

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#33-2016**

Project: McNary

Biologists: Bobby Johnson and Denise Griffith

Dates: October 7 - 13, 2016

Turbine Operation

All available turbine units were operated within the 1% peak efficiency criteria. McNary turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
13	Oct 3 to Dec 2	About 2 months.	Nine year overhaul.
1	Oct 11	8.8 hours.	Hub tapped & hydraulic fluid removed from slot 1C.
1, 6 & 14	Oct 11	43 minutes.	Extended-length submersible bar screen (ESBS) camera inspections.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on October 8, 10 and 12.

Fish Ladder Exits: The head over weir criteria at both exits are to be within 1.0 to 1.3 feet. The differential criteria at the count stations are to be within 0.0 to 0.5 feet. The picketed leads were cleaned as required including weekends. Debris loads were light to minimal at both exits. Along the Oregon shore, debris loads were light.

The Washington exit met all criteria during measured inspections. The regulating weir tripped an alarm and was reset on October 8. The regulating weir set point was adjusted on October 8 and 10.

The Oregon exit also met all criteria. The regulating weir set point was adjusted on October 8.

Weir 338 will remain out of service until the winter maintenance season. The hard forebay elevation constraint will continue in place through October 15, except on October 13, from 0630 to 1900 hours, when the hard forebay elevation constraint was lifted in order to improve operating conditions at John Day and The Dalles projects. The lowest hourly recorded forebay elevation was 338.3 feet on October 13. The lower end of the constraint is 338.1 feet.

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 met criteria.

At the Oregon ladder, north powerhouse entrances NFEW2 and NFEW3 measured 7.9 and 7.8 feet in depth on October 8, respectively. South powerhouse entrance SFEW1 measured 7.4 and 7.9 feet in depth on October 8 and 10, respectively. Entrance SFEW2 measured 7.4 feet in depth on October 8. A possible explanation for this measurement is low tailwater elevation. Pool differentials remained in criteria.

The Oregon ladder collection channel surface velocities averaged 1.3 fps.

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 is scheduled for completion in late October. Unit testing is scheduled to start the second week in November. The bypass continues to function satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with one interruption in service this week. Fish pumps 1 and 3 were out of service 37 and 14 minutes, respectively, on October 11 starting at 1311 hours due to a bus switch. Both pumps operated with blade angles of 23 to 25 degrees. Fish pump 2 is currently under contract for major overhaul with completion expected in mid-November. Testing is scheduled for early March.

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

Juvenile Fish Passage Facility

The fall primary bypass season continues.

Forebay Debris/Gatewell Debris/Oil: Forebay debris loads at the powerhouse and spillway were minimal.

No high trash rack differential measurements were recorded and no trash racks were cleaned.

One problem was observed in the gatewell slots. A headgate hydraulic line fitting leaked fluid into slot 1C on October 11 while unit 1 was out of service. Booms were immediately deployed and all fluid was removed before the unit returned to service.

(ESBSs)/Vertical barrier screen (VBSs): ESBSs are deployed in all units. ESBS camera inspections occurred in units 1, 6 and 14 on October 11. No problems were found. The ESBSs in slots 1A, 6B, 6C, 12A and 12C remained in timer mode. VBS differential monitoring revealed no screens out of criteria. The screens in slot 10A and 10B were cleaned on October 7. VBS rehabilitations continued with new mesh being installed on torn VBS sections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty-two orifices were in use. During VBS cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots.

On October 11, from 1026 to 1730 hours, the orifice in slot 1C was closed to insure no hydraulic fluid entered the channel.

All dewatering and cleaning systems operated satisfactory when in automatic mode. The rectangular screen cleaning brush was lubricated on October 9.

Bypass Facility: Facility winterization and maintenance continues.

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. Temperature is recorded in degrees Fahrenheit.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
117.5	82.4	0.0	0.0	63.0	62.0	6.0	6.0

Other

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

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

Avian Activity: Casual avian observations were performed during other inspections. A gull flock appears to be roosting at various locations near the project.

Gulls and cormorants were observed in the tailwater area, most were roosting on the navigation lock wing wall. They appear to be feeding on juvenile shad in the powerhouse flow or at the juvenile bypass outfall.

In the forebay area, an occasional gull, cormorant, loon or small flock of grebes was noted. Gulls and cormorants were roosting on the rocks by the Washington shore boat dock.

