

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#04-2016**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: March 18 - 24, 2016

Turbine Operation

McNary had available 12 to 14 units (out of 14 total units) for power generation this week. Turbine unit outages are recorded in Table 1 below. “Rolling” units is taking the units out of and back into service going from south to north, which moves forebay debris toward the spillway. On April 1, the hard 1 percent peak efficiency constraint will begin.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
1 thru 14	Mar 23	22.2 hours total.	“Rolled” units to move forebay debris to spillway.
11	Mar 23	2.9 hours	Breaker issue.
9 & 10	Mar 24–30	About 6 days.	Bus connection related to station service upgrades contract.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on March 20, 23 and 24. Picketed leads at the exits will be lowered on March 31. Adult fish counting will resume on April 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 required to be within 0.0 to 0.5 feet. Debris loads were minimal at both exits.

At the Washington exit, all criteria were met during measured inspections. The tilting weir set point was adjusted on March 20 and 23.

At the Oregon exit, the head over weir measured 0.9 feet on March 23. A regulating weir differential alarm along with an encoder alarm for weirs 337 and 338 were noted. The operators reset the exit system and adjusted the regulating weir and tilting weir set points. Both weirs had been in manual mode the day prior to this occurrence to have the drive system painted.

Oregon exit traveling screen differential monitoring revealed no problems.

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 north powerhouse entrance, all inspection points were in criteria. The tailwater sensor reading was 0.9 feet lower than the measured reading on March 20. The electrical staff resolved the issue the next day.

At the south entrance, weir SFEW1 measured depths ranging between 7.8 to 7.9 feet all week. Weir SFEW2 depths ranged between 7.8 to 7.9 feet on March 23 and 24. Higher tailwater elevations possibly contributed to these readings. The pool differential remained in criterion.

Collection channel surface velocities averaged 1.9 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 bypass continues to functioned satisfactorily.

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

The juvenile facility is not currently supplying 450 cfs to the north powerhouse pool and will remain out of service until March 29.

Juvenile Fish Passage Facility

As mentioned above, the juvenile system remains dewatered for winter maintenance. The system will return to service on March 29.

Forebay Debris/Gatewell Debris/Oil: Forebay debris quantities remained heavy. Debris spill operations scheduled between March 22 and 23 were to some degree successful. Due to high west winds, no attempt was made to remove the debris on March 22. On March 23, about one quarter of the debris was removed.

As reflected in Table 1 above, units 1 through 14 were “rolled” on March 23 with spill briefly occurring through bay 21. The tug boat was able to push some of the debris to the spillbay but efforts were hampered by high west winds and insufficient spill volume.

Trash rack racking scheduled for March 28 through 31 should result in more forebay debris being removed. No high trash rack differential measurements were recorded this week.

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. ESBS installations will occur between April 5 and 15.

VBS differential monitoring will resume with ESBS installations. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The orifices remain closed for the winter maintenance season, which concludes on March 28. All systems were tested with no problems found. Scheduled maintenance was performed on the two side dewatering valves. Two fall protection safety gates were install, both directly above the collection channel. The adult jump netting on the handrails was inspected and repaired.

Bypass Facility: Maintenance will continue until March 28. One fall protection safety gate was installed by the barge dryer walkway. New sample tank netting was installed. New gaskets were installed on the separator adult release gate. A permanent temperature probe was mounted in the B side sample tank.

River Conditions

River condition data during the week was provided by the McNary control room and is outlined in Table 2 below. 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.

Spill occurred on March 18 during top spillway weir (TSW) testing and on March 23 during debris spill operations.

Spillway crane and hoist preparations continued. TSW installation and setup occurred between March 18 and 22. TSW testing will occur next week.

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
192.9	172.4	2.8	0.0	44.0	43.0	5.4	4.6

Other

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

Invasive Species: The next mussel station examinations will occur on March 30.

Avian Activity: A few gulls and cormorants were observed. Zone counts will begin on April 1.

Replacement bird distress calls and bird wire supports were ordered. The sprinklers at the bypass outfall were adjusted.

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

PIT Tag Detection System: The power supply outlet used for the duplex passive integrated transponder (PIT) antenna at the Washington ladder exit has been supplying power intermittently for about two months. The electrical line to the outlet will need to be rewired, which will be a lengthy process.

