**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#25-2014**

**Project: McNary**
Biologists: Carl Dugger and Bobby Johnson
Dates: August 15 - 21, 2014

## Turbine Operation

McNary had 10 to 11 units available for power generation this week. The hard constraint one percent criterion continues. No units ran outside the criterion. The summer unit priority sequence, known as the "saw tooth" pattern with units being alternately on or off, also continues. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

| Units | Outage Dates | Outage Length | Main Reason for Outage |
|---|---|---|---|
| 11 | Sep 18, 2013 to Nov 15, 2014 | About one year and two months. | Turbine bearing issue continues. |
| 4 | Mar 27 to Nov 15 | About 7.5 months. | Turbine bearing issue continues. |
| 9 | Aug 11 to Mar 25, 2015 | About 7.5 months. | Maintenance then rewind contract. |
| 13 | Aug 18 to 21 | Three days. | Annual maintenance. |
| 3 & 5 | Aug 19 | 47 minutes. | ESBS camera inspections. Unit 6 was in standby. |

## Adult Fish Passage Facilities

On August 15, 17 and 19, the McNary fisheries biologist performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. Visual adult fish counts, lamprey counts and ladder exit water temperature monitoring continued. The lamprey passage research camera frame at SFEW2 was raised and inspected on August 20 as scheduled.

Fish Ladder Exits: During measured inspections, all Fish Passage Plan criteria were met on both ladders' exits. The project continues to clean the picketed leads as required and on the weekends.

Multiple exit weir alarms occurred this week at the Washington exit all of which the the operator reset without incident. Weir 339 triggered the most alarms. On August 18, the night shift technician found the Washington count station differential at 0.7 feet. Project personnel cleaned the picketed leads early that morning. The amount of milfoil in the area is fairly light.

On August 15, the operator adjusted the Oregon exit set points. Debris loads in the area of the exit have fluctuated depending on wind direction as much of the debris is along the Oregon shore. The operators also reset one false traveling screen differential alarm. Although screen differentials remained low, trash rack differentials rose from 1.3 to 1.9 feet. Traveling screen cycling frequencies were increased from 7 cycles per day to 12 cycles per day. We will continue to monitor both differentials regularly. On August 20, the project staff performed scheduled maintenance on the traveling screens.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, the project will replace the LEDs for W2 and W3 with a panel view.

At the Oregon ladder entrances, all inspection points were in criteria. At the south entrance, SFEW1 and SFEW2 continued to drift in and out of calibration until August 19, when the electrical staff recalibrated them. Electrical upgrades of the Oregon entrances will be completed in the near future. Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder had one interruption in service. On August 20, from 1059 to 1205 hours, the unit was out of service for a fire system inspection. During the outage, the bypass functioned well.

Fish pumps 1 and 3 ran with blade angles of 30 degrees when operational. One interruption in service occurred on August 18, when pump 3 tripped off line from 1730 to 1748 hours. No reason was recorded. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility continues to supplying the usual 450 cfs to the north powerhouse pool with no service interruptions to report.

## Juvenile Fish Passage Facility

The bypass season continues with alternating days of secondary and primary bypass with the switch occurring every morning at 0700 hours. There were no deviations from this schedule. Secondary bypass occurred on August 16, 18 and 20. We bypassed 23,741 smolts, 740 juvenile lamprey and 110,100 juvenile shad this week.

For the week, sample tank mortality ranged from 0.0 to 1.9 percent. The sample tank temperature varied from 69.4 to 70.5 degrees F. Since sample tank water temperature are around 70 degrees F, GBT monitoring remains halted until further notice and the sample rate will remain reduced to a maximum collection of 100 fish per day.

Forebay Debris/Gatewell Debris/Oil: The quantity of floating forebay debris (which consisted mostly of woody material and milfoil) was very light to minimal. Incoming debris quantities were also minimal. Changes in wind direction moved the debris from the powerhouse to the Oregon shore and back. There is no debris at the spillway. Trash rack differential readings were satisfactory, and no racks were cleaned this week. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 1A, 7A, 8C and 13C remain in timer mode. This week, we performed camera inspections in units 3, 5 and 6. All screens were in satisfactory condition. No ESA listed fish or lamprey mortalities were observed during the camera inspections.

