**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#20-2015**

**Project: McNary**
Biologist: Bobby Johnson
Dates: July 10 - 16, 2015

## Turbine Operation

McNary had 12 to 13 of 14 units available for power generation. The hard 1 percent constraint and the saw tooth unit priority 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 |
|---|---|---|---|
| 12 | Feb 8 – Aug 1 | About 6 months. | Rewind contract. |
| 11 | Jul 13 – 17 | About 4 days. | Doble testing and unit maintenance. |
| 10 & 14 | Jul 14 | 1.1 hours total. | Extended-length submersible bar screen (ESBS) camera inspections. |

## Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on July 11, 13 and 15. Visual adult fish counts, review of video tape for adult lamprey counts and ladder exit temperature monitoring continued.

The adult sockeye mortalities observed in the navigation lock last week, have dispersed or been consumed by pelicans. This week, a park ranger reported one adult sockeye and one sturgeon mortality (approximately five feet) on the river bank by Plymouth, Washington. Also, one adult steelhead, one adult Chinook and one sturgeon mortality (approximately five feet) were noted in the forebay. Three adult sockeye mortalities were recovered at the juvenile facility separator. Heat stress was the likely cause of death. All systems will continue to be monitored.

As reported last week, by July 9, both well pumps (which supply potable water) had failed. All systems were switched to raw river water, including the Oregon ladder fish pumps and the Wasco County Public Utility District (PUD) turbine unit in Washington ladder. For the Oregon ladder, only one fish pump could be operated on raw water at the time. The ladder weirs were set as outlined in the Fish Passage Plan (FPP) for one operational fish pump.

The potable water reservoir continued to be filled by a City of Umatilla fire hydrant as needed. The reservoir supplied only basic water needs. Bottled drinking water continued to be used.

On July 10, a submersible pump was procured and installed into the raw water system, which increased the water volume, allowing for two fish pumps to be operated. However, two issues delayed the return of fish pump 3. First, the raw water line has a strainer, which must be cleaned regularly. The possible frequency of cleaning with two fish pumps in operation was a concern. Second, pump 3 had a braking issue, which required a solenoid to be replaced, which occurred on July 11. The returned of fish pump 3 to service was delayed until July 13.

On July 10, before the submersible pump was installed, fish pump 1 tripped off line twice, from 0649 to 0702 hours and from 1209 to 1239 hours due to low cooling water flow, which required the strainer to be cleaned. With the submersible pump in service, water volume was high enough that the operators were able to clean the strainer without a fish pump outage. The strainer was cleaned once a day until fish pump 3 returned to service.

Fish pump 3 returned to service on July 13 at 1124 hours. All entrance weirs were returned to standard position per FPP. With two fish pumps operational, in order to avoid a pump outage, the operators began to use the potable water for cooling while the raw water strainer was being cleaned, which takes approximately five minutes. From July 13 to 15, the strainer was cleaned twice a day.

On July 16, the raw water strainer was cleaned or checked six times. Twice, fish pump 1 tripped off line due to low cooling water flow, from 1411 to 1422 hours and from 1817 to 1825 hours. Each time the strainer was cleaned. Each trip resulted in entrance alarms. Also, that day, the fish pump 3 top plate pump 1 began to fail. The operator switched to top plate pump 2.

Operating both fish pumps on raw water and using potable water during strainer cleaning will continue until well pump 2 is repaired or replaced. The well pump contractor removed the pump on July 17. The contractor will examine the well on July 20.

Fish Ladder Exits: Both ladder exits met all criteria. The picketed leads are being cleaned as required.

At the Washington ladder exit, debris was minimal. On July 16, at 1928 hours, the fisheries technician on duty noted the exit weirs operating excessively. After repeated attempts to resolve the issue, the operator switched the exit to manual mode. A programming issue appeared to be the problem. The exit will remain in manual mode until July 20, when the technical staff can examine the program. The operators will manually adjust the exit as forebay elevation changes occur.

