U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#01-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: March 1 – 6, 2014

Turbine Operation

McNary had 8 to 12 units available for power generation this week. On April 1, the hard constraint one percent criteria will begin. Until then, units can run outside the soft constraint at BPA's request. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4, 2013 – Apr 10, 2014	About 10 months.	After rewind, thrust bearing.
11	Sep 18 – Unknown	Unknown.	Turbine bearing issues continue.
4	Jun 24 – Mar 3	About 8 months.	Returned to service after rewind contract and 72 hour test run.
9, 10 & 12	Mar 1 – 2	43 hours for report period.	BPA substation outage.
4	Mar 4	3.7 hours.	Remove test equipment.
6	Mar 5	6.3 hours.	Tap hub.

Adult Fish Passage Facilities

During January, the project conducted inspection and maintenance on Washington ladder. The ladder was dewatered to tailwater with a dive team doing an inspected of the diffuser grating. The project and a contractor filled in some of the leaking ladder joints.

During February, the project inspected and performed maintenance on the Oregon ladder. We dewatered the ladder to the south junction pool and we dewatered the north pool. The fisheries staff conducted a camera inspection of the powerhouse diffuser grating. The project rehabilitated the supply valve to the 1000 cfs conduit. We also began rehabilitation of the discharge valves at diffusers 12 and 13. The project repaired grating and reinstalled a lamprey passage plate at diffuser 13. The University of Idaho replaced the PIT tag detector above the visitor view window to monitor lamprey passage. At SFEW2, a contractor installed a lamprey passage structure. At NFEW3 and NFEW4, respectively, the project installed a weir with UHMW (ultra high molecular weight) rollers and new bulkheads.

On March 3, 5 and 6, the McNary fisheries staff performed measured inspections of the adult fishways. On April 1, visual adult fish counting will resume.

Fish Ladder Exits: During measured inspections, all Fish Passage Plan criteria were met on both ladders' exits. At the Washington ladder, over winter, the project replaced the upper limits for weirs 334 and 335. We also repair the count station window brushes.

Also, during the winter, on the Oregon exit, when operational, our differential monitoring of the traveling screens revealed no problems. The project is rehabilitating the picketed leads and has ordered material to make new leads. Weir 340 still requires a new encoder, which the project hopes to replace soon.

Fishway Entrances and Collection Channel: At the Washington ladder entrances, all inspection points were in criteria. Over the winter, the electrical staff installed all new digital control for the weirs. Also, we completed rehabilitation of the weir motors. The W2 weir LED has not yet been replaced and weir W3 still requires calibration.

At the Oregon ladder, over winter, the project installed digital controls on all entrance weirs. On March 5, at the south powerhouse entrance, SFEW1 and SFEW2 measured 7.1 and 7.5 feet respectively. All week, at the north powerhouse entrance, NFEW2 and NFEW3 measured 7.5 to 7.7 feet. This is probably due to the juvenile system not supplying the usual 450 cfs to the north powerhouse pool at this time. The project will look into other possible causes. All other Oregon entrance inspection points were in criteria.

The collection channel velocity average 1.5 feet per second. We took these readings from surface observations.

Auxiliary Water Supply System: In January, the Wasco County PUD unit received maintenance. During this time, the project cleaned the conduits' intake trash racks. For the report week, the PUD had no interruptions.

During the winter, the project performed maintenance on pumps 1 and 3. For the week, both pumps had no interruptions with blade angles of 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015.

The juvenile facility remains out of service for maintenance and is not yet supplying the usual 450 cfs to the north powerhouse pool. We will return the system to service in late March.

Juvenile Fish Passage Facility

The facility remains shut down for winter maintenance, which is nearing completion. Around March 25, we will re-water the system. A contractor has almost completed installation of a new bird hazing water cannon system.

Forebay Debris/Gatewell Debris/Oil: In January, forebay debris increased from light to moderate due to tumbleweeds. Trash rack cleaning removed most of the debris. For the week,

forebay debris was light. During the winter, the fisheries staff monitored trash rack differentials with no problems seen. On January 27 to 29, the project cleaned trash racks at units 1, 2, and 5 to 10 removing 39 ten-yard truck loads of debris.

