U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#38-2015

Project: McNary
Biologist: Bobby Johnson
Dates: November 13 – 19, 2015

Turbine Operation

McNary had available 10 to 12 units (out of 14 total units) for power generation this week. On November 1, the soft 1 percent constraint began. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
14	Oct 5–Nov 30	About 56 days.	9 year overhaul.
13	Nov 2–24	About 22 days.	Transmission line outage.
1 to 3	Nov 13	4.8 hours.	Dive contractor removed transducers.
1 & 4	Nov 16–17	30.6 & 33.1 hours each.	High pressure oil injection system (HPOIS - thrust bearing oil pump) installed.
9 to 11	Nov 17	1.2 hours total.	Extended-length submersible bar screen (ESBS) camera inspections.
3 & 11	Nov 17–19	41.6 & 47.6 hours each.	HPOIS installed.
2 & 8	Nov 19–20	24.8 & 25.3 hours each.	HPOIS installed.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on November 13, 15 and 19.

Units 1 and/or 2 discharge provides attraction water for the south Oregon ladder entrances. On November 13, from 1104 to 1553 hours (4.8 hours), these units were out of service in support of a dive. During this outage, the Oregon ladder was in criteria.

On November 19, the Wasco County Public Utility District (PUD) crane used for the turbine unit overhaul failed. This could affect the timing of the Washington ladder winter outage.

Fish Ladder Exits: Criteria at both exits are 1.0 to 1.3 feet for head over weir and 0.0 to 0.5 feet differential at the count stations. Both ladder exits met all criteria and debris loads were

minimal. Scheduled maintenance was performed on the traveling screens at the Oregon ladder exit on November 16.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper. Both ladder entrances met all criteria.

Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: The PUD turbine unit in the Washington ladder remains out of service for runner replacement, which is scheduled for completion in February, 2016. The bypass functioned satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 25 degrees and no interruptions in service. Fish pump 2 is currently under contract for major overhaul with completion scheduled for April, 2016.

The juvenile facility continued to supply 450 cubic feet per second to the north powerhouse pool.

Juvenile Fish Passage Facility

The fall primary bypass season continues. The juvenile facility remains watered up to avoid freeze breakage.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was light. The amount of new debris was minimal.

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

No problems were observed in the gatewell slots.

ESBSs/Vertical Barrier Screens (VBSs): All turbine units have ESBSs installed. The screens in slots 1A, 3B, 11C and 12C remained in timer mode. On November 17 and 19, camera inspections at units 3, 9 to 11 and 13 revealed no problems.

No high VBS differentials were recorded. On November 18 and 19, nine screens were cleaned. On November 17 and 18, scheduled screen maintenance inspections were performed in slots 9C, 10C, 11C, 13A and 13B. The checks include cleaning the screens. No fish mortalities were observed. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS cleaning and inspection, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots. Scheduled maintenance was performed on orifice actuators this week. All systems functioned satisfactorily in automatic mode.

Bypass Facility: During the fall primary bypass season, passive integrated transponder (PIT) tag detection occurs only in the full flow pipe. Light maintenance continued.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the McNary control room. The data period runs from 0000 to 2400 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature (Unit 1 scroll case)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
135.6	106.7	0.0	0.0	54.0	53.0	6.0	6.0

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on December 1.

Invasive Species: The next zebra mussel station examinations will occur on November 22.

Avian Activity: In the forebay observation zone, grebes and gulls with an occasional loon or cormorant were noted. Gulls and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay observation zone.

Gulls and cormorants were observed in the tailwater observation area, roosting on the navigation lock wing wall, in the spill basin or around the powerhouse. They appear to be feeding in the powerhouse flow on juvenile shad.

Gulls and cormorants were observed feeding near the juvenile bypass outfall.

A large gull flock of several hundred birds was moving around in the general area. An occasional merganser and night heron were noted on project.