Project: Ice Harbor

Biologist: Ken Fone

Dates: March 18 - 24, 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 will be replaced to fix the leak. Units were taken out of service one at a time to rake the trash racks on March 22 and March 23. Units are being operated within the 1% peak efficiency range (soft constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on March 21, 23, and 24.

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 surface above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily. The counting of adult fish ended for the season on October 31, 2015, so the south and north shore picketed leads were put in their raised positions on November 2 and 5, respectively. Adult fish counting will resume on April 1.

Fishway Entrances and Collection Channel: The south shore entrance (SFE) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater 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. During the week, electricians calibrated the fishway entrance weir gate elevation readouts.

The south shore channel velocity was in criteria. 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 during 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 approximately 17 square yards of debris observed in the forebay. Oil sheens were observed in unit 5 gatewell slots during the week. Oil

absorbent pads were deployed. The sheens were residual leakage oil from the unit 5 blade packing which will be replaced.

STSS/VBSs: STSSs are raised out of the water and stored in the gatewell slots for annual maintenance. The STSSs will be installed the week of March 28.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was “watered up” and 20 orifices were opened on March 24.

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

Fish Sampling: Fish sampling operations are scheduled to begin the week of April 4.

Removable Spillway Weir: Spill for fish passage is scheduled to start on April 3.

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
75.1	57.9	2.9	0.0	45.0	44.0	6.4	5.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections will take place the week of March 28.

Invasive Species: No new exotic species have been found.

Avian Activity: Low numbers of piscivorous birds were seen around the project during the week.

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

Project: Lower Monumental

Biologists: Bill Spurgeon and Raymond Addis

Dates: March 18 - 24, 2016

Turbine Operation

The units are being operated in soft constraint of the 1% operation 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.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 21, 23, and 24.

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 depth or sill criteria (criteria: $\geq 8'$ or on sill) on all inspections. While on sill the gate depth reading was 7.5 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 2 and 3 were operated throughout this period. Pump 1 was out of service throughout this period and will continue to be out of service throughout this season unless an emergency occurs. This unit has a bushing problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 330 square yards of forebay debris observed during this period. No oil was observed in gatewells.

STSS/VBSs: STSS are raised for winter maintenance. The STSS screens were inspected via rotation on deck on March 17. The STS in gatewell 6A was found to be rotating in the wrong direction. This has been corrected. The STSS are scheduled to be installed the week of March 28.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was “watered up” for facility testing on March 23rd. No problems were detected. The primary bypass outfall water cannons were “watered up” March 22 with no problems noted.

Collection Facility: The facility is “watered up” and in testing mode.

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
71.2	57.7	0.0	0.0	46	45.5	3.0	2.7

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 1. Nine live lamprey were recovered. Mortalities included approximately 195 juvenile lamprey, 2 Siberian prawns and 5 others (all shad).

Invasive Species: No zebra mussels were observed during monitoring station inspections on March 3.

Avian Activity: Gulls and cormorants were the dominant piscivorous bird species observed during fish ladder inspections this week.

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

Project: Little Goose
Biologist: Richard Weis
Dates: March 18 - 24, 2016

Turbine Operation

All turbine units were available for service throughout this report period except unit 5. Unit 5 was out of service for most of this week for digital governor installation. Unit 5 was returned to service on March 24. Soft constraint 1% peak efficiency criteria are in effect.

Adult Fish Passage Facility

The adult fishway was placed back into service starting on February 22 beginning at 0800 hours. The new Fishway Control System still does not work properly. This system will remain in manual mode until repairs can be made.

Adult fishway inspections were performed on March 21, 23 and 24.

Fish Ladder: The ladder exit head differentials held steady at 0.1 feet (criteria ≤ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.) and picketed head differentials held steady at 0.0 feet (criteria ≤ 0.3 ft.). Some debris was observed at the picketed leads or the ladder exit area and was removed. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily. On March 14, fish counters reported that the ladder had lots of woody debris passing the count window. Upon closer inspection, facility staff discovered that the ladder exit trash rack was in the wrong position, much closer to the surface than usual. On March 16, the trash rack was removed and reset into the correct position.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 1.0 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.6 and 8.6 feet (criteria ≥ 8.0 ft). NPE weir depths ranged between 7.0 and 7.8 feet (criteria ≥ 7.0 ft. or on sill). NSE weir depths ranged between 5.3 to 6.5 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse held steady at 1.5 fps (criteria 1.5 to 4.0 fps). Water velocity measurements at the north Powerhouse using the Rickly velocity equipment was not conducted this week.

