U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#20-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: July 11 - 17, 2014

Turbine Operation

McNary had 10 to 12 units available for power generation this week. On April 1, the hard constraint one percent criteria began. No units ran outside this criterion. On July 15, at 1600 hours, the summer unit priority sequence, known as the "saw tooth" pattern was implemented. This priority pattern allows turbine units to be being alternately on or off to moderate water temperatures in the juvenile collection channel. 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 & 2	Jul 7 to 11	About 4 days.	Transformer 1 maintenance & testing.
3	Jul 14 to 17	About 3 days.	Transformer 2 and unit 3 maintenance & testing.

Adult Fish Passage Facilities

On July 11, 13 and 15, 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, video tape review also continues. The counter has noted night time passage of sockeye salmon. Ladder exit temperature monitoring also continues.

On July 17, the dive to fix the gate on the lamprey passage structure at SFEW2 occurred. The gate was successfully repaired and left fully opened. In order to perform the dive, the Oregon ladder was placed in orifice flow mode from 1325 to 1736 hours. After the ladder was restored to service, the operators adjusted the exit weir set points. Also, SFEW2 was removed from service and raised to protect the diver. In addition, from 1325 to 1751 hours, fish pumps 1 and 3 were removed from service. The dive work progressed fairly quickly; the installation and release of safe clearance points took most of the outage time.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria.

On July 15, at 0400 hours, at the Oregon ladder exit, the fisheries technician found high water levels with flow over the picketed leads walkway. The roving operator adjusted the exit set points to reduce flow in the ladder. Wind gusts to 50 mph had moved the debris from the powerhouse to the Oregon shore resulting in the picketed leads becoming obstructed. When the general maintenance staff came on duty, they cleaned leads with the portable crane. Afterwards, the operators readjusted the exit set points. The next day, the project staff restored power to the exit crane. The general maintenance crew then cleaned the exit trash rack.

Our differential monitoring of the traveling screens at the Oregon ladder exit revealed no problems. On July 13, facility personnel noted that the cycle frequency was reduced from 12 times a day to seven after last week's power outage. Debris loads in the area of the exit have fluctuated depending on wind direction. 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.

The Washington exit generally has Eurasian milfoil, which is hanging up on the cameras used for the lamprey passage study. The amount of milfoil is fairly light. All week, multiple exit weir alarms occurred, all of which the operator reset without incident.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. In the near future, the project will replace the LEDs for W2 and W3 with a panel view, which will integrate into the new control system better. The panel view has been ordered. On July 15, scheduled entrance weir mechanical maintenance occurred.

At the Oregon ladder entrances, all inspection points were in criteria. 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. On July 14, all entrance weirs received scheduled mechanical maintenance.

Surface collection channel velocities averaged 1.7 feet per second.

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

Fish pumps 1 and 3 operated with blade angles of 30 degrees and experienced 2 interruptions in service for the report week. On July 11, from 1613 to 1634 hours, both pumps were out of service in support of a bus switch for the upcoming transformer 2 outage. On July 17, a second outage occurred for the dive mentioned above. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015.

The juvenile facility continues to 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 July 11, 13, 15 and 17. We bypassed 280,266 smolts and 4,200 juvenile lamprey this week.

For the week, warm water unit operations and fish sampling discussions continued. As mentioned above, on July 15, unit priority was changed for warm water. Table 2 reflects the air temperature for the PSMFC station, the water temperature at the facility in the morning and the sample mortality rate. The sample date is the morning the sample collection was completed. For example, we sampled from July 11 at 0700 hours to July 12 at 0700 hours so the sample date is July 12.

Table 2. McNary Weather and Water Conditions along with Sample Mortality.

Date	High Air Temperature*	Sample Water Temperature*	Sample Mortality*
July 11	93.2	66.3	NA
July 12	98.7	66.9	1.9
July 13	101.0	66.8	NA
July 14	99.2	67.1	4.0
July 15	98.5	67.9	NA
July 16	102.5	68.1	4.6
July 17	92.7	68.8	NA
July 18	90.5	68.1	1.9
July 19	94.7	68.6	NA
July 20	84.1	68.3	2.9

*Temperatures are in degrees F, sample mortalities rates are expressed as percentages of the entire sample. No fish sampling took place on odd numbered days this week.

On July 15, heat stress was most apparent as reflected by the sample mortality. On July 16, Hermiston, Oregon had a record high of 108 degrees. Since fish transport no longer occurs at this location, facility mortality does not reflect conditions very well. Lost fish are very difficult to retrieve from the separator because they sink quickly and pass out of the system instead of into raceways. Our best indicator of stress is the sample mortality rate.

