U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#17-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: June 20 - 26, 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 below.

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.
5, 13 & 14	Jun 24	1.3 hours total.	ESBS camera inspections.

Adult Fish Passage Facilities

On June 20, 22 and 24, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counting continues. The fisheries staff is checking the exits on all shifts when the juvenile system is in primary bypass. The adult lamprey passage season continues with video tape review counting beginning July 1. Also, exit temperature monitoring continues. On June 25, lamprey passage study cameras were installed at SFEW2.

On July 10, a dive is planned in order to repair the lamprey passage structure at SFEW2 so it can be fully opened.

Fish Ladder Exits: During measured inspections, all Fish Passage Plan criteria were met on both ladder exits. 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 22 and 24, multiple exit alarms occurred, which the operator reset. On June 24, the operator adjusted the exit set points.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. Two false differential alarms occurred, which the operator reset. It has been suggested that the cleaning spray maybe causing the sensors to make false readings. One suggestion is to put the

sensors in protective still wells. On June 22 and 24, the exit set points were adjusted. Also, on June 24, the operators adjusted weir 340. We have provided a radio to the fish counters as the phone still works intermittently. The project hopes to replace the outside phone line in one to two 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 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 south powerhouse entrance, 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 1.9 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.

Also, fish pumps 1 and 3 ran with blade angles of 30 degrees had no interruptions. 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 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 21, 23 and 25. We bypassed 457,715 smolts and 11,200 juvenile lamprey this week.

Descaling concerns have subsided. For the week, the rate ran from 3.5 to 1.5 percent. The project will continue to perform all operations and inspections promptly.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris, which was mostly woody material, tumbleweeds and fine material, was moderate and mostly at the powerhouse. Incoming debris remains light. Project operations and wind moved the debris back and forth across the southern two-thirds of the powerhouse.

We recorded no high trash rack differentials this week and no racks were cleaned due to power demands. On June 30, as we remain proactive, the project will begin to clean trash racks again.

We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are installed at all operational units. Only units 4 and 11 are without ESBSs. The screens at 7A, 8C and 13C slots remain in timer mode. Camera inspections this week at units 5, 13 and 14 revealed no problems. During the inspections, we noted 19 smolt mortalities in the gatewell slots.

VBS differential monitoring revealed no screens out of criteria. On June 23, 25 and 26, we cleaned 15 screens as a preventative measure. We noted five lost juvenile lamprey and 105 lost smolt. Eighty seven of the smolts were from units 1 and 2. These smolt mortalities were noted during the peak of the outmigration. VBS rehabilitation continues.

On June 23, we installed a new cable on our meter used to conduct the differential readings.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty-two orifices were open all week. During VBS 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. During the week, the rectangular screen air burst system tank was recertified. 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 will occur in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring will occur on secondary bypass days.

We turned the sample gates on and off every other day to be on with secondary. The gates and all operational systems functioned well. The primary PIT tag system remains off as the bypass lines provide a better route for the fish than the PIT lines. PSMFC continues to perform weekly examinations of the PIT system. The secondary PIT/bypass gates remain off and open for bypass.

On June 21, a technician lost a bucket down the B side flume while conducting an ice block check. The bucket was small enough to pass out of the system and repeated ice checks revealed no blockage. On June 23, locks were changed at the facility and elsewhere in order to maintain proper security here and in different locations on the project. On June 24, we repaired small cracks in the porosity unit's perforated plate.

River Conditions

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

The summer spill program, which calls for 50 percent of flow to be spilled, continues. The operating project has maintained the 50 percent spill 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
293.6	255.9	146.9	128.4	61.7	59.4	6.0	6.0

*Control Room Data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on July 1.

Invasive Species: The next zebra mussel station examination will occur on June 29.

Avian Activity: USDA hazing continues with two shifts along with boat hazing occurring Monday, Wednesday and Friday as conditions allow. Also, a light lethal take continues near the bypass outfall during boat hazing operations.

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.

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 adjusts all hazing equipment as needed. All hazing techniques appear to be working well. On June 25, the fisheries staff examined and added oil to the outfall water cannon supply pump.

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 tracking with fish numbers.

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

Gulls and terns are feeding in the spill. Pelicans are working the shorelines for adult shad. All species but grebes were observed at the bypass outfall.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
June 20	Forebay	0	0	0	0	19
	Spill	7	0	7	16	0
	Powerhouse	0	0	0	1	0
	Outfall	2	1	0	11	0
June 21	Forebay	0	0	0	0	20
	Spill	16	0	3	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	2	0	7	0
June 22	Forebay	0	0	0	0	0
	Spill	4	1	1	14	0
	Powerhouse	0	1	0	0	0
	Outfall	0	2	0	3	0
June 23	Forebay	0	0	0	0	0
	Spill	5	6	14	8	0
	Powerhouse	0	0	0	6	0
	Outfall	0	0	2	0	0
June 24	Forebay	0	0	0	1	0
	Spill	26	0	15	16	0
	Powerhouse	2	0	0	1	0
	Outfall	3	0	2	0	0
June 25	Forebay	0	0	0	0	0
	Spill	16	3	0	20	0
	Powerhouse	5	0	3	2	0
	Outfall	0	0	0	7	0
June 26	Forebay	0	0	0	0	0
	Spill	5	0	6	17	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0

Research: GBT monitoring and the juvenile survival study continue. On June 24, the GBT flush line pump was replaced. 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 20 - 26, 2014

Turbine Operation

Turbine unit 2 tripped off on 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. The other units were taken out of service one at a time for STS inspections on June 24 and 25.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 23, 24, and 26.

