U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#16-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: June 13 - 19, 2014

Turbine Operation

McNary had 12 units available for power generation this week. The hard constraint one percent criteria began April 1. 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, 2 & 3	Jun 17	1.5 hours total.	ESBS camera inspections.
3	Jun 17	6.8 hours.	Thrust bearing over heated. External thrust bearing oil cooler (ETBOC) issue.

Adult Fish Passage Facilities

On June 13, 15 and 17, 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. On June 15, the knife gate in the prototype Oregon Ladder low flow lamprey passage structure was opened and studies began. Lamprey passage study cameras will be installed at SFEW2 on June 25. Ladder temperature probes were installed June 14, and ladder exit temperature monitoring began the next day.

On June 18, from 1304 to 1333 hours, both operating Orgeon Ladder fish pumps had their blade angles reduced to zero degrees in support of lamprey passage structure inspections at SFEW2. The camera inspection revealed why the structure could not be fully opened. The west side rod interface was no longer screwed into the clevis. This meant the west side of the gate remained closed while the east side of the gate was would almost fully open, which explains why the gate jammed. A dive will be required be required to fix this issue.

During the above camara inspection, the general maintenance staff removed a large piece of wood (6’ long x 6” – 8” inches in diameter) from the base of the picketed leads. Lamprey passage study cameras revealed the presence of this debris earlier in the week.

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 present than the Oregon exit. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. On June 15 and 17, the operator reset multiple Washington exit weir alarms without incident. The operator also adjusted this weir's set points on June 15. At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. Four differential alarms did occur, which the operator reset without incident. The phone at the count station has been working intermittently since June 7. Fish counters have been temporarily provided a radio.

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 W2 and W3 LEDs (light emitting diodes) with a view panel which will integrate into the new control system better. The panel has been ordered.

All inspection points at the Oregon ladder entrances met criteria. At the north powerhouse entrance, NFEW2 occasionally had a very slight amount of slack in its south cable. At the south powerhouse entrance, SFEW1 and SFEW2 drifted in and out of calibration. We hope to complete the upgrades of the Oregon entrances in the near future. Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: For the report week, the Washington ladder PUD turbine unit had one interruption in service in support of scheduled maintenance. During this outage from June 16 at 0658 hours to June 18 at 1303 hours, the bypass system performed well.

Fish pumps 1 and 3 ran satisfactorily with blade angles of 30 degrees except on June 18 as described above. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility continued to supply the usual 450 cfs to the north powerhouse pool with no interruptions in service.

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 13, 15, 17 and 19. We bypassed 85,602 smolts and 1,300 juvenile lamprey this week.

Descaling continues to be a concern. However, this week, the rate dropped from 7.0 to 3.5 percent. Our system checks revealed no local cause for the descaling previously reported. Project personnel will continue to perform all operations and inspections promptly. On June 17, video camera inspections took place in the separator down wells, separator exits and count tunnels. All were found in satisfactory condition. No significant amounts of debris were present.

Forebay Debris/Gatewell Debris/Oil: Floating forebay fine debris concentrations, consisting mostly of woody material and tumbleweeds, was heavy to moderate. Most of the material

remained in front of the powerhouse. Incoming debris loads remain light. We recorded no high trash rack differentials this week and no racks were cleaned. We remain proactive, as project personnel will begin to clean trash racks again on June 23. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are deployed in all operational units. Only units 4 and 11 are without ESBSs. Camera inspections this week in units 1, 2 and 3 revealed no problems. The screens in slots 7A, 8C and 13C slots remain in timer mode. VBS differential monitoring revealed no screens out of criteria. On June 13, 17, 18 and 19, we cleaned 9 screens as a preventative measure. No ESA-listed fish mortalities or lamprey mortalities were seen. On June 19, the VBS in slot 8C was replaced with a screen from unit 11. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During trash removals and VBS checks, we closed the orifices in slots where work was being performed and opened spare orifices in adjacent slots. There were no issues and all systems functioned well in automatic mode. The transition screen cleaning device will remain out of service until winter.

Bypass Facility: During the bypass season, both bypass modes return all fish are 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. PSMFC personnel continue to perform weekly examinations of the PIT tag detection system.

