U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: November 28 – December 4, 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 the BPA. The weather for the week was a wintery mix. 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.
13 & 14	Dec 2	About 3.8 hours each.	Trip testing.
6	Dec 3	Seven hours.	Tap the hub.

Adult Fish Passage Facilities

On November 28, 30 and December 2, the McNary fisheries biologist performed measured inspections of the adult fishways. On November 29, facility staff noted that the ladder control system printer was not functioning properly. This issue was resolved the next working day.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. The exits had no debris issues.

At the Washington exit, the operators reset two false 339 weir alarms. On November 30, we found the count station window brush in the lowered position again. The brush was raised and the issue was resolved the next working day.

At the Oregon exit, traveling screens differentials remain low. The operators reset 4 false differential alarms. On November 30, we found the north traveling screen in bypass mode. The

operator returned it to automatic operation. On December 2, the operator slightly adjusted the regulating weir set point.

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 except on December 2, when NFEW2 and NFEW3 measured 7.9 feet each. This is probably due to the juvenile system was no longer supplying flow to the north powerhouse entrance. 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 one interruption in service. On December 2, the PUD turbine was taken out of service from 0657 to 1105 hours in support of Unit 13 and 14 trip tests mentioned above. During the outage, the bypass system functioned well.

Fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees. On December 4, at 1635 hours, testing of the fish pump house revealed the presence of asbestos. The building was placed off limits to staff until further notice. The Oregon ladder criteria points should indicate if there are any issues with the fish pumps and the pumps are monitored by the control room 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 juvenile system in emergency bypass mode. This mode protects the channel and the facility from severe winter weather. 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 was no debris at the spillway.

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

We observed no problems in the gatewell slots. This week, we removed woody material from some of the slots.

ESBSs/VBSs: ESBSs are installed at all units except units 4 and 11, which are out of service. On December 5, the project will raise ESBSs in units 5 and 9, which will be out of service past December 15. The screens in slots 1A, 1B, 2B, 6A and 13C remain in timer mode. On November 28, the screen in slot 1B was found to be cycling with no record of motor amperage. The operators reset the screen's breaker and recalibrated its brush cycle. On December 3 and 4, the screen in slot 2C was found "short cycling" (prematurely reversing direction). Each time, the operator reset the screen. No ESBS inspections occurred this week due to the heavy work load. The last inspection of the season will occur December 9 at units 1, 2 and 3.

VBS differential monitoring revealed no screen out of criteria. On December 1, we cleaned 3 screens as a preventative measure. 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 continued to note moisture in the orifice actuators' air supply line. The moisture is bled off daily, and orifice operators ate monitored as needed. On December 2, we reopened slot 6A's south orifice as the north orifice was experiencing excessive splashing. Possibly there is some debris moving about in the slot. We will continue to monitor this location.

The channel systems are winterized and light winter maintenance continues. This week, the electrical staff began replacing all corroded junction boxes with stainless steel ones. Also, they will replace electrical conduit as needed.

Bypass Facility: The facility remained dewatered and protected from possible freeze breakage. Winter maintenance continues. No PIT tag detection occurs during emergency bypass operations. The fisheries staff continues separator rehabilitation. On December 1, we were informed that the original separator paint contained arsenic, barium, cadmium, chromium and lead. This knowledge will slow the rehabilitation process.

River Conditions

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

This week, the TSW in bay 20 was opened from November 30 to December 4 in support of the adult fallback study. Otherwise, the TSW was closed this week. The spill recorded below is solely from the TSW. TSW operations during this time of year may create fog and freezing mist which can make the decks slick.

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
154.9	108.9	9.8	0.0	49	47	6.0	6.0

*Temperature taken from the Unit 1 scroll case.

Other

Inline Cooling Water Strainers: Cooling water strainer examinations took place on December 2. We only observed a large number of juvenile shad and 2 yellow perch. No ESA-listed species or lamprey were seen.

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 system 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 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 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, 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 as does the University of Idaho's winter adult steelhead radio tracking study.

Fish Salvage: Unit 11 was dewatered this week in support of a safety inspection. On December 3, we found no fish in the scroll case. On December 4, we removed approximately 85 sturgeon from the draft tube. Of these, about 10 were lost. Approximately, 15 of the sturgeon measured 3.5 to 5 feet in length (two of the lost fish were in this size range). We also removed about 55 channel catfish, of which approximately 10 were lost.

