U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#15-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: June 7 - 13, 2013

Turbine Operation

McNary had 11 to 12 units available for power generation this week. On April 1, the hard constraint one percent criteria began and no units ran outside the criterion this week. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
14	Sep 18 – Jun 28	About nine months.	Turbine bearing issues continue.
3	Jun 4 to Unknown	Unknown.	Turbine bearing issue.
1	Jun 8	2 hours.	ESBS electrical cable repair.
9	Jun 10 to 12	2 days.	Governor oil leak repair.
6, 7 & 8	Jun 11	58 minutes total.	ESBS camera inspections.

Adult Fish Passage Facilities

On June 7, 9 and 12, the McNary fisheries biologists performed measured inspections of the adult fishways. When the juvenile facility is in primary bypass, the fisheries staff helped to monitor the picketed leads. Visual fish counting continues. The nightly lowering of Oregon ladder entrance weirs, SFEW1, SFEW2, NFEW2 and NFEW3 for adult lamprey passage will begin June 15th. District and project staffs are examining replacing current tailwater and pool level sensors.

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

The project cleaned picketed leads at both exits regularly. Debris loads along the Washington shore have been fluctuating yet overall loads are decreasing. Tumbleweeds also remain along some of the Oregon shoreline. A southwest wind dispersed debris later in the week.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. Spill turbulence is causing calibration drifts which are very difficult to correct. Also, weir, W3, has a slight amount slack in its south cable.

At the Oregon ladder entrances, all points were in criteria. At the north power house entrance, NFEW2 only had a slight amount of slack in its south cable at times. At the south power house entrance, we continue to note calibration drifts at SFEW1.

The project continued to examine all weir issues.

Oregon ladder collection channel velocities averaged 1.5 feet per second. We continued to utilize surface readings.

Auxiliary Water Supply System: For the report week, the Wasco county PUD in the Washington ladder had no interruptions in service. Oregon ladder fish pumps 1 and 3 operated all week with blade angles of 30 degrees. Fish pump 2 remains out of service for major overhaul which will require a contract. The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The spring season with alternating days of primary and secondary bypass with the switch occurring every morning at 0700 hours continued. No deviations from this schedule occurred. We bypassed 87,608 smolts and 1,900 juvenile lamprey this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was moderate. Debris along the spillway remains very light. Incoming debris has decreased. Weather and project operations also affected debris dispersal.

The fisheries staff found no problems when measuring trash rack differentials so no racks were cleaned. The project will clean the racks next week.

We noted no problems in the gatewell slots. On June 12, the general maintenance crew removed the ESBS rope at 5B slot from the orifice inflow.

ESBSs/VBSs: All ESBSs are installed except those associated with unit 14 which is out of service. The screens in slots 2A, 3A and 7B remain in timer mode. On June 8, after VBS cleaning, the electrical cables for the screen at 1A slot had to be repaired. The PLC for unit 6's screens continues to have an intermittent lighting issue.

On June 11, camera inspections in units 6 to 8 found the screen cleaner in slot 6C short cycling (or reversing direction prior to the end of the normal traveling distance). The operator recalibrated the mechanism. The brush on the screen, 7B, which is in timer mode, was in the proper position. After the inspection, the screens at unit 7 were briefly left in manual mode.

VBS differential monitoring revealed 6 screens out of criteria. On June 8, 12 and 13, the project cleaned these screens and 11 others. During VBS cleaning operations, we observed 4 juvenile lamprey and 9 smolt mortalities.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with 1 problem observed, the ESBS rope mentioned above. We noted no harm to fish. All systems operated well in automatic mode. The fisheries staff monitored the collection channel during VBS cleanings and during bypass operations.

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

We turned the sample gates on and off every other day to be on with secondary. 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 lines. Also, PSMFC preformed the weekly test of the PIT system. The secondary PIT/bypass gates remain off and open for bypass season.

Transport Summary: No fish transport is taking place at this time.