At the Oregon ladder exit, the debris load was very light to light with aquatic vegetation predominating. Exit weir 340 remains in bypass mode due to a failed encoder. Ladder operation will not be adversely affected. The operators adjusted the regulating weir set point on July 11 and 13. A new sliding door was installed in the count station on July 14.

Fishway Entrances and Collection Channel: At the Washington entrance, all entrance inspection points met criteria.

At the Oregon ladder, the pool differentials remained in criteria at 1.0 to 2.0 feet. The north powerhouse entrance weir, NFEW3, remained raised out of the water until July 13 at approximately 1130 hours, when fish pump 3 became operational. The weir measured 6.9 feet that day as adjustments continued to be made. NFEW3 measured 7.8 feet on July 15, when the entrance was in manual mode from 1101 to 1120 hours for installation on a panel view at the controls. NFEW2 measured 6.3, 6.9 and 7.8 feet, respectively, on July 11 (one operational fish pump), 13 (ladder being adjusted) and 15 (installation of panel view).

On July 11, at the south powerhouse entrance, SFEW1 and SFEW2 measured 5.8 and 5.9 feet, respectively, during one fish pump operation. On July 13, SFEW 1 and SFEW2 measured 7.4 and 7.9 feet, respectively, as adjustments were being made. The biologist asked about the difference in the two weirs readings. The operator found SFEW1 set point to have been inadvertently lowered and adjusted it back approximately 8.0 feet.

Collection channel surface velocities averaged 1.3 feet per second; including a slower velocity recorded on July 11 during one fish pump operation.

Auxiliary Water Supply System: The PUD turbine the unit in the Washington ladder had no interruptions in service.

The disruptions in fish pump service, which appear to have not affect fish passage, are described above. When available, 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.

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 July 11, 13, and 15. This week, 450 juvenile lamprey and 69,836 smolts were bypassed. The sample included juvenile shad.

The B side sample tank water temperature continued to be monitored; with the temperature over 70 degrees all week. The fisheries staff monitored fish in all areas for signs of heat stress. Sample tank mortality ranged from 0.0 to 1.4 percent this week. Descaling rates ranged from 0.0 to 2.9 percent. Though the weather had moderated, warm water temperatures continue to be a grave concern.

The juvenile facility continued to have a limited potable water supply.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was minimal and scattered across the powerhouse face except when northeast winds would temporarily move accumulations

toward the Oregon shore. New incoming debris was minimal and consisted of mostly of aquatic vegetation. On July 17, the surplus log bronc was delivered.

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

No problems were observed in the gatewell slots. Approximately 31 smolt mortalities were noted on the upper edge of the vertical barrier screens (VBSs).

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens were not installed at unit 12 as this unit is out of service. On July 11, both spare ESBSs were moved to the intake deck for rehabilitation. The screens in slots 1A, 3B and 11C remained in timer mode. Camera inspections at units 10 and 14 reveal no problems on July 14.

Rehabilitation of VBSs continued. No high VBS differentials were recorded and no screens were cleaned.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use.

All systems functioned satisfactorily in automatic mode. On July 14, the side and rectangular screen cleaning brush mechanism were lubricated. On July15 and 16, respectively, the side and rectangular screen cleaning brushes cycle times were increased from 180 to 240 minutes due to low debris loads.

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 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.

As smolt numbers decreased, the sample rate ranged from 0.25 to 2.00 percent. 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.

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 |
| 158.1 | 112.5 | 79.0 | 56.4 | 72.0 | 71.4 | 6.0 | 6.0 |

*Control room data.

## Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on August 4.

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

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. The second shift concluded on July 11.

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 as needed. The fisheries mechanic has begun to install bird wire on the downstream navigation lock wing wall handrail.

Juvenile gulls, pelicans and grebes were observed in the forebay along with an occasional osprey. 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 shorelines. Gulls and cormorants have begun to roost on the navigation lock wing wall. Terns and pelicans continued to feed in the powerhouse flow. Approximately 200 pelicans are estimated to be in the area of the project.