The fisheries mechanics completed winterizing the water cannon system this week.

Research: No research is occurring at this time.

Project: Ice Harbor

Biologists: Ken Fone

Dates: October 7 - 13, 2016

Turbine Operation

Unit 5 was taken out of service on March 14 at 1117 hours, due to an oil leak from the blade packing. The packing was replaced and the blades will be welded in place to fix the leak. Unit 2 was taken out of service on April 25 at 0606 hours for runner replacement. Unit 4 was removed from service on October 3 at 0832 hours for annual maintenance.

Available units were operated within the 1% peak efficiency range (hard constraint), except for unit 3. Unit 3 was sometimes operated a few megawatts below the peak efficiency range, due to the GDACS (Generic Data Acquisition Control System) needing to be updated with the narrower peak efficiency range of unit 3 since it became a fixed-blade unit.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on October 11, 12, and 13.

Fish Ladders: The north fish ladder inspection areas (head differentials at the fishway exit and picketed leads, and depth over the weirs) were in criteria on all inspections. The south fish ladder inspection areas (head differentials at the fishway exit and picketed leads, and depth over the weirs) met 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.

Fishway Entrances and Collection Channel: The south shore entrance (SFE-1) depth and channel/tailwater head differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater head differential met criteria on all inspections. The north shore entrance (NSE-1) depth and channel/tailwater head 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.

The south shore channel velocity was in criteria. The channel velocity criterion is 1.5-4.0 feet per second.

Auxiliary Water Supply (AWS) System: Two of the three north shore AWS pumps were in operation during the week. Five of the eight south shore AWS pumps were in operation throughout the week.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no debris observed in the forebay. The surface debris coverage in each gatewell slot ranged from 0% to 5%. Slot 2C was un-watered on July 6 to facilitate the unit 2 head gate sill plate repair.

STSS/VBSs: The STSSs are in cycle-run mode. The STS for slot 5B remains uninstalled to facilitate the work on unit 5. Unit 2 STSSs are raised and stored in their gatewell slots, since unit 2 will not be operated for the rest of the year. Units 1, 3, 4, and 6 STSSs were inspected on September 20 and 21, with no problems found. The next monthly STS inspections are scheduled for the week of October 17.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass operated with 20 opened orifices. Orifices were routinely cycled and back-flushed once per day. The light for orifice 3CN was found burnt out on October 5. Orifice 3CS was opened and orifice 3CN was closed, until the light can be replaced.

Juvenile Fish Facility: The juvenile fish facility is operating in bypass mode.

Fish Sampling: Sampling is done for the season.

Removable Spillway Weir (RSW): Spill for fish passage began on April 3 at midnight and ended on September 1 at midnight.

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
27.5	19.4	0.0	0.0	63.0	63.0	8.2	7.2

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: The latest monthly turbine cooling water strainer inspections occurred on September 1, 20, and 21. A total of 63 juvenile shad and 3 Siberian prawns (all mortalities) were recovered. The next inspections are scheduled for the week of October 17.

Invasive Species: No new exotic species have been found.

Avian Activity: There were low numbers of piscivorous birds observed around the project. At the beginning of the reporting period, up to 10 grebes were observed foraging in the forebay close to the powerhouse side of the dam. Their numbers have decreased to incidental sightings.

Research: No on-site research is actively occurring at this time.

Project: Lower Monumental

Biologists: Bill Spurgeon and Raymond Addis

Dates: October 7 - 13, 2016

Turbine Operation

The units are being operated within the hard 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 5 was removed from service at 0658 hours on September 19 for annual maintenance with an estimated return to service date of October 31, 2016.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Anchor QEA biologists on October 7, 8 and 12.

Fish Ladders: Fishway exit head differentials and depths 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, readings were 7.0, 7.0 and 6.9 feet. South powerhouse channel/tailwater head was in criteria ($1'$ - $2'$) on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: $\geq 8'$ or on sill) on all inspections. While on sill, the reading was 7.9 feet.

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 2 and 3 were operated throughout this report period. Pump 1 was out of service throughout this week due to a bushing problem. This pump will be replaced with the spare pump as time permits.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 7 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 10% surface coverage. No oil problems were observed in the gatewells.

STSS/VBSs: STSSs were operated in cycle-run mode throughout the report period. STS inspections were conducted October 4 and 5 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, and Flume: The collection channel was operated with 18 opened orifices.

