commence on April 08.

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Suzette Frazier
Dates: March 31 – April 6, 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 July 14. Unit 1 return to service is delayed due to time needed to procure studs for replacement in the Kaplan. Unit 2 is out of service for blade seal repair with an expected return to service date of April 20. Unit 2 was delayed due to packing box failure when the unit was watered up for testing.

Adult Fish Passage Facility

Adult fish facilities were inspected by Corps or Anchor QEA biologists April 1, 2, 4, and 5.

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:

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. NPE channel tailwater head differential was out of criteria with readings of 0.7', 0.9', and 0.6 feet. These reading are likely due to NSE 1 not automatically adjusting to tailwater. NSE 1 was raised 0.5 feet with the control system April 1. This returned NPE channel tailwater to criteria.

Collection Channel Velocity: Comments

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)

Fish Ladder Temperature Control System: See above.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	Item
☒	☐	Forebay debris load acceptable? An average of 303.0 square yards of debris was observed in the forebay this week.
☒	☐	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:

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: ESBSs are deployed in all gatewell slots with the exception of unit 1 slots A and B.

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 Facility: Comments. The collection facility is in secondary bypass mode.

Transport Summary: Comments. No fish transport is in progress at this time.

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
167.7	140.50	86.8	73.8	47.0	46.0	2.0	1.5

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Comments. N/A

Invasive Species: Comments. N/A

Avian Activity: Separator piscivorous bird counts began March 26 with observations taken from the separator booth and April 1 with observation taken at the top of the navigation lock. Avian hazing started April 1. Separator daily piscivorous bird counts are summarized in Table 2.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
April 1	07:15	1	0	0	0
April 1	17:55	2	0	0	0
April 2	17:55	4	0	0	0
April 3	17:55	1	0	0	1
April 4	17:55	0	0	0	2
April 5	14:52	1	0	0	0
April 6	07:15	2	0	0	0

GBT: No GBT monitoring information was provided by the Project Biologist this week.

Adult Fish Trap Operations: Operating with a 27% sample rate.

Fish Rescue Operation: No fish rescue operations were conducted this week.

Research

Idaho Fish and Game (IDFG)-Genetic Stock Identification: IDFG began working up fish collected as part of Lower Granite condition sample March 27. 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 by NPT to Dworshak National Fish 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 specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR 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 LGR.

National Marine Fisheries Service (NMFS) In-River Survival: NMFS staff has begun PIT-tagging Chinook and steelhead smolts for their in-river reach survival study. Smolts are collected, PIT-tagged, and released into the tailrace of Lower Granite Dam throughout during the spring..