Also, as mentioned last week, on July 11, from 0851 to 0904 hours, the facility had a power outage in support of transformer 1 service. Although the facility was in secondary bypass mode, no samples were missed as the sample rate set at 0.5 percent. The sample gates were turned off during this power outage.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which consisted mostly of woody material and milfoil was light to very light. Incoming debris remains light and mostly consisted of milfoil. Project operations and wind moved the debris back and forth from the southern half of the powerhouse to the Oregon shore.

Our highest trash rack differential was 1.5 feet at slot 3A. On July 15, we cleaned the unit 3 trash racks removing 2.3 ten yard truck loads. No ESA listed species or lamprey were noted in the debris, which consisted mostly of milfoil and old material from the bottom. Half of the debris came from slot 3A.

We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are installed in all operational units. Only units 4 and 11 are without ESBSs. The screens in slots 7A, 8C and 13C remain in timer mode. On July 12, the screens in slots 1A and 1B required calibration as they were short cycling after the unit returned to service ("short cycling" means the cleaning brushes reverse direction before reaching the usual end of travel) . The screen in slot 1A could not be recalibrated so the operator switched it to timer mode. On July 16, the screen in slot 5A slot also was found short cycling and the operator recalibrated it. This week, no camera inspections occurred.

VBS differential monitoring revealed one screen out of criteria. On July 11, 12 and from July 15 to 17, we cleaned this screen and 9 others. We noted 30 smolt mortalities. Nineteen of the smolts were at unit 7. VBS rehabilitation continues with unit 11 as the staging area.

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 done and opened spare orifices at adjacent slots.

There are no issues to report and all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter. District engineers are looking into long term improvements of the channel system which includes possible changes in the transition screen area.

Bypass Facility: During the bypass season, both bypass modes return all fish are to the river. PIT tag detection will occur 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 operated only during secondary bypass days. The gates and all operational systems functioned well. As mentioned above, the sample gates were off during the power outage on July 11. The primary PIT tag system remains off as the bypass lines provide a better route for the fish than the PIT tag lines. PSMFC continues to perform weekly examinations of the PIT tag system. The secondary PIT tag/bypass gates remain off and open.

On July 11, we noted brief high and low water at the separator with no alarms reported in the collection channel. We will monitor the situation. After the power outage, we noted that some GFIs (ground fault interrupters) at the outlets had to be reset. This week, we began replacing wood steps that are used throughout the facility. Finally, next week, a roof inspection will occur as the facility's roof is in need of repair and/or replacement.

River Conditions

River conditions during the week are outlined in Table 3 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours each day. Water temperature monitoring continues. PSMFC reports the 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 spill level.

Table 3. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
239.8	196.0	120.1	98.0	68.8	66.3	6.0	6.0

*Control room Data

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in early August.

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

Avian Activity: 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 4 below.

USDA swing shift boat hazing concluded on July 12.

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 with gulls and terns concentrated along the south edge of the spill. Pelicans are working both shorelines for adult shad. Cormorants continue to roost on the navigation lock wing wall.

Mostly cormorants and pelicans were observed at the bypass outfall.

On July 14, grebes were again observed in the forebay. They were seen nowhere else. The gulls observed in the forebay were all juveniles and appear to be scavenging. We observed gulls, cormorants and pelicans on the rock by the Washington boat dock. We also noted ospreys on project.

We continue to examine, monitor temperature and add oil to the outfall water cannon supply pump. We also continue to check and clean the pump intake. District engineers are arranging repairs and modifications to the pump.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
July 11	Forebay	17	1	0	0	0
	Spill	3	2	5	22	0
	Powerhouse	0	0	0	13	0
	Outfall	0	0	0	5	0
July 12	Forebay	7	0	0	0	0
	Spill	3	2	4	32	0
	Powerhouse	0	0	0	9	0
	Outfall	0	0	0	4	0
July 13	Forebay	0	0	0	0	0
	Spill	7	3	6	36	0
	Powerhouse	0	0	0	3	0
	Outfall	0	0	1	5	0
July 14	Forebay	10	0	0	0	14
	Spill	1	10	5	20	0
	Powerhouse	0	0	0	5	0
	Outfall	0	1	1	4	0
July 15	Forebay	2	0	0	0	0
	Spill	2	7	1	24	0
	Powerhouse	0	0	0	0	0
	Outfall	0	9	0	4	0
July 16	Forebay	0	0	0	0	0
	Spill	3	1	6	21	0
	Powerhouse	0	0	0	2	0
	Outfall	0	2	0	4	0
July 17	Forebay	12	0	0	0	8
	Spill	0	0	2	18	0
	Powerhouse	0	0	0	0	0
	Outfall	0	2	0	13	0

Research: GBT monitoring, the juvenile salmonid survival and the adult lamprey passage studies continue. Occasionally, we had to prime the GBT flush line pump.

