U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2015

Project: McNary
Biologist: Bobby Johnson
Dates: December 4 - 10, 2015

Turbine Operation

McNary had available 12 to 13 units (out of a total of 14 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–Dec 17	About 73 days.	9 year overhaul.
4	Dec 7–8	36.3 hours.	Install new kidney loop.
1, 2, 4 & 5	Dec 8	1.2 hours total.	Extended-length submersible bar screen (ESBS) camera inspections.
10	Dec 8–11	2.9 days.	High pressure oil injection system (HPOIS - thrust bearing oil pump) repaired.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on December 6, 8 and 9. This week, during scheduled maintenance, facility staff discovered that one of two heat pumps at each ladder's passive integrated transponder (PIT) station requires replacement.

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.

On December 6 and 7, the Oregon ladder tilting weir 340 triggered an alarm once each day. A slip error occurred with the operator resetting a coupling each time. In addition, the regulating weir set point was adjusted on December 6.

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.

At the Washington ladder, all inspection points were in criteria.

On December 4, the Oregon south powerhouse entrance tailwater elevation sensor was calibrated. On December 6, SFEW1 measured a depth of 7.9 feet. The operator adjusted the weir to operate at slightly deeper depths.

Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine unit in the Washington ladder remains out of service for runner replacement, which has been delayed to an undetermined date. The winter maintenance outage will be unaffected. 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. On December 16, the system will be switched to emergency bypass as ESBS removals begin. Dewatering is scheduled for December 22.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was light to minimal. 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 mosts gatewell slots. Sticks were removed from the unit 4 gatewell slots.

ESBSs/Vertical Barrier Screens (VBSs): ESBSs were installed in all units except unit 14, which is out of service past December 15. The two spare ESBSs were moved to the yard on December 4. ESBS removals for winter maintenance will begin on December 16. The screens in slots 1A, 3B, 11C and 12C remained in timer mode. On December 8, camera inspections in units 1, 2, 4 and 5 revealed no problems.

No VBS differentials were recorded and no screens were cleaned. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. Occasionally, a small amount of moisture was bled from the orifice air supply line. Maintenance continued on the orifice actuators and lighting was replaced as required.

All other systems functioned satisfactorily in automatic mode.

Bypass Facility: During the fall primary bypass season, PIT (Passive Integrated Transponder) 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
137.7	103.5	0.0	0.0	47.0	45.0	6.0	6.0

Other

Inline Cooling Water Strainers: All cooling water strainers were inspected on December 1. Juvenile shad were only fish observed and recovered. The next cooling water strainer examination will occur in early January.

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

Avian Activity: In the forebay observation zone, grebes, cormorants and gulls were occasionally 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 walls, on the Washington ladder, 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 occasionally feeding near the juvenile bypass outfall.

A large flock of gulls continued to move around in the general area. An occasional blue heron or bald eagle was noted on project.

Research: There is no on site research in progress at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: December 4 - 10, 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 0859 hours on December 5 to 1706 hours on December 7 to adjust and test the packing on the wicket gates and main unit for water leaks. Unit 6 was out of service from 0907 hours to 1640 hours on December 8, due to generator brakes not releasing. Unit 4 was out of service from 0956 hours to 1158 hours on December 9, because of a high differential on the turbine cooling water strainer caused by a buildup of juvenile shad. Unit 6 was out of service on December 9 at 1531 hours, through the end of the reporting period, to diagnose a possible oil leak.

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on December 7, 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 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. 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 no surface debris observed in the forebay. There was little to no surface debris coverage observed in the gatewells.

STSs/VBSs: The STSs are being operated in cycle-run mode. Unit 1 STSs were removed on November 4, since this unit will remain out of service through December 15. STS inspections for units 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.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass system is operating with 20 orifices open. Orifices were routinely cycled and back-flushed once per day. The hydrocannon water line and pump for deterring birds away from the bypass outfall pipe was shut off and winterized on December 8.

