U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#32-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: October 4 - 10, 2013

Turbine Operation

McNary had 10 units available for power generation this week. On April 1, the hard constraint one percent criteria began and no units ran outside the criterion this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
4	Jun 24 – Jan 30, 2014	About seven months.	Rewind contract.
11	Jun 28 – Jan 30, 2014	About seven months.	Rewind contract.
3	Jun 4 – Feb 4, 2014	About eight months.	Turbine bearing issue.
13	Oct 5	7.5 hours.	ESBS power supply failed.
1	Oct 6	24 minutes.	ESBS camera inspections.
2	Oct 8 – 9	24 hours.	ESBS replaced at 2A slot.

Adult Fish Passage Facilities

On October 4, 6 and 9, the McNary fisheries biologists performed measured inspections of the adult fishways. Visual fish counts continued. Since the juvenile facility is in primary bypass, the fisheries staff helped to monitor the picketed leads. On October 6, prior to the ladder inspection, a technician measured a 0.9' differential at the Washington count station. Since maintenance personnel were unavailable due to the government shutdown, the biologist and technician immediately cleaned the picketed leads at the ladder exits.

Fish Ladder Exits: Project personnel cleaned the picketed leads at the exits regularly. Eurasian milfoil continues to be a problem though the quantity is decreasing.

Both ladders met all Fish Passage Plan criteria during inspections, except as stated here. On October 4, the Washington ladder's head over weir measured 0.9 feet. Earlier in the morning, there was a low water alarm which the operators reset. This may explain the above result. The next day, the exit weirs again triggered alarms and were reset. Finally, the operators adjusted the exit's set points.

On October 6, at the Oregon exit, the head over weir measured 1.4 feet. To resolve the problem, the operators made a set point adjustment. Due to encoder issues, weir 340 remains in manual mode. Our differential monitoring of the traveling screens revealed no problems.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. W2 is operating well with the digital encoder. The LED remains unplugged. W3 is still occasionally experiencing calibration drifts.

At the Oregon ladder entrances, all points were in criteria. At south powerhouse entrance, SFEW2 is occasionally experiencing calibration drifts. Oregon ladder collection channel velocities averaged 1.5 feet per second from surface readings.

Auxiliary Water Supply System: The Wasco county PUD in the Washington ladder had no interruptions in service.

For the Oregon ladder, the fish pumps had two interruptions. On October 4, pump 1 was out of service for 24 minutes due to a grease pump failure. Later in the day, pumps 1 and 3 were out of service for 29 minutes due to a bus switch. Otherwise, pumps operated satisfactorily with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract.

The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. The facility will remain watered up to avoid freeze breakage. Light maintenance and partial winterization has begun. The juvenile channel continued to be monitored 24 hours per day, 7 days per week by the fisheries staff.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light consisting of Eurasian milfoil and wood. Milfoil levels continue to decline. Changes in wind and project operations 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 in unit 11. The screens in slots 2A, 3A, 7B, 8C and 10C remain in timer mode. On October 5, the power supply associated with screens in unit 13 failed. The biologist found the controller had tripped a breaker. After repairs and calibration, the electrician switched the screen in slot 13A to timer mode.

On October 8, camera inspections at units 1, 2 and 5 revealed 2 problems. The screen in slot 2B required calibration, which the operators did. The brush bar set approximately two feet lower than it should have been. In slot 2A, the screen's brush bar could not be found. After examination, power house crews determined the screen would have to be replaced. Project personnel replaced this screen with a spare taken from unit 11 the next day. This ESBS was

found in satisfactory condition during a video camera inspection on Sept 8. The electricians also set the replacement screen on timer mode. Screen inspections at units 2 and 5 were conducted when these units were in standby mode.

VBS differential monitoring revealed no screens out of criteria. On October 10, as preventative measure, the project cleaned 5 screens. One smolt mortality was found during VBS cleanings.

