U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#02-2016

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: March 4 - 10, 2016

Turbine Operation

McNary had all 14 units available for power generation this week. On March 10, unit 7 was out of service for 8.5 hours to repack the oil head. On April 1, the hard 1 percent constraint will begin.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on March 6, 8 and 10. Scheduled maintenance was performed on the passive integrated transponder (PIT) heat pumps in both ladder stations.

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. Both ladder exits met all criteria during measured inspections. Debris loads were minimal to light at both exits.

For the Washington exit, there are no problems to report.

At the Oregon exit, tilting weir 339 triggered an alarm and was reset on March 8. The regulating weir set point was adjusted three times this week. The tilting weir set point was adjusted on March 8.

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 were in criteria.

At the Oregon north powerhouse entrance, weirs NFEW 2 and NFEW3 measured 7.8 feet in depth on March 8 and 10. NFEW weir depth readings may have been impacted by the lack of supplemental water usually provided by the juvenile system. The juvenile system is currently out of service for winter maintenance. At the south entrance, weir SFEW1 measured 7.9 feet in

depth all week. Higher tailwater elevations possibly contributed to these readings. All other inspection points were in criteria.

On March 5, Oregon ladder entrance alarms occurred, possibly due to higher tailwater elevations. The operator adjusted the entrances set points, which helped to clear the alarms. Collection channel surface velocities averaged 2.1 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 has functioned satisfactorily.

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

The juvenile facility is not supplying the usual 450 cfs to the north powerhouse pool and is currently out of service.

Juvenile Fish Passage Facility

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

Forebay Debris/Gatewell Debris/Oil: Forebay debris loads remained heavy. A debris spill operation is scheduled sometime between March 14 and 17.

No high trash rack differential measurements were recorded. Trash racks will be cleaned the last week in March.

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. This week, units 6 and 12 ESBS controllers displayed error messages, which the electrical staff resolved.

VBS differential monitoring will resume with ESBS installations, which will begin April 5. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The orifices remain closed for the winter maintenance season, which will conclude in late March.

Bypass Facility: Maintenance will continue until late March.

River Conditions

River conditions during the week were provided by the McNary control room and are outlined in Table 1 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 10, from 1312 to 1705 hours, due flow in excess of powerhouse capacity.

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
215.7	168.7	7.2	0.0	43.0	42.0	6.0	5.2

Other

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

Invasive Species: The next mussel station examination will occur in late March.

Avian Activity: This week a few gulls, cormorants and kingfishers were observed. Zone counts will begin in April.

Bird distress call deployment and installation of bird wire on the navigation lock wing wall continued.

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

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 4 - 10, 2016

Turbine Operation

All turbine units were available for service. Units are being operated within the 1% soft constraint operating efficiency range.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on March 7, 8, and 9.

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. Since adult fish counts ended for the season on October 31, 2015; 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, except for a depth of 7.7 feet on March 9, caused by entrance weir gate calibration problems. Electricians will calibrate fishway entrance gate elevation readouts the week of March 21. 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.

Auxiliary Water Supply (AWS) System: North shore AWS pumps 1 and 3 are operating. Pump 2 was taken out of service at 1630 hours on March 3 due to a bad electrical relay. 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 25 square yards of debris observed in the forebay.

STSs/VBSs: STSs are currently raised out of the water for annual maintenance.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass is unwatered for annual maintenance.

Juvenile Bypass Facility: The bypass facility is unwatered for annual maintenance.

Fish Sampling: Sampling operations are scheduled to begin the week of April 1.

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
63.9	40.1	3.6	0.0	44.0	43.0	6.0	5.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections will take place later in March.

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 4 - 10, 2016

Turbine Operation

All turbine are being operated within the soft constraint 1% operational 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 out of service from 0757 to 1135 hours on March 4 for data collection instrumentation removal.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 7, 8, 9 and 10.

Fish Ladders: Fishway exit head differentials and depths over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.7 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 2 and 3 were operated throughout this period. Pump 1 was out of service throughout this period and will 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 274 square yards of forebay debris observed during this period. No oil was observed in the gatewells.

STSs/VBSs: STSs are raised for winter maintenance and are scheduled to be installed the week of March 21.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is dewatered for winter maintenance. The primary bypass outfall water cannons are dewatered. Both systems are scheduled to be "watered up" the week of March 21.

Collection Facility: The facility is in winter maintenance mode.

