U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#33-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: October 10 – 16, 2014

Turbine Operation

McNary had 11 units available for power generation this week. The hard constraint one percent criterion continues with no units having run outside the criteria. 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.
6, 7, 8 & 10	Oct 14	Two hours total.	ESBS camera inspections.

Adult Fish Passage Facilities

On October 10, 12 and 15, the McNary fisheries biologist performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts as the juvenile system is in primary bypass. Visual adult fish counts continued.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. Project personnel continued to clean the picketed leads as required, including weekends. This week, walkway lighting at both exits was re-lamped.

At the Washington exit on October 14, two very brief power outages occurred at 0826 hours and 1400 hours, both in support of relay testing, which required the power supply to be switched. The amount of milfoil in the area is very light.

The Oregon exit crane returned to service on October 10. The amount of debris load in the area of the exit continued to fluctuate depending on wind direction. What debris that remains is slowly dissipating.

Oregon exit traveling screen differentials remain low and operators reset one false screen differential alarm this week. However, trash rack differentials ranged from 1.1 to 1.4 feet, which is a decrease from differentials measured last week. We will continue to monitor both differentials regularly. On October 13, a biologist cleaned milfoil and woody material from the traveling screens' debris trough. Finally, at the Oregon exit on October 15, at 1700 hours, a 2 minute outage occurred due to a power supply switch related to relay testing.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Project staff will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel view in the near future.

All Oregon ladder entrance inspection points were in criteria. At the south entrance, SFEW1 and SFEW2 were slightly out of calibration on occasion. At the north entrance, lower tailwater elevations are causing a reduction in criteria point values. Electrical upgrades of the Oregon entrances will be completed in the near future.

Collection channel surface velocities averaged 1.3 feet per second. Lower tailwater elevations are probably affecting our readings.

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 satisfactoryily ran with blade angles of 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract for the winter and spring of 2015. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Juvenile Fish Passage Facility

Fall primary bypass season continues. We continued light winter facility maintenance and phased in winterization.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris consisting mostly of milfoil and woody material was light. Fresh incoming debris was minimal. Changes in wind direction moved the woody debris from the powerhouse to the Oregon shore and back. There was no debris at the spillway. Our trash rack differential readings revealed no problems and no racks were cleaned this week. We observed no problem in the gatewell slots.

ESBSs/VBSs: ESBSs are installed at all units except units 4 and 11, which are out of service. The screens in slots 1A, 7A and 13C remain in timer mode. On October 14, we performed camera inspections in units 6, 7, 8 and 10 with no problems found. No fish mortalities were observed.

VBS differential monitoring revealed no screens out of criteria. On October 14, the project staff cleaned 7 screens as a preventative measure. No ESA listed fish mortalities or lamprey mortalities were observed. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. However, on October 11, we found the orifice in slot 4C closed. The orifice had been closed for approximately six hours in unit which is out of service. We reviewed orifice cycling procedures with the staff. During VBS cleanings, we closed the orifices in slots where work was being performed and opened spare orifices in adjacent slots.

On October 10, an electrical technician resolved control panel issues by repairing the back light electrical connection and replacing the bulb.

There are no other technical problems to report as all other systems functioned well in automatic mode. However, on October 13, the side screen cleaning device stalled for approximately 30 seconds while traveling upstream. It appears the device jammed on debris as it resumed its cycle with no further problems to report. No timing alarm occurred due to the briefness of the jamming incident.

Due to low debris loads, the cycle interval for the side screen cleaning mechanism was increased from 180 to 360 minutes on October 13. For the rectangular screen cleaning device, the interval was increased from 120 to 180 minutes. This should reduce mechanical wear on the devices and reduce the potential for jamming on large debris. Since the system in primary bypass 24 hours per day, 7 days per week, the fisheries staff continues to monitor the channel around the clock.

Bypass Facility: The Fall primary bypass season is in progress. All systems are off, light maintenance and partial winterization continues. PIT tag detection occurs only in the full flow pipe during the fall season. Scheduled maintenance also began on various systems. The long awaited facility roof repair began October 15.

