U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#18-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: June 27 – July 3, 2014

Turbine Operation

McNary had 12 units available for power generation this week. On April 1, the hard constraint one percent criteria began. No units ran outside the criterion. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18, 2013 to Nov 15, 2014	About one year and two months.	Turbine bearing issue continues.
4	Mar 27 to Nov 15	About 7.5 months.	Turbine bearing issue continues.
1, 3 & 6 - 8	Jul 1	5.8 hours total.	Trash rack cleaning.
6	Jul 2	5.7 hours total.	Tap the hub.

Adult Fish Passage Facilities

On June 27, 29 and July 1, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counts continued. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. The adult lamprey passage season continues and on July 1, video tape review counting began. Ladder exit temperature monitoring also continues. On July 10, the lamprey passage study cameras installed at SFEW2 will be adjusted.

On July 17, a dive is planned in support of lamprey passage structure repairs at SFEW2. Repairs will allow the structure to fully open.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. Debris loads remained fairly low near the exits.

The Washington exit generally has more debris and we have cleaned the picketed leads more often here as Eurasian milfoil is arriving on project. On June 29 and 30, weir 339 triggered multiple alarms, all of which the operator reset without incident.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. Two false differential alarms occurred, which the operator reset without incident. On July 2,

scheduled maintenance was performed on the traveling screens. Also, that day, a new encoder was installed at weir 340, with lower limit switch adjustments being made. We have provided a radio to the counters as the phone still works intermittently. The project hopes to replace the outside phone line in 1 to 2 months.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Occasionally, a slight amount of slack occurs in W3's south cable. In the near future, the project will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel view, which will integrate into the new control system better. The panel view has been ordered.

At the Oregon ladder entrances, all inspection points were in criteria. At the north powerhouse entrance, both NFEW2 and NFEW3 occasionally had a slight amount of slack in their south cable. At the south powerhouse entrance, both SFEW1 and SFEW2 drifted in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future.

The collection channel velocity averaged 1.7 feet per second. We took these readings from surface observations.

Auxiliary Water Supply System: For the report week, the PUD at the Washington ladder had no interruptions in service.

Fish pumps 1 and 3 operated satisfactory with blade angles of 30 degrees with no interruptions in service. On July 3, the pumps were switched to bus 1 in preparation for the transformer 1 outage and maintenance to begin on July 7. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015.

From July 7 to 17, asbestos abatement will occur on the 1000 cfs supply conduit discharge valves. These valves were disconnected from the conduit last winter so conduit flow will not be affected.

The juvenile facility continues supplying the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Juvenile Fish Passage Facility

The bypass season continues with alternating days of secondary and primary bypass with the switch occurring every morning at 0700 hours. There were no deviations from this schedule. Secondary bypass occurred on June 27, 29, July 1 and 3. We bypassed 502,890 smolts and 3,400 juvenile lamprey this week.

On June 27, from 1400 to 1420 hours, the porosity control unit was partially dewatered. The technician did not switch to primary bypass but gently guided the smolts off the screen. The power house powerhouse increased generation load from 500 to 700 megawatts due to the reduction of wind generation. This abrupt change in operation reduced orifice flows into the collection channel, resulting in a low water alarm. After 20 minutes, the side dewater valves were

able to adjust and restore proper channel elevations and normal flows at the separator. A check of the channel found no other issues.

Descaling concerns have subsided. For the week, descaling rates ranged from 0.8 to 2.7 percent. The project will continue to perform all operations and inspections promptly.

On June 30, the assistant biologist found 30 decaying subyearling Chinook mortalities on the spillway deck upstream of bay 3. We have no theory on how these fish got there other than a bird regurgitation.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which consisted mostly of woody material, tumbleweeds and fine material, was moderate to light and located mostly at the powerhouse. Incoming debris remains light and mostly consisted of Eurasian milfoil. Project operations and wind moved the debris back and forth across the southern half of the powerhouse. Trash rack cleaning removed some of the debris.

On June 27 and 28, we tested the powerhouse forebay pier nose air burst system and recorded those slots which required maintenance. This system can be very helpful in removing forebay debris.

