U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#17-2015

Project: McNary
Biologist: Bobby Johnson
Dates: June 19 - 25, 2015

Turbine Operation

McNary had 10 to 13 of 14 units available for power generation. The hard 1 percent constraint continued. No turbine units ran outside the constraint. In preparations for forecasted hot weather next week, the saw tooth unit priority began on June 24. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
12	Feb 8 – Aug 1	About 6 months.	Rewind contract.
9	Jun 17 – 24	About 7 days.	Exciter brush failure and replacement.
3	Jun 19 & Jun 23 – 24	12.3 hours & 29.8 hours.	Bearing inspection completed & Repacked oil head.
13	Jun 22 – 25	About 3 days.	Annual maintenance.
11	Jun 23	1.7 hours.	Extended-length submersible bar screen (ESBSs) camera inspection.
1, 3, 5 & 8	Jun 23	About 3.0 hours.	Trash rack cleaning.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on June 19, 21 and 24. Visual adult fish counts and exit temperature monitoring continued.

Fish Ladder Exits: Both ladder exits met all criteria. Debris loads in the area of the exits were generally minimal to light with brief influxes of aquatic vegetation or woody debris. Picketed leads were cleaned as required, including on the weekend. The general maintenance staff was called in on June 21, from 2016 to 2126 hours to clean the Oregon ladder picketed leads after a high water alarm came in. At the Oregon ladder exit, operators adjusted the regulating weir set point on June 19, 21 and 24. At the Washington ladder exit, the operators reset a regulating weir alarm on June 19 and adjusted the regulating weir set points on June 21 and 24.

Fishway Entrances and Collection Channel: At the Washington entrance, all entrance inspection points met criteria except on June 24. The inspection happened to occur as the Wasco County Public Utility District (PUD) turbine unit was returning to service and the bypass system was

closing. The pool differential, entrance weirs W2 and W3 measured 0.5, 6.8, and 6.9 feet, respectively. As reported last week, on June 19, the biologist had found that W2 had not moved since May 4. The operator found the weir in manual mode and returned it to automatic operation.

At the Oregon ladder north powerhouse entrance, weirs NFEW2 and NFEW3 measured depths of 7.9 feet on June 24 possibly due to low tailwater elevation. All other Oregon ladder inspection points were in criteria.

Collection channel surface velocities averaged 1.4 feet per second.

Auxiliary Water Supply System: The PUD turbine unit in the Washington ladder had one interruption in service for scheduled maintenance. The unit was out of service from June 20 at 0752 hours to June 25 at 0955 hours. The bypass system functioned well during the outage.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees. Pump 2 is currently under contract for major overhaul. The repairs should be completed by September, 2015.

This week, the project prepared for a potable water outage so the new system being built can be tied in. The outage will occur on June 26. During the outage, the PUD turbine unit will use raw water for cooling. The Oregon ladder will only have one fish pump available as the raw water pressure is not enough to cool two fish pumps. Details of the outage will be reported next week.

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 in the schedule. Secondary bypass occurred on June 19, 21, 23 and 25. This week, 1,200 juvenile lamprey and 78,900 smolts were bypassed.

The sample tank water temperature continues to be monitored. The B sample tank water temperature was over 68 degrees for the first time on June 24. The mechanical and electrical staffs completed installing a swamp cooler in the wet lab on June 24. Potable water dispensers and port-a-pots were brought in on June 25 in preparations for the potable water outage.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was minimal to light and generally centered on the powerhouse except when northeast winds would temporarily move accumulations toward the Oregon shore. New incoming debris was minimal to light. The debris was a mix of woody material and aquatic vegetation.

No high trash rack differentials were recorded. The racks in 1A, 3A, 5A, 5B, 8A and 8B slots were cleaned on June 23. Two yards of woody debris were removed. No fish were observed in the debris. No problems were observed in the gatewell slots.

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens were not installed at unit 12 as this unit is out of service. The screens in 3B and 11C slots remained in timer mode. ESBS camera inspections conducted on June 23 in unit 11 revealed no problems.

Rehabilitation of vertical barrier screens (VBSs) continued. No high VBS differentials were recorded. The VBSs in 1A, 1B, 14A, and 14B slots were cleaned on June 22 and 23. The general maintenance staff continues to removed sponge from the downstream sides of the VBSs. The fisheries staff observed ten smolt mortalities during the inspections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS and trash rack cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots. All systems functioned satisfactorily in automatic mode.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish 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 the fish over the PIT tag sample release lines downstream of the PIT tag sample gates. 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.