River Conditions

River conditions during the week are outlined in Table 2 as provided by COE data. Our data day runs from 0000 to 2400 hours each day. Powerhouse crews have been conducting spillway crane bus rehabilitation and scheduled spillway hoist maintenance.

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
98.9	73.7	0.0	0.0	65	63	6.0	6.0

*Taken from the Unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on November 4.

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

Avian Activity: Bird counts are no longer occurring. This week, we completed entering our avian counts into a spreadsheet.

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

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. The fisheries staff monitors and adjusts the calls as needed.

During other inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow. Gulls and cormorants were also roosting on the navigation lock wing wall, which is part of the spill zone. In addition, we observed gulls and cormorants occasionally at the bypass outfall. Bird numbers are affected by the juvenile shad out migration and appear to be gradually decreasing.

In forebay locations, we observed an occasional gull, grebe or cormorant. Gulls and cormorants were also seen on the rock by the Washington boat dock. In addition, an occasional great blue heron was observed.

Research: The adult lamprey passage study continues to be phased out. Preparations for the adult salmonid fallback study have been delayed to November due to funding and other issues. The University of Idaho is preparing for a winter adult steelhead radio tracking study. Researchers plan to remove some abandoned antennas from the tailrace deck.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 10 – 16, 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. This turbine unit remains out of service due to an oil leak. Unit 4 was out of service from 0715 hours on September 30 to 1441 hours on October 10 to repair a governor oil leak. Unit 6 was taken out of service at 1048 hours on October 6 for annual maintenance. Unit 2 was removed from service on October 14 at 0940 hours for digital governor installation. All available units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on October 14, 15, and 16.

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. Both the north and the south shore picketed leads are down in their deployed positions.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) depth and channel/tailwater differential were in criteria 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 System: Two of the 3 north shore fish pumps were operated throughout the week. Six of the 8 south fish pumps were operated.

Juvenile Fish Passage Facility

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

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle-run mode since July 21. STS inspections and unit 2 VBS inspections were performed on September 22 and

24. No significant problems were found. The next STS inspections are scheduled for the week of October 20.

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.

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. Since mobilizing on project beginning September 9, the contractor for the spill bay 2 ogee and flow deflector modifications constructed a work access platform from the north powerhouse deck to spill bay 2 and installed access decks on the ogee.

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
18.8	14.6	0	0	64	63	6.9	6.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections of units 1, 2, 4, and 6 took place on September 22 and 24. A total of 26 juvenile shad mortalities were found. The next cooling water strainer inspections are scheduled for the week of October 20.

Invasive Species: No new exotic species have been found.

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

Research: Researchers plan to release sensor fish through unit 3 for the turbine characterization study, pending the return of the unit to service. Pipes for the release of the sensor fish were installed on the framework of the STS in gatewell slot 3B in September.

Project: Lower Monumental
Biologists: Bill Spurgeon and Ray Addis
Dates: October 10 – 16, 2014

Turbine Operation

All available units are being operated within the hard 1% peak efficiency criteria. Unit 6 remains out of service for overhaul.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on October 11, 14, and 16.

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 7.2', 7.1'and 6.8 feet. South powerhouse channel/tailwater head was in of criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 8.2', 8.1'and 7.8 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

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

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

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

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

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 58 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 8% 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 run mode. STSs were inspected October 7 and 8. All screens passed inspection.

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

Collection Facility: The facility was dewatered for winter maintenance on October 15.

Transport Summary: Fish transport concluded for the season 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
18.6	13.7	0.0	0.0	64.0	62.0	6.0	5.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 7. No live fish were recovered. Mortalities included l prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on October 9.

Avian Activity: Daily tailrace counts ceased at end of collection season on October 1. No additional action trigger points were met from the avian action plan through this time period.

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

Project: Little Goose
Biologists: Towns Burgess and Richard Weis
Dates: October 10 – 16, 2014

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on October 15 and 16. Visual adult fish counts are scheduled to continue through October 31.

Fish Ladder: Ladder exit differentials ranged between 0.0 and 0.1 ft. (criteria $\leq$ 0.5 ft.). Water depths over the 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 at 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 1.1 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 7.0 and 7.6 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 6.9 and 7.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near north shore entrance ranged between 2.3 to 2.6 fps (criteria 1.5 to 4.0 fps). North powerhouse surface water velocity measured between 1.4 and 1.9 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 20 and 100 sq ft.