VBS differential monitoring revealed no screens out of criteria. On August 15 and 20, maintenance crews cleaned 8 screens as a preventative measure. Two smolt mortalities were noted. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS cleaning, we closed the orifices at the slots the work was being done and opened spare orifices at adjacent slots. We replaced attraction lights as needed. There are no technical issues to report as all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter.

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

Sample gates are in operation only during secondary bypass operations (i.e.: in service every-other-day). The gates functioned well. The primary PIT tag system remains off, as the bypass lines provide a better route for the fish than the PIT tag return lines. The secondary PIT/bypass gates remain off and open. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

## River Conditions

River conditions during the week are outlined in Table 2 as provide by the smolt monitoring staff, whose data day runs from 0700 to 0700 each day. Water temperature monitoring continues. PSMFC reports the results in a separate report. The summer spill program, which calls for 50 percent of flow to be spilled, continues. The project has maintained the 50 percent level.

Table 2. River conditions at McNary Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temp. ($^{o}$F) | | Water Clarity* (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 161.5 | 134.6 | 81.0 | 67.4 | 71.9 | 70.6 | 6.0 | 6.0 |

*Control Room Data

## Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in early September.

Invasive Species: The next the zebra mussel station examination will occur on August 24.

Avian Activity: USDA hazing activities concluded August 2.

We continue to examine, monitor temperature and add oil to the outfall water cannon supply pump. We also continue to check and clean the pump intake. Repairs to the pump are being arranged.

Bird counts continue with each zone being counted by the fisheries staff once a day, usually in the morning. Counts are reflected in Table 3 below. Bird numbers appear to be decreasing with the reduction in out migrating smolts. However, as juvenile shad numbers rise, we expect bird numbers to increase.

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. The fisheries staff monitors and adjust all hazing equipment as needed. All hazing techniques appear to be working well in the tailwater area with gulls, cormorants and terns concentrated at the spill. Also, cormorants and gulls are roosting on the navigation lock wing wall along with pelicans working the Washington shoreline. Many of the cormorants and gulls observed were juveniles. Tern and pelican numbers appear down. Mostly cormorants and pelicans were observed at the bypass outfall.

Juvenile gulls that were previously observed in the forebay area appear to have moved to the tailwater in order to feed on juvenile shad. Grebes were seen only in the forebay. We observed gulls and cormorants on the rock by the Washington boat dock. Ospreys and blue herons are also seen on project.

Table 3. Daily avian counts at McNary Dam.

| Date | Zone | Gull | Cormorant | Tern | Pelican | Grebe |
|---|---|---|---|---|---|---|
| Aug 15 | Forebay | 7 | 0 | 0 | 0 | 4 |
| | Spill | 10 | 24 | 6 | 7 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 10 | 0 | 5 | 0 |
| Aug 16 | Forebay | 5 | 0 | 0 | 0 | 17 |
| | Spill | 28 | 20 | 0 | 1 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 10 | 0 | 3 | 0 |
| Aug 17 | Forebay | 0 | 0 | 0 | 0 | 19 |
| | Spill | 24 | 40 | 6 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 2 | 0 | 0 | 0 |
| Aug 18 | Forebay | 0 | 0 | 0 | 1 | 11 |
| | Spill | 58 | 18 | 0 | 1 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 9 | 0 | 1 | 0 |
| Aug 19 | Forebay | 0 | 0 | 0 | 0 | 10 |
| | Spill | 39 | 30 | 2 | 4 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 7 | 0 | 0 | 0 |
| Aug 20 | Forebay | 0 | 0 | 0 | 0 | 5 |
| | Spill | 83 | 45 | 4 | 2 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 8 | 0 | 0 | 0 |
| Aug 21 | Forebay | 0 | 0 | 0 | 0 | 4 |
| | Spill | 32 | 22 | 0 | 5 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 6 | 0 | 1 | 0 |

Research: The researcher for the juvenile salmonid survival study has removed most of their equipment. GBT monitoring remains on hold until water temperatures lower or the spill program concludes. The adult lamprey passage study continues. In October, preparations will begin for the adult fallback study.

**Project: Ice Harbor**
Biologist: Ken Fone
Dates: August 15 - 21, 2014

## Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem. Annual maintenance of unit 3 is also taking place. Unit 4 was taken out of service on August 4 at 0830 hours for annual maintenance. Units were taken out of service one at a time for STS inspections on August 18 and 20. All available turbine units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

## Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 18, 19, and 21.

