U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#39-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: November 21 - 27, 2014

Turbine Operation

McNary had 10 to 11 units available for power generation this week. On November 1, the soft constraint one percent criterion began. This week, operational units ran outside the criteria as required by BPA. The weather for the week was more moderate though severe weather is again forecast for next week. 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 Jan 31, 2015	About one year and 4.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jan 31, 2015	About 10 months.	Turbine bearing issue continues.
9	Aug 11 to Mar 25, 2015	About 7.5 months.	Maintenance then rewind contract.
5	Nov 24 to Dec 22	About one month.	Replace generator air cooler.
10, 12, 13 & 14	Nov 25	1.4 hours.	ESBS camera inspections.

Adult Fish Passage Facilities

On November 21, 23 and 24, the McNary fisheries biologist performed measured inspections of the adult fishways.

Fish Ladders' Exits: During measured inspections, all Fish Passage Plan criteria were met on both ladders' exits. The exits had no debris issues.

At the Washington exit, the operators reset one low water alarm.

At the Oregon exit, on November 25, the electrical staff was performing some testing on project. At 0720, they noted the feed to the exit was open. At 0847, they found a blown fuse. By 0854, the electricity was returned to the exit. Due to the shortness of the outage, no ill effect was noted at the exit. The traveling screens' differentials remain low. The operators reset two false differential alarms. On November 23, we cleaned the screens debris trough and set the cycle frequency from 12 times a day to six.

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 LED's for W2 and W3 with a panel view.

At the Oregon ladder's entrances, all inspection points were in criteria except on November 21, when NFEW2 and NFEW3 measured 7.9 and 7.8 feet, respectively. This is probably due to the juvenile system was no longer supplying flow to the north powerhouse entrance. At the south powerhouse entrance, SFEW2 continues to have calibration drift issues. Electrical upgrades of the Oregon entrances will be completed in the near future.

The collection channel velocity averaged 1.7 feet per second. We took these readings from surface observations.

Auxiliary Water Supply System: For the report week, the PUD at the Washington ladder had no interruptions.

Fish pumps 1 and 3 ran with blade angles of 30 degrees with no interruptions. Pump 2 remains out of service for major overhaul, which will require a contract, which could be completed by September, 2015.

The juvenile facility is no longer supplying the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The fall bypass season continues with the system in emergency bypass. This will protect the channel and the facility from severe winter weather. Winter maintenance continues to progress.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which was milfoil along with woody material, was minimal to light. We noted no fresh incoming debris and there was no debris at the spillway.

Our trash rack differential readings revealed no problems and none were cleaned.

We observed one problem in the gatewell slots. On November 24, we removed very slight amount of hydraulic fluid for 5B slot with absorbent pads.

ESBSs/VBSs: ESBS's are installed at all units except units 4 and 11, which are out of service. The screens at 1A, 1B, 2B, 6A and 13C slots remain in timer mode. On November 23, the screen in 1B slot was found with an excess cycle count. The next day, an electrical technician adjusted the screens programming. Also, on November 23, we noted the screen at 8C slot had an excessive cycle count and observed it short cycling (i.e.: cleaning brush reversing direction before the desired end of travel) at the panel view. The chief operator found the computer system off line. An electrical technician was called in to reboot the computer and reset the ESBS. The next day, the lead electrical technician, examined the screens at 8B and 8C slots. These screens, which

were set to timer mode last week, were returned to normal operation by the technician. On November 25, camera inspections at units 10 and 12 to 14 revealed no problems.

VBS differential monitoring revealed no screen out of criteria and none were cleaned. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: With emergency bypass, 42 orifices remained open all week. We continue to note moisture in the orifice operators' air supply line and to bleed the moisture off daily. With warmer weather, the orifice operators required less attention. From November 24 to 29, the orifice at 5B slot was closed as a precaution due to the hydraulic fluid mentioned above. A spare orifice was opened at 5A slot and the unit is out of service. 6A slot's south orifice remains with the north orifice open to compensate.

The channel systems are winterized and light winter maintenance will continue.

On November 26, we were unable to clear the debris from the still well for the forebay elevation indicator.

Bypass Facility: The facility remained dewatered and protected from possible freeze breakage. Winter maintenance continues. No PIT tag detection occurs during emergency bypass.

The fisheries staff continues rehabilitation of the separator and removal of the direct barge loading line from the barge dock.

River Conditions

River conditions during the week are outlined in Table 2 as provide by COE data. Our data day runs from 0000 to 0000 each day.

This week, the TSW in bay 20 was opened from November 24 at 0010 to November 27 at 0015 for the adult fallback study. The remainder of the week, the TSW was closed. The spill recorded below is at the TSW. On November 21, the researcher adjusted their equipment at the TSW.

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
126.9	104.1	9.0	0.0	48	48	6.0	6.0

* Temperature taken from the unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on December 2.

Invasive Species: The zebra mussel station examination on November 24 revealed no problems.

