U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
09-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 25 –May 1, 2014

Turbine Operation

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

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
11	Sep 18 to Jul 31	About 10.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jul 31	About 4 months.	Turbine bearing issue continues.
1, 3, 5 & 9	Apr 29	2.4 hours.	Trash rack cleaning.

Adult Fish Passage Facilities

On April 25, 28 and 30, the McNary fisheries biologist performed measured inspections of the adult fishways. On April 30, NOAA Fisheries personnel conducted the monthly inspection. Visual adult fish counting continues.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria during measured inspections. 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.

On April 28, an operator adjusted the Washington exit weir set points. Otherwise, Washington exit differentials were satisfactory this week. Oregon exit traveling screen differentials were satisfactory this week. Even so, 9 differential alarms did occur at this exit during this report period. The operator reset all alarms without incident.

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

At the Oregon ladder entrances, all inspection points were in criteria. Also, all weirs appear to be maintaining calibration. We hope to complete the electrical upgrades of the Oregon entrances in the near future. Surface collection channel 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 ran satisfactorily with blade angles of 30 degrees. 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 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 were no deviations from this schedule as secondary bypass occurred on April 26, 28 and 30. We bypassed 282,372 smolts and 500 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.

On April 29, approximately 43 cubic yards of material were raked from slots 1A, 3A, 5A and 9A. No ESA listed species or lamprey were seen in this debris. The next full cleaning is scheduled for May. Trash rack differential readings revealed no problems. Some woody debris was removed from the gatewell slots this week.

ESBSs/VBSs: ESBSs are currently deployed in all operational units. Only units 4 and 11 are without ESBSs. Camera inspections will begin in mid May. The screen in slot 13C remains in timer mode. During the week, we found the screen in 7A slot short cycling (cleaner brush reversing direction earlier than expected) on three occasions. The operator recalibrated the screen each time. On May 1, we noted slot 3C's ESBS controller run and stop indicator lights lit at the same time. We have asked the electrician to look into both issues.

VBS differential monitoring revealed no screens out of criteria. On April 29, project staff examined VBSs in unit 10 as part of a preventative maintenance program. We cleaned these screens. No ESA-listed species or lamprey were observed in the removed debris.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. Unit 4 orifices remain closed with makeup orifices open at unit 3 to maintain channel elevation. During trash removals and VBS checks, we closed the orifices in slots where work was being performed and opened spare orifices in adjacent slots.

On April 25, the rectangular screen cleaner brush stalled while traveling downstream in the cleaning configuration. We returned the mechanism to the park position and ran it two more times without incident. We monitored the device over night and into the week without encountering any further problems. At this time, we are assuming it jammed on debris. There were no other issues and all systems functioned well in automatic mode. The transition screen cleaning device remains out of service until winter.

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

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

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. The spring spill program, which calls for 40 percent of the flow to be spilled, continued. Due to flow in excess of powerhouse capacity, 43 to 61 percent of the total river flow was spilled this week. The TSWs continued to operate 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
274.5	260.0	160.1	111.3	49.9	47.7	6.0	5.5

*Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur May 5.

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

Avian Activity: Bird counts continue with each zone being counted by the fisheries staff once a day, usually in the morning. Counts are reflected in Table 3 below. On April 28, we began to regularly observe two loons in the forebay.

This week, we continued to observe gulls, pelicans, and cormorants on the rocks by the Washington boat dock. Ospreys were also observed on project. One grebe entered a gatewell slot and passed out of the bypass system this week. USDA hazing continued two shifts per day. Boat hazing occurs on Mondays, Wednesdays and Fridays as conditions allow. Limited lethal take became necessary near the bypass outfall during boat hazing operations. The bird distress calls deployed along the navigation lock wing wall and other operating project locations appear to have discouraged roosting. All hazing techniques appear to be working well. In early June, infrasound will be briefly demonstrated on project as a bird deterrent.

On April 29, the contractor replaced the rotating assembly and seals in the bird cannon pump. The water cannon was out of service for approximately 9 hours. On April 30, pump and water cannon operation were switched to manual mode, allowing operation 24 hours a day, 7 days per week. This change is expected to reduce wear on the pump foot valve and increase longevity and reliability.

Table 3. Daily Avian Counts at McNary Dam.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Apr 25	Forebay	4	0	0	2	1
	Spill	16	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 26	Forebay	0	0	0	0	0
	Spill	8	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 27	Forebay	0	0	0	0	0
	Spill	17	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	16	1	0	1	0
Apr 28	Forebay	0	0	0	0	0
	Spill	6	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	0	0	1	0
Apr 29	Forebay	0	0	0	0	2
	Spill	27	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	15	0	0	0	0
Apr 30	Forebay	0	0	0	0	5
	Spill	6	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 1	Forebay	0	0	0	0	6
	Spill	17	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	2	0	0	0	0

Fish Salvage: On April 29, project personnel unwatered the unit 4 scroll case and draft tube. No fish were found.