Research: On November 13, a dive contractor removed transducers located in units 1 and 2. These transducers are the last of those previously installed in support of the adult steelhead fallback study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: November 13 – 19, 2015

Turbine Operation

Unit 1 was removed from service on November 2 at 0417 hours for annual maintenance. Unit 6 was out of service from 1618 hours on November 9 to 1046 hours on November 14 to repair an oil cooler leaking water into the turbine bearing. Units 5 and 6 were out of service from 0728 hours on November 16 to 1025 hours on November 17 for relay testing on the No. 3 115 kV line. Units were taken out of service one at a time for STS inspections on November 16 and 18. All available units were operated within the 1% peak efficiency range (soft constraint).

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on November 17, 18, and 19.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. The water surfaces above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily. The south shore and north shore picketed leads are raised since adult fish counting is done for the season.

Fishway Entrances and Collection Channel: The south shore entrance (SFE-1) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater differential were in criteria, except for a depth of 7.3' on November 17 when the entrance gate was off of sill. The gate control was put in manual mode and lowered back down to sill. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

The south shore channel velocity was in criteria on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were operated throughout the week. Six of the eight south shore AWS pumps were operated throughout the week.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an approximate average of 1 square yard of surface debris observed in the forebay. There was little to no surface debris coverage in the gatewells.

STSs/VBSs: The STSs are being operated in cycle-run mode. Inspections of the STSs in unit 2 through unit 5 occurred on November 16 and 18. Overall, there were a few screen clips missing from the seams, but no significant problems were observed. Unit 1 STSs were removed on November 4, since the unit will remain out of service through December 15.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass system is operating with 20 orifices open. The light for orifice 3AN burned out during the week. Orifice 3AS was opened in place of 3AN until the light was replaced a few days later. Orifices were routinely cycled and back-flushed once per day.

Juvenile Fish Facility: Fish are being routed through the bypass pipe.

Fish Sampling: Fish sampling is done for the season.

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3 and ended on August 31.

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
25.1	12.2	0	0	59	56	7.5	7.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The cooling water strainers for unit 2 through unit 5 were inspected on November 16 and 18. There was a total of approximately 180 juvenile shad found (all mortalities).

Invasive Species: No new exotic species have been found.

Avian Activity: A relatively high number of cormorants, gulls, and pelicans were seen around the dam during the week, with the majority of birds roosting on or near Eagle Island. Approximately 10-15 cormorants were observed foraging below the end of the juvenile fish bypass pipe during the week. Fish facility personnel periodically used a laser light to scare the cormorants away from the outfall pipe and Eagle Island, and move them further downstream. Generally, efforts were successful when done under overcast skies near dawn or dusk.

Research: There is no on-site fish research actively occurring.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: November 13 – 19, 2015

Turbine Operation

Turbine units are being operated within soft constraint 1% peak efficiency criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017. Unit 2 was removed from service at 0800 hours on November 9 for annual maintenance with an estimated returned to service on January 14, 2016.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 16, 17 and 18.

Fish Ladders: Fishway exit head differentials and depth over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, both gate depth readings ranged from 7.2 to 7.8 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.

Auxiliary Water Supply System: AWS pumps 1, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 36 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 30% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STS operation changed to cycle mode on August 7 as average sub-yearling Chinook length became greater than 120 mm. STS inspections were conducted November 3 and 4 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure and Flume: The collection channel was operated with 19 orifices open. Primary dewatering structure (PDW) over head lights are turned off to encourage fish to exit the collection channel.

Collection Facility: The collection season ended at 0700 hours on October 1 at which time the facility went into primary bypass. The JFF facility was dewatered for winter maintenance on October 6.

Transport Summary: Transport is not occurring at this time.

River Conditions

No spill occurred during this report period. 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
25.1	19.1	0.0	0.0	58	56	4.4	3.6

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 2. Live fish recovered included 1 yellow perch. Mortalities included 50 Siberian prawns and 74 American shad.

Invasive Species: No zebra mussels were observed at the monitoring stations on November 2.

Avian Activity: Daily tailrace counts ceased at the end of the collection season on October 1. The bird sprinklers at the outfall pipe exit are dewatered for the winter.

