

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#35-2016**

Project: McNary

Biologists: Bobby Johnson and Denise Griffith

Dates: October 21 - 27, 2016

Turbine Operation

All available turbine units were operated within the hard 1% peak efficiency criteria this week. The soft 1% peak efficiency criteria begins November 1. 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 over-haul.
2	Oct 24 to 28	4.4 days.	Annual maintenance.
1, 3 & 4	Oct 25	14.3 hours each.	Bonneville Power Administration (BPA) system maintenance.
5 to 8	Oct 26 to 27	37.1 hours each.	BPA system maintenance.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on October 21, 23 and 25. Adult fish counts conclude on October 31. The general maintenance staff will raise both ladders picketed leads on November 1.

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 minimal at both exits and along the Oregon shore.

The Washington exit met all criteria during measured inspections except on October 23, when the count station differential measured 0.8 feet. The biologist immediately cleaned the picketed leads. A fisheries technician found the count station differential at 0.9 feet on October 27. The general maintenance staff cleaned the leads as soon as their shift began. The leads had been cleaned the previous afternoon. The regulating and tilting weirs set points were adjusted on October 23.

The Oregon exit met all criteria. The regulating weir set point was adjusted on October 21 and 25. The tilting weir set point was adjusted on October 21. Weir 338 will remain out of service

until the winter maintenance season. The soft forebay elevation constraint will conclude on October 31. 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, south powerhouse entrances SFEW1 and SFEW2 measured 7.4 to 7.7 feet in depth on October 21 and 23. The biologist asked again for the pool elevation sensor to be calibrated. All other inspection points remained in criteria. All Oregon ladder entrances were in manual operation twice on October 25 for 30 minutes total for bus switches, which also involved fish pump outages.

The Oregon ladder collection channel surface velocities averaged 1.5 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 near completion. Turbine unit testing is scheduled to start on November 14. The bypass continues to function satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with two interruptions in service this week. Fish pumps 1 and 3 were out of service on October 25 from 0609 to 0623 hours and from 2025 to 2036 hours for bus switches. Both pumps operated with blade angles of 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 were light to minimal. Debris loads at the spillway were minimal.

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

No problems were observed in the gatewell slots.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs): ESBSs are deployed in all units. No ESBS camera inspections occurred this week. The ESBSs in slots 1A, 6B, 6C, 12A and 12C remained in timer mode.

VBS differential monitoring revealed no screens out of criteria. VBSs in slots 1A, 4A, 7B and 11A were cleaned on October 25 and 27. 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. An orifice attraction light bulb was replaced in slot 1A on October 23.

All dewatering and cleaning systems operated satisfactory in automatic mode.

Bypass Facility: Facility winterization and maintenance continues. Bus switches on October 25 resulted in two power outages totaling 13 minutes on October 25. Both outages were outside normal work hours.

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 (kcfs). Temperature is recorded in degrees Fahrenheit.

Scheduled spillway hoist maintenance and testing continued. Unit outages on October 26 and 27 resulted enough spill to influence the daily average spill recorded below.

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
130.5	97.6	23.6	0.0	59.0	58.0	6.0	6.0

Other

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

Invasive Species: The mussel station examinations on October 23 revealed no problems.

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 numbers in the tailwater area remained high at times. Over 100 gulls were observed. The birds were roosting on the navigation lock wing wall and other structures. They appeared to be feeding on juvenile shad in the powerhouse flow or at the juvenile bypass outfall.

In the forebay area, a large grebe flock nearing 100 birds was noted at times along with gulls or cormorants. Gulls and cormorants were also roosting on the rocks by the Washington shore boat dock. One grebe was removed from gateway slot 5B on October 23. Blue herons, night herons and bald eagles were also observed on project.

Research: No onsite research is occurring at this time.

Project: Ice Harbor

Biologists: Ken Fone

Dates: October 21 - 27, 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% operating 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 operating 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 25 and 26.

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) 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 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 were in 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 an average of 1 square yard of debris observed in the forebay. The surface debris coverage in each gatewell slot ranged from 0% to 5%. Slot 2C was unwatered July 6 to facilitate the unit 2 head gate sill plate repair.

STSS/VBSs: The STSs are in cycle-run mode. The STS for slot 5B remains uninstalled to facilitate the work on unit 5. Unit 2 STSs 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 STSs were inspected on October 18 and 19, with no problems found.

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.

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

Fish Sampling: Sampling is done for the season. The raw water lines for the sampling facility were drained and winterized on October 26.

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
26.2	15.8	0.1	0.0	59.0	59.0	8.8	8.4

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on October 18 and 19. A total of approximately 800 juvenile shad (all mortalities) were found.

Invasive Species: No new exotic species have been found.

Avian Activity: There were moderate numbers of grebes, pelicans, cormorants, and gulls observed around the project, mainly in the spillway basin close to the dam, on the south shore of the tailrace across from the coffer cells, and on Eagle Island. Most of the birds were observed to be resting.

Research: No onsite research is actively occurring at this time.

Project: Lower Monumental

Biologists: Bill Spurgeon and Raymond Addis

Dates: October 21 - 27, 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 biologists on October 24, 25 and 27.

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 met 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 7.2, 6.7 and 7.2 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 7.8 feet.