Research: GBT monitoring continues. The first release for the juvenile survival study was rescheduled from May 1 to April 27.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: April 25 –May 1, 2014

Turbine Operation

Turbine units 1 – 6 were available for service.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways April 21, 22, and 23.

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 deployed in their down 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 also 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 were operated. 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 satisfactorly.

STSs/VBSs: STSs are in position for juvenile fish guidance and are in continuous run mode. Continuous run mode was previously initiated on April 21. STS inspections were performed April 21, 22 and 23. The STS in slot 1C was found detached from the cross bar. Cooling water strainer inspections were 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 28 and April 30. Sampling days continue to alternate weekly on Mondays and Wednesdays, and Tuesdays and Thursdays.

Table 1. Fish Sampling:

April 28:

Species	Sampled	Descaled	Morts	Avian Marks
C-CH	29	3	0	0
UC-CH	57	2	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	40	0	0	0
UC-SH	3	0	0	0
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	1	0	0	0
TOTAL	130	5	0	0

April 30:

Species	Sampled	Descaled	Morts	Avian Marks
C-CH	33	2	0	0
UC-CH	23	0	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	65	3	0	2
UC-SH	1	0	0	0
C-COHO	---	1	0	0
UC-COHO	2	0	0	0
C-SOCK	---	---	---	---
UC-SOCK	2	0	0	0
TOTAL	126	6	0	2

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

River Conditions

River conditions during the week are outlined in Table 1 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
81.2	65.3	55.6	24.4	50	50	5.6	5.1

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on April 21, 22 and 23. One lamprey mortality and one juvenile Chinook mortality were recovered from unit 5. No other fish were found. Combined unit run times totaled 2,050.1 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 25	4	22	2	2
Apr 26	30	90	3	0
Apr 27	22	10	14	0
Apr 28	30	16	0	4
Apr 29	24	16	0	1
Apr 30	33	37	3	3
May 1	8	19	0	0

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 25 –May 1, 2014

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 5 returned to service at 1639 hours on April 25.

Adult Fish Passage Facility

The adult fishways were inspected by Corps and PSMFC/State biologists on April 25, 26, 27, and 29.

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 7.3', 6.8, and 6.8 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections except April 26 when the channel/tailwater head was 0.8'.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth reading was 7.1 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

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 5.3 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 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 to 20 orifices open.

Collection Facility: Facility operation changed to collection for transport at 0700 hours on May1.

Transport Summary: Every-day barging is scheduled to begin on May 2.

River Conditions

Spring spill operations in support of fish passage were initiated at 0001 hours on April 3. River conditions during the week are outlined in Table 1.

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
83.0	63.8	30.0	28.0	51.0	49.0	4.4	3.5

*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. 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 25	1100	7	0	0
Apr 26	1100	4	0	0
Apr 27	1100	5	0	0
Apr 28	1100	5	0	0
Apr 29	1100	9	0	0
Apr 30	1100	3	0	0
May 1	1100	4	0	0

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

Project: Little Goose
Biologist: George Melanson
Lead Biological Science Technician: James Brandon
Dates: April 25 –May 1, 2014

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on April 27, 29 and 30.

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 1.1and 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 0.7 and 1.7 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.7 feet (criteria $\geq$ 8.0 ft). NPE weirs were on sill and ranged between 5.3and 5.6 feet (criteria $\geq$7.0 ft). NSE weirs are in manual and depths ranged between 5.7 and 6.2 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity was measured at 1.7 fps near the junction pool and ranged from 2.5 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: Estimated amounts of woody debris in the immediate forebay ranged between 130 and 400 sq ft.

Spillway Weir: The spillway weir was in service in the low crest position during this reporting period.

ESBS/VBS: All ESBSs operated as designed. Drawdowns were performed on Units 1, 2 and 3 on May 1. All criteria were met.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile system operated with 20 to 22 open orifices.

Transportation Facility: The Juvenile Bypass System was switched from primary bypass to secondary bypass on April 26 for a 24 hour sample. Total collection was 163,713 with a decaling rate of 0% and mortality rate of less than 0.1%. GBT (Gas Bubble Trauma) sampling showed no signs of trauma. Collection for transportation started on May 1.

Transport Summary: Collection for fish transportation started May 1 with direct barge loading operations. The first barge of the regular transport season will depart Little Goose on May 2.

River Conditions

On April 27, the forebay was increased to above MOP to an elevation range of 637-638 feet. This temporary operation was required to stow the navigation lock floating bulkhead. Following bulkhead stowage, the forebay water elevation was lowered and achieved MOP range on April 30.