River Conditions

River conditions during the week are outlined in Table 2 as provided by the PSMFC smolt monitoring staff. The data day runs from 0700 to 0700 hours. Daily temeperature reports will begin June 15.

The spring spill season which calls for 40 percent of flow being spilled continues. On June 20, the summer spill season will begin. Spill was 41 to 45 percent of total flow this week due to flow in excess of powerhouse capacity.

From June 10 at 1015 to June 13 at 1030 hours, the project removed the TSWs from bays 19 and 20. During this time, the spill pattern from the Fish Passage Plan Table MCN-10 was used. On June 13, from 1508 to 1540 hours, bay 1 was closed in support of crane work associated with that that spillway gate.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (^{o}F)		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
259.1	237.6	116.1	99.5	61.5	59.5	6.0	6.0

*****Control room data.

Other

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

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

Avian Activity: We continued bird counts with each zone being observed once a day, usually in the morning. In the forebay locations, we observed a high count of 23 grebes with an occasional osprey. Also, we noted pelicans, cormorants and gulls on the rocks by the Washington boat dock.

The 1 grebe in reported in the gatewell slots last week, was joined by another bird for a total of 2 grebes in the slots. One grebe remains in the juvenile collection channel.

In the tailwater area, we had high counts of 45 gulls, 20 terns, 12 pelicans and four cormorants. All of the birds were in the spill basin with the pelicans feeding on adult shad along the navigation lock wing wall. We observed high counts of 3 gulls, 10 terns and 3 pelicans by the bypass outfall. Overall, bird numbers appear to be decreasing.

Hazing personnel continued to work seven days a week with 2 shifts covering the day light hours. The fisheries staff continues to work with the propane and water hazing cannons to keep them functioning well.

Research: The FGE study at units 6, 7, 12 and 13; GBT examinations and the Oregon exit traveling screen study continued.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: June 7 - 13, 2013

Turbine Operation

Turbine units 1- 4 and 6 are in service. Turbine unit 5 remained out of service due to blade cracks.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways June 10, 11, and 12.

Fish Ladders: The north and south shore adult fish ladder inspection areas (picketed leads, head differentials, fish way exits, and depth over weirs) were within criteria.

Adult Fishway Performance at Ice Harbor Dam:

	30-May	4-Jun	5-Jun	6-Jun	10-Jun	11-Jun	12-Jun
CHANNEL VELOCITIES IN SOUTH FISHWAY:	1.4	1.9	1.6	1.8	1.5	1.6	2.2
DIFFERENTIALS/DEPTHS:							
Ladder Exit	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Ladder Weirs	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Counting Station	0.1	0.1	0.2	0.1	0.0	0.1	0.1
North Fish Ladder							
Ladder Exit	0.0	0.0	0.0	0.1	-0.1	0.0	0.0
Ladder Weirs	1.2	1.1	1.1	1.2	1.2	1.2	1.2
Counting Station	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Collection Channels							
South Shore	1.2	1.6	1.7	1.8	1.4	1.8	1.9
North Powerhouse	1.3	1.1	1.0	1.3	1.3	1.4	1.3
North Shore	1.3	1.6	1.2	1.0	1.2	1.1	1.1
Weir Depths							
SFE 1	9.1	8.9	8.7	8.6	9.0	8.6	8.7
NFE 2	8.3	9.7	10.0	10.5	8.7	10.4	9.4
NSE 1	8.6	7.5	8.4	9.0	8.8	8.8	8.9
CRITERIA POINTS:							
Channel Velocities	NO	YES	YES	YES	YES	YES	YES
Differentials							
South Fish Ladder							
Ladder Exit	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES
Counting Station	YES	YES	YES	YES	YES	YES	YES
North Fish Ladder							
Ladder Exit	YES	YES	YES	YES	YES	YES	YES
Ladder Weirs	YES	YES	YES	YES	YES	YES	YES
Counting Station	YES	YES	YES	YES	YES	YES	YES

Table 1. Adult Fishway Performance at Ice Harbor Dam – continued:

	30-May	4-Jun	5-Jun	6-Jun	10-Jun	11-Jun	12-Jun
Collection Channels	YES	YES	YES	YES	YES	YES	YES
South Shore	YES	YES	YES	YES	YES	YES	YES
North Powerhouse	YES	YES	YES	YES	YES	YES	YES
North Shore							
Weir Depths	YES	YES	YES	YES	YES	YES	YES
SFE	YES	YES	YES	YES	YES	YES	YES
NFE	YES	NO	YES	YES	YES	YES	YES
NSE							

The north adult fish way entrance was out of criteria June 4. With the amount of spill in the area of the entrance, it is difficult to maintain. The entrance is being operated in manual mode to prevent excessive up and down movements. The shift operator was asked to adjust the entrance to the lowest possible depth before losing the collection channel differential. It is a constant battle to maintain both criteria with the spill. Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tail water differentials were in criteria. Channel/tail water 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

Fore bay Debris/Gate well Debris/Oil: No problems to report. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in operation. No problems were found on the May inspections. STS/VBS inspections are scheduled for June 25 and 26. Turbine strainer inspections will be done at the same time. One juvenile lamprey mortality was found lodged in an STS during the inspections.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices. There were no problems with the incline screen cleaner brush.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample took place April 8. Sampling days will alternate from Monday and Wednesday to Tuesday and Thursday each week.

Removable Spillway Weir: The RSW is in operation. Spill for fish began April 3, 2013.

Fish Sampling: Sampling results for June 11 and 13 are shown below.

June 11:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	2	0	0	0
UC-CH	5	0	0	0
C-CH-O	67	1	0	0
UC-CH-O	57	1	0	0
C-SH	5	0	0	1
UC-SH	---	---	---	---
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	136	2	0	1

June 13:

Species	Sampled	#De-scaled	Morts	Avian Marks
C-CH	2	0	0	0
UC-CH	---	---	---	---
C-CH-O	48	1	0	0
UC-CH-O	59	1	0	0
C-SH	4	0	0	0
UC-SH	1	0	0	1
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	----	---	---	---
UC-SOCK	---	---	---	---
TOTAL	114	2	0	1

River Conditions

River conditions during the week are outlined in Table 1.

Table 1. 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
75.6	58.7	53.2	21.6	58	57	6.9	5.2

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: A total of 122 juvenile lamprey mortalities were recovered during cooling water strainer inspections on May 21 and 22. Other fish recovered included 2 live juvenile lamprey (released), 1 adult lamprey (mortality) and 1 juvenile catfish (mortality).

Invasive Species: No invasive species were detected this week.

Avian Activity: Formal bird counts began April 8 and are in progress. Hazing activities by APHIS began April 1. The fish facility is conducting bird observations when possible.

Research: The south fish ladder adult fish trap is currently being operated to capture Chinook. Tentative end date for trapping is June 25. Further investigation into the fish trap jib crane tripping on overload continues.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: June 7 - 13, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Units were rotated out of service for STS inspections on June 10, 11, and 12.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on June 7, 8, 9, and 12.

Fish Ladders: Fishway exit head differentials and depths over the weirs were within 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 NSE 2 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.

SPE 1 and SPE 2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.1', 7.5', 7.1', and 6.1 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 7.0', 7.6', 7.3', and 6.5 feet. SSE 2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections.

Auxiliary Water Supply System: AWS pumps 1 and 3 were operated throughout this period. Two pump operation will continue until bearing repair and shaft alignment work is completed on pump 2, approximately July 15.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 1.3 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage. No oil was observed in the gatewells.

STSs/VBSs: STS operation remains in continuous run mode as subyearling Chinook lengths averaged less than 120 mm. STSs were inspected on June 10, 11, and 12. All screens passed inspection.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 20 orifices open.

Collection Facility: The facility is in collection for transport mode. Collection for Battelle research on subyearling Chinook passage and survival continues.

Transport Summary: Every-other-day barging is occurring.

River Conditions

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
74.8	57.9	23.7	20.6	60.0	57.5	5.0	4.5

*Scrollcase temperatures.

