U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#01-2016

Project: McNary
Biologist: Bobby Johnson
Dates: March 1 - 3, 2016

Turbine Operation

McNary had all 14 turbine units available for power generation this week. On March 2, unit 6 was out of service for 5.6 hours for hub tapping. On April 1, the hard 1 percent peak efficiency constraint will begin.

Adult Fish Passage Facilities

During the winter ladder outages, all above water maintenance was completed.

From January 4 to 27, the Washington shore ladder was out of service for winter maintenance. The ladder was dewatered to tailwater elevations. The diffuser grating was inspected by camera. Maintenance staff continued to seal ladder leaks. Pacific State Marine Fish Commission (PSMFC) employees removed, rehabilitated and reinstalled four passive integrated transponder (PIT) detectors. A rehabilitated tilting weir drive system was installed at exit weir 337.

From February 1 to 27, the Oregon shore ladder was out of service. The ladder was dewatered to tailwater elevation. Due to safety concerns, the 1000 cubic feet per second (cfs) auxiliary conduit intake valve was not closed this winter. The conduit discharge valves require rehabilitation before closures are feasible. Since the auxiliary conduit remained open during the outage, flows precluded diffuser grating examinations by a diver or with a video camera. Fish pump discharge sluicegates cannot be closed either due to possible hydraulic oil leaks. These gates also require rehabilitation.

At the Oregon ladder, new picketed leads were built and painted. A rehabilitated drive system was installed at exit weirs 337 and 338. PSMFC removed, rehabilitated and reinstalled one PIT detector. Rehabilitated floating orifice gates (FOGs) were installed at W1, W3 and W4. The FOGs at W43 and W44 were removed for rehabilitation. Bulkheads are installed at W14, W43 and W44. Fish pump maintenance was also completed.

The McNary fisheries biologist performed measured inspections of the adult fishways on March 1 and 3.

Fish Ladder Exits: Criteria at both exits are 1.0 to 1.3 feet for head over weir and 0.0 to 0.5 feet differential at the count stations. Both ladder exits met all criteria during measured inspections. Debris loads were minimal at both exits.

At the Washington exit, tilting weir 337 triggered an alarm and was subsequently reset on March 1. The tilting weir set point was adjusted on March 3.

At the Oregon exit, weir 338 was found straight up and out of sequence on March 1. Maintenance staff determined the weir was not responding to the program logic controller (PLC). An electrician immediately resolved the problem. The encoder at weir 334 failed on March 3. Again, an electrician resolved the issue. The ladder remained within criteria during each incident.

With the 1000 cfs auxiliary conduit open all winter, the Oregon exit traveling screens remained operational except during maintenance. The screen differentials were monitored once a week during the winter and into the 2016 fish passage season. No problems were found. The screens cycle time was set 6 times a day except during the ladder outage when the screens operated twice a day.

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, NFEW3 measured a depth of 7.9 feet on March 3. 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. All other inspection points met criteria.

Collection channel surface velocities averaged 2.2 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 winter maintenance outage was unaffected. The bypass has functioned satisfactorily when the ladder was in service.

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

As mentioned above, the juvenile facility remains out of service and is not supplying the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remains dewatered for winter maintenance. The system will be return to service in late March.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load expanded from minimal to heavy quantities over the winter. The debris consists mostly of woody material. A debris spill operation is scheduled for March 14.

Trash rack differential measurements continued twice a week during the winter maintenance season and into March. No high trash rack differentials were recorded. Per the Fish Passage Plan (FPP), four slots were cleaned on January 14. One ten-yard truck load of woody material was removed and no fish were observed. Trash racks will be cleaned the last week in March.

On February 14, a small amount of hydraulic fluid was removed from slot 9A with absorbent pads and booms. No other problems were observed in the gatewell slots this week.

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

VBS differential monitoring will resume with ESBS installation, 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. Overwinter and into March, the airline was bleed daily to remove moisture.

