**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#44-2013**

**Project: McNary**
Biologists: Carl Dugger and Bobby Johnson
Dates: December 27 - 31, 2013

## Turbine Operation

McNary had 11 units available for power generation this week. On November 1, the soft one percent constraint began. This week, no units ran outside the criteria. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

| Units | Outage Dates | Outage Length | Reason |
|---|---|---|---|
| 4 | Jun 24, 2013 – Feb 13, 2014 | About 7.5 months. | Rewind contract. |
| 11 | Jun 28, 2013 – Mar 2, 2014 | About 8 months. | Rewind contract. |
| 3 | Jun 4, 2013 – Apr 4, 2014 | About 10 months. | Turbine thrust bearing issue. |

## Adult Fish Passage Facilities

On December 27, 28 and 30, the McNary fisheries staff performed measured inspections of the adult fishways. The project continues to prepare for the winter maintenance season.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria. The upper limits switches at the Washington exit weirs 334 and 335 remain out of service as did Oregon exit weir 340 (due to an encoder issue). Operators adjusted the Oregon exit regulating weir once. Traveling screen differentials were satisfactory and no problems were encountered. However, operators did reset the traveling screen alarms 7 times this week without incident.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. W2 is operating well with the temporary digital encoder. The LED remains unplugged. W3 continued to drift in and out of calibration. The weir cannot move as the failed encoder has yet to be replaced. The technical staff continues to work on the new control system. A slight amount of slack was also noted in the weir's south cable this week.

The Oregon ladder's north powerhouse entrances were out of criteria throughout the report period. NFEW2 and NFEW3 measured depths ranging from 7.5 to 7.7 feet. These readings may be partly due to the fact that the juvenile facility is not longer supplying water to the entrance. On December 28, the biologist noted the north and south tailwater sensors were off by 0.4 and 0.8 feet, respectively, which would also impact the readings. The technical staff continues to work on these problems and the control upgrades. All other inspection points were in criteria.

Surface Oregon ladder collection channel velocities averaged 1.4 feet per second.

Auxiliary Water Supply System: The Wasco County PUD turbine unit in the Washington ladder had no interruptions in service this week.

At the Oregon ladder, fish pumps 1 and 3 had no interruptions in service. Both pumps operated satisfactorily with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. Preparations for this work are in progress.

As mentioned above, the juvenile facility is no longer supplying the usual 450 cfs to the north powerhouse pool as this facility is out of service for winter maintenance.

## Juvenile Fish Passage Facility

The system is out of service for winter maintenance.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light, consisting mainly of woody material, tumbleweeds and milfoil. Trash rack differential measurements revealed no problems and no racks were cleaned. The differentials will be regularly checked during the winter season. A slight amount of fish screen oil was noted in 2 gatewell slots, all of which was removed with absorbent pads.

ESBSs/VBSs: All ESBSs are in their raised positions. Winter maintenance continues. VBS differential monitoring will resume next spring when the ESBSs are installed. VBS rehabilitations will continue during the winter outage season.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Orifices are closed and the channel is dewatered for the winter maintenance season. Water in the orifice air supply line continues to be a problem. Transition screen cleaning brush repairs continue.

Transportation Facility: Maintenance continued in the winterized facility as did work on the perforated plate in the porosity control unit. The actual perforated plate repairs or refurbishment will be contracted out this winter. This week, the fisheries staff rehabilitated the sample gates.

Transport Summary: Transport did not occur at McNary this year. After regional discussion, transport will no longer occur at McNary in the future.

## River Conditions

River conditions during the week are outlined in Table 2 as provided by the COE. Our data day runs from 0000 to 2400 hours.

Table 2. River conditions at McNary 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 |
| 123.1 | 105.2 | 0.0 | 0.0 | 41 | 41 | 6.0 | 6.0 |

## Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on January 7.

Invasive Species: During ladder and facility maintenance, surfaces will be examined for invasive species, especially when unwatered.

Avian Activity: Formal bird counts concluded on September 30. However, informal observations are being made during the course of other inspections. Forebay area observations included an occasional gull, grebe, blue heron or cormorant. Gulls are still being observed on the rocks by the Washington boat dock.