Other

Spring spill continues.

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 5. No live lamprey were recovered. Mortalities included 80 juvenile lampreys, 5 juvenile salmon, and 1 Siberian prawn.

Invasive Species: There were no zebra mussels observed at the monitoring stations on June 2.

Avian Activity: Bird hazing ended for the season on June 2.

Research: PNNL researchers subyearling Chinook research resumed on May 31. Current plans are for this activity to continue until July 8.

Project: Little Goose
Biologist: Richard Weis
Dates: June 7 - 13, 2013

Turbine Operation

Turbine units 1 through 6 were available for all of this report period. Unit 4 was forced out for an oil leak in the governor cabinet on June 5 and was returned to service on June 7. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway June 9, 11 and 13.

Fish Ladder: The ladder exit head differentials remained steady at 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials remained steady at 0.0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit. 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 1.6 and 2.1 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.3 feet (criteria $\geq$8.0 ft). As a result of 2 pump operations and decreased channel to head differentials, NPE2 remained closed. NPE1 weir rested on sill and depths ranged between 5.3 and 5.6 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.4 and 5.6 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity was 1.7 fps (criteria $\geq$1.5 fps) near the NPE with one inspection for the week. Collection channel subsurface water velocity was measured on June 10 using the Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity averaged 2.8 fps with 2 pumps operation.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria, ranging between 73 and 77 rpm. Fish pump 3 remains out of service and is undergoing repairs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris observed this week ranged from 50 to 200 square feet inside the trash shear boom. Drawdown measurements were performed on turbine units 1 through 3 on June 11. All measurements were within proper operating range and indicated no significant buildup of debris on trashracks, ESBSs or VBSs. Units 3-6 were raked of trash on June 12. Units 1 and 2 were raked on June 13.

Spillway Weir: The spillway weir was switched to the high crest position on June 3.

ESBS/VBS: All ESBSs operated within criteria this report period. ESBS screen brushes were manually operated for inspection on May 23. All brushes operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 23 open orifices.

Transportation Facility: The facility continued collection for transport. Daily fish collection for the week ranged between 7,450 and 30,927 for a total of 143,981. The descaling and mortality rate was 0.3% and less than 0.1% respectively.

Transport Summary: Every-other-day barging operations continued; all loading operations were trouble free.

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
73.2	58.1	22.2	17.3	58.8	54.8	6.0	4.5

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on June 9. No mussels were observed. The next inspection is scheduled for July 8.

Cooling Water Strainers: Cooling water strainers for all units were inspected on June 12. One salmonid mortality and one lamprey mortality were removed.

Avian Activity: The maximum bird count from a single survey included 17 cormorants, 138 gulls and 3 pelicans. USDA-APHIS bird hazing continued through this report period.

Research: WDFW Gas Bubble Trauma research was conducted on June 10. No signs of GBT were seen. UC Davis is performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho is performing Adult Salmon Passage Studies using radio-telemetry. Battelle PNNL is on-site for the second year of BiOp Performance Standard Tests.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: June 7 - 13, 2013

Turbine Operation

Lower Granite had all turbine units available for power generation during this report period.

Adult Fish Passage Facility

On June 7 - 9 COE fish biologists conducted daily inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all fishway entrances throughout this report period.

Weir depths at the south shore fishway entrances also met criteria during all weekly inspections. The north powerhouse fishway entrances were on sill during all inspections this week with depths ranging from 5.8 to 6.1 feet due to tailwater elevations below 636.0 feet (these gates bottom out at elevations below 636.0 feet). Weir depths at the north shore entrances ranged from 3.7 to 5.1 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in order to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.99 to 1.14 feet per second and averaged 1.07 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were run during the week without any problems. Fish pump 1 is scheduled to complete testing by June 27 and will then return to available status.

Juvenile Fish Passage Facility

Fish collection numbers were fairly stable during the week. Sample rates during the week ranged from 2% up to 4% in order to help accommodate fish marking needs for testing the prototype overflow weir and 14-inch orifice in the collection gallery.