On June 30, our highest trash rack differential was 1.9 feet. Only July 1, we cleaned all racks with a differential of 1.0 feet or high. This resulted in 1B, 3A, 3B, 6A, 6B, 7A, 7B, 8A and 8B slots being cleaned. We removed 12.3 ten-yard truck loads of debris. The heaviest load weighed 18.3 tons. The debris was mostly tumbleweeds with woody material and milfoil mixed in. No species of interest were noted in the trash. However, while the units were out of service, we noted 69 smolt mortalities in the gatewell slots. Of these, 62 were found in unit 1. The project will clean trash racks as required.

We observed no problems in the gatewell slots. On July 2, we removed woody debris, which inadvertently entered the slots during trash rack cleaning.

ESBSs/VBSs: ESBSs are installed at all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 7A, 8C and 13C remain in timer mode. Camera inspections this week did not occur due to trash rack cleaning activity.

VBS differential monitoring revealed no screens out of criteria. On June 23 and July 1 to 3, we cleaned 19 screens as a preventative measure. We noted 6 juvenile lamprey and 25 smolt mortalities. Twenty of the smolts were recovered from units 1 and 2. These smolt mortalities were noted during the peak of the out migration. VBS rehabilitation continues. On June 30, we installed a new screen in slot 11A.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS and trash rack cleaning, we closed the orifices at the slots the work was being performed and opened spare orifices at adjacent slots.

The low water alarm is described above. There are no other issues to report and all systems functioned well in automatic mode. During the week, the rectangular screen's air burst system's compressor and the channel's hoist both received scheduled maintenance. The transition screen cleaning device will remain out of service until winter.

Bypass Facility: During the bypass season, both bypass modes return all fish to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

Sample gates are in operation only during secondary bypass operations (i.e.: in service every-other-day). The gates functioned well. The primary PIT tag system remains off, as the bypass lines provide a better route for the fish than the PIT tag return lines. The secondary PIT/bypass gates remain off and open for bypass. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

On July 2, the heat pump for the wet lab failed and the unit will require a new compressor. On July 3, we noted adult lamprey mortality in the separator. Also, this week, the shop hoist, facility elevators and fire detectors all received scheduled maintenance.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours daily. Water temperature monitoring continues. PSMFC provides temperature results in a separate report.

The summer spill program, which calls for 50 percent of flow to be spilled, continues. The project has maintained the 50 percent level.

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
298.9	271.4	149.8	135.9	63.2	61.6	6.0	5.5

*Contol Room Data.

Other

Invasive Species: The zebra mussel station examination on June 29 revealed no problems.

Inline Cooling Water Strainers: Cooling water strainers were inspected for lamprey on July 1. A total of 23 lamprey and 41 unclipped subyearing smolts were recovered. Except for 1 smolt, all recovered fish were mortalities. Turbine units 4 and 11 were not inspected since they were not operated. The combined run time for the other 12 turbine units was 8012 hours.

Avian Activity: Two shifts of USDA hazing continued with boat hazing occurring on Mondays, Wednesdays and Fridays as conditions allow. Also, a light lethal take continues near the bypass outfall during the boat hazing.

The bird distress calls deployed along the navigation lock wing wall and around the project appear to have discouraged roosting. The fisheries staff monitors and adjust all hazing equipment as needed. All hazing techniques appear to be working well. The fisheries staff continues to examined and added oil to the outfall water sprinkler supply pump. Repairs to the pump are being arranged.

Bird counts continue with each zone being counted by the fisheries staff once a day and usually in the morning. Counts are reflected in Table 3 below.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
June 27	Forebay	0	0	0	0	0
	Spill	10	0	16	17	0
	Powerhouse	0	1	2	1	0
	Outfall	0	0	0	6	0
June 28	Forebay	1	0	0	0	0
	Spill	6	0	10	38	0
	Powerhouse	0	0	0	2	0
	Outfall	0	0	0	3	0
June 29	Forebay	0	0	2	0	0
	Spill	6	0	8	25	0
	Powerhouse	0	0	0	3	0
	Outfall	0	2	0	3	0
June 30	Forebay	0	0	0	0	0
	Spill	17	5	22	27	0
	Powerhouse	0	0	2	3	0
	Outfall	6	0	2	2	0
July 1	Forebay	37	1	0	0	0
	Spill	1	5	3	19	0
	Powerhouse	0	1	3	4	0
	Outfall	2	1	1	2	0
July 2	Forebay	10	0	0	0	0
	Spill	3	0	4	1	0
	Powerhouse	0	0	0	5	0
	Outfall	0	0	0	0	0
July 3	Forebay	0	0	0	0	0
	Spill	10	6	5	35	0
	Powerhouse	0	0	0	8	0
	Outfall	0	0	0	0	0

Again, we observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys on project. Bird numbers appear to track with fish numbers.

