U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#07-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 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 the criterion. From April 12 to 13, units 1 and 2 ran at the lower end of the criterion due to high VBS differentials. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18 to Jul 31	About 10.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jul 31	About 4 months.	Turbine bearing issue continues.
13 & 14	Apr 11	9.6 hours total.	ESBS installation & maintenance.
9	Apr 14	7.7 hours.	ESBS installation & maintenance.
10	Apr 14 to 18	About 4 days.	Wicket gate packing and brush bar retrieval.
3	Apr 15 to 17	About 2 days.	ESBS installation, maintenance & wicket gate packing.

Adult Fish Passage Facilities

On April 11, 13 and 16, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counts continued.

Last week, district personnel examined vibration issues at the prototype lamprey weir at SFEW2 and made adjustments to the structure. On April 14, participants in a follow-up meeting discussed potential prototype improvements.

Since electrical upgrades are not yet completed at the Oregon ladder entrances, the assistant biologist and control room operator explored various weir configurations on April 13 and 14 in an attempt to lower ladder entrance weirs into criteria while keeping pool differentials also in criteria. At 1200 hours on April 14, they determined the weirs were not responding to software programming and asked the technical staff to investigate. Technicians found that weir level sensors have not interacted properly with the software program since the new sensors were installed during the winter maintenance season. This issue now appears to be mostly resolved.

The assistant biologist and chief operator first lowered south power house entrances into criteria by adjusting the weir set points. The biologist then checked both entrances, finding the south entrance in criteria. This was followed by north power house entrances set points adjustments. The biologist then checked both entrances and found all points in criteria. The Oregon sensors still require calibration.

Fish Ladder Exits: During measured inspections, both ladder exits met all Fish Passage Plan criteria. Debris loads remained 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. The Washington exit experienced multiple weir alarms on April 16, which the operator reset without incident. Oregon exit traveling screen differentials were satisfactory this week. Even so, two differential alarms did occur at this exit during this report period. The operator reset both alarms without incident.

Fishway Entrances and Collection Channel: At the Washington ladder entrances, all inspection points were in criteria. In the near future, the project will replace the LEDs for W2 and W3 with a PLC (Programmable Logic Circuit), which will integrate into the new control system better.

On April 11 and 13, the Oregon ladder north powerhouse entrance, NFEW2, measured depths of 7.8 feet and 7.9 feet, respectively. On April 11, NFEW3 measured a depth of 7.8 feet. The pool differential remained in criteria. At the south powerhouse entrance, on April 11 and 13, SFEW 1 and 2 measured depths ranging from 7.6 to 7.8 feet. The pool differential remained in criteria. The work conducted on April 14 (see above) appears to haves resolved the criteria issues. Project personnel will continue to examine all sensor calibration drifts. Also, we expect to complete the Oregon Entrances electrical upgrades in the near future. Collection channel surface velocities averaged 1.6 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine unit had no interruptions in service. Fish pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. On April 16, the project replaced an electrical supply power pole the well house. A full reservoir allowed completion of this work without a fish pump outage. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool without any 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 was no deviations from this schedule as secondary bypass occurred on April 12, 14 and 16 as planned. We bypassed 19,985 smolts and 1,380 juvenile lamprey this week.

Forebay Debris/Gatewell Debris/Oil: Moderate to heavy floating forebay debris accumulations were evident this week, mostly in front of the powerhouse. Project operations, trash rack cleaning and weather patterns have moved the debris somewhat. The debris is composed mostly of woody material. For now, the volume of incoming debris has decreased. No trash raking

occurred this week. The next cleaning is scheduled for May. Trash rack differential readings revealed no problems. For the week, we observed no problems in the gatewell slots. We removed woody debris from the slots as needed.

ESBSs/VBSs: On April 11, 14 and 15, ESBS were installed in units 3, 9, 13 and 14, which completes ESBS deployments in all operational units. Only units 4 and 11 are without ESBSs. Camera inspections will begin about one month after installation is complete.

From April 11 to 12, the screen in slot 7B was placed in timer mode after triggering an alarm. From April 11 to 13, the unit 8 screen control panel's view screen would not light up. Unit 8 ESBSs were checked in the control room instead. Both issues were resolved. On April 14, the operator switched the screen in slot 13C to timer mode after triggering an alarm. The electrical staff worked on the screen's controls for the next two days. However, the screen continued to activate alarms in automatic mode, so the operator returned it to timer mode, where it remains.

During the winter of 2012-2013, the project lost the ESBS brush bar in slot 10B. This week, following camera inspection and headgate installations, project personnel dewatered the unit 10 scroll case and retrieved the bar. We observed no ESA-listed fish or lamprey during the dewatering operation.