During the week, we completed, as previously agreed with the district office, the installation of handles and latches on the full flow flume hatch covers.

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 each day. PSMFC personnel also began water temperature monitoring on June 15.

The spring spill program, which called for 40 percent spill of total river flow, concluded at 0001 hours on June 16. At this time, the summer spill program, which calls for 50 percent of flow to be spilled, began. Before this change, due to flow in excess of powerhouse capacity, 40 to 43 percent of flow was spilled. After the change, the project maintained the 50 percent level. River conditions are outlined in Table 2 below.

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
259.9	213.0	130.2	91.3	60.3	58.8	6.0	4.3

*Control Room data

Other

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

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

Avian Activity: USDA hazing continues with two shifts along boat hazing occurring Monday, Wednesday and Friday 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 as birds continue to concentrate in the spill flow, with grebes in the forebay.

The bird cannon tripped off line on the afternoon of June 18th, as observed by hazing personnel. Fisheries staff restored service by 0900 hours on the 19th. The fisheries staff also has concerns regarding pump pressure readings. This problem was reported to district engineers.

Pelicans and cormorants have discovered the bypass outfall. Pelicans also appear to be feeding on adult shad along both shore lines.

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

No grebes were observed in the gatewell slots or elsewhere in the juvenile bypass system.

Bird counts continued with each zone being counted by the fisheries staff once a day, 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 13	Forebay	0	0	2	0	12
	Spill	2	2	0	6	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	2	0
June 14	Forebay	0	0	1	0	3
	Spill	18	0	0	8	0
	Powerhouse	0	1	0	1	0
	Outfall	0	0	0	2	0
June 15	Forebay	0	0	0	0	7
	Spill	26	0	3	6	0
	Powerhouse	0	1	0	0	0
	Outfall	0	2	0	6	0
June 16	Forebay	0	0	0	0	27
	Spill	17	8	7	11	0
	Powerhouse	0	1	0	0	0
	Outfall	0	2	0	8	0
June 17	Forebay	0	1	0	0	13
	Spill	42	0	9	17	0
	Powerhouse	0	0	0	1	0
	Outfall	0	1	0	6	0
June 18	Forebay	0	0	0	0	12
	Spill	24	4	0	23	0
	Powerhouse	3	0	0	1	0
	Outfall	0	3	0	0	0
June 19	Forebay	0	0	0	0	0
	Spill	3	1	23	13	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	4	0

Research: GBT monitoring and the juvenile survival study continue. The adult lamprey passage study began June 15 at the exits and will be phased in at SFEW2.

Project: Ice Harbor
Biologist: Ken Fone
Dates: June 13 - 19, 2014

Turbine Operation

Turbine unit 2 tripped off line on a protective relay action at 1142 hours on May 18 and remains out of service in support of turbine shaft bearing investigations. 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. All other units were available for service. The unit 6 scroll case was unwatered on June 13. There were no fish observed.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 16, 17, 18, and 19.

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, except on June 16 with readings of 7.6 feet and 2.2 feet, respectively. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria, except on June 16 with a depth of 6.3 feet. The powerhouse operator was informed of these out of criteria points needing resolution. 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 three north shore fish pumps were operated without problems. Six of eight 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 3 VBS inspections were performed on May 19 and 21, with no problems found. STS inspections are scheduled to occur the week of June 23.

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 April 2. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays. Sampling results for June 17 and 19 are outlined in the tables below.

Table 1. Fish condition sampling results at Ice Harbor Dam

June 17:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	0	---	---	---
C-CH-O	46	0	0	0
UC-CH-O	47	1	0	0
C-SH	0	---	---	---
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	94	1	0	0

June 19:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	48	2	0	0
UC-CH-O	53	0	0	0
C-SH	5	0	0	1
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	106	2	0	1

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

River Conditions

Summer spill operations are scheduled to begin June 21. 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
88.1	67.7	53.6	24.1	58	58	6.0	4.1

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections took place on May 19 and 21. A total of 13 juvenile lamprey mortalities and one juvenile coho mortality were recovered. Transformer cooling water strainer inspections occurred on June 4. Seven live juvenile lamprey were recovered, with no mortalities observed. Turbine cooling water strainer inspections are scheduled for the week of June 23.

Invasive Species: No new exotic species have been found.