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
33.7	12.3	0	0	49	48	8.5	7.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The cooling water strainers for units 1 and 6, and unit 4, were inspected on December 1 and 9, respectively. There was a total of approximately 350 juvenile shad found (all mortalities). The other cooling water strainers will be inspected the week of December 14.

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. Up to 20 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. The adult fish trap was installed in the south ladder exit pool on the afternoon of December 7 so that Pacific States Marine Fisheries Commission personnel could finish wiring in PIT-tag detection capability for the trap. The work was performed in the afternoons, when generally less adult fish are using the ladder. The doors to the trapping cage were open so that fish could pass straight through the trap. The trap was removed on the afternoon of December 11.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: December 4 - 10, 2015

Turbine Operation

The units are being operated within the 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 return to service on January 14, 2016.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 7, 8 and 9.

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 7.1 to 7.5 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 64 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 30% surface coverage.
No problems observed in the gatewells.

STSs/VBSs: STS operations changed to cycle-run 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: Fish 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
33.0	14.9	0.0	0.0	48.6	48.2	4.8	2.8

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 2. No fish were seen or recovered.

Invasive Species: No zebra mussels were observed at the monitoring stations on December 7.

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: Richard Weis
Dates: December 4 - 10, 2015

Turbine Operation

All turbine units were available for service throughout this report period except for units 1, 3 and 6. Unit 1 was removed from service on December 07 for annual maintenance. Unit 3 was out of service for XJ breaker failure. Unit 6 was removed from service for digital governor replacement on November 2. Soft constraint 1% peak efficiency criteria have been in effect since November 1.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 07, 08 and 10.

Fish Ladder: The ladder exit head differentials ranged between 0.1 and 0.2 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 mode due to failure of the slack cable sensors. North power house weirs are also in manual mode as the fishway computer was bringing the weirs up off sill and out of criteria. Channel to tailwater head differentials ranged between 0.7 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.4 and 8.9 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 5.8 and 6.4 feet and was on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.7 and 7.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.8 and 2.0 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 the gatewells are clean. Drawdowns were performed on units 2 and 4 on December 09. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile Bypass System (JBS) is running with 18 open orifices.

Transportation Facility: The JFF (Juvenile Fish Facility) collection season ended with the last truck departure taking place 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.

Table 1. River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
27.1	15.6	0	0	45.9	45.5	6.0+	6.0+

*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 December 3. No zebra mussels were detected.

Avian Activity: Bird hazing ended on June 16. See Table 2 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
Dec 04	None	0	0	0	0
Dec 05	None	0	0	0	0
Dec 06	None	0	0	0	0
Dec 07	0843	123	3	0	0
Dec 08	0830	4	15	0	0
Dec 09	None	0	0	0	0
Dec 10	0800	50	10	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 57 and 58 degrees F. Since unit 1 is currently out of service for annual inspections, scroll case temperature readings may be impacted.

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: December 4 - 10, 2015

Turbine Operation

Units are operating within the soft constraint 1% peak efficiency criteria. Units were rotated out of service from December 7 through December 9 to clear unit debris/ice bubbling line plugging.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps Biologists on December 7, 8, 9 and 10.

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'). SSE2 failed to operate for an unknown reason during routine maintenance and was out of service December 8 at 1600 and returned to service December 9 at 1115.

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 a gate depth reading of 5.0', 5.0', 5.1' and 5.3 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 0.9 feet differential reading December 10.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) with readings ranging from 0.9 – 0.8 fps and an average 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. No oil was reported in the gatewell slots.

ESBSs/VBSs: ESBSs removals took place from November 30 to December 2.

Orifices, Collection Channel, Dewatering Structure and Bypass Pipe: The orifices were closed and collection channel was dewatered on December 2.

Collection Facility: The facility was dewatered on December 2

Transport Summary: Fish transport ended for the season with the final truck departure on October 31.

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
28.6	15.5	0.0	0.0	43	42	5.0+	4.6

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections are scheduled for December 21.

Invasive Species: No evidence of zebra/quagga mussel was observed December 1.

Adult Fish Trap Operations: The adult trap was removed from service and winterized on November 23.

Fish Rescue Operation: No fish rescues occurred this week.