VBS differential monitoring revealed 10 screens out of differential criteria. From April 13 to 17, project personnel cleaned these screens plus one more as a precautionary measure. On April 12 and 13, units 1 and 2 were operated at reduced electrical loads until the VBSs were cleaned. Six juvenile lamprey were noted as lost during these cleaning operations. On April 17, no records were kept for one of the VBSs during cleaning operations.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. We removed one obstruction from south orifice 2B. No fish injuries were noted. Unit 4 orifices remain closed to preclude oil residue from entering the collection channel. Makeup orifices were opened in unit 3 to maintain collection channel elevations. The electrical staff installed a new light fixture at south orifice 6B. On April 13, we switched from north orifice 1A to south orifice 1A. The north orifice was in use to avoid water splashing on the side brush limit switch. Since the switched had been moved several years ago, there was no longer a reason to continue to use the north orifice. From April 15 to 16, the orifice at slot 10B was closed with a spare at slot 9C opened in preparation for a slot unwatering, which did not occur. During raking operations, orifices in the affected slots were closed, and make-up orifices were opened in adjacent slots to maintain collection channel elevations.

All systems functioned well in automatic mode. On April 16, we removed a stick from the rectangular screen cleaning mechanism's west scissors arm. 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 only on secondary bypass days.

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

The week, we fixed the line running from the web lab to the sample raceway.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the smolt monitoring staff, whose data day runs from 0700 to 0700 hours daily. The spring spill program, which calls for 40 percent of the flow to be spilled, continues. Due to flow in excess of powerhouse capacity, 40 to 52 percent of flow was spilled this week. TSWs remain open in bays 19 and 20.

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
245.1	220.3	122.4	87.9	48.5	47.3	5.5	5.0

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur in early May.

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

Avian Activity: Bird counts continue with each zone being counted by the fisheries staff once a day, usually in the morning. These counts are reflected in Table 3. The April 17 counts were inadvertently missed.

This week, we observed gulls, pelicans, and cormorant on the rocks by the Washington boat dock. We also noted ospreys on project. Two grebes entered the gatewell slots with one passing to the collection channel. Both grebes remain in these locations.

USDA hazing continues and bird distress calls remain deployed. On April 23, the first day of boat hazing will occur. The fisheries staff continues to monitor the bird cannon pump for leaks and other issues. We observed no new problems.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Apr 11	Forebay	1	0	0	0	4
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 12	Forebay	0	0	0	0	9
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 13	Forebay	0	0	0	0	3
	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 14	Forebay	0	0	0	0	6
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 15	Forebay	0	0	0	0	4
	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 16	Forebay	0	0	0	0	3
	Spill	2	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 17	Forebay	NA	NA	NA	NA	3
	Spill	NA	NA	NA	NA	0
	Powerhouse	NA	NA	NA	NA	0
	Outfall	NA	NA	NA	NA	0

Research: GBT monitoring began this week as plan and continues. Also, preparations continue for the juvenile survival study. This week, the resources staff removed a large log from one of the study trolleys attached to the forebay deck. Adjustments and testing are also planned for the lamprey weir at SFEW2.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: April 11 - 17, 2014

Turbine Operation

Turbine units 1 – 6 were available for service.

Adult Fish Passage Facilities

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

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exits, 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) and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) and channel/tailwater differential were in criteria on all inspections. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated without problems. Six of 8 south fish pumps are in service. All south fish pumps are available for operation.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in position for juvenile fish guidance and are in cycle run mode. Continuous run mode will be initiated April 21. STS inspections are scheduled for April 21 and 23. Cooling water strainer inspections will be completed at the same time.

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

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample took place April 2. Sampling results are outlined in the tables below for April 14 and April 16. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays.

Table 1. April 14 and 16 fish sampling results, Ice Harbor Dam.

April 14:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	32	0	0	0
UC-CH	51	1	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	11	0	0	1
UC-SH	---	---	---	---
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	6	1	0	0
TOTAL	100	2	0	1

April 16:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	40	1	0	1
UC-CH	55	2	0	1
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	12	0	0	2
UC-SH	6	0	0	0
C-COHO	---	---	---	---
UC-COHO	3	0	0	0
C-SOCK	---	---	---	---
UC-SOCK	6	1	0	1
TOTAL	122	4	0	5

Removable Spillway Weir: The RSW is in operation position. Spill for fish 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
88.4	71.7	67.2	53.7	49	48	5.2	4.8

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on March 24 and 25. A total of 379 lamprey were recovered, of which 2 were found live and the rest were mortalities. Unit 6 was out of service and not inspected. Combined unit run times totaled 2,944.5 hours.

Invasive Species: No new exotic species have been found.

Avian Activity: Bird hazing began April 1. The water cannon is functioning satisfactorily. Daily counts are reflected in Table 3 below.