This winter, the project removed oil from unit 4 with absorbent pads and booms. Also, we removed fish screen oil from two slots. For the week, we observed no problems.

ESBSs/VBSs: All ESBSs remain raised and the project has almost concluded maintenance. The project plans to install the screens from April 5 to 15 similar to the last five seasons for juvenile lamprey passage.

VBS rehabilitation also continued during the winter. When ESBS installation begins, we will resume VBS differential monitoring.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The orifices remain closed for winter maintenance which is near conclusion. The channel will be re-watered and bypass operations will begin in late March.

During the winter, the project repaired the channel's hoist support, the side screen and transition screen cleaning devices. We found no problem with the south side dewatering valve. At 4A, 5A and 6B slots, the mechanics replaced the study flumes with standard orifice flumes so we can operate these orifices. The traps still remain in place.

Bypass Facility: The facility remains dewatered for winter maintenance which is near completion. This winter, the fisheries staff replaced two winterization drains. We did maintenance on the PIT tag and sample systems. PSMFC install a new PIT tag control system at the facility.

The project has a contractor rebuilding the porosity control unit perforated plate, which we should reinstall the third week of March. The fisheries staff is currently re-plumbing the sample tank anesthesia chambers to remove the water lines from the walkway.

Transport Summary: As a reminder, McNary is no longer a transport facility. This section will be removed from future weekly reports.

River Conditions

River conditions during the week are outlined in Table 2 as provide by control room data, which runs from 0000 to 2400 hours each day. Water temperature is taken from the unit 1 scroll case. On March 2 and 5, spill occurred due to flow in excess of powerhouse capacity and for TSW testing, respectively. On March 4, the project installed TSW2 at bay 20 with a hoist for the adult survival study which began later in the week. The TSW will remain in place for the spring spill program.

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
180.0	125.3	3.7	0.0	38	37	6.0	3.1

Other

Inline Cooling Water Strainers: Examination results are reflected in Table 3. The next examination of the main unit cooling water strainers is scheduled for early April.

Table 3. Inline Cooling Water Strainer Results.

Date	Lost Lamprey	Live Lamprey	Lost Smolts	Live Smolts
January 7	0	0	0	0
February 4	0	24	0	0
March 4	1	115	0	0

Invasive Species: During winter maintenance, the project observed no invasive species. The biologist will do a zebra mussel station examination later this month.

Predatory Bird Observations: Bird counts will resume later in the month when technicians are on shifts. Gulls, cormorants, grebes and bald eagles appear to over winter in the general area. This week, we observed an occasional gull or cormorant near the project. The bypass system is not functional so there are no birds to observe at the outfall.

Research: On March 6, a researcher began releasing steelhead adults at 12A slot as part of the adult survival study. They will also release fish at the TSW. Other researchers have not yet begun preparations for their studies on juvenile survival and adult lamprey passage.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: March 1 – 6, 2014

Turbine Operation

Turbine unit 6 is out of service this reporting period. Turbine unit 6 is out of service for digital governor installation. Scheduled return to service date is March 28.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways March 3, 4, and 5.

Fish Ladders: The adult fish ladders (north and south) were operational beginning March 1. The north fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. Facility staff also found the north shore entrance gate closest to the power house was in service. The shift operator was notified to close the north shore entrance and place the entrance gates to the entrance closest to the south shore in service as directed by the Fish Passage Plan. The north adult fish ladder was out of service February 4 – 17 for annual maintenance. This ladder was unwatered to tailwater elevation and a ROV video inspection performed on the lower diffusers, no problems were found. The south fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. The south adult fish ladder was out of service January 2 – March 3 for annual maintenance. The ladder was unwatered to tailwater elevation and a ROV video inspection of the lower diffusers performed, no problems were found. Both the north and the south shore picketed leads are down.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) and channel/tailwater differential was in criteria on all inspections. The north shore entrance (NSE) and channel/tailwater differential was in criteria on all inspections, except March 3. On this inspection, the channel/tailwater differential was at 0.8 feet. The shift operator was notified to raise the entrance weir so as to increase the channel/tailwater differential to criteria. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. Channel/tailwater 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 are in service. All south fish pumps are available for operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: On March 5, oil was detected in gatewell 2 C. The problem was a leaking valve in the headgate slot. The problem was corrected and the oil removed by placing oil absorbent pads in the slot. Debris is accumulating in the forebay in front of the south fish exit due to the trash boom failure. The trash boom has been repaired and plans

are for removing the debris within the area of the fish exit this Friday. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily. Turbine unit trash rack raking is tentatively scheduled for the week of March 24.