SSE2 was in criteria ($6'$ above sill) on all inspections. South shore channel/tailwater head met 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 period 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 4 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 20% 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 facility was dewatered for winter maintenance on October 1.

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

River Conditions

Summer spill operations in support of fish passage 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
23.4	18.6	0.0	0.0	60.0	59.8	4.7	4.4

*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 of feeding piscivorous birds are summarized in Table 2 below. Daily tailrace counts ceased at end of collection season on September 30. No action trigger points from the avian action plan occurred this period.

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

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
October 21	---	---	---	---	---	---
October 22	---	---	---	---	---	---
October 23	---	---	---	---	---	---
October 24	---	---	---	---	---	---
October 25	---	---	---	---	---	---
October 26	---	---	---	---	---	---
October 27	---	---	---	---	---	---

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

Project: Little Goose

Biologists: Scott St. John and Richard Weis

Dates: October 21 - 27, 2016

Turbine Operation

All turbine units were available for service except units 1 and 3. Unit 1 was forced out of service at 1641 hours on October 26 due to oil in the immediate tailrace. Unit 1 was placed back into service at 1000 on October 27 after mechanical crews determined there were no oil leaks. 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 21, 23 and 27.

Fish Ladder: The ladder exit head differentials and water depth at Diffuser 13 maintained criteria (≤ 0.5 ft. and 1.1-1.2 ft., respectively) and picketed lead 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. The emergency cooling pumps for the adult fish ladder were removed from service on September 09.

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 8.5 and 8.8 feet. South shore channel/tailwater head differential was in criteria (criteria 1.0-2.0 ft.) on all inspections.

NPE1 and NPE2 weir gates met depth criteria on all inspections and were on sill. Weir depths ranged between 7.1 and 7.6 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 6.3 to 7.1 feet (criteria ≥ 6.0 ft or on sill.) and met depth criteria on all inspections. North shore channel/tailwater head differentials met criteria (criteria 1.0-2.0 ft.) on all inspections.

Collection Channel Velocity: The average surface water velocity measurements were in criteria on all inspections and ranged between 2.0 and 3.1 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. There was minimal woody debris in the immediate forebay.

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 430 fish were collected. The descaling and mortality rates were 7.0% and 0.2% 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
22.1	18.8	0.0	0.0	59.9	58.9	6.0	4.5

*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 21 - 27, 2016.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
October 21	0915	19	0	0	0
October 22	1035	46	14	0	0
October 23	1115	49	49	0	0
October 24	1000	56	55	0	0
October 25	1045	66	68	0	0
October 26	1100	82	61	0	0
October 27	1100	115	49	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 424 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 21 - 27, 2016.

Date	Sample	Collection*
October 21	116	
October 22	77	
October 23	104	
October 24	35	
October 25	52	
October 26	33	
October 27	7	
Totals	424	

*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 21 - 27, 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 3 was removed from service at 0630 hours on October 17 for annual maintenance and is scheduled to return to service on November 9. Units 4 and unit 2 were rotated out of service for ESBS/VBS inspections on October 23. Unit 5 was out of service from 0749 to 1326 hours on October 24 to remove and replace a defective ESBS in slot 5A.

Adult Fish Passage Facility

Adult fish facilities were inspected by Corps or Anchor QEA biologists October 21, 22, 23, and 26. The Fishway Control System's NSE readings were used this week due to the North Non-Overflow elevator being out of service.

Fish Ladder: Fish ladder exit head differentials and depths over the weirs met criteria ($\leq 0.5'$ and $1.0-1.3'$, respectively) on all inspections with the exception of a 1.4 feet reading of depth over the weirs on October 22. The supply valve was adjusted and depth criteria was restored shortly after the discrepancy was discovered. Picketed lead head differentials met criteria ($\leq 0.3'$). An average of about 5.3 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. South shore channel/tailwater head differential met criteria (criteria $1'-2'$) on all inspections.

NPE1 and NPE2 weir gates were in depth or sill 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 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 was in criteria (criteria $1'-2'$) on all inspections.

Collection Channel Velocity: The average collection channel velocity met criteria (criteria 1.5-4.0 fps) on all inspections.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 1 and 3 in service. Pump 2 is 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 84.5 square yards of debris was observed in the forebay this week.

ESBSs/VBSs: ESBS/VBS inspections were conducted October 23 in units 4, 3 and 2. No reportable issues were observed. The ESBS in slot 5A was replaced on October 24 after an electrical ground fault was discovered in the screen cleaning brush motor.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The collection channel is operating with 18-19 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. Due to an increase in fish numbers, the semi-truck and trailer was used on October 26 for transport.

River Conditions

No spill occurred this week. 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
23.5	18.7	0.0	0.0	58.0	54.5	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 October 16. No zebra/quagga mussel were found. Smolt monitoring biologists euthanized 30 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 21	1045	13	28	0	0
October 22	1342	2	15	0	0
October 23	1017	7	36	0	0
October 24	1515	4	22	0	0
October 25	1614	3	0	0	0
October 26	1628	5	22	0	0
October 27	1315	8	8	0	0

GBT: No Gas Bubble Trauma examinations are taking place at this time.

Adult Fish Trap Operations: The trap is being operated seven day a week with a sample rate of 19%. Coho collection for the Nez Perce Tribe brood stock program continues.

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

Research: There is no active onsite research taking place at this time.