U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#29-2015

Project: McNary
Biologist: Bobby Johnson
Dates: September 11 - 17, 2015

Turbine Operation

McNary had 13 to 14 of 14 units available for power generation. The hard 1 percent constraint continued. No turbine units ran outside the constraint. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
4	Sep 14–17	About 4 days.	Annual maintenance.
1, 13 & 14	Sep 15	1.5 hours.	Extended-length submersible bar screen (ESBS) camera inspections.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on September 11, 13 and 16. Visual adult fish counts, review of video tape for adult lamprey counts and exit temperature monitoring continued.

All systems continued to be monitored diligently as water temperatures continued to decline slightly.

On September 17, at 0003 hours, the Oregon ladder fish pumps tripped off line due to low cooling water flow. At 0010 hours, a low entrance differential alarm came in. At 0030 and 0105 hours, respectively, fish pumps 3 and 1 returned to service using raw water for cooling. From 0130 to 0137 hours, both fish pumps were out of service to allow cleaning of the raw water strainer. From 0759 to 0802 hours, fish pump 1 tripped off line due to loss of cooling water. Though times were not recorded, the Wasco County Public Utility District (PUD) turbine unit in the Washington ladder was also operated using raw cooling water.

The potable water reservoir electrical breakers, including the low water alarm, may have been inadvertently left open by the contractor working on the potable water system on the previous day. The well pump received no instructions to run automatically, which resulted in the reservoir being almost drained dry. The first indication there was an issue was the fish pumps tripping off line. The operators closed the breakers and returned the well pump to service after

all systems had been switched to raw cooling water. By 1156 hours, the reservoir refilled to a point where the fish pumps and the PUD turbine unit could be switched back to potable cooling water. The operators also cleaned the fish pump raw water cooling strainer.

Fish Ladder Exits: Criteria at both exits are 1.0 to 1.3 feet for head over weir and 0.0 to 0.5 feet differential at the count stations. Both ladder exits met all criteria. Picketed leads were cleaned at both exits as required, including weekends.

At the Washington ladder exit, the regulating weir set point was adjusted on September 12. Multiple exit alarms occurred and were reset on September 16. The operators also adjusted the regulating weir and tilting weir set points. Aquatic vegetation quantities were minimal in the exit area.

At the Oregon ladder exit, two exit weir alarms occurred and were reset on September 11. The operators also adjusted the tilting weir set point. On September 14, mechanics changed the packing on the traveling screen wash pump. Debris loads were light along the Oregon shore.

On September 16, at 0813 hours, tilting weir 340 was removed from service. Since a forebay constraint of 337.0 to 340.0 feet is in effect, this weir lays flat and does not move. Ladder operation will not be adversely affected. As part of the Oil Accountability Program (OAP), mechanics will replace and test a new weir motor and brake assembly. From 0813 to 1331 hours, the exit was in manual mode. The operators made adjustments as needed with forebay elevation changes. When operators returned the exit to automatic mode, the program instructions were set to bypass weir 340. The operators also adjusted the regulating weir and tilting weir set points.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper.

At the Washington entrance, all entrance inspection points met criteria. On September 16, the program logic controller (PLC) panel would not light up when touched. The electrical staff resolved the issue the next day.

At the Oregon ladder, all entrance inspection points met criteria. On September 16, the biologist examined previous ladder inspection reports and found weir NFEW3 had not moved since September 13. This issue had been reported in Weekly Report 26. The electrical staff replaced the weir overload breaker on September 17.

Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: The PUD turbine unit in the Washington ladder had no interruptions in service. There was no unit outage recorded for the events of September 17 as reported above.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees with only the interruptions in service on September 17 as reported above. Fish pump 2 is currently under contract for major overhaul with completion scheduled for April, 2016.

The juvenile facility continued to supply 450 cubic feet per second to the north powerhouse pool.

Juvenile Fish Passage Facility

The fish passage season consists of alternating days of primary and secondary bypass modes. The switch occurs every morning at 0700 hours. There were no deviations from this schedule. Secondary bypass occurred on September 11, 13, 15 and 17. This week, 32 juvenile lamprey and 8 smolts were bypassed. This week, no smolts were examined on two of the three data days with a 25 percent sample rate. Juvenile shad were the predominant species sampled.