STSs/VBSs: STSs are currently raised for annual maintenance. STSs are tentatively scheduled to be lowered into operating position the week of March 24.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass is not in operation. All orifices are closed. Start up date is tentatively scheduled for March 17. Repairs to caulking, juvenile collection channel netting, damaged Plexiglas orifice covers, and screen cleaner repairs were accomplished during the winter outage. The primary dewatering screen was inspected along with the supporting structure underneath. All diffuser boards under the primary dewatering screen were replaced last year and appear in good condition. A zebra mussel inspection was performed, none were found. The concrete in the juvenile collection channel concrete is continuing to deteriorate in places. Considerations should be made for repainting the juvenile fish bypass structure and pipes.

Juvenile Bypass Facility: The bypass is scheduled to be put into operation March 17.

Fish Sampling: The first sample is scheduled for April 2. Sampling days will alternate.

Removable Spillway Weir: The RSW is currently not in operation. Spill for fish is expected to begin April 3, 2014.

River Conditions

Spill began as river flows exceeded powerhouse capability March 6. 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
74.6	40.0	10.3	0.0	39	38	2.9	1.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey on February 26. A total of 205 lamprey mortalities were recovered over a combined run time of 1,621.6 unit hours.

Invasive Species: During ladder and facility maintenance, surfaces were examined for invasive species, none were found.

Avian Activity: Bird hazing will begin April 1.

Research: No research is in progress at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: March 1 – 6, 2014

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. At 1150 hours on March 6 units 2, 3, 4, and 6 began operation outside of the 1% operation criteria. The violation was authorized by BPA due to high water levels. Unit 5 was removed from service at 1300 hours on October 29 for 6 Year Overhaul/Thrust Bearing Replacement with an estimated return to service date of March 21, 2014.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on March 1, 2, 3, and 6.

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 for the north shore fishway exit on March 1, 2, and 3 where readings were 0.8', 0.7', and 1.4' respectively. Crews worked on removing the debris jam at the north ladder exit on both March 2 and 3 before finally clearing the exit. Excessive wind on March 1 prevented boat access at the north fishway exit. 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 lowered on March 2.

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 7.6 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections except March 6 when the reading was 0.8'. The operator was notified and fish pump rpm was increased.

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 out of criteria (1'-2') on all inspections (0.1', 0.1', 0.1', and 0.0'). Operators were working on a solution including turning the fish pumps up. The PLC for automated control of the fishway has failed and a replacement has been ordered. Upon arrival it will require programming prior to returning to service. The automated system is estimated to return to service in May. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: AWS pumps 1, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 1,285.0 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 and are scheduled to be deployed late in the week of March 17th.

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. Both systems are scheduled to be watered up the week of March 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
87.9	40.4	0.0	0.0	39.5	37.0	2.4	1.6

*Scrollcase temperatures.

Other

Spill for fish passage has yet to begin.

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 3. Twelve live lamprey were recovered. Mortalities included about 166 juvenile lamprey, 6 peamouth, and 40 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on March 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: March 1 – 6, 2014

Turbine Operation

Turbine units 1 through 6 were available for service throughout this report period with one exception. Turbine unit one was forced out of service on February 28 at 2326 hours to March 1 at 1100 hours due to exciter problems. Soft constraints of 1% peak efficiency criteria are in effect.

Adult Fish Passage Facility

The adult fishway was placed back into service on February 27 beginning at 1530 hours. In the process of watering up, the NPE weir gates (in the automatic mode) remained in a raised position causing the cables to slack and the gate transducer targets to wedge between bulkhead slots and become stuck. With the fish pumps running this caused the water in the channel to elevate above the NSE transducer targets damaging NSE1 target. NSE gates were in criteria. NPE gates were not within criteria. The NPE gates were repaired on March 4 and all gates were positioned in criteria by 1730 hours.