Project: Ice Harbor
Biologist: Ken Fone
Dates: July 11 - 17, 2014

Turbine Operation

Turbine unit 2 tripped a protective relay action at 1142 hours on May 18 and remains out of service due to a problem associated with the turbine shaft bearing. Annual maintenance of unit 2 is also occurring. Unit 6 was removed from service on June 12 at 0925 hours and remains out of service for an oil change and to repair a turbine guide bearing leak. Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem. All available turbine units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on July 14, 15, 16, and 17.

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, except on July 16 when the differential was 2.6 feet. The high differential may be due to the difficulty in getting an accurate reading of the tailwater elevation because of turbulence from project spill. 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 throughout the week. Six of the 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. Oil sheens were observed in intake slot 3C and gatewell slot 3C beginning on July 10. Oil absorbent pads remain in the gatewell slot.

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. The next STS inspections are scheduled for the week of July 21.

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 alternated weekly on Mondays and Wednesdays, and Tuesdays and Thursdays. The last sample of the season occurred on July 15. Sampling results are outlined in the table below.

Table 1. Fish condition sampling results at Ice Harbor Dam

July 15:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	4	1	0	0
UC-CH-O	8	0	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	12	1	0	0

Removable Spillway Weir: The RSW is in operation. Spill in support of fish passage began on 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
53.5	41.3	36.2	14.5	66	65	6.0	6.0

*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. The next strainer inspections are scheduled for the week of July 21.

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 for July 14 and 15 are provided in Table 3. The piscivorous bird count program at the project began on April 1 and ended on July 15.

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

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
July 11	---	---	---	---	---
July 12	---	---	---	---	---
July 13	---	---	---	---	---
July 14	0	1	0	17	0
July 15	1	15	0	9	0

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: July 11 - 17, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 2 returned to service on July 17 at 1340 hours.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on July 11, 12, 13, 14, and 16.

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 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 with the exception of a reading of 7.6 feet on July 11. 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 5.7', 6.6', 5.8', 6.0', and 6.6 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of readings of 0.9' and 0.9 feet on July 12 and 16, respectively.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 5.9', 6.1', 6.2', 6.2', and 6.2 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

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 0-10% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation changed to cycle mode on July 17 due to subyearling Chinook lengths averaging greater 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

River conditions during the week are outlined in Table 1. Summer spill began at 0001 hours on June 21 with the initiation of the Bulk spill pattern.

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
52.2	39.2	17.0	16.4	68	65	5.0+	4.8

*Scrollcase Temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on July 7. One live Siberian prawn was recovered. Mortalities included 10 juvenile lamprey and 60 Siberian prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on July 6.

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
July 11	1100	12	2	0
July 12	1115	8	1	0
July 13	1100	2	0	0
July 14	1100	3	0	0
July 15	1100	3	0	0
July 16	1100	10	1	0
July 17	1115	10	0	0

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

Project: Little Goose
Biologists: Richard Weis
Dates: July 11 - 17, 2014

Turbine Operation

Turbine units 1, 2, 4, 5 and 6 were available for this reporting period. Unit 3 was placed out of service on July 7 at 0700 for a planned six year overhaul. Unit 3 is scheduled to be out of service till August 15. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on July 13, 16 and 17.

Fish Ladder: The ladder exit head differential ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs ranged between 1.1 and 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 1.2 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.9 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 5.1 and 6.0 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.3 and 5.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area ranged between 1.5 to 2.0 fps. Surface water velocity ranged between 2.0 to 2.2 fps near the north shore entrance (criteria 1.5 to 4.0 fps). Monthly water velocity test using Rickly hydro-flow meter near the North power house entrance averaged 2.5 fps.

Auxiliary Water Supply System: All fish pumps operated within criteria except Fish Pump 3. Pump 3 was out of service on July 17 for 2 hours to repair a water leak at the pump.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 50 and 100 sq ft.

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

ESBS/VBS: All ESBSs operated without problems except the screen in slot 1C. This screen was found turned off at 1600 hours on July 17 and reported to operator. This outage lasted 3 hours and the screen was returned to service at 1855 hours.

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

Transportation Facility: The collection and transportation facility operated within criteria this report period. A total of 27,819 fish were collected for transport. Six subyearling Chinook fry were bypassed. The descaling and mortality rates were 1.0% and 0.4% respectively. This weekly report period saw 6 adult lamprey removed from sample and released above the dam at Little Goose Landing.

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

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
50.4	40.6	15.1	11.8	71.5	67.1	6.0	5.5

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on July 12. There was nothing seen.

