U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#40-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: November 29 – December 5, 2013

Turbine Operation

McNary had 11 units available for power generation this week. Unit 13 was available but in standby status due to a BPA transmission line load restriction. On November 1, the soft one percent constraint began. Units ran outside the criterion on December 3 to 5. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
4	Jun 24 – Jan 30, 2014	About 7 months.	Rewind contract.
11	Jun 28 – Jan 30, 2014	About 7 months.	Rewind contract.
3	Jun 4 – Feb 4, 2014	About 8 months.	Turbine thrust bearing issue.
13	Dec 2 – 12	About 10 days.	BPA line restriction.
1, 8 & 10	Dec 3	74 minutes.	ESBS camera inspections.
6	Dec 4	6.3 hours.	Hub tapped.
5, 6, 7 & 8	Dec 4	1.6 hours.	Units in and out of service for unit 8 black start test.
10	Dec 5	8 hours.	ESBS replaced 10A slot.

Adult Fish Passage Facilities

On November 29, December 1 and 3, the McNary fisheries staff performed measured inspections of the adult fishways. The project continues to prepare for the winter maintenance season.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria during the inspections.

Multiple alarms occurred at the Washington exit on December 1, as the upper limit switches on weirs 334, 335 and 336 had failed. The operators adjusted the weirs and set points so that the exit would remain in criteria until the limit switches can be replaced.

At the Oregon exit, due to encoder issues, weir 340 remains in manual mode. Our differential monitoring of the traveling screens revealed no problems. However, multiple traveling screen alarms occurred, which the operators reset without incident. The mechanics performed scheduled maintenance on the traveling screens this week.

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 is still experiencing calibration drifts. Also, this week, the biologist noted that W3 had not moved since November 10. The technical staff found that the encoder had failed although the weir remained in criteria. They have begun to lay new conduit to permit installation of a new control system in the near future.

At the Oregon ladder entrances, all points were in criteria even though the juvenile bypass system is no longer supplements water into the ladder. We have noted SFEW2 drifting out of calibration at times. Collection channel surface velocity readings averaged 1.7 feet per second.

Auxiliary Water Supply System: The Wasco County PUD turbine in the Washington ladder had no interruptions in service this week. Fish pumps in the Oregon ladder had one interruption in service during the same report period. From December 5, at 1530 hours to December 6, at 0730 hours, pump 1 was out of service due to a grease pump failure. The pump cooling water strainer was found obstructed and cleaned during the outage. When operational, fish pumps 1 and 3 operated with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. Preparation for this work is in progress.

Since the juvenile facility is in the emergency bypass configuration, it is no longer supplying the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remained in primary bypass until November 27 when the fisheries staff switched to emergency bypass operations due to issues with the side screen cleaning device. Maintenance and winterization continued.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light to very light consisting mainly of woody material and milfoil. Changes in wind direction continue to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. We noted no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all units except at unit 11. The screens stored at units 3 and 11 will be used as spares. The ESBSs in slots 2A, 3A, 7B, 8C, 10C, 13A and 14B remain in timer mode. On December 3, camera inspections at units 1, 8 and 10 revealed no problems. Since ESBS removals will begin December 16, this is the last inspection of the year. On December 5, the ESBS in slot 10A failed. This screen was replaced with a screen taken from slot 3C. On December 6, at 1950 hours, operators found this screen in manual mode and switched it to automatic operation.

VBS differential monitoring efforts revealed 1 screen out of criteria. This reading was taken with the unit running at 76 megawatts. On December 5, the project cleaned this screen. We saw no ESA listed species or lamprey during the cleaning. Since units 3 and 11 are out of service, slot 3C and slots associated with unit 11 are being used to cycle in rehabilitated VBSs. On

December 4, the project staff brought up enough VBS sections to change out 2 screens. On December 6, the maintenance crew will replace the VBS in slot 6B.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices opened with no problems to report. Again this winter, water is condensing in the orifice air supply line. The fisheries staff is bleeding the water off daily. Fish facility staff finalized winterization of the collection channel with the system configuration change into emergency bypass mode. Due to severe weather, only light maintenance has begun.

Transportation Facility: Since the facility has been winterized, maintenance will expand. However, severe winter weather limited our outside work this week. We were able to complete rehabilitation of the PIT tag slide gates. Inside activities included painting and wall repairs. The HVAC system in the facility continues to be a major problem, especially, during severe weather.

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 provide by the COE. Our data day runs from 0000 hours 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
137.1	99.4	0.0	0.0	47	46	6.0	6.0

Other

Inline Cooling Water Strainers: The cooling water strainer examinations took place December 3. Only 1 juvenile lamprey mortality was recovered from unit 6.

Invasive Species: The next zebra mussel station examinations will occur in late December.

Avian Activity: On September 30, bird counts concluded. While doing other inspections, we conducted casual bird observations. In the forebay area, we observed an occasional group of gulls or a single gull, a small group of grebes, a blue heron, a merganser or a cormorant. We continued to observe gulls on the rocks by the Washington boat dock. In the tailwater area, we noted gulls, mergansers 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 fluctuating with their seasonal movements and juvenile shad out migration. We observed an occasional gull by the emergency bypass outfall. The 3 gull distress calls remain deployed.

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

Project: Ice Harbor
Biologist: Mark Plummer
Dates: November 29 – December 5, 2013

Turbine Operation

Main turbine units 1, 2, 3, and 5 were available for operation. Turbine unit 4 remains out of service for governor installation. Turbine unit 6 remained out of service for blade repair.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways December 2, 3, and 4.