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
81.4	65.2	28.9	19.6	50.1	48.7	4.5	3.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on April 30. Three salmonids were removed.

Invasive Species: No zebra mussels were observed on the substrate monitor on April 20 inspection. The next schedule for inspection is on May 5.

Avian Activity: USDA-APHIS bird hazing was utilized all week. Daily maximum bird counts are shown in Table 2 below.

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

Date	Gulls	Cormorants	Caspian Terns	Pelicans
Apr 25	53	15	0	0
Apr 26	55	10	0	0
Apr 27	58	12	0	0
Apr 28	16	15	0	0
Apr 29	29	6	0	0
Apr 30	21	11	0	0
May 1	52	14	0	0

Research: The University of Idaho continued the adult salmon passage study. The adult lamprey passage study commences in May.

Project: Lower Granite
Biologists: Mike Halter, Elizabeth Holdren and Ches Brooks
Dates: April 25 –May 1, 2014

Turbine Operation

Lower Granite had all turbine units available for power generation during most of the report period. On April 25 starting at 0743 hours turbine units 6, 5 and 4 were rotated out of service in support of VBS inspections. Inspections of these screens were complete by 1537 hours the same day. On April 26 starting at 0657 hours turbine units 3, 2 and 1 were rotated out of service in support of VBS inspections. Inspections of these screens were completed by 1323 hours on that day. The turbine units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

On April 25, 26, 27, and 29 COE fish biologists conducted inspections of the adult fishway system. In addition, an additional inspection was conducted on April 30 with personnel from the Fish Passage Center and Little Goose Dam.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at the south shore fishway entrances during the weekly inspections. Head differential readings at the north powerhouse fishway entrances met criteria on the April 25, 26, and 30 inspections but were out of criteria on the April 27 and April 29 inspections with readings of 0.8 and 0.7 feet, respectively (criterion (1.0 – 2.0 feet). The head differential readings at the north shore fishway entrances met criteria on the April 26 and April 27 inspections. North shore entrance head differentials were out of criteria on the other dates with readings ranging from 0.6 to 0.9 feet (criterion 1.0 – 2.0 feet). These out of criteria events are associated with the fact that fish pump one is now being run in 'slow' speed mode. Fish pump one'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 (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 5.4 to 7.4 feet. Weir depths at north shore entrance 1 ranged from 4.4 to 5.2 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 3.4 to 5.2 feet (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, and cannot adjust for weir depths automatically; this gate has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being sacrificed in attempt to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.97 to 1.18 feet per second and averaged 1.08 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week with fish pump 2 held in standby mode. In attempt to correct the fishway system for lower than desired head differential readings, fish pump 1 was switched from slow speed to high speed operation at 1105 hours on April 29. Fish pump 1 then tripped out due to an overload condition at 1258 hours on April 30. To avoid this situation on a recurring basis, fish pump 1 was placed back in slow speed operation.

Juvenile Fish Passage Facility

The sample rate remained at 0.5% during the report week. All fish other than sample fish and research fish were 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 issue. The brush cleaning cycle is set for once every two hours. The first video VBS inspection of all screens was accomplished on April 25-26. No problems of note were observed.

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. Separator personnel are manually operating the valve (when needed) with a drill attached to the hand crank on the operator.

Transportation Facility: All fish other than research fish were diverted back to the river through the long bypass pipe (secondary bypass). All raceways have been watered up to support NOAA-Fisheries Survival Study tagging operations and in anticipation of the start of general barging operations on May 2.

Transport Summary: General fish barging is scheduled to begin on May 2. The first research barge was scheduled to depart Lower Granite on April 10, but did not due to the Little Goose navigation lock outage. The Little Goose navigation lock returned to service at 1800 hours on April 21 and the only research (specific) barge of the season departed Lower Granite on April 25.

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
83.1	65.7	30.8	20.4	50.3	49.3	4.8	3.1

*Cooling water intake temperature.

Other

Visual adult fish counts began 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 April 28. A total of 5 lamprey mortalities were found in the strainers over a combined run time of 2,988.5 unit hours. The next cooling water strainer inspections are scheduled for late May.

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. Sixteen hour per day hazing began on April 21 and will continue until June 1. (This is in attempt to provide the maximum amount of hazing effort when the highest numbers of juvenile fish are passing the dam). Daily avian counts are compiled in table 2 below.

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

Date	Gulls	Cormorants	Caspian Terns	Pelicans
Apr 25	0	0	0	0
Apr 26	0	0	0	0
Apr 27	0	0	0	0
Apr 28	0	0	0	0
Apr 29	0	0	0	0
Apr 30	0	0	0	0
May 1	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.

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.

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 were 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 2,500 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.