In anticipation of hot weather next week, the sample rate was reduced from 1.0 to 0.5 percent on June 23 in an effort to reduce the number of fish handled.

Three juvenile lamprey mortalities were found on the perforated plate on June 25 after the full flow flume above the separator was cleaned. Procedures were reviewed with the fisheries staff.

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. The routine the summer spill program in support of fish passage continued with 50 percent of river flow being spilled. The spill pattern was altered for navigation as required.

The smolt monitoring staff continued recording water temperature data. The results are published in a separate report.

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
153.2	112.0	76.7	56.0	68.5	66.0	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 7.

Invasive Species: The next zebra mussel station examinations will occur on June 26.

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

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued bird hazing at the project. A second shift continued. Boat hazing occurred on Monday, Wednesday and Friday as scheduled. On June 24, boat hazing concluded two hours early so the contractor working on fish pump 2 could lift the rotor with no distractions. The limited lethal take of cormorants continued.

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. The fisheries mechanics continued to clean the bird hazing water cannon pump intake as needed. The general maintenance staff cleaned the intake on the weekend.

Grebe numbers continued to be low in the forebay with only a small group of birds being observed. An occasional tern, gull, cormorant, pelican or osprey was observed usually while doing other inspections. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone.

Gulls, terns and cormorants were observed in the tailwater area feeding in the spillway flow along with pelicans along the edges. Pelicans were also observed along the Oregon shore by the juvenile facility. Tern numbers appear to be rising. On June 22, terns began to feed in the powerhouse flow, which is unusual when spill is occurring. This would suggest subyearling Chinook are passing through the powerhouse in significant numbers.

Gulls, terns, cormorants and pelicans were noted feeding at the juvenile bypass outfall with pelicans being the predominate species. Pelicans were also observed roosting on the rocks downstream in the wildlife park.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Jun 19	Forebay	0	0	0	0	0
	Spill	6	4	42	16	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Jun 20	Forebay	0	0	0	0	0
	Spill	1	0	29	14	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Jun 21	Forebay	0	0	0	0	0
	Spill	0	0	31	8	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Jun 22	Forebay	1	0	0	0	0
	Spill	6	1	43	4	0
	Powerhouse	0	0	12	5	0
	Outfall	0	0	0	0	0
Jun 23	Forebay	0	0	0	0	0
	Spill	30	0	25	10	0
	Powerhouse	0	0	14	6	0
	Outfall	3	0	0	4	0
Jun 24	Forebay	0	0	0	0	7
	Spill	0	10	56	34	0
	Powerhouse	0	0	14	4	0
	Outfall	0	0	7	0	0
Jun 25	Forebay	0	0	0	1	5
	Spill	0	0	46	16	0
	Powerhouse	0	0	23	3	0
	Outfall	0	2	0	6	0

Research: Gas bubble trauma (GBT) examinations continued at the frequency of once per week. The adult lamprey passage study continued.

Project: Ice Harbor
Biologists: Ken Fone
Dates: June 19 - 25, 2015

Turbine Operation

Units were taken out of service one at a time for STS inspections on June 22 and 24. Unit 1 was out of service from 0702 hours to 0911 hours on June 23 to accommodate gatewell dipping for fish sampling. Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 23, 24, and 25.

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) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria, except for a depth of 6.1 feet on June 23 when the gate was slightly off of sill in manual control. The powerhouse operator was informed and the gate was lowered down to sill. 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. North shore pump 3 was taken out of service at 0846 hours on April 22 to replace the pre-lubrication pump. Six of eight south shore AWS pumps were operated.

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: STS operation was changed from cycling mode to continuous-run mode on June 3 due to the average fork length of subyearling Chinook being less than 120 mm at the Lower Monumental Fish Facility. Inspection of each unit's STSs and unit 4 VBSs occurred on June 22 and 24. No screen problems were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open. Orifices were routinely cycled and back-flushed three times per day. Orifice light 5BN was found to be not working on June 22 due to a bad light switch. Orifice 5BS was opened and 5BN closed until the switch can be repaired.

Juvenile Fish Facility: Fish are being routed through the bypass, except when sampling operations are occurring.

Fish Sampling: Sampling alternates from Monday and Wednesday, to Tuesday and Thursday, each week. Sampling occurred on June 23 and 25. Sampling results are outlined in Table 1 below.