Avian Activity: Bird counts are no longer occurring.

Repairs to the outfall's water sprinkler system's pump are still being arranged with January or February, 2015 as the target date.

During other inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow. We observed gulls and cormorants roosting on the navigation lock wing wall and feeding in the TSW flow, which is part of the spill zone. Finally, we observed gulls and cormorants at the emergency bypass outfall. When no spill was occurring, we observed gulls and grebes roosting on the water in the spill basin. Bird numbers are affected by the juvenile shad out migration, their own migratory patterns and the weather. A large flock of gulls appears to be roost at various locations around the project.

In the forebay area, we observed an occasional gull or group of gulls along with an occasional cormorant and blue heron. Only an occasional grebe or small group of grebes was noted. No grebes were observed elsewhere. We observed gulls occasionally on the rock by the Washington boat dock.

Research: The adult steelhead fallback study continues along with the University of Idaho's winter adult steelhead radio tracking study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: November 21 - 27, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem and for annual maintenance, and remains out of service due to an oil leak from the hub. The plan for the fall and winter is to convert unit 3 into a fixed-blade unit to remedy the problem. Unit 6 was out of service from 1048 hours on October 6 to 1414 hours on November 26 for annual maintenance. Unit 2 was removed from service on October 14 at 0940 hours for digital governor installation.

Unit 1 was operated above the upper limit of the ± 1% range of peak turbine efficiency on November 25 and 26 to accommodate the turbine characterization study

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on November 24, 25, and 26.

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. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. The north and the south shore picketed leads were put in their raised positions on November 3. The counting of adult fish ended for the season on October 31.

Fishway Entrances and Collection Channel: The south shore entrance (SFE) depth and channel/tailwater differential were in criteria, except for a differential of 2.1 feet on November 24. 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.

Auxiliary Water Supply (AWS) System: Two of the 3 north shore AWS pumps were operated throughout the week. Six of the 8 south AWS pumps were operated until November 26. On November 26, south AWS pump 3 tripped off at 0935 hours and was available for service at 1523 hours the same day, but only five pumps needed to be run to meet fishway criteria.

Juvenile Fish Passage Facility

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

STSs/VBSs: Most of the STSs are in position for juvenile fish guidance and have been in cycle run mode since July 21. Unit 3 STSs were removed for the season on November 4, since the unit will remain out of service past December 15. Unit 1, 2, 4, 5, and 6 STS inspections were performed on November 17 and 19. No significant problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. The collection channel operated with 20 orifices open. The bird abatement hydro-cannon was turned off and winterized for the season on November 13 due to increasing ice buildup on the outside of the hydrocannon and bypass outfall pipe.

Juvenile Bypass Facility: The bypass is in operation.

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

Removable Spillway Weir: Spill in support of fish passage began on April 3 and ended on August 31. The contractor for the spill bay 2 ogee and flow deflector modifications continue concrete cutting and chipping of the ogee, as well as diving to install temporary bulkheads, in preparation for the modifications.

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
29.4	17.2	0	0	53	48	6.4	6.4

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on November 17 and 19. One juvenile lamprey mortality and several hundred juvenile shad mortalities were found. Semiannual transformer cooling water strainer inspections occurred on November 26. No fish were observed.

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 moderate to high numbers of gulls, cormorants, grebes, mergansers, and pelicans, were seen around the project during the week.

Research: Researchers continue releasing sensor fish through unit 1 for the turbine characterization study.

Project: Lower Monumental
Biologists: Bill Spurgeon
Dates: November 21 - 27, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 6 remains out of service for six year overhaul.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 24 and 25.

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 7.3' and 7.3 feet. South powerhouse channel/tailwater head was in of criteria (1'-2') on all inspections.

SSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections. 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 latest update on getting the automated system back in service is February 2015. 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 on the remaining days of the period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 55.5 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 10% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STSs are operating in cycle mode. STSs were inspected November 4, 5 and 6. All screens passed inspection.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 18 orifices open.

Collection Facility: N/A.

Transport Summary: N/A.

River Conditions

Summer spill ended at 0000 hours on September 1. 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
29.2	16.6	0.0	0.0	48	48	5.0	4.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 3. Live fish included 1 prawn. Mortalities included l5 prawn and 90 shad.

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

Avian Activity: Bird counts are presently being done with ladder inspections. This will continue until April 1, 2015.

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

Project: Little Goose
Biologist: Richard Weis
Dates: November 21 - 27, 2014

Turbine Operation

Turbine units 1, 2, 4, 5 and 6 were available for all of this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. Unit 2 was placed into service on November 25 from its annual maintenance outage. All available turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on November 24, 25 and 26.