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

Date	Gulls	Cormorants	Caspian Terns	Pelicans
Apr 11	2	21	2	2
Apr 12	NA	NA	NA	NA
Apr 13	20	15	1	1
Apr 14	0	11	4	1
Apr 15	35	13	6	1
Apr 16	15	28	0	1
Apr 17	25	26	0	2

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

Project: Lower Monumental
Biologist: Bill Spurgeon
Lead Biological Science Technician: K. C. Deife
Dates: April 11 - 17, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 5 was removed from service at 1300 hours on October 29 for 6 Year Overhaul/Thrust Bearing Replacement with an estimated return to service date of April 24, 2014.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and PSMFC/State biologists on April 11, 12, 13, 15, 16, and 17.

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 depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.5', 7.6, 6.6', 6.8', and 7.1 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

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 6.9', 7.6', 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 except April 12, 13, and 16 when the channel/tailwater head was 0.9', 0.9', and 0.9 feet.

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.

A replacement for the PLC for automated control of the fishway has been ordered. Upon arrival it will require programming prior to returning to service. The automated system is estimated to

return to service in May. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: 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 80.8 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 remains in continuous run mode due to the average length of sampled sockeye being less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 19 orifices open.

Collection Facility: Collection for condition sampling began on April 1. Subsequent collection for condition monitoring will occur every third day.

Transport Summary: Fish transport is not occurring at this time.

River Conditions

River conditions during the week are outlined in Table 1. Spring spill operation was initiated at 0001 hours on April 3.

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
85.9	70.0	29.4	26.0	51.0	48.0	3.6	2.2

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 2. No live lamprey were recovered. Mortalities included 108 juvenile lamprey and 40 juvenile shad.

Invasive Species: No zebra mussels were observed at the monitoring stations on April 4.

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2 below. Gulls were the dominant species observed during inspections this week.

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

Date	Time (hours)	Gulls	Cormorants	Tern
Apr 11	1100	0	0	0
Apr 12	1100	0	0	0
Apr 13	1105	3	1	0
Apr 14	1100	5	1	0
Apr 15	1100	16	1	0
Apr 16	1100	8	2	0
Apr 17	1100	11	0	0

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

Project: Little Goose
Biologist: Richard Weis
Lead Biological Science Technician: James Brandon
Dates: April 11 - 17, 2014

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on April 13, 15, 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 1.0 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.6 feet (criteria $\geq$ 8.0 ft). NPE weirs were on sill and depths ranged from 5.6 to 6.0 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 6.4 and 6.5 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities were 1.5 fps near the junction pool and ranged from 2.4 to 2.8 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: Woody debris in the immediate forebay ranged between 150 and 400 sq ft. A small sheen of oil was observed in gatewell 4C. Oil absorption pads were deployed.

ESBS/VBS: All ESBSs operated as designed except for 2A. Fish screen 2A apparently tripped a breaker and was reset on April 11. Drawdown differentials were performed on Unit 1 on April 17. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 19 open orifices until April 17 when the number of opened orifices was increased to 22.

Transportation Facility: The Juvenile Bypass System was switched from primary bypass to secondary bypass on April 16 for a 24 hour sample. Total collection for the week was 28,252

with a descaling rate of 0.7% and mortality rate of less than 0.1%. GBT inspection showed no signs of trauma.

Transport Summary: Collection for fish transport is expected to begin May 1st.

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

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
84.2	73.5	31.1	21.2	49.2	48.5	4.1	3.4

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on April 16. One lamprey and one salmonid were removed.

Invasive Species: No zebra mussels were observed on the substrate monitor on April 5 inspection. The next schedule for inspection is on May 5.

Avian Activity: USDA-APHIS bird hazing was utilized all week.

Table 2. Maximum Daily Bird Counts, Little Goose Dam.

Date	Gulls	Cormorants	Caspian Terns	Pelicans
Apr 11	10	14	0	0
Apr 12	31	23	0	0
Apr 13	13	02	0	0
Apr 14	10	7	0	0
Apr 15	25	8	0	0
Apr 16	35	24	0	0
Apr 17	27	15	0	0

Research: University of Idaho has resumed adult salmon and steelhead monitoring.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: April 11 - 17, 2014

Turbine Operation

Lower Granite had all turbine units available for power generation during this report period. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On April 12 - 14 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore during the weekly inspections. The head differential at the north powerhouse fishway entrances was out of criteria on the April 12 inspection with a reading of 0.8 feet (criterion 1.0' – 2.0'). The head differential readings at the north shore fishway entrances were out of criteria on the April 12 and 14 inspections with readings of 0.7 feet (criterion 1.0' – 2.0'). These out of criteria events are associated with the fact that fish pump 1 is now being run in 'slow' speed mode. Fish pump 1's motor management relay system has a tendency to trip the pump offline when the pump is running in 'fast' speed mode during low tailwater conditions, which happened on 3 occasions last week (the pump requires up to an hour to restart).