Project: Ice Harbor
Biologist: Ken Fone
Dates: November 28 – December 4, 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 2 was removed from service on October 14 at 0940 hours for digital governor installation. Unit 6 was out of service from 0842 hours on December 1 to 1638 hours on December 2 to fix a vacuum breaker problem.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on December 1, 2, and 3.

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 until November 26. On November 26, south AWS pump 3 tripped a breaker at 0935 hours and was available for service at 1523 hours the same day, but only five pumps were needed to meet fishway criteria. On December 3 at 1415 hours, south pump 3 was turned back on and 6 pumps were once again running.

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 this 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. Subfreezing temperatures during this reporting week caused icing of the water level sensors in the collection channel, creating problems for the automated system that controls the water level. An additional heat lamp was installed over the stilling well pipes that house the water level sensors to reduce the icing problem.

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
35.8	22.2	0	0	48	46	10.2	10.0

*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.

Redd Survey: A redd survey of the downstream approach to the navigation lock occurred on December 2, as required prior to conducting scheduled maintenance dredging.

Research: The release of sensor fish through unit 1 for the turbine characterization study ended on December 1.

Project: Lower Monumental
Biologists: Bill Spurgeon
Dates: November 28 – December 4, 2014

Turbine Operation

The units are being operated in soft 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 December 1, 2 and 3.

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, 7.3' and 7.4 feet. South powerhouse channel/tailwater head was in 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 all 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 - 35% surface coverage. 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 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.

Transportation Facility: N/A. The facility has been unwatered for the winter.

Transport Summary: N/A. Fish transport is not taking place at this time.

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
36.6	19.8	0.0	0.0	47	45	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 concurrently 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 28 – December 4, 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 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 2, 3 and 4.

Fish Ladder: Ladder exit differentials held steady at 0.0 ft. (criteria ≤ 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 ≤ 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 1.2 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.3 feet (criteria ≥ 8.0 ft). NPE weirs rested on sill and ranged between 6.7 and 7.1 feet (criteria ≥7.0 ft). NSE weirs are in manual mode and depths ranged between 8.1 and 9.3 feet (criteria ≥ 6.0 ft.). North powerhouse surface water velocity measured between 1.6 and 2.4 fps. Collection channel surface water velocity near north shore entrance ranged between 2.1 to 2.4 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 100 and 400 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. 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 bypass 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
27.2	16.8	0	0	44.3	43.0	6.0+	6.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on December 4. 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 28	---	---	---	---	---
November 29	---	---	---	---	---
November 30	---	---	---	---	---
December 1	1532	10	9	0	0
December 2	1547	10	4	0	0
December 3	0811	8	3	0	0
December 4	0755	12	13	0	0

*Observations not taken from November 28 through 30.

Gas Bubble Disease: WDFW Gas Bubble Trauma Monitoring 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 28 – December 4, 2014

Turbine Operation

All available turbine 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. Unit 2 was removed from service for annual maintenance and fish screen slot closure at 0612 hours on December 1. The expected return to service date for unit 2 is January 9, 2015.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on December 1, 2, and 3. Visual adult fish counts concluded on October 31. Daytime video counts began on November 1 and 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 all but the December 3 inspection which had a 0.7 foot differential. 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 velocities were 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 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. Pump 1 was operating in slow speed mode while AWS pump two was in standby mode. The fish pumps tripped off line at 2115 hours on December 4 due to a line disruption outage. The pumps were restarted at 2122 hours with fish pump 1 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/VBS inspections have concluded for the year. Due to very cold weather conditions, ESBS removals 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.

Transportation 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
35.3	23.9	0.0	0.0	45.6	44.4	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit 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.

Fish Salvage Operation: Lower Granite fish facility personnel conducted a fish rescue operation in the Lower Granite juvenile collection channel on December 1. There were 27 total adult salmonids recovered. These included 12 unclipped Steelhead, 14 clipped steelhead (all live), and 1 partially decomposed unclipped steelhead mortality. All recovered fish were released into the forebay at Offield Landing. No juvenile salmonids or non-salmonids were encountered. The operation was well coordinated, with no problems encountered.

Research

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