Table 2. Lower Monumental Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
N/A					

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

Project: Little Goose
Biologist: Towns Burgess
Dates: November 13 – 19, 2015

Turbine Operation

All turbine units were available for service throughout this report period except units 2, 3, and 6. Unit 2 was removed from service on November 9 for its annual and returned to service on November 19. Unit 2 was removed from service on November 14 due to exciter trouble. Unit 6 was removed from service for digital governor replacement on November 2. Soft 1% peak efficiency constraint criteria have been in effect since November 1.

Adult Fish Passage Facility

Adult fishway inspections were performed on November 16 and 18.

Fish Ladder: The ladder exit head differentials held steady at 0.0 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held steady at 0.0 feet (criteria $\leq$ 0.3 ft.). The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: The adult fishway system is mostly in manual mode. North shore adult fish entrance weirs are in manual due mode to failure of the slack cable sensors. North power house weirs are also on manual mode as the fishway computer was bringing the weirs off sill and out of criteria. Channel to tailwater head differentials ranged between 1.0 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.6 and 9.0 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 6.0 and 6.3 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.3 and 6.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse held steady at 1.9 fps (criteria 1.5 to 4.0 fps). The monthly water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 3.5 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. The fish pump 1 gear box was rebuilt and is still waiting on return to service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay held steady at 0 square feet for the week.

Spillway Weir: The spillway weir was removed for the season on June 18.

ESBS/VBS: ESBSs are all deployed and gatewells are clean. Drawdowns were not performed this week.

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

Transportation Facility: The JFF (Juvenile fish Facility) collection season ended with the last truck going down river on October 31. GBT (Gas Bubble Trauma) sampling ended for the season.

Transport Summary: The collection and transportation facility was placed into primary by-pass on October 31 at 0700 hours.

River Conditions

River conditions during the week are outlined in Table 1 below.

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
24.2	14.1	0	0	55.0	54.0	5.8	5.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were last checked on October 24. No fish were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on October 10. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See the chart below for the numbers observed.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Nov 13	None	0	0	0	0
Nov 14	None	0	0	0	0
Nov 15	None	0	0	0	0
Nov 16	0800	60	0	0	0
Nov 17	None	15	3	0	0
Nov 18	None	82	4	0	0
Nov 19	None	96	3	0	0

*Bird counts are taken from a single observation, Forebay and Tailrace.

Scroll Case Temperature: Little Goose Dam has only one temperature probe on the scroll case in unit 1 only. The temperature ranged between 58.0 and 59.0 degrees F.

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: November 13 – 19, 2015

Turbine Operation

Units are operating within the soft constraint 1% peak efficiency criteria. Unit 2 was removed from service for annual maintenance at 0705 hours on November 9.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps or Blue Leaf Environmental biologists November 16, 17 and 19.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively). Picketed lead head differential was in criteria (≤ 0.3').

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill). South shore channel/tailwater head differential was in criteria (criteria 1'-2').

NPE1 and NPE2 weir gates were in depth criteria (criteria ≥8' or on sill). North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2').

NSE1 was out of criteria (criteria ≥7' or on sill) on all inspections with gate depth readings of 4.8', 5.2' and 4.8 feet. NSE2 remains set with a chain fall hoist in the closed position to improve channel/tailwater head differentials. North shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspection with the exception of a 0.8 feet differential reading on November 17.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) with readings ranging from 0.9 – 0.8 fps, averaging of 0.8 fps. Alternative methods of measuring collection channel velocity are being investigated.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 2 operating and pump 3 is in standby mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris was minimal. Daily gatewell surface inspections continue. Floating debris is being removed daily to prevent orifice blockages. No oil was reported in the gatewell slots.

ESBSs/VBSs: ESBSs are installed and operating.

Orifices, Collection Channel, Dewatering Structure and Bypass Pipe: Orifices are being back-flushed every three hours as needed.

Collection Facility: Facility operation is in secondary bypass mode.

Transport Summary: No transport is occurring at this time.

River Conditions

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

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.9	15.0	0.0	0.0	52	51	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were inspected October 29. No lamprey or other fish were found.

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

Adult Fish Trap Operations: The adult trap will remains in operation until November 22. Female Coho will be collected for NPT (Nez Perce Tribe) brood stock through November 20.

Fish Rescue Operation: No fish rescues occurred.