Collection Facility: The collection season ended at 0700 hours on September 30 at which time the facility entered primary bypass. The facility was dewatered for winter maintenance on October 1.

Transport Summary: Fish transport is not occurring at this time.

River Conditions

Summer spill operations ended at 2400 hours on August 31. 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
26.5	19.1	0.0	0.0	62.3	61.4	4.7	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 3. No live fish were recovered. Mortalities included 5 Siberian prawns.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on October 1.

Avian Activity: Daily tailrace counts ceased at end of collection season on September 30 which is reflected in Table 2 below. No action trigger points from the avian action plan occurred during this report period.

Table 2. Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
October 7	---	---	---	---	---	---
October 8	---	---	---	---	---	---
October 9	---	---	---	---	---	---
October 10	---	---	---	---	---	---
October 11	---	---	---	---	---	---
October 12	---	---	---	---	---	---
October 13	---	---	---	---	---	---

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

Project: Little Goose

Biologists: Scott St. John and Richard Weis

Dates: October 7 - 13, 2016

Turbine Operation

All turbine units were available for service except unit 3. Unit 3 was placed out of service for an extended annual on September 26. No 1% violations to report.

Adult Fish Passage Facility

The Fishway Control System software was updated by RJS construction and returned to automatic operation on August 9. All weirs were manually adjusted and returned to automatic mode to determine functionality of the new software. The system was not operating sufficiently and was returned to manual mode on September 19. Future calibration and maintenance still need to be performed.

Adult fishway inspections were performed on October 9 and 11.

Fish Ladder: The ladder exit head differentials and water depth at Diffuser 13 maintained criteria (≤ 0.5 ft. and 1.0-1.3 ft., respectively) and picketed lead differentials ranged from 0.0 to 0.1 feet (criteria ≤ 0.3 ft.). The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily. The emergency cooling pumps for the adult fish ladder were removed from service on September 9.

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates met depth criteria (criteria ≥ 8.0 ft. or on sill) on all inspections and depths ranged between 9.0 and 9.2 feet. South shore channel/tailwater head differential was in criteria (criteria 1.0-2.0 ft.) on all inspections.

NPE1 and NPE2 weir gates were in depth criteria on all inspections and were on sill. Weir depths ranged between 7.6 and 7.7 feet (criteria ≥ 7.0 ft. or on sill). North powerhouse channel/tailwater head differential was in criteria (criteria 1.0-2.0 ft.) on all inspections.

NSE1 and NSE2 weir gate depths ranged between 6.6 to 7.7 feet (criteria ≥ 6.0 ft or on sill.) and were in depth criteria on all inspections. North shore channel/tailwater head differential was in criteria (criteria 1.0-2.0 ft.) on all inspections.

Collection Channel Velocity: The average water velocity measurements were in criteria on all inspections and ranged between 1.7 and 2.3 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: The fish ladder is now operating on three pumps. The average water velocity (bottom, middle, top) of the adult channel at NPE was 3.1 fps on September 28.

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 estimated at about 2,400 square feet on October 11.

Spillway Weir: The TSW was removed on July 11.

ESBS/VBS: Electrical ESBS brush tests were performed on September 13. Units 5 and 6 were found with electrical faults and repaired. Limits switches were reset on both units.

Orifices, Collection Channel, Dewatering Structure, and Flume: The gear box for the weirs in the primary dewatering structure was removed from service after an oil leak was discovered. The leak was subsequently contained and cleaned. The weirs will remain turned off until repairs are completed. The juvenile bypass system is presently running with 19 opened orifices. Orifices are cycled every 24 hours.

Collection Facility: Fish collection and sampling is occurring every day at the JFF. Fish transportation by truck occurs on even numbered days this month.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 622 fish were collected. The descaling and mortality rates were 9.6% and 0.93% respectively. There were no adult lamprey removed from the raceways or sample this report period.

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* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
23.3	18.8	0.0	0.0	62.8	62.4	5.2	4.8

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were inspected September 28. No fish were seen.

Invasive Species: The zebra mussel substrate monitor was inspected on October 4. No mussels were seen.

Avian Activity: USDA Bird hazing ended on June 25. See Table 2 below for USACE counts.