Auxiliary Water Supply System: Fish pump 1 is still waiting to be installed. Fish pumps 2 and 3 were shut down on March 18 for one hour due to high operating temperatures and low cooling water flow. The JFF (Juvenile Fish Facility) staff was not notified. Presently, fish pumps 2 and 3 are running.

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 between 1,200 and 3,000 square feet.

Spillway Weir: The spillway weir is scheduled to be placed back in service by April 3 (the start of spring spill in support of fish passage).

ESBS/VBS: ESBSs were deployed, starting March 22 with unit 3. Presently, all fish screens are deployed except for those in turbine unit 5 (turbine units may be operated without ESBSs until April 1).

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is scheduled to be placed back into service in March.

Transportation Facility: The transportation facility is scheduled to be watered up on March 30.

Transport Summary: Fish transport is slated to begin in late April or early May.

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
69.1	55.2	0.0	0.0	46.0	45.7	3.4	2.8

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor is scheduled for inspection in April.

Inline Cooling Water Strainers Cooling water strainers on all units were last inspected on March 17. A total of 23 juvenile lamprey mortalities (Ammocoete) were removed.

Avian Activity: Bird counting and hazing will resume in April.

Research: No on-site research is in progress at this time.

Project: Lower Granite

Biologists: Elizabeth Holdren, Robert Horal

Dates: March 18 - 24, 2016

Turbine Operation

Units are being operated within the soft constraint 1% operational criteria. Unit were rotated out of service for ESBS deployment March 21-23.

Adult Fish Passage Facility

The automatic fish ladder control system continues to experience internal functioning errors. These errors are being assessed as upgrades continue. Entrance gates found out of criteria during ladder inspections due to fish ladder control system problems are manually adjusted to depth or sill criteria and left in hand mode until programmers return to make adjustments. Adult fish facilities were inspected by Corps or Anchor QEA biologists on March 21, 22, 23, and 24.

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 differential was in criteria ($\leq 0.3'$). An average of about 2.8 square yards of debris was observed near the fish ladder exit.

Fishway 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 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 with the exception of a 7.9 feet reading of NPE1 on March 23. This out of criteria reading is related to the fish ladder control system issues. The gate automatically adjusted to 8.0 feet when readings at this location were double checked after the inspection was completed. 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 to improve channel/tailwater head differentials. North shore channel/tailwater head differential was in criteria (criteria $1'-2'$) on all inspections except for a 0.8 feet reading on March 23. This setting also automatically adjusted (to 1.0 feet) when double checked after the inspection.

Collection channel average velocity was in 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 2 and 3 operating. Pump 1 is in standby mode pending bulkhead repositioning.

Fish Ladder Temperature Control System: One steelhead kelt was observed stranded in the upper section of the fish ladder temperature control structure that supplies water to diffuser 14

intake on March 16 and 17. There were no fish observed in the temperature control structure this week.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: An average of about 257.5 square yards of debris was observed in the forebay this week. No oil was observed in the gatewell slots. Gatewell debris was removed as screens were deployed an average of about 0.25 cubic yards of debris was removed per gatewell slot.

ESBSs/VBSs: ESBSs were installed March 21-23.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel was return to service at 1145 hours on March 21. The North shore makeup water valve was returned to service at 1130 hours on March 21. The South shore makeup water valve was return to service following winter maintenance upgrade on March 22.

Collection Facility: The collection facility was “watered up” at 1220 hours on March 21 and is operating in secondary bypass mode. Fish condition sampling is scheduled to begin at 0700 hours on March 25 with the first sample being worked up on March 26.

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

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
72.4	56.6	0.0	0.0	46.0	44.2	4.4	3.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers are scheduled for inspection on March 28.

Invasive Species: Zebra/quagga mussel substrate was deployed March 1.

Adult Fish Trap Operations: The trap is in 24 hour operation Monday-Friday at a 17% sample rate. The first spring Chinook of the season was collected in the adult trap on March 25.

Fish Rescue Operation: No fish rescues occurred this week.

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