Gulls, cormorants and terns are feeding in the spill. Pelicans are working both shorelines for adult shad. All species were observed occasionally at the bypass outfall. No grebes were observed anywhere on project. The gulls observed in the forebay were all juveniles and appear to be scavenging.

Research: GBT monitoring, the juvenile salmonid survival and the adult lamprey passage studies continued.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 27 – July 3, 2014

Turbine Operation

Turbine unit 2 tripped off a protective relay action at 1142 hours on May 18 and remains out of service to investigate a problem associated with the turbine shaft bearing. Unit 6 was removed from service on June 12 at 0925 hours and remains out of service to change the oil and repair a turbine guide bearing leak. Unit 5 was out of service from 1553 hours to 1649 hours on June 3 due to a breaker problem.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 30, July 1, and July 2.

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exit, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exit, and depth over weirs) were in criteria on all inspections. Both the north and the south shore picketed leads are down in their deployed positions.

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential were in criteria on all inspections. Fishway entrance criteria are 8 feet depth or greater, 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 were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. There was little to no debris observed in the forebay and gatewells.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in continuous run mode since May 27. STS inspections and unit 6 VBS inspections were performed on June 24 and 25. Personnel observed a narrow gap in the mesh of the STS in slot 5A due to a few missing retaining clips at the end of one of the seams. Clips were immediately reinstalled to close the gap.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample of the season occurred on April 2. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays. Sampling results are outlined in the tables below.

Table 1. Fish condition sampling results at Ice Harbor Dam

July 1:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	2	0	0	1
C-CH-O	32	0	0	0
UC-CH-O	55	4	0	0
C-SH	4	0	0	0
UC-SH	1	1	0	1
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	94	5	0	2

July 3:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	31	1	1	0
UC-CH-O	39	2	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
TOTAL	71	3	1	0

Removable Spillway Weir: The RSW is currently in operation. Spill in support of fish passage began April 3, 2014.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
80.5	64.6	62.1	21.3	60	59	6.7	5.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on June 13, 24, and 25. A total of 3 juvenile lamprey, 1 juvenile salmonid, and 1 Siberian prawn were found, all of which were mortalities.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The avian deterrent program has generally been effective at reducing the numbers of piscivorous birds near the dam. Daily maximum birds counted in the tailrace are provided in Table 3.

Table 3. Daily maximum piscivorous bird counts in the tailrace at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
June 27	0	17	3	16	0
June 28	0	5	0	3	0
June 29	0	1	2	11	0
June 30	0	0	1	10	0
July 1	0	0	0	12	0
July 2	---	---	---	---	---
July 3	0	10	0	20	0

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: June 27 – July 3, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 5 returned to service on June 27 at 1520 hours. Unit 2 was removed from service on June 30 at 0705 hours for annual maintenance. Unit 5 was out of service on June 30 from 0730 to 1431 hours to remove hydraulic cylinder and to swap STSs.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on June 27, 28, 29, and July 2.

Fish Ladders: Fishway exit head differentials and depths over the weirs were in 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. An unclipped adult Chinook was observed between the north shore picketed leads on June 27. This was likely due to the powerhouse crew not following standard operating procedures for cleaning picketed leads.

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 with the exception of a 0.8 feet reading on June 28.

SPE1 and SPE2 weir gates were in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 6.8', 6.7', and 6.0 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.8 feet reading on June 28.

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 7.4', 6.9', and 6.7 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.8 feet reading on June 27.

The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (fishway control regulating gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC

also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system is estimated to return to service in July. 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: All AWS pumps were in service and operating throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-15% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation remains in continuous run mode due to subyearling Chinook length averaging less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open.

Collection Facility: No problem with the facility during this period.

Transport Summary: Every-other-day barging is occurring.

River Conditions

Summer spill began at 0001 hours on June 21 with the initiation of bulk spill patterns. Involuntary spill (no market for the electricity) occurred on June 28, 29, and July 3. River conditions during the week are outlined in Table 1 below.