The B side sample tank water temperature and fish in all areas continued to be monitored. Warm water temperatures continued to be a concern though the temperatures have been decreasing.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was minimal to very light and scattered across the powerhouse face. New debris was minimal.

No high trash rack differentials were recorded and no trash racks were cleaned.

No problems were observed in the gatewell slots.

ESBSs/VBSs: All turbine units have ESBSs installed. The screens in slots 1A, 3B, 11C and 12C remained in timer mode. ESBS camera inspections conducted in units 1, 13 and 14 revealed no problems on September 15. Operators had to reset the screen in slot 1A after the inspection.

No high VBS (vertical barrier screen) differentials were recorded. On September 17, screens in slots 1A, 1B, 1C, 7A, 7B, 8B and 9A were cleaned. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots.

All systems functioned satisfactorily in automatic mode. This week, the rectangular screen cleaning brush cycling time ranged from 120 to 240 minutes. The fisheries staff continued to monitor the north side dewatering valve and observed no new problems.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are to the river. Passive integrated transponder (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 sample gates are turned on and off every other day so that they are in service only during secondary bypass. The gates and all operational systems functioned well. The PIT tag sample gates remained turned off. The facility bypass lines provide a superior route for fish over the PIT tag sample release lines downstream of the PIT tag sample gates. The Pacific State Marine Fish Commission (PSMFC) maintenance staff continued their weekly checks of the PIT tag detection system. The A and B side flume bypass gates remain off and open for secondary bypass.

One stick was removed from the junction where the sample raceway release and the secondary bypass lines meet on September 13. There appeared to be no fish injured. Algae removal from the system continued on every primary bypass day.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitoring staff. The data period runs from 0700 to 0700 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperature is recorded in degrees Fahrenheit. On September 15, from 1405 to 1407 hours, spillbays 2 through 5 were opened one foot for scheduled maintenance testing.

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
109.6	75.9	0.0	0.0	68.2	66.5	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on October 6.

Invasive Species: The next zebra mussel station examinations will occur in late September.

Avian Activity: Avian counts are recorded in Table 3 below.

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. The fisheries mechanic and the general maintenance staff continued to clean the bird hazing water cannon pump intake three times a week.

In the forebay observation zone, a small flock of grebes or a cormorant or gull was occasionally noted. Gulls and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay observation zone.

Gulls and cormorants were observed in the tailwater observation area, roosting on the navigation lock wing wall and occasionally feeding in the powerhouse flow. Overall bird numbers have declined. It appears they are feeding on juvenile shad.

Occasionally, a gull or cormorant was observed near the juvenile bypass outfall.
Great blue herons and osprey were also occasionally observed near the project.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Sep 11	Forebay	0	0	0	0	8
	Spill	0	18	0	0	1
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Sep 12	Forebay	0	2	0	0	0
	Spill	14	8	0	0	0
	Powerhouse	10	0	0	0	0
	Outfall	0	0	0	0	0
Sep 13	Forebay	0	0	0	0	0
	Spill	6	18	0	0	0
	Powerhouse	0	1	0	0	0
	Outfall	0	0	0	0	0
Sep 14	Forebay	0	0	0	0	1
	Spill	26	66	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	6	2	0	0	0
Sep 15	Forebay	0	0	0	0	0
	Spill	7	40	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Sep 16	Forebay	2	0	0	0	8
	Spill	85	14	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Sep 17	Forebay	0	0	0	0	0
	Spill	10	13	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0

Research: The adult lamprey passage study continued. On September 23, the researcher will remove the camera frame installed at SFEW2.

Project: Ice Harbor
Biologist: Ken Fone
Dates: September 11 - 17, 2015

Turbine Operation

Units 4 and 3 were taken out of service for annual maintenance at 0830 hours and 0930 hours, respectively, on August 31. Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on September 14, 15, and 16.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. The water surfaces above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily.

Fishway Entrances and Collection Channel: The south shore entrance (SFE-1) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater differential were in criteria on all inspections. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

The south shore channel velocity was in criteria on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were operated throughout the week. Six of the eight south shore AWS pumps were operated throughout the week.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no surface debris observed in the forebay. There was little to no surface debris coverage in the gatewells.