Table 1. Fish condition sampling results at Ice Harbor Dam

June 23:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	41	1	0	0
UC-CH-O	86	3	1	0
C-SH	1	1	0	0
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	128	5	1	0

June 25:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	41	0	0	0
UC-CH-O	62	0	0	1
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	103	0	0	1

Fin splits that extend all the way to the main body of the fish are categorized as fin injuries. This type of fin injury (mainly in the caudal fin) has been observed in some of the sample fish this season. The seasonal incidence of these fin injuries in all steelhead and Chinook (excluding fry) routinely collected and sampled in the fish facility up to June 29 is 22.1% and 12.3%, respectively. Fish (predominantly Chinook) were dipped out of gatewell slot 1B and transported to the fish facility to become the fish for condition sampling on June 23. The incidence of fin injuries in this group of Chinook was 2.4%, indicating that some of the fin injuries seen this season may be occurring downstream of the gatewell slots. The freshness of most of the fin injuries observed this season is undetermined, so there is the possibility that some injuries are also occurring upstream of the dam. Fish facility personnel will continue to investigate for possible sources of the injury throughout the juvenile bypass and collection system.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3. The RSW is in operation.

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
31.9	26.5	22.3	10.4	67	65	7.0	5.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on June 22 and 24. The fish (all mortalities) found were 19 juvenile lamprey, 42 Siberian prawns, 1 sculpin, and 1 crawdad.

Invasive Species: No new exotic species have been found.

Avian Activity: Bird numbers observed (Table 3 below) were low early in the week. Gull and pelican numbers increased towards the end of the week. Contracted land-based hazing of piscivorous birds occurred for 16 hours per day through June 20, and changed to 8 hours per day starting June 21. Concurrent boat-based hazing for 8 hours per day, 3 days per week, ended on June 20. The hazing program has generally been effective at pushing birds away from the dam. This season, boat-based hazing has been successful at reducing bird numbers in the middle of the river where the shore-based pyrotechnics could not reach, largely due to the operating project granting boat-based hazing access into the powerhouse side of the lower boat-restricted-zone.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
June 19	4	5	1	0	14
June 20	0	4	0	0	2
June 21	9	9	0	0	18
June 22	---	---	---	---	---
June 23	13	1	8	0	12
June 24	15	5	0	0	22
June 25	11	6	0	0	28

Research: Hydroaccoustic transducers mounted on the STS frame in gatewell slot 1B, and on 1B trash rack, are collecting data for the turbine intake fish distribution study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: June 19 - 25, 2015

Turbine Operation

The units are being operated within the hard constraint 1% operational 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 3 was removed from service at 0800 hours on June 22 for annual maintenance with an estimated return of service of July 9, 2015.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on June 19, 20, 21 and 24.

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 5.5 to 6.0 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 6.0 to 6.1 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 21 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-15% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STSs are operating in continuous-run mode due to average sub-yearling length being less than 120 mm. STS inspections were conducted June 2 and 3 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 18 orifices open with the exception of June 19 and 20 with 19 orifices open. Open orifices

with burnt out lights were found on June 19, 20 and 21. Operator switched gatewell orifices upon notice. Orifice 36 was left open with the light out after operator opened orifice 35 on June 19 and 20.

Collection Facility: Operated in collection for transport mode. No facility problems this period.

Transport Summary: Alternate day barging began on May 22.

River Conditions

Spring spill operation was initiated at 0001 hours on April 3. Spill was either halted or limited during barge docking and loading operations. 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
30.8	27.4	17.7	13.6	69	67	5.0	4.8

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 3. There was one live juvenile lamprey recovered. Mortalities included 12 juvenile lamprey, 2 salmon smolts, and 1 steelhead smolt.

Invasive Species: No zebra mussels were observed at the monitoring stations on June 5.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2 below. Gulls 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
June 19	1100	20	8	0	0
June 20	1100	11	2	0	0
June 21	1100	2	2	0	0
June 22	1100	19	1	0	0
June 23	1100	12	0	0	0
June 24	1100	7	1	0	0
June 25	1100	2	0	0	0

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

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

Project: Little Goose
Biologist: Richard Weis
Dates: June 19 - 25, 2015

Turbine Operation

All turbine units were available for service throughout this report period except unit 1. Unit 1 was not available for power generation on June 23 and until 1140 hours on June 24. A pressure relief valve for the governor system failed and was replaced. Hard constraints of 1% peak efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on June 21 and 25.

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.). A few dead adult shad were removed from between the Picketed leads. 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. We are still getting incorrect gate elevation readings when the gate is in the lower quarter of the fish channel at NSE. NSE 1 and 2 are in manual mode. Channel to tailwater head differentials ranged between 1.1 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.7 feet (criteria $\geq$ 8.0 ft) and were on Sill. NPE weir depths ranged between 4.4 and 5.3 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.6 and 6.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.9 and 2.4 fps (criteria 1.5 to 4.0 fps). The monthly June water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.8fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box was rebuilt and is waiting on parts to allow placement of the gear box into position.