Since the associated turbine units are out of service, slots 3C slot and slots associated with unit 11 are being used to store and cycle in rehabilitated VBSs. Next week, the project will replace the screen in slot 6B, which is next in the rotation.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 40 orifices open and observed no problems. On September 30, we went to 40 orifices (from 42) by closing 2 orifices at unit 4, which is out of service. This reduced the opening of the side dewatering valves, which in turn will reduce the likelihood of the side screen becoming obstructed with debris. Since technicians are monitoring the collection channel around the clock, orifice adjustments can be made as required at unit 4.

On October 8, a technician observed the side screen cleaning device rise about one quarter inch and stall for about one second. The device was traveling downstream as it was cleaning the screen. We assume debris was responsible for this observation.

All systems operated well in automatic mode and there are no further problems to report. The fisheries mechanics made adjustments to some of the orifice operators and the staff monitored the channel during VBS cleaning.

Transportation Facility: With fall primary bypass season, we have all systems removed from service. PIT tag detection will only occur in the full flow pipe. Light maintenance has begun and the facility will remain watered to avoid freeze breakage.

This week, the fisheries mechanics completed rehabilitation of the gatewell trap.

Transport Summary: Last week's report stated that "transport did not occur at McNary this year and is not likely to resume in the near future". The report should have stated: "transport will no longer occur at McNary in the future". This status has not changed.

River Conditions

River conditions during the week are outlined in Table 2 as provide 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
114.0	78.3	0.0	0.0	65	61	6.0	6.0

Other

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

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

Avian Activity: On September 30, formal bird counts concluded. Casual observations continued, especially while conducting other inspections. In the forebay area, we observed an occasional group of gulls or grebes. Also, we noted cormorants. On the rocks by the Washington boat dock, we observed cormorants and gulls. We noted no grebes elsewhere on project.

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. Bird numbers maybe fluctuating with their seasonal movements and juvenile shad out migration.

We observed an occasional gull, merganser or cormorant by the bypass outfall.

The hazing sprinkler system remains out of service. A new system will be installed this fall. The 3 gull distress calls remain deployed.

Research: Preparations for the direct adult steelhead survival study at the turbine intake and TSW continue.

Project: Ice Harbor
Biologist: Mark Plummer
Biological Technician: Donald Dennis
Dates: October 4 - 10, 2013

Turbine Operation

Main turbine units 1, 2, 3, 4, and 5 were available for operation. Turbine unit 3 was out of service October 5 from 1335 hours to 0555 hours. Turbine unit 6 remained out of service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways October 3, 7, and 9.

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: The center fish way weir 2 remains out of service. Currently, center fish way weir 1 is being operated. Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria on sill or greater than 8 feet of depth. 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 are available for operation.

Juvenile Fish Passage Facility

Fore bay Debris/Gate well Debris/Oil: A small sheen of oil was found in Turbine unit 2 bulkhead slot C. A valve on the head gate hydraulic line was leaking. Maintenance tightened the packing on the valve to stop the leak. Oil absorbent booms and pads were placed in the gate well to pick up the sheen. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in cycle run mode operation. STS/VBS inspections were performed September 23 and 25. No problems to report. Turbine strainer inspections were done at this time, results are listed below. October inspections are scheduled for 21 and 23.

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 completed 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.

Fish Sampling: Juvenile fish sampling concluded July 15.

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
31.3	19.1	0.0	0.0	62	62	7.4	7.3

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on September 23 (units 1, 2, 3 & 6) and September 25 (units 4 and 5). 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 decreased as juvenile fish numbers decline.

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: October 4 - 10, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 2 was taken out of service for annual maintenance at 0800 hours on September 9 and remains out of service. Units were rotated out of service for STS inspection on October 8 and 9.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on October 4, 5, 7, 9, and October 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 NSE 2 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.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 6.9', 71', 7.5', 6.8, 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. While on sill the gate depth readings were 7.9 feet. 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, approximately October 17.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 62.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-25% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS's are operating in cycle run mode. STSs were inspected on October 8 and 9. All screens passed inspection.