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

River Conditions

Spill occurred on March 10 as requested by the BPA due to the lack of electrical demand. 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
62.5	41.1	2.3	0.0	43.0	43.0	3.4	2.8

*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 other individuals (juvenile American shad).

Invasive Species: No zebra mussels were observed at the monitoring stations 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 4 - 10, 2016

Turbine Operation

All turbine units were available for service throughout this report period except unit 5. Unit 5 is out of service for digital governor installation. Units 1, 2, 3 and 4 were rotated in and out of service from March 7-9 in support of dive operations. These outages supported transducer installations for the pending fish guidance efficiency study. Soft 1% peak efficiency constraint criteria are in effect.

Adult Fish Passage Facility

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

Adult fishway inspections were performed on March 7, 8 and 9.

Fish Ladder: The ladder exit head differentials held steady at 0.1 feet (criteria $\leq$ 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 $\leq$ 0.3 ft.). No debris was observed at the picketed leads or in the ladder exit area. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: Channel to tailwater head differentials ranged between 0.4 and 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 5.7 and 9.0 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 6.8 and 7.6 feet (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 4.6 to 7.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.0 and 1.2 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: Fish pumps 2 and 3 were started on February 22 and operated within criteria. Fish pump 1 is awaiting installation. Fish pump 2 encountered oil pressure and limit switch issues and is presently out of service (see 16 LGS 03 MFR Failure of Fish Pump 2 for detailed explanation). Water velocity measured at the north Powerhouse using the Rickly velocity equipment was not conducted this week.

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 3,200 to 10,500 square feet. Woody debris was observed in gatewells but removal is not feasible at this time since the ESBSs are in their raised positions and block access.

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

ESBS/VBS: ESBSs are currently raised and removed from service for maintenance.

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 placed back into service in March.

Transport Summary: Fish transport is estimated 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
60.4	39.9	0.0	0.0	43.8	43.3	5.0	4.6

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were last inspected on February 16. A total of 10 juvenile lamprey mortalities (Ammocoete) were removed.

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

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

Research: As mentioned above, transducers were installed this week in support of the pending Fish Guidance Efficiency study. No other on site research activity occurred this week.

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: March 4 - 10, 2016

Turbine Operation

Units are being operated in soft constraint of the 1% operation criteria. Unit 3, 4, and 5 were rotated out of service to rack trash racks March 4.

Adult Fish Passage Facility

The automatic fish ladder control system was upgraded during the winter maintenance outage. Calibration of the control system was initiated following ladder watered up. Ongoing adjustments to the control system are needed due the system not correspond to physical reading. Adult fish facilities were inspected by Corps biologists on March 7, 8, 9, and 10.

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

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were out of criteria (criteria ≥8' or on sill) on three inspections with gate depth readings of 7.7', 7.8', and 7.9 feet. South shore channel/tailwater head was in criteria (criteria 1'-2') on all inspections.

NPE1 and NPE2 weir gates were in depth or sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the gate depths were 7.1 feet and 7.2 feet. NPEs were set to sill elevation of 628.0 feet in local mode March 10 due to the automatic control system adjusting the gates beyond their sill limits. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 was out of depth criteria (criteria ≥7' or on sill) on all inspections with reading 5.0', 5.9', 5.0', and 5.1 feet. 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 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. Return to service of pump 1 is pending bulkhead installation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: About 10 cubic yards of debris were removed from the forebay and unit 4 trashracks on March 4.

ESBSs/VBSs: ESBSs are scheduled to be installed March 21-24.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel is in winter maintenance mode and scheduled to return to service on March 21. Repairs to the South shore makeup water valve drive shaft and operator during the winter maintenance outage are scheduled for testing prior to "watering up" the collection channel.

Collection Facility: The collection facility is in winter maintenance mode.

Transport Summary: No fish transport is occurring.

River Conditions

Spill occurred March 10 due to the lack of electrical demand or load. River conditions during the week are outlined in Table 1 below.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
62.0	40.4	2.8	0.0	41.5	41.2	4.7	3.7

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were last inspected February 24.

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

Adult Fish Trap Operations: The trap is being operated at a 17% sample rate, five days per week.

Fish Rescue Operation: A navigational lock fish rescue operation took place on March 7. Fish recovered included 4 decomposed adult clipped steelhead, 12 decomposed adult shad, and 4 adult smallmouth bass mortalities. Powerhouse maintenance crew collected and released an unknown number of live incidental fish during navigational lock dewatering.

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