Fish Ladders: The north fish ladder inspection areas (head differentials at picketed leads and fishway exit, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at picketed leads and fishway exit, and depth over weirs) were in criteria on all inspections. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. Both the north and the south shore picketed leads are down in their deployed positions.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) depth and channel/tailwater differential were in criteria, except for a 2.2 differential on August 18 and 19. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth was in criteria, but the channel/tailwater differential was out of criteria with readings of 3.2 feet, 2.6 feet, and 2.3 feet on August 18, 19, and 21, respectively. The high differentials may be due to the low tailwater levels and/or difficulty in getting accurate readings of the tailwater elevation because of turbulence from project spill. The north channel diffuser valves were closed to 50% on August 19 in an attempt to reduce the channel/tailwater differential, but the differentials continue to be high. The differentials should be in criteria more often when spill and minimum operating pool operations end for the season. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated throughout the week. Six of 8 south fish pumps were operated.

## Juvenile Fish Passage Facility

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

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle mode since July 21. Units 1, 2, 4, 5, and 6 STS inspections and unit 5 VBS inspections were performed on August 18 and 20. No significant problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: Sampling operations began on April 2 and ended on July 15.

Removable Spillway Weir: The RSW is in operation position. Spill in support of fish passage began on April 3, 2014.

## 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 |
| 32.0 | 22.5 | 22.0 | 12.3 | 70 | 70 | 8.1 | 7.6 |

*Unit 1 scrollcase temperature.

## Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections of units 1, 2, 4, 5, and 6 took place on August 18 and 20. A total of 21 Siberian prawn mortalities were found.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The piscivorous bird count program at the project began on April 1 and ended on July 15. Relatively low numbers of cormorants and gulls and a few pelicans have been seen around the project.

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

**Project: Lower Monumental**
Biologists: Bill Spurgeon and Ray Addis
Dates: August 15 - 21, 2014

## Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 3 was taken out of service on 8/15 for annual maintenance. Units 1, 2 and 4 were returned to service after T1 maintenance at 1707 hours on August 21. Units 5 and 6 were taken out of service on 8/21 to restore the power house line and were also returned to service at 1507 on August 21.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on August 16 and 20.

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, the gate depth readings were 5.3'and 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, the gate depth readings were 6.0' and 5.7 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (fishway control regulating gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system is estimated to return to service in August.

The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: All AWS pumps were in service and operating throughout this period.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-5% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STS are operating in cycle run mode. STSs were inspected August 5, and 6. All screens passed inspection.

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

Collection Facility: No problem with the facility during this period.

Transport Summary: Every-other-day barging ended on August 16. Alternate day trucking began with the midi-tanker on August 18.

## River Conditions

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 |
| 32.0 | 22.0 | 16.5 | 7.0 | 70.5 | 69.5 | 5.0+ | 5.0+ |

*Scrollcase temperatures.

## Other

Spill: Summer spill began at 0001 hours on June 21 and initiated the use of the Bulk spill pattern. The spill season is scheduled to end at the end of August. During the week of August 15 – 21, the dam went to navigation friendly spills during lockage, due to low flows. On August 16, spill was shut down from 1300 to 1545 hours due to a barge having broken free from the tug. The barge had to be recovered from the spillway.

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 4. No live fish were recovered. Mortalities included 1 juvenile bullhead.

Invasive Species: No zebra mussels were observed at the monitoring stations on August 1.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week. Hazing for the season ended on June 2. No additional action trigger points were met from the avian action plan through this time period.

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

| Date | Time (hours) | Gulls | Cormorants | Terns |
|---|---|---|---|---|
| August 15 | 1100 | 13 | 0 | 0 |
| August 16 | 1200 | 11 | 0 | 0 |
| August 17 | 1100 | 7 | 0 | 0 |
| August 18 | 1100 | 3 | 0 | 0 |
| August 19 | 1100 | 3 | 0 | 0 |
| August 20 | 1100 | 12 | 0 | 0 |
| August 21 | 1200 | 1 | 0 | 0 |

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

**Project: Little Goose**
Biologist: James Brandon
Dates: August 15 - 21, 2014

## Turbine Operation

Turbine units 1, 2, and 4 were available for this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. Unit 5 was out of service this report period due to Station Service Transformer 1 is not working properly. Unit 6 was taken out of service on August 11 for annual repairs. All available turbine units were operated within the 1% peak efficiency range.