Fish Ladder: Ladder exit differentials held steady at 0 ft. (criteria $\leq$ 0.5 ft.). Water depths over diffuser 13 weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was 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 1.3 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.2 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 6.4 and 7.2 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 6.6 and 7.4 feet (criteria $\geq$ 6.0 ft.). North powerhouse surface water velocity measured between 1.8 and 2.3 fps. Collection channel surface water velocity near north shore entrance ranged between 2.1 to 2.5 fps (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 held steady at 100 sq ft.

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 screens met criteria. Monthly test of all ESBS screens were performed on November 25. All screens met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system was operated with 18 open orifices.

Transportation Facility: The juvenile collection and transportation facility is dewatered and is in primary by-pass.

Transport Summary: Fish transport has ended for the season.

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
27.2	16.8	0	0	47.6	47.4	6.0+	5.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on November 25. No fish were found.

Invasive Species: No zebra mussels were observed on the substrate monitor on November 24. The next inspection is scheduled for December 21.

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

Table 2. Tailrace counts of foraging piscivorous birds at Little Goose Dam.

Date*	Time (hours)	Gulls	Cormorants	Terns	Pelicans
November 21	---	---	---	---	---
November 22	---	---	---	---	---
November 23	---	---	---	---	---
November 24	0804	22	10	0	0
November 25	0740	10	5	0	0
November 26	0814	8	10	0	0
November 27	---	---	---	---	---

*Observations not taken from November 21 through November 23 and November 27.

Gas Bubble Disease: WDFW Gas Bubble Trauma concluded July 28.

Research: The University of Idaho continues their adult salmonid and adult lamprey passage study.

Project: Lower Granite
Biologists: Elizabeth Holdren, Ches Brooks and Robert Horal
Dates: November 21 - 27, 2014

Turbine Operation

Units are being operated in soft constraint of the 1% operation criteria. Unit 1 was removed from service for annual maintenance at 0716 hours on October 21. The expected return to service date for unit 1 is now December 16.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on November 24, 25 and 26. Visual adult fish counts concluded on October 31, daytime video counts began on November 1and are scheduled to continue through December 30.

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

Fishway Entrances and Collection Channel: NSE1 was out of criteria (criteria ≥7' or on sill) on all inspections with depth readings ranging from 4.7 to 5.0 feet. NSE2 was out of criteria (criteria ≥7' or on sill) on all inspections with depth readings ranging from 5.6 to 6.4 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'-2') on all inspections. The out of criteria head differential readings were 0.8 feet on each inspection. NSE2 has been out of service since 2011 and is currently suspended with a hoist system at a compromised depth of 630.0 feet. The gate requires a complete rehab and will remain out of service until funding is available. Entrance weir depths are being sacrificed in an attempt to maintain channel/tailwater head differential.

NPE1 and NPE2 weir gates were in depth or sill criteria (criteria ≥8' or on sill) on all inspections. While on sill the weir gate depth readings were 7.7 and 7.9 feet. North powerhouse channel/tailwater head differentials were in criteria (criteria 1'-2') on all inspections.

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

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections. The daily average channel velocity readings averaged 1.1 feet per second. Powerhouse electrical crew is investigating the velocity meter and looking into alternatives for replacement.

Auxiliary Water Supply System: All AWS pumps were available for service for the majority of the report week. Pumps 1 and 3 were operated. AWS pump 2 was in standby mode.

Fish pump one's motor management relay system tripped the pump offline on November 25 at 1105 hours. This pump has a tendency to trip offline when being run in fast speed during periods of low tailwater elevations. When this occurs it takes approximately one hour to restart the pump – time to allow the pump to cool enough for a restart. The pump was restarted in slow speed at 1206 hours the same day.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction.

ESBSs/VBSs: ESBS/VBS inspections have concluded for the year. Due to very cold weather conditions, removal of the ESBSs began on November 12 and concluded on November 14.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel has been dewatered for the year. A safe clearance for the juvenile fish collection channel was issued and all 51 clearance points have now been secured. The two points involving the prototype overflow weir located at slot 5A were secured on November 26, when special tooling was received. We estimate that 15 to 20 adult steelhead are in the collection channel. An excellent sanctuary pool of one to two feet – with good water flow (as always, from the combined leakage of the north makeup water valve and the orifices) exists and cannot be compromised. A fish rescue operation will be conducted in this channel on December 1.

Collection Facility: On November 14 the juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season. This was done earlier than usual due to very cold temperatures and the possibility of freeze damage. Winter maintenance has begun in earnest.

Transport Summary: The final transport truck departed Lower Granite on October 31.

River Conditions

River conditions during the week are outlined in Table 1. No spill is occurring at this time.

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
28.1	17.1	0.0	0.0	44.5	43.5	5.0+	4.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on November 25. There were no lamprey mortalities. No other fish species were recovered. The combined unit run time was 996.2 hours. The next inspections are scheduled for late December.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on November 19.

Avian Activity: Daily piscivorous bird counts concluded on November 13.

Adult Fish Trap Operations: The adult fish trap facility was shut down and dewatered on November 11.

Research

Research: Onsite juvenile fish research has concluded for the year.