Spillway Weir: Spillway Weir was removed from service on August 4.

ESBSs/VBSs: ESBSs operated within criteria this report period. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 19 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. Daily fish collection week ranged between 13 and 164 and totaled 438 for the week. The descaling and mortality rates were 4.5% and 2.2% respectively.

Transport Summary: Every other day trucking continues with no problems encountered.

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
21.4	14.5	0	0	63.6	63.5	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on October 10. No fish were found.

Invasive Species: No zebra mussels were observed on the substrate monitor on September 13. The next inspection is scheduled for October 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
October 10	1510	23	27	0	0
October 11	1230	14	8	0	0
October 12	1500	10	0	0	0
October 13	1300	23	4	0	0
October 14	1300	28	20	0	0
October 15	1325	12	25	0	0
October 16	1330	26	14	0	0

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: October 10 – 16, 2014

Turbine Operation

Units are being operated within the hard constraint 1% operational criteria. Unit 5 was removed from service for annual maintenance at 0657 hours on September 2. A contact issue with unit 5 blades and liner is being investigated during the outage. The expected return to service date for unit 5 is now October 31. Turbine unit 4 remains out of service at as of 1840 hours on October 9 to investigate governor/speed issues. Unit 6 was out of service from 1042-1300 hours on October 10 in support of ESBS brush cleaning system tests in gatewell slot 6B.

Adult Fish Passage Facility

The fish ladder was inspected by Corps biologists on October 10, 11, 12 and 13.

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. NSE1 depth readings ranged from 4.8 to 5.7 feet. NSE2 was out of criteria on all inspections with depth readings ranging from 5.2 to 6.7 feet. North shore channel/tailwater head was out of criteria (criteria 1'-2') on all inspections. The out of criteria head differential readings were 0.8, 0.7, 0.8 and 0.9 feet respectively. 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 7.2 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 ranged from 1.0 to 1.2 feet per second. Powerhouse electrical crew is investigating the velocity meter and looking into alternatives for replacement. Physical surface velocity readings were taken at the north and south shore channels. The south shore channel surface velocity readings were both 2.4 fps and the north shore channel reading was 2.0 fps.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 3 were operated. AWS pump 2 was in standby mode. Fish pump 1 is operating at fast speed to provide additional water to the fishway channel.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction. Daily monitoring and removal of gatewell debris continues.

ESBSs/VBSs: ESBSs are deployed in all operational units. The brush cleaning cycle is set for once every 2 hours.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being back-flushed every 3 hours.

Collection Facility: The sample rate was reduced from 100% to 50% on October 13 due to an increase in subyearling Chinook. Collection was returned to 100% on October 15. The weekly descaling rate was 4.13%. Descaling for the season was 1.16% compared to a seasonal rate of 2.72% in 2013 and 1.94% for the 2008-2012 seasonal average. Descaling typically is higher during the end of September and the beginning of October and so far, this season is no exception even though cumulative descaling is the lowest it has ever been. The smaller separator bars used to screen jacks out of the sample were removed at 0700 hours on October 10 to investigate whether the bars had an influence on descaling rates.

Transport Summary: Every-other-day truck transport is occurring with trucks departing on odd numbered days this month. The semi-truck was used on October 13 to transport 232.0 pounds of fish.

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
23.1	15.7	0.0	0.0	64.0	62.0	4.9	3.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections are scheduled for October 27 and 28.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on October 13.

Avian Activity: Daily piscivorous bird 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.

Table 2. Daily maximum tailrace picivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
October 10	0800	4	21	0
October 11	0800	2	6	0
October 12	0800	2	6	0
October 13	0800	3	6	0
October 14	0800	2	0	0
October 15	0800	7	11	0
October 16	0800	1	3	0

Adult Fish Trap Operations: The adult fish trap facility was in 24 hour operations. Nez Perce continues to collect fall adult Chinook for truck transportation to Cherry Lane Hatchery however transport days are now contingent on the number of fish being trapped.

Research

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