Table 2. Daily Avian Counts at Little Goose Dam, October 7 - 13, 2016.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
October 7	0930	17	5	0	0
October 8	0945	26	6	0	0
October 9	1200	33	25	0	0
October 10	1230	36	41	0	0
October 11	0830	36	3	0	0
October 12	0930	41	3	0	0
October 13	0945	9	8	0	0

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

Siberian Prawn: Siberian prawns continue to be collected at the Juvenile Fish Facility. Prawns are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor QEA, frozen and properly disposed of in a landfill. There were 1,131 prawns collected in the sample and euthanized during this report period. Prawn numbers are outlined in Table 3 below.

Table 3. Daily Siberian Prawn Counts at Little Goose Dam, October 7 - 13, 2016.

Date	Sample	Collection*
October 7	132	
October 8	70	
October 9	93	
October 10	153	
October 11	211	
October 12	401	
October 13	71	
Totals	1,131	

*Collection and sample numbers are the same as the facility is currently sampling at 100%

Gas Bubble Trauma: GBT inspections ended for the season with the July 19 report. No signs of GBT were seen this season.

Research: The Fish Guidance Efficiency (FGE) emergency gate closure study ended on July 22 and equipment was removed from unit 2 on August 30.

Project: Lower Granite

Biologists: Elizabeth Holdren and Robert Horal

Dates: October 7 - 13, 2016

Turbine Operation

Units are being operated within the hard constraint 1% peak efficiency criteria. Unit 1 remains out of service for Kaplan blade linkage repair. Unit 5 returned to service after the six year overhaul 1616 hours October 13.

Adult Fish Passage Facility

Adult fish facilities were inspected by Corps or Anchor QEA biologists October 8, 11, and 13.

Fish Ladder: Fish ladder exit head differential and depth over the weirs were in criteria ($\leq 0.5'$ and $1.0-1.3'$, respectively) on all inspections. Picketed lead head differentials also met criteria ($\leq 0.3'$). An average of about 0.66 square yards of debris was observed near the ladder exit.

Fish Ladder Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria $\geq 8'$ or on sill) on all inspections with exception of SSE2 reading October 12 of 7.8 feet. South shore channel/tailwater head differential was in criteria (criteria $1'-2'$) on all inspections except for a 0.9 feet reading on October 8.

NPE1 and NPE2 weir gates met depth or sill criteria (criteria $\geq 8'$ or on sill) on all inspections with exception of a NPE2 reading of 7.9 feet on October 8. North powerhouse channel/tailwater head differential met criteria (criteria $1'-2'$) on all inspections.

NSE1 was in criteria (criteria $\geq 7'$ or on sill) on all inspections. NSE2 has been out of service since 2011 and remains set with a chain fall hoist in the closed position. North shore channel/tailwater head differential met criteria (criteria $1'-2'$) on all inspections except October 12 with a reading of 0.9 feet.

Collection Channel Velocity: Collection channel average velocity was in criteria (criteria 1.5-4.0 fps) on all inspections with the exception of a 0.9 fps reading observed on October 12.

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

Fish Ladder Temperature Control System: This system is not in service at this time.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: An average of about 85.6 square yards of debris was observed in the forebay this week.

ESBSs/VBSs: ESBS/VBS inspections are scheduled for late October.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The collection channel is operating with 18-21 opened orifices. Orifices are being cycled every three hours.

Collection Facility: The facility is in collection for transport mode. Sampling is occurring every other day.

Transport Summary: Truck transport is occurring on even numbered days this month.

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
26.6	19.2	0.0	0.0	64.0	61.8	5.0+	5.0

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: No inspections took place this week.

Invasive Species: The zebra/quagga mussel substrate was inspected September 30. No zebra/quagga mussels were found. Smolt monitoring biologists euthanized 81 Siberian prawns from the collection sample this week.

Avian Activity: Daily piscivorous bird counts are summarized in Table 2 below.

Table 2. Daily piscivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
October 7	1500	2	51	0	0
October 8	1249	16	52	0	0
October 9	1158	0	22	0	0
October 10	1215	14	57	0	0
October 11	1515	9	6	0	0
October 12	1307	17	38	0	0
October 13	1539	2	1	0	0

GBT: Gas bubble trauma sampling has concluded for the season.

Adult Fish Trap Operations: The trap is being operated seven days a week with a sample rate of 19%. Fall Chinook are being collected for transport to the Lyons Ferry hatchery and to the Nez Perce Tribal hatchery. Coho collection for the Nez Perce Tribe brood stock program continues.

Fish Rescue Operation: No fish rescued took place this week.

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