In the tailwater area, we noted gulls and cormorants and an occasional bald eagle. Most of the feeding birds were in powerhouse area. Roosting birds were seen on the navigation lock wing wall. Bird numbers may be declining with their seasonal movements and the reduction in juvenile shad out migration numbers.

We observed no birds by the outfalls. This is not surprising since the outfall is out of service for the winter. The clean up contract for the new outfall pipe has reached the 100 percent completion stage. This contract includes the installation of new piping and pump system for the bird hazing sprinkler system.

Research: An adult steelhead survival study may occur next spring.

**Project: Ice Harbor**
Biologist: Mark Plummer
Dates: December 27 - 31, 2013

## Turbine Operation

Main turbine units 1, 3, and 4 were available for operation. Turbine unit 2 went out of service December 26, due to failure of the vacuum breaker. Turbine unit 5 went out of service December 20 and remains out of service for a governor installation. Turbine unit 6 remained out of service for blade and cavitation repair.

## Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways December 27 and 30.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria. The south fish ladder fish pumps are scheduled to be shut down January 2, 2014. The south fish ladder is to be unwatered to tailwater elevation on January 6, 2014.

Fishway Entrances and Collection Channel: All fishway entrances were within criteria. Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tail water differentials were in criteria. Channel/tail water differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated without problems. Six of 8 south fish pumps were operated without problems. All fish pumps are available for operation.

## Juvenile Fish Passage Facility

Fore bay Debris/Gate well Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are raised for winter maintenance.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass was unwatered December 23.

Juvenile Bypass Facility: Unwatered.

Fish Sampling: The first sample took place April 8 and the last sample was performed July 15.

Removable Spillway Weir: The RSW is not in operation. Spill for fish began April 3, 2013 and ended August 31, 2013 at 2359 hours.

## River Conditions

River conditions during the week are outlined in Table 1.

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 |
| 22.3 | 17.7 | 0.0 | 0.0 | 40 | 40 | 9.5 | 9.5 |

*Unit 1 scrollcase temperature.

## Other

Inline Cooling Water Strainers: No lamprey were found during the December 17 (units 2, 3 and 6) and 18 (units 1, 4 and 5) inspections; however there were several juvenile shad mortalities recovered.

Invasive Species: No new invasive species were detected this week.

Avian Activity: The fish facility is conducting bird observations when possible.

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

**Project: Lower Monumental**
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: December 27 - 31, 2013

## Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Unit 5 was removed from service at 1300 hours on October 29 for annual maintenance.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 30 and 31.

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. North shore picketed leads were raised on November 14.

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 sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.2 and 7.5 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 1 and 3 were operated throughout this period. Two pump operations will continue until bearing repair and shaft alignment work is completed on pump 2.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 175.0 square yards of forebay debris observed during this period. No oil was observed in gatewells.

STSs/VBSs: STSs were raised for winter maintenance on December 16 and 17.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was dewatered for winter maintenance on December 17. The primary bypass outfall avian deterrent water cannons were dewatered on December 17.

Collection Facility: The facility is in winter maintenance mode.

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

## River Conditions

River conditions during the week are outlined in Table 1.

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 |
| 23.0 | 17.2 | 0.0 | 0.0 | 37.0 | 37.0 | 5.0+ | 5.0+ |

*Scrollcase temperatures.

## Other

Spill for fish passage ended at 0000 hours on September 1. The RSW was lowered on December 30 in preparation for sill plate repair.

Inline Cooling Water Strainers: Cooling water strainers were inspected on December 9. No live lamprey was recovered. Mortalities included about 165 juvenile shad and 4 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on December 2.

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: George Melanson
Dates: December 27 - 31, 2013

## Turbine Operation

Turbine units 3 through 6 were available during this report period. Turbine unit 1 was removed from service for scheduled annual maintenance on December 2. Turbine unit 2 was removed from service for scheduled exciter replacement on November 25. The soft 1% peak efficiency constraint criterion is in effect.

