U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 5 - 11, 2014

Turbine Operation

McNary had 10 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 requested by BPA. The weather for the week was fairly mild. 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.
1, 2 & 3	Dec 9	59 minutes.	ESBS camera inspections.
7	Dec 10	2.3 hours.	Trash rack cleaning and unit testing.
6 & 8	Dec 10	2.4 hours each.	Unit testing.
13	Dec 11	1.1 hours.	Trash rack cleaning.
10 & 12	Dec 11	1.6 hours each.	Unit testing.

Adult Fish Passage Facilities

On December 5, 7 and 10, the McNary fisheries biologist performed measured inspections of the adult fishways. On December 7 and 11, the operators rebooted the fishway control system computer. On December 11, during backup diesel generator tests for the spillway, the Washington ladder was briefly without power. There was no adverse effect on the system or fish passage criteria. This week, the project began preparations to replace emergency personnel escape ladders at the Washington fish ladder.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. The exits had no debris issues, although we are noting an increase in milfoil on the Washington ladder exit trash rack.

At the Washington exit, the operators reset three false weir 339 alarms. On December 10, the operators adjusted the regulating weir's set point.

At the Oregon exit, the traveling screen differentials remain low. The operators reset two false differential alarms. Also, the project staff began to install new stair caps on the stairs leading to the Oregon count station.

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 (Light Emitting Diodes) for W2 and W3 with a panel view.

At the Oregon ladder entrances, all inspection points were in criteria. At the south powerhouse entrance, SFEW1 and SFEW2 continue to have calibration drift issues. Electrical upgrades of the Oregon entrances will be completed in the near future.

Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder had no interruptions in service.

Fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees. The fish pump house remains off limits to fisheries staff due to the presence of asbestos. On December 12, a contractor will begin asbestos monitoring in the pump house. The Oregon ladder criteria points should indicate if there are any issues with the fish pumps and pumps operations are monitored within the control room's alarm system. Pump 2 is currently out of service for major overhaul under contract. This work should 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 mode. This mode of operation protects the channel and the facility from severe winter weather until the ESBSs are raised and the orifices are closed in late December. Winter maintenance continues to progress.

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

Our trash rack differential readings revealed no problems. On December 10 and 11, as a test, the project staff cleaned slots 7A, 7C, 13B and 13C, removing about one ten-yard truck load of debris. No ESA listed species or lamprey were noted in the debris.

We observed no problems in the gatewell slots.

ESBSs/VBSs: As mentioned above, on December 7 and 11, the fishway control system computer had to be rebooted by the operators. The electrical staff is looking into the issue. ESBSs remain deployed in all units except units 4 and 11, which are out of service. On December 5, the project raised the ESBSs at units 5 and 9, which will be out of service past December 15. Removal of the remaining ESBSs will begin on December 16.

When the screens at unit 9 were raised, all three screens had their brush bar. The bar found on August 12 in the unit scroll case in slot C slot must have come off a screen during a previous season. The project was fortunate this brush bar was removed without incident.

The screens in slots 1A, 1B, 2B, 6A and 13C remain in timer mode. On December 6, the screen in slot 1B slot was again found to be cycling with no record of motor amperage. The operators reset the screen breaker and recalibrated the brush cycle. Later that day, an electrician installed a new plug on the screen's electrical supply cable. From December 6 to 11, the screen in 14B slot was found short cycling (i.e.: reversing direction prior to the desired amount of travel). Each time, the operator reset the screen without incident.

On December 9, the last camera inspections of the season occurred at units 1 to 3, with no problems found.

VBS differential monitoring efforts revealed one screen out of criteria when the associated unit operated at 80 megawatts. On December 6, 9 and 10, the project cleaned this screen and eight others as a precautionary measure. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Emergency bypass operations continued with 42 orifices in service all week. We continue to note moisture in the orifice actuator air supply line. Moisture continued to be bled out of these air lines daily and orifice actuators were monitored as needed. The orifices will remain open until all ESBSs are raised in late December.

Channel systems are winterized (other than orifices and air lines) and light winter maintenance continues.

This week, the electrical staff continued replacing all corroded junction boxes with stainless steel ones. Also, they replaced electrical conduit as needed. During this work, electricians inspected the rectangular dewatering screen motor which raises and lowers the cleaning brush. After removing the stator from the motor and the bearing cover from the gearbox, the electricians discovered gear oil in the motor. This meant that the seal between the motor and gearbox had failed. We are checking for spare parts on project and will order any parts that may be needed. The gearbox appears to be functional. This probably explains the issues seen when the brush was last operated in November.

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 continued separator rehabilitation.

River Conditions

River conditions during the week are outlined in Table 2 as provide by COE data. Our data day runs from 0000 to 2400 hours each reporting period.

The TSW in bay 20 was opened on December 5 in support of the adult fallback study. Otherwise, the TSW was closed. The spill recorded below is from the TSW. On December 11, a very slight amount of spill occurred at bays during scheduled maintenance tests.

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
162.6	142.8	8.6	0.0	46	45	6.0	6.0

* Temperatures taken from the Unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur in early January.

Invasive Species: The next zebra mussel station examination will occur in late December.

Avian Activity: Bird counts are no longer occurring.

Repairs to the outfall water cannon pump are scheduled for mid-February, 2015.

During other inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow. We observed gulls and occasionally 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 occasionally cormorants at the emergency bypass outfall. Bird numbers are affected by the juvenile shad out migration, their own migratory patterns and the weather.