Table 3. Daily Avian Counts at McNary Dam.

| Date | Zone | Gull | Cormorant | Tern | Pelican | Grebe |
|---|---|---|---|---|---|---|
| Jul 10 | Forebay | 0 | 0 | 0 | 0 | 0 |
| | Spill | 9 | 10 | 44 | 71 | 0 |
| | Powerhouse | 0 | 0 | 20 | 25 | 0 |
| | Outfall | 0 | 1 | 0 | 4 | 0 |
| Jul 11 | Forebay | 2 | 0 | 0 | 2 | 1 |
| | Spill | 12 | 47 | 96 | 85 | 0 |
| | Powerhouse | 0 | 0 | 15 | 31 | 0 |
| | Outfall | 0 | 10 | 0 | 11 | 0 |
| Jul 12 | Forebay | 0 | 0 | 0 | 1 | 10 |
| | Spill | 8 | 27 | 78 | 85 | 0 |
| | Powerhouse | 0 | 0 | 19 | 24 | 0 |
| | Outfall | 0 | 8 | 0 | 17 | 0 |
| Jul 13 | Forebay | 0 | 0 | 0 | 0 | 0 |
| | Spill | 0 | 0 | 67 | 50 | 0 |
| | Powerhouse | 0 | 0 | 17 | 15 | 0 |
| | Outfall | 0 | 5 | 2 | 5 | 0 |
| Jul 14 | Forebay | 2 | 0 | 0 | 0 | 12 |
| | Spill | 0 | 5 | 25 | 25 | 0 |
| | Powerhouse | 0 | 0 | 20 | 10 | 0 |
| | Outfall | 3 | 5 | 0 | 8 | 0 |
| Jul 15 | Forebay | 3 | 0 | 0 | 0 | 0 |
| | Spill | 0 | 4 | 20 | 24 | 0 |
| | Powerhouse | 0 | 0 | 18 | 20 | 0 |
| | Outfall | 0 | 2 | 0 | 6 | 0 |
| Ju1 16 | Forebay | 2 | 0 | 0 | 1 | 2 |
| | Spill | 0 | 0 | 30 | 31 | 0 |
| | Powerhouse | 0 | 0 | 22 | 15 | 0 |
| | Outfall | 1 | 6 | 0 | 10 | 0 |

Cormorants and pelicans along with an occasional gull or tern were noted feeding at the juvenile bypass outfall. Pelicans and cormorants were also observed roosting on the rocks downstream in the wildlife park.

Research: Gas bubble trauma (GBT) examinations occurred on July 15, after which, six smolt mortalities were removed from the recovery raceway. Due to the possibility of heat stress, GBT monitoring was suspended for the rest of the season.

The adult lamprey passage study continued. On July 10, from about 1100 to 1200 hours, the camera system lost power. A breaker in the fish pump house had tripped. On July 13, the electrical staff examined the outlet and determined the load on the breaker was near maximum. All other outlets on the line were removed from service. On July 15, the camera frame was raised for inspection and cleaning.

**Project: Ice Harbor**
Biologists: Ken Fone
Dates: July 10 - 16, 2015

## Turbine Operation

Units 6 and 5 were taken out of service for annual maintenance at 0716 hours and 0717 hours, respectively, on July 6. Units were operated within the 1% peak efficiency range (hard constraint).

## Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on July 13, 14, and 15.

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 on all inspections. The north shore entrance (NSE) 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. North shore pump 3 was taken out of service at 0846 hours on April 22 to replace the pre-lubrication pump. Six of the 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 continuous-run mode to cycling mode on July 9 due to the average fork length of subyearling Chinook being greater than 120 mm at the Lower Monumental Fish Facility. Inspection of each unit's STSs and unit 4 VBSs last occurred on June 22 and 24. No screen problems were observed. The next inspections are scheduled for the week of July 20.