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
31.2	19.0	0.0	0.0	63.5	61.1	4.9	3.6

*Scrollcase temperatures.

Other

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

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 7. No live lamprey was recovered. Seven live Siberian prawns were recovered. Mortalities included 33 juvenile shad, 2 juvenile suckers, and 31 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on October 7.

Avian Activity: Bird hazing has ceased for the season.

Research: Turbine units 5 and 6 were taken out of service from 0900 to 1505 hours on October 1 to facilitate Battelle's removal of cluster (antenna) arrays.

Project: Little Goose
Biologist: Richard Weis
Dates: October 4 - 10, 2013

Turbine Operation

Turbine units 2, 3, 4, 5 and 6 were available for most of this report period. Turbine unit 1 was removed from service for scheduled exciter replacement on October 1. Unit 4 was placed out of service on October 7 for annual inspection and maintenance. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway on October 6, 8 and 10.

Fish Ladder: The ladder exit head differentials remained steady at 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs remained steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or 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 1.4 and 2.0 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 8.0 and 8.4 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 7.0 and 7.4 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 7.0 and 7.2 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities ranged between 1.7 and 2.3 (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on September 10 using the Rickly Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity average was 3.2 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria ranging between 73 and 75 rpm.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. 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: All ESBS operated within criteria this report period. ESBS screens were tested for proper operation on September 15. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 20 open orifices.

Transportation Facility: The facility continued collection for transport. Daily fish collection for the week ranged between 264 and 487 and totaled 2,514. The descaling and mortality rate was 3.7% and 1.5% respectively. Nine juvenile Chinook were bypassed this report period with severe columnaris infection. No problems with the facility were encountered.

Transport Summary: Every other day trucking continues. Fish continued to be transported below Bonneville Dam to the Smolt Monitoring Facility and released to the river via the outfall flume. A total of 2,105 fish were transported. All loading and transport operations were completed satisfactorily.

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
29.4	26.2	0	0	63.5	61.8	6.0+	5.7

*Ladder temperature.

Other

Inline Cooling Water Strainers Cooling water strainers on all units were checked on October 9. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on September 23. No mussels were observed. The next inspection is scheduled for October 23.

Avian Activity: Maximum bird counted from single survey included 55 cormorants, 10 Grebes and 41 gulls.

Research: UC Davis is performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho is performing Adult Salmon Passage Studies using radio telemetry.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: October 4 - 10, 2013

Turbine Operation

Lower Granite had turbine units 1, 2, 3, 4 and 5 available for power generation at the beginning of the report period. Turbine unit 6 was removed from service on June 24 for cavitation repair, followed by annual maintenance. The expected return to service date is December 31. Turbine unit 5 was removed from service on October 7 at 0711 hours for annual maintenance. The expected return to service date is November 1. As scheduled, turbine unit 2 was out of service on October 8 from 0633 until 1511 hours for PMG (permanent magnetic generator) testing.

Special unit operations to improve adult passage continued through most of the report week, with the project directed on October 2 at 1512 hours to operate unit priority as follows: 1, 2, 3, and then 4 – 6 in any order thru October 9. The purpose of that operation was to operate turbine unit #1 as the priority unit continuously during all hours with minimal starts and stops – in order to provide improved ladder attraction flow. On October 9 at 1700 hours the project ended special unit operations and resumed operating units in the priority order defined in the 2013 FPP table LWG-4, as follows: 2, 3, then 4-6 any order, and then 1.

Adult Fish Passage Facility

On October 4 – 7 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 and north powerhouse fishway entrances during the weekly inspections. The head differential reading at the north shore fishway entrances was out of criteria on the October 7 inspection with a reading of 0.8 feet (criterion 1.0' – 2.0').

