U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#43-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: December 20 - 26, 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 – Feb 13, 2014	About seven and a half months.	Rewind contract.
11	Jun 28 – Mar 2, 2014	About eight months.	Rewind contract.
3	Jun 4 – Apr 4, 2014	About ten months.	Turbine thrust bearing.
10	Dec 23	Two hours.	3 D cam repair.
1	Dec 26	48 minutes.	Speed adjustment.

Adult Fish Passage Facilities

On December 20, 22 and 23, the McNary fisheries staff performed measured inspections of the adult fishways. The project continues to prepare for the winter maintenance season.

Fish Ladder Exit: During the inspections, both ladder exits met all Fish Passage Plan criteria except on December 20, when the Oregon ladder's head over weir measured 1.4 feet. At the Oregon exit, weir 340 remains in manual mode due to encoder issues. Traveling screen differentials were satisfactory and no problems were observed. However, operators did reset two screen alarms without incident this week. The upper limit switches at the Washington exit weirs 334 and 335 remain out of service. Some tumbleweeds have collected on the picketed lead supports, but this is not a significant passage issue.

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 drifted in and out of calibration this week as the weir cannot move until the failed encoder is replaced. The installation of a new control system is in progress. A slight amount of slack continues to be observed in the W3 weir south cable. All week, the Oregon ladder north powerhouse entrances were out of criteria. NFEW2 and NFEW3 measured depths of 7.5 and 7.6 feet. Since the technical staff has calibrated all the sensors and entrance weirs, this could be due to the fact that the juvenile facility is not longer supplying water to the north

powerhouse entrance. All other inspection points were in criteria. Surface Oregon ladder collection channel velocities averaged 1.3 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 pump 1 was out of service on December 24, from 1759 to 1810 hours, due to a grease pump issue. When operational, pumps 1 and 3 ran 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 to consisting mainly of woody material and milfoil. Changes in wind direction continued to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. The differentials will be checked regularly during the winter season. We noted no problems in the gatewell slots.

ESBSs/VBSs: All ESBSs are in their raised positions. Maintenance is now in progress. VBS differential monitoring will resume next spring when ESBSs are installed. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: All 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. Repairs on the transition screen area cleaning brush began this week.

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.

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
126.4	102.8	0.0	0.0	41	41	6.0	6.0

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur in early January.

Invasive Species: Zebra mussel station examinations took place on December 22. No invasive mussels were observed.

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 group of gulls or a single gull, merganser or cormorant. Gulls are still being observed on the rocks by the Washington boat dock.

In the tailwater area, we noted gulls and cormorants. Most of the feeding birds were in powerhouse area. The roosting birds were on the navigation lock wing wall or in the spill basin. Bird numbers maybe declining with their seasonal movements and juvenile shad out migration declines. Occasionally, we observed a great blue heron or a few grebes in the spill basin. 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 is at the 60 percent stage. This contract includes the installation of new piping and pump system for the bird hazing sprinkler system.

Research: A dive is being planned to remove transducers from the trash racks. These transducers were utilized in support of last season's fish passage research. Planning is also in progress for an adult steelhead survival study to take place next spring.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: December 20 - 26, 2013

Turbine Operation

Main turbine units 1, 2, 3, 4, and 5 were available for operation. Turbine unit 4 returned to service from governor installation December 20 at 1253 hours. Turbine unit 2 went out of service December 26 due to failure of the vacuum breaker. Turbine unit 6 remained out of service for blade repair.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways on December 23, 24, and 26.

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.

Fishway Entrances and Collection Channel: All fishway entrances were within criteria. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tail water differentials were in criteria, except on December 26. On this inspection, the north channel/tailwater differential was at 3.0 feet. All south adult collection channel velocities 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 are available for operation.

Juvenile Fish Passage Facility

Forebay 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 un-watered 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
22.1	16.8	0.0	0.0	40	39	9.5	9.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: No lamprey were found during the December inspection, however there were several juvenile shad mortalities.

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.

Fish Salvage: Seventy-nine adult salmonids (33 unclipped steelhead, 44 clipped steelhead, and 2 unclipped Chinook) were removed from the juvenile fish collection channel December 22 when the channel was un-watered. In addition, there were 3 juvenile shad mortalities found on the inclined dewatering screen. All fish were released downstream of Ice Harbor Dam at Hood Park. No other mortalities were observed.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: December 20 - 26, 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 24 and 26.

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 7.2 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 the 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.

Transportation 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
22.3	17.7	0.0	0.0	37.5	37.5	5.0+	5.0+

*Scrollcase temperatures.

Other

Spill for fish passage ended at 0000 hours on September 1.

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 20 - 26, 2013

Turbine Operation

Turbine units 3 through 6 were available for most of 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 criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 23, 24 and 26.

Fish Ladder: The ladder exit head differentials held relatively steady at 0.1 to 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 1.5 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths held steady at 8.3 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 6.7 and 7.3 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.6 and 7.1 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities measured near the junction pool ranged between 1.8 and 1.9 fps and 1.9 to 2.4 fps near the north shore entrance (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on November 13, using the hydrologic current meter. The velocity averaged 2.8 fps with 3 fish pumps operating with all weirs in their 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. Gatewells for the most part, remained clear of debris.

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
22.3	16.9	0	0	37.2	36.5	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on December 24. A total of 3 juvenile lamprey (Macrothalmia) mortalities were removed, two from unit 5 and one from unit 6.

Invasive Species: The zebra mussel substrate monitor was inspected on December 26; no mussels were observed. Inspections 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 20 - 26, 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 3 was forced out of service at 2059 hours on December 21 because of governor trouble. This turbine unit was returned to service at 0711 hours on December 23. 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 remained out of service for a six year overhaul. The planned return to service date is now December 29, 2013. The turbine units are being operated in soft constraint of the 1% operation criteria.

Adult Fish Passage Facility

On December 20, 21, and 23 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 7.1 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 0.92 to 1.15 feet per second and averaged 1.04 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 status.

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 and 6. This was done earlier than usual due to very cold temperatures and the possibility of freeze 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, ESBSs removals began on December 4 and were finished the next day.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel has been dewatered 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 new 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
22.2	17.4	0.0	0.0	41.5	40.0	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 will continue 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.

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 Fishtrap Operations: The adult fish trap was completely dewatered for the season at 0800 hours on November 25 and all related trap operations and research have concluded for the season.