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 6BS was found to be not working on July 10 due to a bad fixture. Orifice 6AS was opened and 6BS closed (with 6BN open) until the fixture was replaced on July 14.

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

Fish Sampling: Sampling days alternate from Monday and Wednesday, to Tuesday and Thursday, each week. Sampling did not occur this week, per the 2015 Fish Passage Plan, Ice Harbor Section 2.4.1.2.e.2, due to the sampling facility water temperature being 73.0 and 71.0 degrees F on the morning of July 13 and July 15, respectively.

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 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 |
| 31.4 | 22.8 | 21.2 | 8.3 | 71 | 70 | 11.6 | 8.3 |

*Unit 1 scrollcase temperature.

## Other

Inline Cooling Water Strainers: Monthly inspections of unit 5 and unit 6 cooling water strainers occurred on July 6. There were no fish found. The other strainers will be checked the week of July 20.

Invasive Species: No new exotic species have been found.

Avian Activity: Daily bird numbers observed are shown in Table 2 below. Total bird numbers moderately increased from last week. The majority of these birds were roosting on Eagle Island. Contracted land-based hazing of piscivorous birds for 8 hours per day ended on June 30.

Table 2. Daily maximum piscivorous bird counts at Ice Harbor Dam

| Date | Gulls | Cormorants | Caspian Terns | Grebes | Pelicans |
|---|---|---|---|---|---|
| July 10 | --- | --- | --- | --- | --- |
| July 11 | --- | --- | --- | --- | --- |
| July 12 | --- | --- | --- | --- | --- |
| July 13 | 56 | 11 | 28 | 0 | 19 |
| July 14 | 98 | 18 | 28 | 0 | 15 |
| July 15 | 69 | 8 | 22 | 0 | 35 |
| July 16 | --- | --- | --- | --- | --- |

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: July 10 - 16, 2015

## Turbine Operation

The units are being operated within the 1% operational hard constraint 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 on June 22 for annual maintenance and returned to service at 1420 on July 16, 2015.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on July 10, 11, 12 and 15.

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 5.9 to 6.3 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 19 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 were operating in cycle mode. STS inspections were conducted July 7 and 8 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 July 10 and 11 with 20 orifices open.

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

Transport Summary: Alternate day barging began on May 22 and continued through this period.

## River Conditions

Routine spill operations in support of fish passage were 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.

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 |
| 31.2 | 24.1 | 16.8 | 11.7 | 70.9 | 70 | 5.0 | 3.8 |

*Scrollcase temperatures.

## Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 6. There were no live fish recovered. Mortalities included 3 juvenile lamprey, 1 salmon smolt, and 11 Siberian prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on July 3.

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 |
|---|---|---|---|---|---|
| July 10 | 1100 | 11 | 1 | 0 | 0 |
| July 11 | 1100 | 30 | 0 | 0 | 0 |
| July 12 | 1100 | 20 | 0 | 0 | 0 |
| July 13 | 1100 | 35 | 0 | 0 | 0 |
| July 14 | 1100 | 25 | 0 | 0 | 0 |
| July 15 | 1105 | 19 | 0 | 0 | 0 |
| July 16 | 1100 | 49 | 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: July 10 - 16, 2015

## Turbine Operation

Some turbine units were available for service throughout this report period. Unit 3 was removed from service for annual maintenance on July 7 and returned to service on July 16. Unit 4 was removed from service on July 13 for over speeding. Unit 4 was returned to service on July 14. Unit 2 is out of service for Digital Governor installation starting on July 14. Hard constraints 1% peak efficiency operational criteria are in effect. No violations were seen.

## Adult Fish Passage Facility

Adult fishway inspections were performed on July 15 and 16.

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 held steady at 1.2 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. 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 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.4 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.2 and 4.4 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths held steady at 6.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.7 and 1.8 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 3.8fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. 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: Spillway weir was removed for the season on June 18.