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
76.3	63.3	31.9	16.8	64	60	5.0+	4.5

*Scrollcase Temperatures

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 24. No live fish were recovered. Mortalities included 13 juvenile lamprey, 5 juvenile salmon, 1 juvenile smallmouth bass, and 15 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on June 1.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week. Hazing for the season ended on June 2. No additional action trigger points were met from the avian action plan through this time period.

Table 2. Tailrace Counts of Foraging Piscivorous Birds at Lower Monumental Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
June 27	1115	7	0	0
June 28	1115	6	0	0
June 29	1115	11	1	0
June 30	1130	1	0	0
July 1	1115	1	0	0
July 2	1100	0	0	0
July 3	1100	2	1	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: June 27 – July 3, 2014

Turbine Operation

Turbine units 1 through 6 were available for most of this reporting period. Units 2 and 3 were out of service for NPDES (National Pollution Discharge Elimination System) work. Units 2 and 3 were down from 1300 to 1616 on June 30. Units were done separately one at a time. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on June 29, 30 and July 3.

Fish Ladder: The ladder exit head differential ranged between 0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differential was observed at the picketed leads (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 1.4 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.5 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 5.4 and 5.8 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.7 and 5.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area was 1.8 fps. Surface water velocity ranged between 2.4 to 2.6 fps near the north shore entrance (criteria 1.5 to 4.0 fps).

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 20 and 150 sq ft.

Spillway Weir: The spillway weir was operated in the high crest position.

ESBS/VBS: All ESBSs operated without problems except for the screen in slot 3C. The cleaning brush motor was replaced in slot 3C on June 24. The limit switch was reset on June 25.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection and bypass system operated with 22 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. A total of 58,389 fish were collected for transport. Six subyearling Chinook fry were by-passed. Descaling and mortality rates were 0.8% and 0.07% respectively. To date 12 adult lamprey have been removed from sample and released above the dam at Little Goose Landing.

Transport Summary: Every other day barging operations continued during this reporting period. All collected fish were transported with the exception of the 6 subyearling Chinook fry mentioned above that were bypassed.

River Conditions

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
76.9	63.1	26.2	18.9	62.6	62.4	5.2	4.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were not checked this report period.

Invasive Species: No zebra mussels were observed on the substrate monitor on June 13. The next inspection is scheduled for July 10.

Avian Activity: USDA-APHIS bird hazing ended on June 20.

Table 2. Maximum Daily Bird Counts by Species at Little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
June 27	12	11	0	0
June 28	12	21	4	1
June 29	21	26	0	3
June 30	14	4	17	2
July 1	9	16	0	0
July 2	2	10	0	0
July 3	24	12	0	0

Research: The University of Idaho continues their adult salmon and adult lamprey passage study. The U of I is placing new lamprey detection sensors at the SSE, NSE, NPE and the 180 degree turn halfway up the ladder.

Project: Lower Granite
Biologists: Mike Halter, Elizabeth Holdren and Ches Brooks
Dates: June 27 – July 3, 2014

Turbine Operation

Turbine units are being operated in hard constraint of the 1% operation criteria. Unit 5 was out of service from 0650 hours on June 20 until 1051 hours on July 2 for governor repairs. Unit 6 was taken out of service at 0719 hours on May 12 for blade repair and annual maintenance.

Adult Fish Passage Facility

On June 28, 29 and 30 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings at the south shore and north powerhouse fishway entrances remained within criteria during the weekly inspections. Head differential reading at the north shore fishway entrances met criteria on the June 30 inspection, but was below criteria on the June 28 and 29 inspections with readings of 0.9 feet on both dates (criterion $\geq$ 1.0 feet).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances remained on sill this week due to tailrace levels below 636.0 feet (at which level the gates bottom out). Weir depths at both north powerhouse entrances ranged from 5.3 to 6.3 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 ranged from 4.5 to 5.1 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.4 to 4.2 feet (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being 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 1.03 to 1.17 feet per second and averaged 1.11 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode.

Juvenile Fish Passage Facility

The sample rate was raised from 4% to 10% at 0700 hours on 1 July to accommodate research needs. The sample rate was lowered to 5% at 0700 hours on July 2.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. No debris spills took place during the week. The JFF staff have been monitoring gatewells daily and removing floating debris with a hand basket in attempt to circumvent orifice blockages.