Adult fishway inspections were performed on March 3, 5 and 6.

Fish Ladder: The ladder exit head differentials measured 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs measured 1.1 feet (criteria 1.0-1.3 ft.) and picketed head differentials held steady a 0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or 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 1.3 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.7 feet (criteria $\geq$ 8.0 ft). Following repairs to the NPE weirs on March 5, depths ranged between 7.2 and 7.4 feet (criteria $\geq$7.0 ft. or on sill). NSE weirs were manually operated and depths ranged between 6.1 and 6.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured 1.4 fps near the junction pool and ranged between 1.6 and 2.3 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria. Fish pump #3 was removed from service on March 5 from 0905 to 1040 hours to perform repairs to NPE weir gates.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom separated approximately mid-section. Efforts are underway to have it repaired. Woody debris in the immediate forebay was estimated between 2,500 to 3,000 square feet. Woody debris was observed in gatewells but is unable to be removed with the ESBS in the raised screens.

Spillway Weir: The spillway weir is scheduled to be placed back in service April 3 at 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 March 25.

Transportation Facility: The transportation facility is scheduled to be placed back into service March 26.

Transport Summary: Fish transport is estimated to begin late April.

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
82.8	39.5	0	0	39.5	38.4	3.8	2.2

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor is scheduled for inspection on April 2.

Cooling Water Strainers Cooling water strainers on all units were inspected on March 6. A total of 14 juvenile lamprey mortalities (Ammocoete) were removed.

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

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

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: March 1 – 6, 2014

Turbine Operation

Lower Granite had turbine units #1, 2, 3 and 6 available for power generation at the beginning of the report period. Turbine unit #4 was taken out of service for thrust bearing plumbing repair (resistive thermal device), and returned to service at 0922 hours on March 6. Turbine unit #5 is out of service to allow for the installation of equipment related to the ongoing research for the prototype overflow weir and 14" orifice. This work is expected to be completed by March 14. The turbine units are being operated in soft constraint of the 1% operation criteria.

Adult Fish Passage Facility

On March 4 and 6 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 March 4 inspection with a reading of 0.8 feet (criterion 1.0' – 2.0').

Weir depths at the south shore and north powerhouse fishway entrances were also within criteria on all inspections this week. Weir depths at north shore entrance #2 were also within criteria this week. North shore entrance #1 ranged from 4.8 to 5.2 feet on inspections this week (criterion ≥ 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 1.02 to 1.12 feet per second and averaged 1.07 feet per second.

Auxiliary Water Supply System: Fish pumps one and two were run during the week. Fish pump three is out of service for lower guide bearing repairs. This pump is expected return to service by mid March.

Juvenile Fish Passage Facility

Juvenile fish collection and transportation operations for 2013 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 implemented earlier than usual due to very cold

temperatures and the possibility of frost damage. We anticipate watering up the juvenile fish collection gallery and separator the week of March 17, 2014.

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: The ESBSs were dogged-off for maintenance work during the week. Deployment of ESBSs is tentatively scheduled to begin during the third week of March.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel remains dewatered for winter maintenance. Water-up of the gallery is tentatively scheduled for March 20.

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

Transport Summary: No activity to report. General fish barging is scheduled to begin somewhere in the April 21 – May 1 time period.

Removable Spillway Weir: The RSW is presently off line. It will resume operation with normal spring spill activities on April 3.

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
87.0	40.5	0.0	0.0	43.0	43.0	3.5	2.9

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1. The recording hours are from 0400 to 2000 hours.

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

Lamprey: Cooling water strainers were last inspected for lamprey on February 25. A total of 205 lamprey mortalities were found in the strainers over a combined run time of 1179.6 unit hours. The next cooling water strainer inspections are scheduled for late March 2014.

Avian Activity: Formal bird counts and hazing activities are scheduled to begin on April 1.

Adult Fish Trap Operations: The adult fish trap is scheduled to be watered up on March 10. The initial sample rate will be noted in the next report.