STSs/VBSs: The STSs are being operated in cycle-run mode. Inspection of the STSs in units 1 through 5 and VBSs in unit 2 occurred on August 13, 17, and 19. There were no screen problems observed. The next monthly inspections will occur the week of September 21.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass system is operating with 20 orifices open. Orifices were routinely cycled and back-flushed once per day.

Juvenile Fish Facility: Fish are being routed through the bypass pipe.

Fish Sampling: Fish sampling is done for the season.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3 and ended on August 31.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
26.7	16.5	0	0	67	67	7.4	6.2

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The turbine cooling water strainers for units 1 through 5 were inspected on August 17 and 19. There were 3 juvenile channel catfish, 1 juvenile shad, and 7 Siberian prawns found (all mortalities). The next monthly inspections will occur the week of September 21.

Invasive Species: No new exotic species have been found.

Avian Activity: A relatively low number of piscivorous birds were seen around the dam during the week.

Research: Beginning on September 9, sensor fish were released into the unit 1 turbine intake, via pipes installed on the STS framework in gatewell slot 1B, for the turbine environment characterization study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: September 11 - 17, 2015

Turbine Operation

The units are being operated within the hard constraint 1% peak efficiency criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017. Unit 6 was removed from service on August 31 at 0725 for annual maintenance with an estimated return to service of September 24.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on September 11, 12, 13 and 16.

Fish Ladders: Fishway exit head differentials and depths over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, both gate depth readings ranged from 6.4 to 7.1 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, gate depth readings ranged from 7.6 to 7.9 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 1, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 34 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 5% surface coverage. No problems were observed in the gatewells.

STSs/VBSs: STS operations changed to cycle-run mode on August 7 as average sub-yearling Chinook length became greater than 120 mm. STS inspections were conducted September 1 and 2 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 20 orifices open.

Collection Facility: Operated in collection for transport mode. No problems occurred.

Transport Summary: Every-other-day truck transport is occurring and is scheduled to continue through 0700 hours on October 1.

River Conditions

Summer spill operation ended at 2400 hours on August 31. River conditions during the week are outlined in Table 1 below.

Table 1. River conditions at Lower Monumental 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
27.9	15.9	0.0	0.0	68	66.5	5.0	3.4

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on September 2. Live fish recovered included 47 Siberian prawn. Mortalities included 50 Siberian prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on September 4.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2 below. Gulls and cormorants were the dominant species observed during inspections this week. Hazing ended on June 2.

Table 2. Lower Monumental Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Sept 11	1100	5	1	0	0
Sept 12	1100	0	1	0	0
Sept 13	1115	0	0	0	0
Sept 14	1100	0	0	0	0
Sept 15	1109	1	0	0	0
Sept 16	1102	6	0	0	0
Sept 17	1055	5	1	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: September 11 - 17, 2015

Turbine Operation

All turbine units were available for service throughout this report period except units 3, 4 and 5. Unit 4 was removed from service on August 18 for annual maintenance and was returned to service on September 14. Unit 3 was placed out of service on August 25 for Digital governor installation. Unit 5 was removed from service for its annual maintenance on September 16. Hard constraints of 1% peak efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on Sept. 13 and 17.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.3 ft.). The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: The adult fishway system is in automatic mode. Channel to tailwater head differentials ranged between 1.1 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.9 and 9.1 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 5.6 and 5.9 feet (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 5.6 and 5.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 2.2 and 2.4 fps (criteria 1.5 to 4.0 fps). The monthly water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.8 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box was rebuilt and is waiting on return to service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay ranged between 100 and 2,100 square feet for the week. Fish screen 3A was pulled on September 17 to evaluate the source of an oil leak.

Spillway Weir: Spillway weir was removed for the season on June 18.

ESBS/VBS: ESBSs are all deployed and gatewells are clean except for slot 3A which has a light sheen of oil. Drawdowns were not done this week.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is running with 18-20 open orifices.

Transportation Facility: The JFF transported every other day by truck. GBT (Gas Bubble Trauma) sampling ended for the season.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 819 fish were collected for transport. The descaling and mortality rates were 1.4% and 2.7% respectively. This weekly report period saw 1 adult lamprey removed from sample and released upstream at Little Goose Landing.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
22.6	15.6	0	0	65.6	65.5	6.0	4.9

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were checked on September 19. No fish were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on September 13. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See the chart below for numbers observed.