ESBSs/VBSs: ESBSs are deployed in all units and have been operating without issue. The brush cleaning cycle is set for once every 2 hours. ESBS/VBS monthly inspections were conducted on June 27 and 28. The inspector noted that several small sections of strapping used for securing the mesh were possibly loose on unit 3's VBSs along with several missing rivets. Less than ideal visibility made confirmation of this condition difficult. The inspector did note that the mesh was entirely in place. These areas will be examined again during the next inspection.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. Debris levels were moderate with a mix of smaller vegetative and larger woody material moving through the system.

Transportation Facility: Operations proceeded smoothly at the facility during the week. There were some issues with smaller vegetative and larger woody debris in the raceways but nothing that caused plugging of the inclined screen, flumes, or pipes. Lamprey friendly tailscreens (larger screen mesh) remain installed in all raceways.

Transport Summary: The facility switched to every other day fish barging operations on June 1 (May 31 was the first day without a barge departure from Lower Granite). Fish barges will continue to depart Lower Granite on the even-numbered days of July. All barges other than the two involved in every other day transport have been returned back to Lower Granite for storage and maintenance work. Due to the lower numbers of fish being transported, and the consequent need to run only one fish engine on the barges for aerator water, the decision was made to allow the towboat contractors to fuel fish barges on an every other trip basis.

Removable Spillway Weir: The operating project began FOP (Fish Operations Plan) summer spill operations of 18 kcfs 24 hours a day at 0001 hours on June 21; the RSW is operated as a normal part of summer spill activities which are scheduled to last through the end of August.

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
78.5	64.6	30.9	18.5	62.1	60.8	5.0+	5.0

*Cooling water intake temperature.

Other

The adult fish counters began visual counts at the counting window on April 1. The counting hours are from 0400 to 2000 hours PST and are scheduled to continue through October 31.

Inline Cooling Water Strainers: Unit cooling water strainers were inspected for on June 26. A total of 14 lamprey mortalities were found. The combined unit run time was 2,089.2 hours. The next cooling water strainer inspections are scheduled for late July.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on the June 6 inspection. No evidence of zebra mussels was found. The next inspection will take place in early July.

Avian Activity: Formal bird counts and hazing activities began on April 1. Sixteen hour per day hazing began on April 21 and concluded on June 1. Avian hazing then continued 8 hours per day and until the end of June. Tailrace piscivorous bird counts are taken daily one hour after sunrise and one hour before sunset from the juvenile fish wet separator platform (See Table 2).

Table 2. Maximum Tailrace Counts of Piscivorous Birds at Lower Granite Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
June 27	2	0	0	0
June 28	0	0	0	0
June 29	0	0	0	0
June 30	2	0	0	0
July 1	3	0	0	0
July 2	0	0	0	0
July 3	3	0	0	0

Adult Fish Trap Operations: The adult fish trap was watered up for sampling on March 10 with a sample rate of 28%. On April 14 at 1400 hours the sample rate was lowered to 15%. Since, as in 2013, adult trapping will only be conducted Monday thru Friday the 15% sample rate represents an overall weekly sample rate of 11%. Genetic/scale samples will be taken from one out of every 10 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. Up to twenty sort by code Lemhi origin Chinook will be radio-tagged and scale and genetic samples taken.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification: The goal of this study is to develop fine-scale genetic profiles for natural origin salmon and steelhead; develop genetic stock identification (GSI) techniques to estimate stock-specific escapement over LGR, monitor abundance, productivity and distribution of naturally produced adult and juvenile steelhead and

salmon; research and monitor stock-specific life history characteristics. At LGR the goal of the study will be to enumerate and characterize the natural production of spring/summer Chinook salmon and steelhead above LGR with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday until the first part of July with the goal to collect between 2,000-5,000 genetic samples each from yearling spring/summer Chinook and steelhead and 500-3,000 genetic samples from subyearling fall Chinook.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2013 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

Biological Evaluation of Prototype Overflow Weir and 14 Inch Orifice: Blue Leaf and Biomark and UC Davis completed their marking work on Sunday, June 15. The overflow weir/14 inch orifice study has concluded fish releases for the season but due to high turbidity during May, the video portion of the study was not completed. Since turbidity in the river is now suitable for video monitoring of passage, UC Davis has requested that both the 14 inch and 10 inch orifices in gatewell 5A remain open and that unit 5 remain the second highest priority unit. These requests were approved until July 8.