## Adult Fish Passage Facility

An adult fishway inspection was performed on December 31.

Fish Ladder: The ladder exit head differentials measured 0.2 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs measured 1.1 feet (criteria 1.0-1.3 ft.) The picketed leads were removed from the ladder on December 16. 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 1.4 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths measured 8.3 feet (criteria $\geq$8.0 ft). NPE weirs depths measured 7.0 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths measured 6.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured 1.9 fps near the junction pool and 2.3 fps near the north shore entrance (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on December 30, using the hydrologic current meter. The velocity averaged 4.0 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Up to an estimated 2000 square feet of woody surface debris was observed inside the trash-shear boom.

Spillway Weir: The spillway weir was removed from service on August 1. Spill for summer fish season ended on September 1.

ESBS/VBS: ESBS screens are raised and removed from service.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system was dewatered and removed from service on December 17.

Transportation Facility: Seasonal maintenance work at the facility is in progress.

Transport Summary: Fish transport ended on October 31.

## 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 |
| 21.5 | 17.3 | 0.0 | 0.0 | 37.1 | 36.5 | 6.0+ | 6.0+ |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on December 24. Three juvenile lamprey (macrothalmia) mortalities were removed; 2 from unit 5 and 1 from unit 6.

Invasive Species: The zebra mussel substrate monitor was inspected on December 26; no mussels were observed. Inspection for zebra mussels will resume in April 2014.

Avian Activity: Bird counting has ended for the season.

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

**Project: Lower Granite**
Biologists: Mike Halter and Ches Brooks
Dates: December 27 - 31, 2013

## Turbine Operation

Lower Granite had turbine units 1, 3, 4 and 5 available for power generation at the beginning of the report period. Turbine unit 6 remained out of service for cavitation repair, followed by annual maintenance. The expected return to service date is January 5, 2014. Turbine unit 2 was returned to standby condition at 1509 hours on December 30, following a 6 year overhaul. The turbine units are being operated in soft constraint of the 1% operation criteria.

## Adult Fish Passage Facility

On December 28, 30, and 31, COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all adult fishway entrances during the weekly inspections.

Weir depths at the south shore and north powerhouse fishway entrances were also within criteria on all inspections this week. Weir depths at the north shore entrances ranged from 5.0 to 6.9 feet on inspections this week (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.97 to 1.16 feet per second and averaged 1.03 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. On October 31, fish pump one's speed was changed from slow to fast which helped head differential readings at the fishway entrances. Fish pump 2 is in standby.

## Juvenile Fish Passage Facility

Juvenile fish collection and transportation operations ended at 0700 hours on October 31. The juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season on December 5-6. This was done earlier than usual due to very cold temperatures and the possibility of frost damage.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: ESBS/VBS inspections have concluded for the year. Due to very cold weather conditions, removal of the ESBSs began on December 4 and concluded the next day.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel has been unwatered for the year.

Transportation Facility: On December 5 and 6, the juvenile fish collection gallery and collection/transportation facility were dewatered for the winter season. Winter maintenance continues.

Transport Summary: Nothing to report. Fish trucking operations concluded on October 31 and the semi tractor has been returned to the McNary Project.

Removable Spillway Weir: The RSW was operated in support of general spill operations during the season. Mandatory spill operations in support of fish passage ended on September 1.

## River Conditions

River conditions during the week are outlined in Table 1.

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 |
| 22.0 | 17.7 | 0.0 | 0.0 | 41.5 | 40.9 | 5.0 | 5.0 |

*Scrollcase temperature.

## Other

Visual counts in the adult fish ladder counting room between the hours of 0400 and 2000 began on April 1 and concluded on October 31. Video counts during the same hours began on November 1 and continued through December 31.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on December 18. A total of 52 lamprey were found in the strainers over a combined run time of 793.7 unit hours. The next cooling water strainer inspections are scheduled for January 2014.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on the December 6 inspection. No evidence of zebra mussels was found.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30.

Adult Fish Trap Operations: The adult fish trap was completely dewatered for the season at 0800 hours on November 25 and all related trap operations and research are over for the season.