Avian Activity: Piscivorous bird hazing began on April 1. The avian deterrent program has generally been effective at reducing the numbers of piscivorous birds near the dam. Daily bird counts are provided in Table 3.

Table 3. Daily Morning Piscivorous Bird Counts at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
June 13	6	26	30	52	0
June 14	0	7	0	10	0
June 15	4	20	11	26	0
June 16	0	0	5	16	0
June 17	0	5	1	8	0
June 18	5	5	2	9	0
June 19	0	4	3	6	0

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

Project: Lower Monumental
Biologists: Bill Spurgeon and K.C. Deife
Dates: June 13 - 19, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 5 was removed from service on June 18 at 1235 hours. The problem is currently being investigated.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and PSMFC/State biologists on June 13, 14, 15, 16, and 18.

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.

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 readings of 7.6', 7.0', and 7.6 feet on June 14, 15, and 16, respectively. North shore channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.5 feet reading on June 18.

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 7.9', 7.4', 6.7', 6.5', and 7.4 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 0.6 feet reading on June 18.

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 7.5', 6.8', and 7.4 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 0.7 feet reading on June 13.

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 being currently being programmed. The automated system is estimated to return to service in June. 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 is scheduled to begin at 0001 hours on June 21. 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
85.6	66.5	30.0	24.6	59	57	3.5	3.2

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 19. Two live lampreys and 1 live Siberian prawn were recovered. Mortalities included 9 juvenile lamprey, 35 juvenile salmon, and 1 Siberian prawn.

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.

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

Date	Time (hours)	Gulls	Cormorants	Terns
June 13	1130	11	2	0
June 14	1100	7	0	0
June 15	1100	21	3	0
June 16	1100	15	1	0
June 17	1100	17	0	0
June 18	1100	2	0	0
June 19	1100	1	0	0

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

Project: Little Goose
Biologist: James Brandon
Dates: June 13 - 19, 2014

Turbine Operation

Turbine units 1 through 6 were available for all of this reporting period. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on June 14, 16 and 19.

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 1.1 and 1.6 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 5.4 and 5.9 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.7 and 6.0 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area was measured at 1.6 fps. Surface water velocity ranged between 1.7 to 2.1 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 4,500 and 5,500 sq ft.

Spillway Weir: The spillway weir was closed on June 16 at 1145 hours and opened on June 17 at 1055 hours in support of a change from low crest to high crest configuration.

ESBS/VBS: All ESBS operated without problems.

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

Transportation Facility: On June 18 starting at 1000 hours, the collection flume was switched to primary by-pass for two hours, so we could clean woody debris out from under the separator bars. Three cubic yards of debris was removed. Otherwise, the collection and transportation facility operated within criteria during this report period. A total of 179,569 fish were collected for transport. 7 subyearling Chinook fry were by-passed. The descaling and mortality rates were 0.09% and 0.24% respectfully.

Transport Summary: Every other day barging continued during this reporting period. All fish collected but the 7 subyearling Chinook fry mentioned above were transported.

River Conditions

Summer spill operations are scheduled to begin June 21.

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
85.8	66.1	25.6	19.7	58.5	58.3	5.3	3.0

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on June 19. Three juvenile lamprey mortalities and 2 juvenile salmonids were removed.

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 was utilized all week.

Table 2. Maximum Daily Bird Counts at little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
June 13	7	9	1	2
June 14	3	10	3	4
June 15	7	17	1	4
June 16	6	21	0	4
June 17	7	8	2	4
June 18	3	7	1	0
June 19	8	7	0	2

Research: The University of Idaho continued their adult Salmon and adult Lamprey passage study. The U of I is requesting more antennas to be installed in support of the lamprey study.

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

Project: Lower Granite
Biologists: Mike Halter, Elizabeth Holdren and Ches Brooks
Dates: June 13 - 19, 2014

Turbine Operation

Lower Granite had five turbine units available for power generation at the beginning of the report period. Turbine unit 6 is out of service for turbine blade seal insection, the expected return to service date is uncertain but may happen as soon as next week. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On June14, 15, and 16 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 were below criteria on all inspections with readings of 0.7, 0.8 and 0.9 feet repectively (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 5.6 to 6.0 feet. The weir depths at the north shore entrances were out of criteria all week. Weir depths at north shore entrance 1 ranged from 4.8 to 5.8 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.8 to 4.3 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 0.91 to 1.16 feet per second and averaged 1.10 feet per second.