Weir depths at the south shore fishway entrances met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances were on sill all week due to tailrace elevations below 636.0 feet (at which depths the gates bottom out). Weir depths at the north powerhouse entrances ranged from 5.9 to 6.4 feet. 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 3.8 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 1.05 to 1.18 feet per second and averaged 1.11 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 2 were run during the week. An operational test was performed April 14 at 1228 hours on fish pump 3, that required fish pumps 1 and 2 to be out of service. Fish pump 3 failed to start. The problem was found to be a linkage issue in the breaker for this pump, and the problem is believed to be fixed. Fish pumps 1 and 2 were back online at 1348 hours the same day. Lower Granite will re-test fish pump 3 on April 21.

Juvenile Fish Passage Facility

The sample rate was lowered from 2% to 1% at 0700 hours on April 13, and from 1% to 0.5% at 0700 hours on April 16 due to increasing fish collection numbers, and remained at that level for the remainder of the report week. All fish other than sample fish are being diverted back to the river via the long outfall pipe (secondary bypass).

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 any issues. The brush cleaning cycle is set for once every two hours. The first video inspection is scheduled for April 25-26.

A gatewell dipping operation took place on April 17 in order to determine if the replacement fish screens obtained from John Day Dam caused increased fish descaling in comparison to the fish screens presently in use. Turbine unit 2 has a John Day fish screen in slot C while Turbine unit 3 has John Day fish screens in slots B and C. The John Day fish screen has 1/16 inch spacing compared to 1/8 inch spacing on the standard LGR fish screens. To evaluate descaling, all 3 gatewells in Units 2 and 3 were dipped by COE and PSMFC personnel on Thursday, April 17. In gatewell slot 2A, 236 fish were examined and 3 were descaled for a descaling rate of 1.3%. In gatewell slot 2B, 194 fish were examined and 8 were descaled for a descaling rate of 4.1%. In gatewell slot 2C, 211 fish were examined and 6 were descaled for a descaling rate of 2.8% (Table 20). In gatewell slot 3A, 221 fish were examined and 5 were descaled for a descaling rate of 2.3%. In gatewell slot 3B, 219 fish were examined and 5 were descaled for a descaling rate of 2.3%. In gatewell slot 3C, 224 fish were examined and 3 were descaled for a descaling rate of 1.3% (Table 21). Combined, the three gatewell slots without the John Day fish screens had a descaling rate of 2.5% while the three gatewell slots with the John Day fish screens had a descaling rate of 2.1%. Each gatewell was dipped one time and the number of fish in each dip ranged from 224 to 800 and averaged about 450. Descaling during the gatewell dipping was higher than has been observed in the sample this season, probably due to high fish numbers in the dip net.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every three hours around the clock. The 42-inch controller valve on the separator quit working early on the morning of March 24. Powerhouse electricians have traced the problem to a bad transformer and have one on order. At the present time, separator personnel are manually operating the valve (when needed) with a drill attached to the hand crank on the operator.

Transportation Facility: The juvenile collection gallery was watered up starting at 0800 hours on March 20. The separator was also watered up and all juvenile fish (other than sample fish) are being diverted back to the river through the long bypass pipe (secondary bypass). The upstream raceways are watered up to support NOAA-Fisheries Survival Study tagging operations and in anticipation of the start of barging operations.

Transport Summary: There was nothing significant to report. General fish barging operations are tentatively scheduled to begin somewhere in the April 23 – May 1 time period. The first research barge was scheduled to depart on April 10 but did not due to the Little Goose navlock outage. At the present time (April 20) the Little Goose navlock is scheduled to return to service no later than April 22 – pending critical testing of gate operation that will verify proper alignment and function.

Removable Spillway Weir: The RSW resumed operation with normal spring spill activities on April 3.

River Conditions

River conditions during the week are outlined in Table 1.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
84.3	69.6	31.3	20.5	50.3	49.9	4.7	3.4

*Scrollcase 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 March 26. A total of 473 lamprey mortalities were found in the strainers over a combined run time of 2,840.4 unit hours. The next cooling water strainer inspections are scheduled for late April.

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

Avian Activity: Formal bird counts and hazing activities began on April 1.

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

Date	Gulls	Cormorants	Caspian Terns	Pelicans
Apr 11	9	0	0	0
Apr 12	9.5	0	0	0
Apr 13	35	0	0	0
Apr 14	43	0	0	0
Apr 15	22.5	0	0	0
Apr 16	34	0	0	0
Apr 17	10.5	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.