Weir depths at the south shore fishway entrances met criteria during all weekly inspections with depths ranging from 8.0 to 8.2 feet (criterion $\geq$ 8.0 feet). Weir depths at the north powerhouse fishway entrances also met criteria during all weekly inspections with depths ranging from 8.1 to 8.2 feet (criterion $\geq$ 8.0 feet). Weir depths at the north shore entrances ranged from 4.7 to 7.0 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 order to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.85 to 1.00 feet per second and averaged 0.92 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. The replacement coil and circuit board for fish pump 2's starter arrived this week. In order to test the operation of this fish pump with the new parts it was necessary to lift the pump's associated bulkheads. The successful test was accomplished starting at 1400 hours on October 9. The test was completed and all fish pumps were returned to service by 1552 hours the same day. Fish pump 2 is now in standby.

Juvenile Fish Passage Facility

The sample rate remained at 100% during the report week.

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: VBS/ESBS video inspections last took place on August 23. No issues of note were reported. The next inspections are planned for late October.

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 light during the report week.

The number of smolts that were more than 20% descaled moderated somewhat during the report week. Descaling was 4.2% for the week compared to 5.9% in 2012 and 4.7% for the 2007-2011 average. The project continues to monitor all areas and structures associated with juvenile fish passage closely. Historically, descaling rates increase during September and October to their highest levels of the season.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind with fish collection, fish sampling, or fish transportation equipment. Fish collection numbers at Lower Granite increased slightly during the week with an average daily collection of smolts of 259 (versus a daily average of 247 last week). Due to the high numbers of jack Chinook present in the juvenile bypass system, the facility has continued to employ a smaller gap series of separator bars to screen the jacks out of the sample. These bars have proven quite effective.

Transport Summary: Every other day fish barging operations concluded on August 16. All fish barges have been returned to Lower Granite and are docked for maintenance work and winter storage. Fish trucking operations began on August 18 using the pickup midi-tanker. On October 7, Lower Granite combined fish truck transport operations with Little Goose. Lower Granite will continue to 'piggyback' Little Goose fish when needed. Every other day truck transport is scheduled to continue thru October 31.

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 at 0001 hours 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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
30.6	25.2	0.0	0.0	62.7	61.6	5.0+	5.0

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counting between the hours of 0400 and 2000 began on April 1.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on September 24. A total of 0 lamprey were found in the strainers over a combined run time of 675.1 unit hours. The next cooling water strainer inspections are scheduled for late October.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on October 4. No evidence of zebra mussels was found. The next inspection will take place in early November.

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: Adult fish trap operations continued with the sample rate increased from 15% to 20% on the evening of October 8. Scale samples will be taken from one out of every 7 hatchery steelhead. All wild steelhead captured will be PIT-tagged and scale and genetic samples taken. Any previously PIT-tagged steelhead (either hatchery or wild) will have both scale and genetic samples taken for verification purposes.

IDFG is radio tagging adult 'B' run wild and hatchery steelhead to examine the difference in movement, staging and if the fish are straying from predicted/natural areas.
WDFW is radio tagging fall Chinook that were PIT-tagged as juveniles by Tiffani Marsh over the last four years.

The Nez Perce is conducting a study to monitor the effectiveness of adult 'B' run steelhead hatchery (supplementation) in the Clearwater sub-basin. Utilizing sort-by-code; fifty each of known South Fork Clearwater adults – comprised of: Clearwater natural, supplementation and conventional steelhead will be radio tagged. The two main goals of this study are: 1. Compare

the relative performance of these three groups. 2. Determine spatial overlap in the spawning distribution of these groups

Fall Chinook Transport: Collection of adult fall Chinook for transport to Lyons Ferry Hatchery and the Nez Perce Hatchery at Cherry Lane continued during the week. The Nez Perce are trucking fish on Sunday and Monday and Lyon's Ferry Hatchery is trucking fish Tuesday – Saturday. Trucking operations will continue into November (or until hatchery needs are met).