

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#44-2015**

Project: McNary

Biologist: Bobby Johnson

Dates: December 25 - 31, 2015

Turbine Operation

McNary had all 14 units available for power generation this week. There were no turbine unit outages to report. The soft 1 percent constraint began November 1.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on December 27, 28 and 30. At times, during the week, the panel display at each of three entrances would not come out of hibernation when touched. The electrical staff found no problems.

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 during measured inspections. Debris loads were minimal at both exits.

At the Washington exit, the tilting and regulating weir set points were adjusted on December 27. The regulating weir set point was adjusted on December 30.

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.

At the Oregon north powerhouse entrance, NFEW2 measured from 7.5 to 7.8 feet depth, all week. On December 30, the biologist found the weir in manual mode and reset it to automatic operation. The control room was notified the weir had possibly been in manual mode since December 27. NFEW3 measured 7.9 feet depth on December 27. At the south powerhouse entrance, SFEW1 measured 7.9 feet depth on December 27.

Low tailwater elevations, the lack of supplemental water from juvenile system to the north pool, tailwater sensors calibration drifts and entrance weir adjustments when recording data may have influenced these readings.

Collection channel surface velocities averaged 1.8 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. This work 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 is no longer supplying water (450 cubic feet per second) to the north powerhouse pool.

Juvenile Fish Passage Facility

On December 22, the fall bypass season concluded following the raising of all ESBSs and the dewatering of the juvenile channel for winter maintenance.

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. Trash rack differential measurements will continue into the winter maintenance season.

No problems were observed in the gatewell slots.

Extended-length submersible bar screens (ESBSs)/Vertical Barrier Screen (VBSs): All ESBSs are raised and winter maintenance continues.

On December 19, VBS differential monitoring concluded with the last ESBS removals. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: On December 22, at 0800 hours, the 42 orifices in use were closed for the winter maintenance season. This week, maintenance on the side screen cleaning brush was completed and work began on the rectangular screen cleaning device. Two area light fixtures near the control panel were also replaced.

Bypass Facility: At the facility, maintenance continued.

River Conditions

River conditions during the week are outlined in Table 1 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 1. 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
142.4	100.9	0.0	0.0	44.0	41.0	6.0	5.0

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on January 5.

Invasive Species: Examinations for invasive species will occur as systems are dewatered for winter maintenance.

Avian Activity: In the forebay observation zone, cormorants, grebes 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.

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

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

Project: Ice Harbor

Biologists: Ken Fone

Dates: December 25 - 31, 2015

Turbine Operation

All units were available for service. Units were operated within the 1% peak efficiency range (soft constraint).

Adult Fish Passage Facility

Fish facility personnel inspected the adult fishways on December 28 and 29.

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: STSSs have been removed for the season.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass system was unwatered for annual winter maintenance on the afternoon of December 18.

Juvenile Fish Facility: The facility is currently unwatered for annual maintenance.

Fish Sampling: Fish sampling previously ended for the season in July.

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* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
24.7	18.8	0	0	43	42	12.0	12.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: The unit 1 cooling water strainer was inspected on December 1, 28, and 30. The unit 4 strainer was inspected on December 9 and the unit 5 strainer was inspected on December 16 and 30. The unit 6 strainer was inspected on December 1, 16, 17, and 30. There was a total of approximately 2,200 juvenile shad recovered (all mortalities).

Invasive Species: No new exotic species have been found.

Avian Activity: Relatively high numbers of cormorants, gulls, and pelicans were seen roosting on or near Eagle Island, and opportunistically foraging around the dam, coincident with the large numbers of juvenile shad passing the project.

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

Project: Lower Monumental

Biologists: Bill Spurgeon and Raymond Addis

Dates: December 25 - 31, 2015

Turbine Operation

The units are being operated within the soft constraint of 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. Unit 5 was removed from service at 1713 hours on December 28 due to thrust pump start failure and returned to service at 1718 hours on December 29.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 28.