ESBS/VBS: ESBSs are all deployed and gatewells are cleaned except gatewell 5A which has oil absorbent pads deployed as a slight sheen of oil had been seen. All criteria were met. Drawdowns were not done this week.

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

Transportation Facility: The JFF was transporting fish every other day. GBT (Gas Bubble Trauma) sampling was performed on July 13. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 104,347 fish were collected for transport. The descaling and mortality rates were 0.5% and 0.7% respectively. This weekly report period saw 0 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 |
| 32.3 | 24.4 | 11.2 | 9.1 | 72.4 | 70.5 | 6.0 | 4.9 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: All cooling water strainers were checked on July 15. No fish or invertebrates were seen.

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

Avian Activity: Bird hazing ended on June 16. See Table 2 below for details.

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

| Date | Time (hours) | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|---|
| July 10 | 0945 | 101 | 1 | 0 | 0 |
| July 11 | 1015 | 85 | 4 | 0 | 0 |
| July 12 | 1245 | 120 | 11 | 0 | 2 |
| July 13 | 1235 | 132 | 11 | 0 | 0 |
| July 14 | 0930 | 73 | 1 | 0 | 1 |
| July 15 | 1100 | 96 | 5 | 0 | 1 |
| July 16 | 0945 | 85 | 7 | 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: July 10 - 16, 2015

## Turbine Operation

Units are operating in hard constraint of the 1% criteria. Unit 4 is out of service for annual maintenance/six year overhaul with a tentative return to service date of August 17. Unit 2 was placed in standby mode at 1501 hours and unit 1 was brought on line at 1509 hours, July 13, to improve tailrace conditions for adult fish passage.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on July 10, 11, 12, 14 and 15.

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 sill criteria (criteria ≥8' or on sill) on all inspections. While on sill the weir gate depth readings were 6.0', 5.9', 6.0,' 6.2 and 6.1 feet. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections with the exceptions 0.9 feet readings July 14 and 15.

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 July 10. The out of criteria readings were 0.7', 0.9', 0.5'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.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 - 1.2 fps and a weekly average of 1.0 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 AWS pumps 1 and 2 are operating and pump 3 is in standby mode.

## 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 July.

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. A barge trip to illustrate the Corps juvenile fish transportation program to Judge Simon departed Lower Granite July 16.

## River Conditions

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 |
| 34.4 | 25.5 | 18.0 | 6.8 | 68.5 | 67.0 | 5.0+ | 4.5 |

*Cooling water intake temperature.

## Other

Auxiliary pump 1 (supplies water to the ladder exit) and the three temporary ladder cooling pumps remain in 24 hour operation. These pumps were offline from 1035 to 1200 hours July 10 to install an air conditioned enclosure around the breaker box to prevent the tripping due to overheating.

Inline Cooling Water Strainers: The next cooling water strainer inspections are scheduled for late July.

Invasive Species: No evidence of zebra/quagga mussel was observed July 3.

Spill: To improve tailrace conditions for adult passage the RSW was closed at 1210 hours July 8 and spill operations were changed to follow FPP TABLE LWG-9.

Avian Activity: Hazing activities concluded June 30. 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 |
|---|---|---|---|---|
| July 10 | 0600 | 0 | 0 | 0 |
| July 11 | 0600 | 0 | 0 | 0 |
| July 12 | 0600 | 1 | 0 | 0 |
| July 13 | 0600 | 0 | 0 | 0 |
| July 14 | 0600 | 0 | 0 | 0 |
| July 15 | 0600 | 0 | 0 | 0 |
| July 16 | 0600 | 3 | 2 | 0 |

Adult Fish Trap Operations: The adult ladder fish trap started emergency trapping of sockeye for transport to Eagle Fish Hatchery July 13. The trap will collect fish for a maximum of four hour periods between the hours of 0600 to 1200 Monday through Friday.

Fish Rescue Operation: No fish rescue occurred.

## Research

Onsite research has concluded for the season.