Maintenance has been completed on all screen cleaning brushes, channel lighting and dewatering valves. The transition area overflow screens were replaced. On March 1, the bulkhead hoist pendant was repaired.

Bypass Facility: The sample and PIT tag systems were maintained over the winter. The primary gate gasket was replaced and all valve operators were maintained. The separator was also repainted. Maintenance will continue into late March.

River Conditions

River conditions during the week are outlined in Table 1 below as provided by the McNary control room. The data period runs from 0000 to 2400 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit. Top spillway weir (TSW) hoist extensions were completed this winter.

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
185.4	157.6	0.0	0.0	42.0	42.0	6.0	5.8

Other

Inline Cooling Water Strainers: Cooling water strainer examinations results are outlined in Table 2 below. The next strainer examinations will take place on April 5.

Table 2. Cooling Water Strainer Inspection Results.

Date	Results
Jan 5	One live juvenile lamprey. Approximately 650 juvenile shad mortalities.
Feb 2	Approximately 150 juvenile shad mortalities.
Mar 1	69 juvenile lamprey mortalities. Several Stickleback mortalities.

Invasive Species: During winter maintenance, no invasive species were found. Zebra/Quagga mussel monitoring station examinations will begin in late March.

Avian Activity: Grebes, gulls, cormorants, mergansers, bald eagles and blue herons were observed over the winter. Bird numbers declined overtime to where only a few gulls and cormorants were observed this week. Zone counts will begin in April.

In February, the second bird water cannon (of two) for the bypass outfall was repaired, reinstalled and tested. This week, preparations to install two additional down facing sprinklers at the bypass outfall began. The deployment of bird distress calls will begin next week.

Research: University of Idaho researchers removed unneeded radio tracking equipment over the winter. This equipment was used to track adult lamprey and adult salmonid passage within the adult fishways. There is no on site research in progress at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: March 1 - 3, 2016

Turbine Operation

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

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on March 1, 2, and 3.

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. Adult fish counts ended for the season on October 31, 2015, so the south and north shore picketed leads were placed in their raised positions on November 2 and 5 respectively. Adult fish counts are expected to 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 7.4 and 7.3 feet caused by entrance gate calibration problems on March 1 and 2 respectively. 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 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 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 is scheduled to start 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
31.9	30.4	0	0	43	42	6.4	6.2

*Unit 1 scrollcase 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 1 - 3, 2016

Turbine Operation

All turbine units are being operated within the soft constraint 1% peak efficiency operational criteria. Unit 1 was removed from service on December 10, 2014 for rehabilitation with an estimated return to service date of January 12, 2017. Unit 2 was removed from service at 0734 hours on February 29 for the installation of data collection instrumentation and returned to service at 1559 hours on March 1.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 1, 2 and 3.

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 met depth criteria (criteria: ≥ 8' or on sill) on all inspections with the exception of March 2 when NSE1 and NSE2 readings were 4.0' and 4.3' respectively. The operator was notified. North shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of March 1 and 2, where readings were 0.0' and 0.9' respectively. The operator was notified.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections with the exception of March 2, when readings were 3.5' and 3.2' respectively. The operator was notified. While on sill, the gate depth readings were 7.5 and 7.7 feet. South powerhouse channel/tailwater head met in criteria (1'-2') on all inspections with the exception of March 1, when the reading was 0.3 feet. The operator was notified.

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 with the exception of March 1 with a reading of 0.1 feet. The operator was notified.

Auxiliary Water Supply System: AWS pump 1 was out of service throughout this report period. AWS pumps 2 and 3 returned to service at 1630 hours on March 1. AWS pump 2 went was taken out of service at 2210 hours on March 1 due to an overheating issue and was returned to service at 1245 hours on March 2.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 63 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 currently dewatered for winter maintenance. The primary bypass outfall water cannons are also 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: Transport is not occurring at this time.