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

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
July 11	13	12	0	0
July 12	13	16	0	2
July 13	20	12	0	0
July 14	22	14	0	1
July 15	16	1	0	1
July 16	12	12	0	0
July 17	23	8	0	0

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

Gas Bubble Disease: No signs of GBT were found this week.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: July 11 - 17, 2014

Turbine Operation

Lower Granite had 5 turbine units available for power generation during the report period. Turbine unit 6 was taken out of service at 0719 hours on May 12 for blade repair and annual maintenance. Turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

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. On July 11, 12 and 13 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 readings at the north shore fishway entrances were slightly below criteria on all inspections with readings of 0.9 feet (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 5.2 to 5.3 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 ranged from 4.1 to 4.2 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 measured 3.1 feet on each inspection (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 1.09 to 1.25 feet per second and averaged 1.16 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 20% at the beginning of the report week. The sample rate was lowered to 10% at 0700 hours on July 13 where it remained for the rest of the report week.

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 two hours. ESBS/VBS monthly inspections were last 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 VBSs along with several missing rivets, but that less than ideal visibility made it hard to be certain. He also noted 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 3 hours around the clock. Debris levels were relatively light during the week with a mix of smaller vegetative and larger woody material moving through the system. Due in large part to the diligence of the fish facility operators in conjunction with the winter installation of an air burst system under the incline screen/dewatering structure, for the first time in at least 5 years, partial primary bypass operations have not been needed to pressure wash the incline screen.

Transportation Facility: Operations proceeded smoothly at the facility during the week. Descaling for all species combined was 0.40% for the week and is 0.83% for the season, compared to 2.19% in 2013 and 1.56% for the 2008-2012 average. The cumulative descaling rate through July 17 of 0.83% is the lowest since at least 1985. 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 departed Lower Granite on the odd days of the month of June, and continue to do so in July. During the barge trip that departed on July 7, the barge rider reported that engine 2 on barge 8108 had shut off several times for no apparent reason. This barge was taken off line upon its return on July 10 for maintenance, which continued during this report week. Barge 8107 took its place for the trip departing on July 11. 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 lower numbers of fish being transported, and the consequent need to run only one fish engine on the barges for aerator water, the policy allowing towboat contractors to fuel fish barges on an every other trip basis continued.

Removable Spillway Weir: The 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 below.

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
52.7	41.5	18.6	18.4	66.3	66.0	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were last inspected 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 July 4 inspection. No evidence of zebra mussels was found. The next inspection will take place in early August.

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 took place 8 hours per day 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 (Table 2).

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
July 11	1945	3	0	0	0
July 12	1945	0	0	0	0
July 13	1945	2	0	0	0
July 14	1945	1	0	0	0
July 15	1945	3	0	0	0
July 16	1945	0	0	0	0
July 17	1945	1	0	0	0

Auxiliary Drawdown Pumps: There are 3 auxiliary pumps that draw water from elevation 705 feet (about 30 feet down); these pumps were designed to supply water to the fish ladder during the reservoir drawdown test in 1992. Auxiliary pumps 1 (supplies water to the ladder exit) and 2 (supplies water to diffuser 14) were placed into operation at 0930 hours on July 10 in order to supply cooler water to the fish ladder. On July 11 at 1854 hours the power plant operator on duty discovered that auxiliary pump 1 was not in service. A trouble report was generated and an electrician was called in the next morning. The electrician found that the pump starter had a faulty control transformer. Facility staff decided to replace the starter with the one from auxiliary pump 3 (which supplies water to the ladder false weir and is not being used). Auxiliary pump 1 returned to service at 1539 hours on July 12. Auxiliary pump 2 remained in operation

without any interruptions in service. A new starter was installed in auxiliary pump 3 by the afternoon of July 15.

Adult Fish Trap Operations: The Lower Granite adult trap facility remains out of service. It is not certain how long repairs will take. The project operations, electrical and mechanical crews are taking steps to make repairs. The return to service estimate at this time is approximately 1 week.

Research

United States Geological Survey (USGS) Research, Monitoring, and Evaluation of Spawning and the Early Life History of the Snake River Fall Chinook salmon ESU: Under the 2008/2014 Biological Opinions RPA 55.4 "Research, monitoring, and evaluation of spawning and the early life history of the Snake River fall Chinook salmon ESU" the RPA specifically states the need to "investigate, describe, and quantify key characteristics of the early life history of Snake River fall Chinook salmon in the main-stem Snake, Columbia, and Clearwater Rivers". This study is needed because efforts to reconstruct the juvenile subyearling Chinook run at LGR by using a method that relies on expanding fish numbers in the sample tank results in negative values for natural-origin fish, particularly in May and early June during the peak of passage. An alternative is to estimate the number of hatchery and natural fish in the sample tank directly by using morphological characteristics identified by Tiffan and Connor (2011). Discrimination between the two groups of fish relies on photographing fish and conducting a discriminant analysis of principal components obtained from morphological measures on the fish. Once a week (Fridays) through the end of July, USGS personnel will sample and photograph up to 100 unmarked, run at large and up to 20 marked subyearling fall Chinook.