Auxiliary Water Supply System: Fish pumps one and three were run during the week with fish pump two held in standby mode.

Juvenile Fish Passage Facility

The sample rate remained at 4.0% until 0700 hours on June 15 when it was lowered to 2.0% where it remained for the duration 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 has 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 attempted on May 30. An attempt was made to view the screens in units 3 and 5. Due to turbid water conditions the inspections were cancelled. The next inspections are scheduled for late June.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. Debris levels were fairly high with a lot of smaller material moving through the system.

Transportation Facility: Operations proceeded smoothly at the facility during the week. There were some issues with smaller 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 project 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 are departing Lower Granite on the odd numbered days of the month of June. All barges other than the two utilized 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 decision was made late in the report week to allow the towboat contractors to fuel fish barges on an every other trip basis.

Removable Spillway Weir: The RSW resumed operation with normal spring spill activities on April 3. Summer spill operations are scheduled to begin June 21.

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
88.5	68.6	20.4	20.3	58.5	57.4	4.6	3.6

*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: Cooling water strainers were last inspected for lamprey on May 27. A total of 181 lamprey mortalities were found in the strainers over a combined run time of 2,929.2 unit hours. The next cooling water strainer inspections are scheduled for late June.

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 is presently taking place 8 hours per day and will continue through the end of June.

Table 2. Daily Average Predacious Bird Counts at Lower Granite Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
June 13	18	0	0	0
June 14	17	0	0	0
June 15	15	0	0	0
June 16	16	0	0	0
June 17	11	0	0	0
June 18	10	0	0	0
June 19	7	0	0	0

* Numbers are an average of the morning and evening counts off the JFF separator platform.

Adult Fish Trap Operations: The adult fish trap was watered up and sampling began on March 10. The initial sample rate was 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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: The goal of this research project is to study the physiology and endocrinology of steelhead kelts to evaluate the feasibility and success of several strategies for rehabilitating and handling steelhead collected at LGR. Also, to understand and identify the suite of physiological changes that occurs in Snake River steelhead during the process of sexual maturity, and to determine changes that occur post spawning that are associated with successful downstream migration and recovery to spawn again. As part of this collaborative study to investigate approaches to increase adult steelhead returns the NPT will select up to 150 fish for transport to the Dworshak National Fish Hatchery holding facility.

National Marine Fisheries Service (NMFS) In-River Survival: This week, NMFS staff began PIT-tagging Chinook and steelhead smolts for their Survival Study to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LGR tailrace. The last fish marking activities for this study concluded on Friday, June 13.

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: A prototype broad crested overflow weir and 14 inch diameter orifice were installed into intake gatewell 5A during the winter of 2012. These structures are being evaluated by UC Davis, Biomark and Blue Leaf Environmental in order to test whether these structural modifications will reduce passage times and increase survival of fish through the upper portion of the LGR Juvenile Bypass System. Last winter a sharp crested weir was installed in place of the broad crested weir and a prototype LED light ring was installed on the 14 inch orifice. The goal of the study is to assess the biological and debris passage characteristics associated with each style of passage structure (14 inch orifice - with light ring) and 'sharp crested' overflow weir) during the day, and this year also at night. Results of this study will be used to determine whether any redesign of the weir or orifice structures is necessary and to determine which of these structures warrant installation in the remaining gatewells. This study will also help inform future management decisions for structural modifications at other Columbia and Snake River dams. Up to 375 fish of each species (clipped yearling Chinook, clipped subyearling Chinook and clipped steelhead) will be collected from the JFF east raceways during the NMFS survival and transport study sampling.

These fish are PIT-tagged, photographed, evaluated for condition, held overnight and released the next morning for the day release or the next evening for the night release. The fish are released into gatewell 5A or the gallery channel. To further evaluate these structures up to 100 adult steelhead kelts and up to 2500 juvenile lamprey will be PIT-tagged and released. A subsample of each release group will be collected in the Sort-By-Code tanks and examined for injury. Blue Leaf and Biomark completed their marking work on Sunday, June 15.