Fish Ladders: Fishway exit head differentials and depth over the weirs were within criteria ($\leq 0.5'$ and $1.0'$ - $1.3'$, respectively) on all inspections. Picketed lead head differentials were in criteria ($\leq 0.4'$ and $\leq 0.3'$ 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: $\geq 8'$ 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: $\geq 8'$ or on sill) on all inspections. While on sill, both gate depth readings were 7.1 feet. South powerhouse channel/tailwater head was in criteria ($1'$ - $2'$) on all inspections.

SSE1 weir gate was in depth criteria (criteria: $\geq 8'$ 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 10 square yards of forebay debris observed during this period. Gatewell debris readings are not available as STSs are raised. No problems were observed in gatewells.

STSS/VBSs: STSSs were operated in cycle-run mode until removed for winter maintenance (all screens were raised by the end of the 17th). 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 dewatered for winter maintenance on December 17 at 1315 hours.

Collection Facility: The JFF (Juvenile Fish 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 (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
25.4	19.4	0.0	0.0	42	42	5	5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were cleaned and inspected on December 2. Biological content is unknown as fish facility personnel were not contacted to coordinate this joint PM (Periodic Maintenance).

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 25 - 31, 2015

Turbine Operation

All turbine units were available for service throughout this report period except units 3 and 4. Unit 3 was removed from service due to a faulty switch on December 23 at 1658 hours and was returned to service at 1730 hours. Unit 4 was previously removed from service for digital governor installation on December 14. Soft constraint 1% peak efficiency criteria have been in effect since November 1.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 28, 29 and 30.

Fish Ladder: The ladder exit head differentials ranged between 0.2 and 0.3 feet (criteria ≤ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials ranged between 0.0 and 0.1 feet (criteria ≤ 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 is raising weirs off sill and out of criteria. Channel to tailwater head differentials ranged between 0.9 and 1.3 feet (criteria 1.0 to 2.0 ft.). SSE weir depths held steady at 8.8 feet (criteria ≥ 8.0 ft). NPE weir depths held steady at 6.6 feet and were on sill (criteria ≥ 7.0 ft. or on sill). NSE weir depths held steady at 7.0 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.6 and 2.1 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 was not seen this week.

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

ESBS/VBS: ESBSs are all in their raised positions.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system was dewatered on December 21 and all orifices are closed.

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

Transport Summary: The juvenile collection system was dewatered for the season on December 21.

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
23.6	17.6	0	0	40.9	40.7	5.8	5.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: All cooling water strainers were last checked on December 21. 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 the chart below for the numbers observed. Bird counting has ended for the season and will resume in the spring.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Dec 25	None	0	0	0	0
Dec 26	None	0	0	0	0
Dec 27	None	0	0	0	0
Dec 28	None	0	0	0	0
Dec 29	None	0	0	0	0
Dec 30	None	0	0	0	0
Dec 31	None	0	0	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 45 and 50.7 degrees Fahrenheit.

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

Project: Lower Granite

Biologists: Elizabeth Holdren, Robert (JR) Horal

Dates: December 25 - 31, 2015

Turbine Operation

Units are operating within the soft constraint 1% peak efficiency criteria.

Adult Fish Passage Facility

The adult fish ladder was inspected by Corps Biologists on December 28, 29, and 30.

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

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

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

NSE1 was out of criteria (criteria $\geq 7'$ or on sill) on all inspections with gate depth reading of 4.9, 4.9, and 5.4 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 inspections.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 0.8 – 0.9 fps and an average of 0.9 fps. Alternative methods of measuring collection channel velocity are being investigated as part of the fish ladder control system upgrade during the 2015-2016 winter maintenance outage.

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 gatewell slots.

ESBSs/VBSs: ESBSs are undergoing winter maintenance.

Orifices, Collection Channel, Dewatering Structure and Bypass Pipe: The collection channel is dewatered for winter maintenance.

Collection Facility: The facility is in winter maintenance mode.

Transport Summary: Juvenile fish transport has ended for the season.

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°)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.7	19.6	0.0	0.0	40.0	40.0	5.0+	4.7

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers inspections were last inspected on December 21. Six juvenile lamprey mortalities were recovered from units 2 and 5.

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

Adult Fish Trap Operations: The adult trap is in winter maintenance mode.

Fish Rescue Operation: No fish rescues occurred this week.

Research: No onsite research is taking place at this time.