Table 2. Daily maximum tailrace piscivorous bird counts at Little Goose Dam*.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Sept 11	1050	17	12	0	0
Sept 12	1045	21	14	0	0
Sept 13	1315	13	19	0	0
Sept 14	1140	14	23	0	0
Sept 15	0800	18	4	0	0
Sept 16	1120	25	9	0	0
Sept 17	1130	18	13	0	0

*Bird counts are taken from a single observation, Forebay and Tailrace.

Scroll Case Temperature: Little Goose Dam has only one temperature probe on the Scroll Case in unit 1 only. Temperatures ranged between 65.5 and 68^{o}F.

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: September 11 - 17, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Unit 6 was removed from service for annual maintenance on August 12. Unit 5 was removed from service at 0630 hours on September 14 for annual maintenance.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps or Blue Leaf Environmental biologists on September 12, 15, and 16.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differential was in criteria (≤ 0.3') on all inspections.

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NPE1 and NPE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections with the exception of a 0.9 feet reading on September 12.

NSE1 was inspected with an underwater ROV on September 11. No problems were found. NSE1 was calibrated and inspected by electricians before being returned to automatic operation September 15. NSE1 was out of depth criteria on September 15 and 16 with depth readings of 5.4' and 4.8 feet respectively. NSE2 was in depth criteria (criteria ≥7' or on sill) on September 12. NSE2 was closed September 15 to improve channel/tailwater head differentials. North shore channel/tailwater head differential was out of criteria (criteria 1'-2') on September 12 with a head differential reading of 0.9. September 15 and 16 head differentials were in criteria. NSE's will continue to be monitored to determine if this operation will be able to maintain head differentials in current tailwater conditions.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 0.8 – 0.9 fps and a weekly average of 0.8 fps. Alternative methods of measuring collection channel velocity are being investigated.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 2 operating and pump 3 is in standby mode. AWS pumps 1 and 2 were taken out of service from 1431-1529 hours September 11 to facilitate underwater ROV dive inspections of NSE1.

The dive inspection was unsuccessful earlier in the season due to tailwater conditions during spring spill operations.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris was minimal. Daily gatewell surface inspections continue. Floating debris is being removed daily to prevent orifice blockages. No oil was reported in the gatewell slots.

ESBSs/VBSs: Video inspections are scheduled for late October.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours.

Collection Facility: Collection for juvenile transport and condition sampling continues.

Transport Summary: Truck transport continues with truck departing Lower Granite on odd numbered days.

River Conditions

No spill is occurring. River conditions during the week are outlined in Table 1 below.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.0	16.6	0.0	0.0	64.0	63.8	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers are scheduled for inspection at the end of September.

Invasive Species: No evidence of zebra/quagga mussel was observed on September 7.

Avian Activity: Piscivorous bird observation counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Terns
September 11	0725	1	0	0
September 12	0725	1	0	0
September 13	0725	1	0	0
September 14	0725	1	0	0
September 15	0627	2	0	0
September 16	0629	1	0	0
September 17	0630	1	0	0

Adult Fish Trap Operations: The adult trap is in 24 hour operation with a 10% sample rate. Collection of fall adult Chinook for truck transportation to Lyons Ferry Hatchery and for the Nez Perce Hatchery at Cherry Lane is occurring.

Fish Ladder Temperature Mitigation: Auxiliary pump 1 (supplies water to the ladder exit) and the three temporary ladder cooling pumps remain in 24 hour operation.

Fish Rescue Operation: Unit 5 fish screen slots were dipped September 15 as part of permanent fish screen slot closure work. Fish recovered included 1 juvenile white fish, 1 juvenile sockeye/kokanee, and 1 pumpkinseed. There were no mortalities.

Research

U.S. Geological Survey (USGS) Early Life History of Juvenile Fall Chinook: The project focuses on research, monitoring, and evaluation of spawning and early life history of Snake River fall Chinook salmon, develop strategies to reduce non-indigenous fish, and enhance research on salmon predators and invasive species. LGR and LGO reservoirs food web changes are being investigated to determine importance of non-native Siberian prawn and opossum shrimp in juvenile salmon diets. USGS did not sample during this report week.