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

Research: The adult steelhead fallback study continues until December 15. The University of Idaho's winter adult steelhead radio tracking study continues.

This week, the fisheries staff completed removal of study equipment left on the powerhouse deck by USGS several years ago.

Project: Ice Harbor
Biologist: Ken Fone
Dates: December 5 - 11, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem, 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 2 was removed from service on October 14 at 0940 hours for digital governor installation. Unit 6 was taken out of service on December 8 at 1245 hours and remains out of service to accommodate BPA work on the Ice Harbor-Franklin No. 3 115 kV line.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on December 8, 9, and 10.

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 surface above the 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. Adult fish counts 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 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.

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.

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 their deployed positions for juvenile fish guidance and have been in cycle-run mode since July 21. Unit 3 STSs and unit 2 STSs were removed for the season on November 4 and December 10, respectively, since both units 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. On December 10, the mechanical screen cleaner at the primary dewaterer was taken out of service for the remainder of the season due to possible failure of the gear box that raises and lowers the brush. Fish facility personnel and powerhouse shift operators will monitor channel water levels and use the air burst system to clean the downstream section of the inclined screen until the channel is unwatered for winter maintenance.

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
29.0	22.0	0	0	46	46	10.0	9.8

*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 approximately 175 juvenile shad 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 moderate to high numbers of gulls, cormorants, grebes, mergansers, and pelicans, were seen around the project during the week.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon
Dates: December 5 - 11, 2014

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Unit 6 returned to service at 1540 hours on December 10. Unit 1 was removed from service for annual maintenance on December 10 at 0745 hours.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 8, 9 and 10.

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 7.0, 6.6' and 6.7 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections. SSE1 weir gate was in sill or depth criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.6 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 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 satisfactorily through this report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 21.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 75% surface coverage so gatewell debris dipping was conducted. Oil absorbent pads are in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STSs are operating in cycle-run 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: The facility has been on primary bypass since October 1, due to the end of the collection season.

Transport Summary: Alternate day trucking ended with the final sample on October 1.

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	22.2	0.0	0.0	44	43	5.1	5.0

*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.

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

Project: Little Goose
Biologist: Richard Weis
Dates: December 5 - 11, 2014

Turbine Operation

Turbine units 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 1 was placed out of service for its annual repair on December 1. All available turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 9, 10 and 11.

Fish Ladder: Ladder exit differentials held steady at 0.0 ft. (criteria $\leq$ 0.5 ft.). Water depths over diffuser 13 weirs ranged between 1.1 and 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 1.0 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 6.8 and 7.3 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 7.7 and 8.1 feet (criteria $\geq$ 6.0 ft.). North powerhouse surface water velocity measured between 1.7 and 2.2 fps. Collection channel surface water velocity near north shore entrance ranged between 2.2 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 between 300 and 400 sq ft.

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

ESBS/VBS: Available ESBSs operated within criteria this report period. All brushes operated as designed. Fish screens on units 1 and 3 were pulled on December 11. These turbine units will not be used prior to December 16 and are out of service.

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

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

Transport Summary: Fish transportation system 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
27.6	21.9	0	0	42.4	42.1	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on December 11. 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 16.

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
December 5	---	---	---	---	---
December 6	---	---	---	---	---
December 7	---	---	---	---	---
December 8	0751	8	3	0	0
December 9	0800	4	2	0	0
December 10	0800	16	1	0	0
December 11	1531	7	1	0	0

*Observations not taken from December 5 through December 7.

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Ches Brooks and Robert Horal
Dates: December 5 - 11, 2014

Turbine Operation

Units are being operated within the 1% soft constraint operational criteria. Unit 1 was removed from service on October 21 at 0716 hours for annual maintenance. Unit 1 is expected to be returned to service on December 16. Unit 2 was removed from service on December 1 at 0612 hours for annual maintenance. The unit 2 expected "return to service" date is January 9, 2015. Unit 5 was out of service on December 9 from 0817-1045 hours for scheduled exciter card replacement. Units 5 and 3 tripped off line due to an external BPA remedial action scheme (RAS) signal on December 10 from 1630-1637 hours and 1630-1659 hours, respectively. Unit 5 operated at speed no load until it was brought back online at 1637 hours.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on December 8, 9, and 10.

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 4.6' to 4.9 feet. NSE2 was out of criteria (criteria ≥7' or on sill) on all inspections with depth readings ranging from 5.4' to 5.7 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'- 2') with differential readings of 0.9, 0.8 and 0.9 feet. NSE2 has been out of service since 2011 and is suspended with a non-adjusting hoist system at an elevation 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 sill criteria (criteria ≥8' or on sill) on all inspections. While on sill the weir gate depth readings were 7.4', 7.7', and 7.7 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. The powerhouse electrical crew is looking into alternatives for velocity meter replacement.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 3 were operated. AWS pump 2 was in standby mode. Pump 1 is operating in "fast speed" mode.

Juvenile Fish Passage Facility

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

ESBSs/VBSs: ESBS removals were completed on November 14.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel and bypass flume are dewatered.

Collection Facility: The collection facility is in winter maintenance mode.

Transport Summary: No fish transport is occurring at this time.

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
29.4	25.3	0.0	0.0	44.3	42.4	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected on November 25. No live lamprey were recovered. No lamprey mortalities or other fish species were recovered. 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 is dewatered.

Fish Salvage Operation: No fish salvage occurred during this report week.

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