## Adult Fish Passage Facility

Adult fishway inspections were performed on August 19 and 21.

Fish Ladder: No differentials were observed at the ladder exit (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differentials were observed at the picketed leads (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.5 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.6 (sill) and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 4.9 and 5.4 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 5.0 and 5.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area was measured at 1.9 fps. Surface water velocity ranged between 2.4 to 2.6 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 0 and 5 sq ft. While pulling head gates from Unit 6 following the unit annual, a leak developed on the hydraulic hose connected to the head gate cylinder in slot 6C. The oil leak was discovered at around 1505 hours on August 21. The main unit was not running at the time, and all oil appears to be contained within the head gate slot. Current estimates on the volume of oil discharged into the slot are between 1 and 5 gallons. Crews removed the oil out of slot 6C.

Spillway Weir: The spillway weir was removed from service on August 4.

ESBS/VBS: All ESBSs operated within criteria this report period. All brushes operated as designed. All ESBS fish screens passed the monthly brush test on August 19.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. Daily fish collection for the week ranged between 299 and 1,954 and totaled 6,136. The descaling and mortality rates were 0.6% and 1.0% respectively. This weekly report period saw 5 adult lamprey removed from sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging ended on August 16. Every other day trucking started August 18 with no problems.

## River Conditions

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 |
| 28.8 | 23.4 | 9.0 | 8.9 | 72.2 | 69.1 | 6.0+ | 6.0 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers were not checked this report period.

Invasive Species: No zebra mussels were observed on the substrate monitor on August 14. The next inspection is scheduled for September 13.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Maximum Daily Counts of Tailrace Foraging Piscivorous Birds at Little Goose Dam.

| Date | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|
| August 15 | 31 | 23 | 0 | 0 |
| August 16 | 40 | 23 | 0 | 0 |
| August 17 | 36 | 26 | 0 | 0 |
| August 18 | 30 | 18 | 0 | 0 |
| August 19 | 22 | 15 | 0 | 0 |
| August 20 | 31 | 15 | 0 | 0 |
| August 21 | 26 | 11 | 0 | 0 |

Research: The University of Idaho continues their adult salmon and adult lamprey passage study. WDFW Gas Bubble Trauma monitoring concluded July 28.

**Project: Lower Granite**
Biologists: Elizabeth Holdren and Ches Brooks
Dates: August 15 - 21, 2014

## Turbine Operation

Lower Granite had five turbine units available for power generation at the beginning of the report period. Turbine Unit 4 was taken out of service at 0716 hours on August 4 for annual maintenance. The expected return to service date for this unit is August 29. Work to replace three neutral bushings in conjunction with Doble testing, on the T1 line began on August 11 and was completed by 1428 hours on August 17. During the work period; turbine unit 5 was run at speed no-load (5 kcfs) for station keeping, T2 turbine units 5 and 6 were returned to service every other day for 24 hours. Except as mentioned above, all turbine units are being operated in hard constraint of the 1% operation criteria.

## Adult Fish Passage Facility

The adult fish counters began visual counts at the counting window on April 1. The counting hours are from 0400 to 2000 hours PST and are scheduled to continue through October 31. On August 15, 17, 18 and 21 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings at the south shore and north powerhouse fishway entrances remained within criteria during the weekly inspections. Head differential readings at the north shore fishway entrances met criteria on the August 15 inspection but were below criteria on the remaining inspections with readings of 0.9 feet (criterion $\geq$ 1.0 feet).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances remained on sill this week due to tailrace levels below 636.0 feet (at which level the gates bottom out). Weir depths at both north powerhouse entrances ranged from 5.2 to 5.6 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 entrances ranged from 4.2 to 4.6 feet. (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 entrances ranged from 3.2 to 3.6 feet (Criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 1.04 to 1.18 feet per second and averaged 1.12 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode.

## Juvenile Fish Passage Facility

The sample rate was increased from 50% to 100% at 0700 hours on August 16 in order to facilitate the start of trucking operations.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. No debris spills took place during the week. The JFF staff have been monitoring gatewells daily and removing floating debris with a hand basket in attempt to circumvent orifice blockages.