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 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 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

June 23:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	0	---	---	---
C-CH-O	44	3	0	0
UC-CH-O	49	1	0	0
C-SH	9	1	0	1
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	102	5	0	1

June 25:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	2	0	0	0
C-CH-O	64	1	0	0
UC-CH-O	44	2	0	0
C-SH	2	0	0	0
UC-SH	0	---	---	---
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	113	3	0	0

Removable Spillway Weir: The RSW is in operation position. 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
69.5	64.8	51.2	19.4	59	58	6.8	6.1

*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: 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 maximum birds counted in the tailrace are provided in Table 3.

Date	Gulls	Cormorants	Caspian Terns	Pelicans	Grebes
June 20	0	15	1	19	0
June 21	---	---	---	---	---
June 22	1	5	3	3	0
June 23	---	---	---	---	---
June 24	0	0	0	18	0
June 25	0	2	0	15	0
June 26	0	2	0	11	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 due to a bad restoring cable.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on June 20, 21, 22, and 25.

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. 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 6.0', 6.6', 6.5', and 7.0 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.9', 7.2', 7.3' and 7.5 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 20.

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 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 0.3 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 operations remain 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 and initiated the use of the Bulk spill pattern. 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
67.5	63.0	30.0	16.7	60	59	4.9	4.2

*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 bass, and 15 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. Cormorants 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 20	1100	3	0	0
June 21	1100	2	0	0
June 22	1130	0	0	0
June 23	1100	1	1	0
June 24	1130	0	1	0
June 25	1130	0	6	0
June 26	1100	3	5	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: June 20 - 26, 2014

Turbine Operation

Turbine units 1 through 6 were available for most of this reporting period. Unit 3 fish screen 3C was found off line on June 24 at 0240 hours. Screen 3C was found to have a faulty brush motor that was replaced and unit was returned to service at 1000 hours on June 24. Screen 3C was found off line again on June 25 at 0650 hours. The screen brush limit switch was reset and unit was placed on line at 0700 hours. All turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on June 22, 24 and 26.

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 1.1 and 1.9 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 5.3 and 5.5 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.6 and 5.7 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity near the junction pool area ranged between 1.8 and 2.2 fps. Surface water velocity ranged between 2.2 to 2.7 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 400 and 8,000 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 3C. The brush motor was replaced in 3C on June 24. The limit switch was reset on June 25.

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

Transportation Facility: The collection and transportation facility operated within criteria this report period. A total of 57,756 fish were collected for transport. Twelve subyearling Chinook fry were by-passed. The descaling and mortality rates were 1.0% and 0.09% respectfully.

Transport Summary: Every other day barging continued during this reporting period. All collected fish were transported with the exception of the above mentioned subyearling Chinook fry 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
66.9	63.4	20.3	19.0	61.8	58.6	6.0	5.2

*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. Observation results are summarized in Table 2 below.

Table 2. Maximum Daily Bird Counts: Single observation.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
June 20	5	12	1	4
June 21	8	16	0	2
June 22	2	23	1	2
June 23	4	8	0	0
June 24	10	6	0	0
June 25	10	11	0	0
June 26	4	8	0	0

Research: The University of Idaho continues their adult salmon and adult lamprey passage study. The U of I is requesting more antennas to be placed for 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 20 - 26, 2014

Turbine Operation

Lower Granite had five turbine units available for power generation at the beginning of the report period. As scheduled, Turbine unit 5 was removed from service on June 20 at 0650 hours for governor repairs, the expected return to service date is now July 2. Turbine unit 3 was declared out of service at 0129 hours on June 25 (forced outage) due to an overheating trip on an upper guide bearing. Unit 3 was returned to service at 0424 hours the same day. Turbine unit 6 is out of service for turbine blade seal insection, the expected return to service date is uncertain. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On June 20, 21, 22 and 26 COE fish biologists conducted inspections of the adult fishway system. The June 26 inspection was conducted with the ODFW biologist from Little Goose Dam.

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 21 inspection but were below criteria on the June 20, 22 and 26 inspections with readings of 0.9, 0.9 and 0.6 feet respectively (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 5.7 to 5.8 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 5.0 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.7 to 3.8 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 1.10 to 1.25 feet per second and averaged 1.16 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 was raised from 2.0% to 4.0% at 0700 hours on June 20, 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. 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 attempted on May 30. An attempt was made to view the screens in unit 3. Due to turbid water conditions the inspections were cancelled. The next inspections are scheduled for June 27 and 28.

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 went 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 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 will depart Lower Granite on the odd days of the month of June. 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 decision was made to allow the towboat contractors to fuel fish barges on an every other trip basis.

Removable Spillway Weir: The project began FOP 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
68.2	64.3	20.5	18.7	62.1	56.2	5.0+	4.7

*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 inspected for lamprey on June 26. A total of 14 lamprey mortalities were found in the strainers over a combined run time of 2,089.2 unit 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 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 20	2	0	0	1
June 21	5	0	0	0
June 22	3	0	0	3
June 23	7	0	0	0
June 24	7	0	0	3
June 25	4	0	0	0
June 26	0	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. *Collection of kelts from the separator at Lower Granite for this study concluded the morning of June 26.*

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.*