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction; none was removed.

ESBSs/VBSs: VBS/ESBS video inspections last took place on May 17-18. The next inspections are scheduled for June 14 - 15.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage. Debris levels were fairly light during this report week.

Transportation Facility: Daily fish collection numbers at Lower Granite averaged 19,264 as subyearling Chinook releases started to slow down. Lower fish numbers coupled with the need to divert most of the fish over to NOAA for their marking operation again left few fish available for direct loading this week. If fish numbers increase significantly, we will resume direct loading fish barges. Lamprey friendly tail screens (with larger mesh openings) were deployed in all operating raceways the week of May 13 and remained in place during the report week.

Transport Summary: The first everyday barge left Lower Granite on May 2. The only research barge of the season (index barging) departed Lower Granite on April 26. Research fish are now being barged along with the general fish collection. Every day barging from Little Goose began on May 3 and Lower Monumental began on May 8. The smaller barges (direct loaded at Little Goose) were taken off line on May 28. The last daily barge left Lower Granite on June 3. Every-other-day barging will take place until mid-August.

The towboat Umatilla with the loaded barge 8105 had an engine failure on the afternoon of June 8. The tug Cascades was diverted to JDA to pick up the Umatilla's loaded 8105 barge. The fish should have been released around 2000 hours that evening, but were released at approximately 1300 hours on June 9. Both the tug crews and our barge riders should be commended for their diligence, long hours and effort - to ensure minimal negative impact to the fish under their care.

Removable Spillway Weir: Mandatory spill operations began at 0000 hours on April 3. The RSW was operated in support of general spill operations.

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* (^{o}F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
75.0	58.5	20.2	20.1	59.3	58.4	5.0+	4.8

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1 and concluded on March 31. Visual counting between the hours of 0400 and 2000 began on April 1.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on June 1. No evidence of zebra mussels was found. The next inspection is scheduled for early July.

Lamprey: Cooling water strainers were last inspected for lamprey entrainment on May 29. A total of 135 lamprey were found in the strainers over a combined run time of 2,703.7 unit hours. The next cooling water strainer inspections are scheduled for late June.

Avian Activity: Formal bird counts and hazing started on April 1. Gulls are presently being hazed from dawn to nearly dusk and the control agents have been very successful in keeping them out of the tailrace area of the dam.

Adult Fish Trap: The adult fish trap was watered up and sampling began on March 4. The sample rate is now 25%. Since in 2013 adult trapping will only be conducted Monday thru Friday the 25% sample rate represents an overall weekly sample rate of 21%. Genetic 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.

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.

Biological Evaluation of Prototype Overflow weir and 14 inch Orifice: A prototype overflow weir and enlarged 14 inch orifice were installed into intake gatewell 5A during the winter. These structures will be evaluated by UC Davis, Biomark and Blue Leaf Environmental. Biological testing will take place from April 15-June 30; the goal is to release 350 hatchery steelhead and 350 hatchery yearling Chinook into the gatewells six days a week, beginning April 15. When yearling spring/summer fish numbers decline 350 hatchery subyearling Chinook will be collected and released.

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.

United States Fish and Wildlife Service (USFWS), United States Geological Service (USGS), Pacific Northwest National Laboratory (PNNL) and National Marine Fisheries Service (NMFS) –Holdover fall Chinook Study: This study is part of the regional discovery based research titled "Investigating passage of ESA-listed fall Chinook salmon at Lower Granite Dam during winter when the fish bypass system is not operated". This is a cooperative study of the survival and prevalence of the reservoir-type life history of juvenile fall Chinook salmon in the Snake River and the passage of subyearlings and reservoir-type fish through the lower Snake River. This part of the study collects PIT-tagged yearling fall Chinook holdovers in the Sort by Code tanks at LGR from the 2012 release of Dworshak hatchery fish.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is done to monitor the migration behavior and survival of wild spring/summer Chinook salmon in the Snake River basin. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of different 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 2012 in natal streams and are diverted to the Sort by Code tanks at LGR.