ESBSs/VBSs: ESBSs are deployed in all units and have been operating without issue. The brush cleaning cycle is set for once every 2 hours. ESBS/VBS monthly inspections were last conducted on June 27 and 28. The next inspections are scheduled for late August.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. Debris levels remained light during the week.

Transportation Facility: Operations proceeded smoothly at the facility during the week. Descaling for all species combined was 0.81% for the week and is 0.80% for the season compared to 2.19% in 2013 and 1.45% for the 2008-2012 average. Lamprey friendly tailscreens (larger screen mesh) remain installed in all raceways.

Transport Summary: Every other day fish barging operations concluded on August 16. All fish barges have been returned to Lower Granite and are docked for maintenance work and winter storage. Every other day fish trucking operations began on August 18 using the pickup mounted midi-tank. Collected fish numbers have been relatively low and well within the capacity of this transport vehicle.

## River Conditions

The project began FOP (Fish Operations Plan) summer spill operations of 18 kcfs, 24 hours a day at 0001 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 |
| 26.5 | 22.4 | 18.7 | 9.5 | 64.6 | 64.4 | 5.0+ | 3.2 |

*Cooling water intake temperature.

## Other

Inline Cooling Water Strainers: Unit cooling water strainers were last inspected on July 24. A total of 6 lamprey mortalities were found. The combined unit run time was 1,473.0 hours. The next cooling water strainer inspections are scheduled for late August.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on the August 2 inspection. No evidence of zebra mussels was found. The next inspection will take place in early September.

Avian Activity: Formal bird counts and hazing activities began on April 1. Sixteen hour per day hazing began on April 21 and concluded on June 1. Eight hour per day hazing began on June 2 and concluded on June 30. Tailrace piscivorous bird counts are taken daily one hour after sunrise and one hour before sunset from the juvenile fish wet separator platform (Table 2).

Table 2. Maximum Daily Counts of Tailrace Foraging Piscivorous Birds at Lower Granite Dam.

| Date | Time (hours) | Gulls | Cormorants | Terns |
|---|---|---|---|---|
| August 15 | 1930 | 0 | 0 | 0 |
| August 16 | 1930 | 0 | 0 | 0 |
| August 17 | 1930 | 0 | 0 | 0 |
| August 18 | 1930 | 0 | 1 | 0 |
| August 19 | 1930 | 0 | 0 | 0 |
| August 20 | 1930 | 0 | 1 | 0 |
| August 21 | 1930 | 0 | 1 | 0 |

Adult Ladder Cooling Pumps: Three rented ladder cooling pumps to supplying 25 to 27 cfs water from a depth of approximately 60 feet to the fish ladder, along with an associated generator were installed in the forebay near the adult ladder exit on August 1. On the first 6 days of the report week these pumps operated from 0500 until 1500 hours each day; with auxiliary Pump 1 on, auxiliary Pump 2 held in standby and diffuser 14 operating in auto mode. At 1500 hours on these days, auxiliary pumps 1 and 2 begin operation with diffuser 14 in auto mode. On August 21 at 1608 hours the rented ladder cooling pumps were put into continuous 24/7 operation with auxiliary pump 1 also operating.

Adult Fish Trap Operations: The Lower Granite adult trap facility was scheduled to operate Monday through Friday, but only operated during the week on August 15, 18 and 21. There was no trap operation on August 19 and 20; due to water temperatures at the trap exceeding 70°F. The temperature allowing, the trap operated from 0700 hours until 1100 hours at at sample rate of 100%. Genetic/scale samples were be taken from one out of every five clipped steelhead and one of every six clipped Chinook. All unclipped steelhead captured were PIT-tagged (if no tag was present) and scale and genetic samples taken.

Fall Chinook Transport: Fall adult Chinook trapping/sampling protocols and brood stock transportation to Lyons Ferry Hatchery and the Nez Perce Hatchery at Cherry Lane are

scheduled start on August 18. The Nez Perce will truck fish on Sunday and Monday and Lyon's Ferry Hatchery will truck fish Tuesday – Saturday. Trucking operations will continue into November (or until hatchery needs are met). Trapping and sampling protocols will be covered in next week's report.

## Research

All onsite research has concluded for the year.