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 was 0 square feet for the week.

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

ESBS/VBS: ESBSs are all deployed and gatewells are clean except gatewell 5A which has oil absorbent pads deployed as a slight sheen of oil had been seen. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is running with 21 open orifices.

Transportation Facility: The JFF continues the transport of fish every other day. GBT (Gas Bubble Trauma) sampling was performed on June 22. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 95,182 fish were collected for transport. The descaling and mortality rates were 0.8% and 0.25% respectively. This weekly report period saw 2 adult lamprey removed from sample and released upstream at Little Goose Landing.

River Conditions

River conditions during the week are outlined in Table 1.

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
31.8	28.5	10.6	8.6	70.1	69.2	5.4	5.0

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on June 02. No zebra mussels were detected.

Cooling Water Strainers: Cooling water strainers were not checked this week.

Avian Activity: Bird hazing ended on June 16. See chart below for details.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
June 19	0935	103	4	0	2
June 20	1200	53	12	0	0
June 21	1210	31	8	0	0
June 22	1235	33	6	0	0
June 23	1035	58	7	0	0
June 24	1200	50	7	0	0
June 25	0800	33	2	0	0

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: June 19 - 25, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. As scheduled, unit 4 was removed from service at 0920 hours on June 24 for annual maintenance.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on June 19, 20, 21, 23 and 24.

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 with the exception of weir depth readings of 7.9 feet on June 23. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections with the exception of June 21 when a differential of 0.9 feet was noted.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill the weir gate depth readings were 5.6', 5.3', 5.7,' 5.5' and 5.2 feet. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 remains in the closed position. NSE2 is set with a chain fall hoist at 626.0 feet. NSE2 was in depth criteria (criteria ≥7' or on sill) on all inspections. North shore channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with the exception of June 20. The out of criteria readings were 0.9', 0.8', 0.7 and 0.6 feet respectively. All readings were taken from the electronic display on the FSC board due to the north shore access elevator being out of service.

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 0.9 - 1.2 fps and a weekly average of 1.1 fps. Alternative methods of measuring collection channel velocity are being investigated for installation as part of the adult fish ladder control system upgrade.

Auxiliary Water Supply System: The fish ladder is in two AWS pump operation with pumps 1 and 2 in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied with wind strength and direction. Daily gatewell surfaces inspections continue with floating debris being removed by hand basket to prevent orifice blockages. No oil was reported in gatewell slots.

ESBSs/VBSs: The next video inspections are scheduled for late June.

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

Collection Facility: Collection for transport continues.

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

River Conditions

The project began FOP summer spill operations of 18 kcfs 24 hours a day at 0002 hours on June 21; the RSW is operated as a normal part of summer spill activities which are scheduled to last through the end of August. 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
33.2	30.2	20.4	17.4	67.0	66.0	5.0+	5.0

*Cooling water intake temperature.

Other

There are three auxiliary pumps that draw water from forebay elevation 705 feet (about 30 feet down); Auxiliary pump 1 (supplies water to the ladder exit) was put into operation at 1306 hours on June 23 in order to supply cooler water to the fish ladder. Three temporary ladder cooling pumps were installed in the forebay near the adult ladder exit and provide water from approximately 60 feet down to the diffuser 14 intake; these pumps were brought online at 1020 hours on June 25. All four pumps will remain in 24 hour operation until further notice.

Inline Cooling Water Strainers: Cooling water strainers were last inspected May 28.

Invasive Species: No evidence of zebra/quagga mussel was observed June 12.

Avian Activity: Hazing activities began April 1. 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	Caspian Terns	Pelicans
June 19	1945	5	0	0	0
June 20	1945	4	0	0	0
June 21	1945	4	0	0	0
June 22	0600	4	0	0	0
June 23	0600	1	0	0	0
June 24	0600	0	0	0	0
June 25	1945	0	0	0	0

Adult Fish Trap Operations: The adult ladder fish trap is out of service due to concerns with trapping fish at water temperatures in the 68-69°F range.

Fish Rescue Operation: A fish rescue operation took place in the scroll case of unit 4 on June 25, no salmonids were encountered. One crayfish and a sucker were recovered and released into the tailrace.

Research

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: NPT began steelhead kelt collection March 29. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. NPT will transport up to 150 kelts to Dworshak National Fish Hatchery as part of this study. The attempt to collect kelts for this study will conclude June 30.

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 2014 in natal streams and are diverted to the Sort-By-Code tanks at LGR. The onsite portion of this study will conclude June 30.