River Conditions

Spill is not taking place at this time. 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 (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
39.1	34.7	0.0	0.0	45.1	44	3.2	3.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected March 1. In all, 9 live lamprey were recovered. Mortalities included approximately 195 juvenile lamprey, 2 Siberian prawns and 5 other species (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 1 - 3, 2016

Turbine Operation

All turbine units were available for service throughout this report period. 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 still does not work properly. This system will be in manual mode until the juvenile fishway system is "watered up". Adult fishway inspections were performed on March 2 and 3.

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 0.2 and 1.1 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.5 and 8.8 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 6.1 and 7.3 feet (criteria $\geq$7.0 ft. or on sill). NSE weir depths held steady at 6.5 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 2.0 and 2.7 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 waiting to be installed. Fish pump 2 encountered oil pressure and limit switch issues and is presently out of service. 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 80 to 100 square feet. Woody debris was observed in gatewells but is unable to be removed since the ESBSs are in their raised positions in the affected slots.

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

ESBS/VBS: ESBS screens are 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 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
40.4	32.1	0	0	43.3	42.9	3.7	3.5

*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 (Ammocoetes) were removed.

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

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert (JR) Horal
Dates: March 1 - 3, 2016

Turbine Operation

Units are being operated within the soft constraint 1% operational criteria.

Adult Fish Passage Facility

The fish ladder was "watered up" at 1436 hours on February 23. The automatic fish ladder control system was upgraded during the winter maintenance outage. Calibration of the control system was initiated following ladder waterd up. Ongoing adjustments to the control system are needed as the system readings do not correspond to the physical readings. Adult fish facilities were inspected by Corps biologists March 1, 2, and 3. Additional fish ladder inspections were performed as part of the control system calibration.

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 weir gate was in depth criteria (criteria ≥8' or on sill) on all inspections with the exception of a reading of 7.6 feet on March 3. SSE2 weir gate was in depth criteria on all inspections with the exception of a reading of 7.7 feet on March 3. South shore channel/tailwater head was in criteria (criteria 1'-2') on all inspections.

NPE1 weir gate was out of criteria (criteria ≥8' or on sill) on two inspections with depth readings of 6.4' and 7.6 feet on March 1and 3, respectively. NPE-2 weir gate was out of criteria (criteria ≥8' or on sill) on two inspection with depth reading of 6.2' and 7.6 feet on March 1 and 3, respectively. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 was in depth criteria (criteria ≥7' or on sill) on all inspections with the exception of a 6.9 feet reading on March 2. 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.

Velocity meters were installed in the collection channel as part of the fish ladder control system upgrade during the winter maintenance outage. Collection channel velocity was in criteria (criteria 1.5-4.0 fps) on all inspections.

Auxiliary Water Supply System: AWS pumps 2 and 3 were returned to service February 23. The fish ladder is in two pump operation with AWS pumps 2 and 3 being operated. The pump 1 return to service date is pending as bulkhead installation is will follow lower guide bearing repairs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: About 20 cubic yards of debris was removed from the forebay and trash racks of units 2, 3, 5, and 6. Units 2 and 3 trash racks were raked March 1 and trash racks in units 5 and 6 were raked March 2. The remaining trash racks will be cleaned March 5.

ESBSs/VBSs: ESBSs are scheduled to be installed in mid-March. Unit 5 VBSs were repaired in the January 20-26 timeframe followed by unit 2 VBS repairs from January 27 to February 1.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel is in winter maintenance mode.

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

Transport Summary: No fish transport is occurring at this time.

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^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
49.9	36.6	0.0	0.0	40.5	40.0	5.0	4.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Inline cooling water strainers were last inspected February 24. No live lamprey were recovered. Mortalities included 319 juvenile lamprey.

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

Adult Fish Trap Operations: Trap operation commenced at 1500 hours on March 3.

Fish Rescue Operation: No fish rescues occurred during this report period.

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