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: Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria. All channel/tail water differentials were in criteria. The 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

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

STSs/VBSs: STSs are in cycle run mode operation. The STS/VBS inspection were performed November 18 and 19. No problems to report.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices.

Juvenile Bypass Facility: No problems to report.

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 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
35.7	14.3	0.0	0.0	48	45	8.5	8.3

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers in units 1 – 5 were inspected on November 18. Unit 6 was not inspected as it remains out of service. No lamprey were seen or recovered during these inspections.

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

Avian Activity: The fish facility is conducting bird observations when possible. Observable predation has increased as juvenile shad are passing the Dam.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: November 29 – December 5, 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. Unit 6 was removed from service at 2310 hours on December 3 due to brake failure. Following brake replacement, unit 6 was returned to service at 1650 hours on December 4.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on December 2, 4, and 5.

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 except the south shore weir on December 4 (0.9'). 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 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. NSE2 was in criteria on December 2, but out of criteria on December 4 and 5 with gate depth readings of 7.9' and 7.8 feet. Technicians checked NSE2 calibration, found it off by 1.28 feet and requested that the operator put in a trouble report (TR). 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 7.8', 7.8', and 7.3 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. SSE 2 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 in December.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 67.3 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-20% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle run mode.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 18 orifices open.

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
33.8	13.4	0.0	0.0	45.0	43.5	5.0	4.8

*Scrollcase temperatures.

Other

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

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 5. No live lamprey was recovered. Recovered mortalities included about 220 juvenile shad and 19 Siberian prawns.

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

Avian Activity: Bird hazing has ceased for the season.

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

Project: Little Goose
Biologists: George Melanson
Dates: November 29 – December 5, 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. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

Adult fishway inspections were performed on December 2 and 4.

Fish Ladder: The ladder exit head differentials held relatively steady at 0.1 to 0.2 feet (criteria ≤ 0.5 ft.). Water depths over the weirs measured 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (criteria ≤ 0.3 ft.). No debris was observed at the picketed leads or at the ladder exit. 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 1.2 and 1.9 feet (criteria 1.0 to 2.0 ft.). SSE weir depths held steady at 8.3 feet (criteria ≥8.0 ft). NPE weirs ranged between 7.0 and 7.3 feet (criteria ≥7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths measured 7.0 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocities measured near the junction pool ranged between 1.8 and 2.2 fps (criteria ≥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 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: An estimated 500 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 passage season ended on September 1.

ESBS/VBS: All ESBSs operated within criteria this report period. ESBSs were tested for proper operation on November 18. All operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 18 open orifices.

Transportation Facility: The facility was switched to primary by-pass on October 31 at 0700 hours. All fish are being routed to the tailrace mid-channel area. 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
32.5	13.5	0	0	44.9	43.8	6.0+	6.0+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on December 2. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on November 21; no mussels were observed. The next inspection is scheduled for December 20.

Avian Activity: A maximum of 75 gulls and 11 cormorants were counted during bird surveys.

Research: No research is in progress at this time.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: November 29 – December 5, 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 remained out of service for a six year overhaul. The planned return to service date is December 16, 2013.

Adult Fish Passage Facility

On November 30, and December 1 and 3, 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 the south shore fishway entrances during the weekly inspections. Head differential readings at the north powerhouse entrances were within criteria on the November 30 inspections but slightly below criteria on the December 1 and 3 inspections with a reading of 0.9 feet on both dates (criterion 1.0 – 2.0 feet). Head differential readings at the north shore entrances were also within criteria on the November 30 inspection but out of criteria on the December 1 and 3 inspections with respective readings of 0.8 and 0.6 feet (criterion 1.0 – 2.0 feet).

Weir depths at the south shore fishway entrances and north powerhouse fishway entrances were within criteria on all 3 inspections this week. Weir depths at the north shore entrances ranged from 4.9 to 7.1 feet (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 attempts 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 1.14 feet per second and averaged 1.05 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 system was switched to secondary bypass (all juvenile fish routed out the pipe to mid-river release) this provides continued PIT-tag interrogation. Due to very cold weather conditions, the powerhouse mechanical crew began pulling fish screens on December 4. The plan is to dewater the fish facility on the morning of December 6 as soon as the last of the fish screens are pulled.

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.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage. Debris levels were relatively light this week.

Transportation Facility: The JFF operated smoothly during the week. The separator remained watered up to bypass fallback adult salmonids and enumerate PIT-tagged juvenile fish (Lower Granite does not have PIT-tag detection on the primary bypass pipe and the separator has to remain operational to track PIT-tags). Separator personnel also continued to monitor adult fallback salmonids for condition factors. There were no operational problems of any kind. The facility will be dewatered for the season as soon as the last of the fish screens are raised.

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
34.6	15.0	0.0	0.0	46.5	44.0	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 inspected for lamprey on November 25. No lamprey were found in the strainers over a combined run time of 1,075.9 unit hours. The next cooling water strainer inspections are scheduled for late December.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on November 1. No evidence of zebra mussels was found. The next inspection will take place in early December.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30. The project continues to make daily counts of avian predators from the separator platform.

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 are over for the season.

Research: No research is in progress at this time.

Fish Salvage Opertion: Lower Granite Fish Facility personnel led a fish rescue operation on December 2 in the draft tube of turbine unit 2 at Dworshak Dam. By mid afternoon the draft tube was successfully dewatered. Lower Granite personnel (and a member of the Dworshak mechanical crew) entered the draft tube and after a thorough inspection the draft tube was deemed clear of fish.