U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#13-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: May 24 – May 30, 2013

Turbine Operation

McNary had 12 to 13 units available for power generation this week. On May 30, when the units tripped off line, the operators made no adjustment to the spill flow. 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.
4	May 23 to 24	About 9 hours.	ESBS PLC failed.
10, 11, 12 & 13	May 28	65 minutes total.	ESBS camera inspections.
4 to 12	May 30	24 minutes or less each.	Units tripped off line together and were restored to service.

Adult Fish Passage Facilities

On May 24, 26 and 28, 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.

Fish Ladder Exits: During the inspections, both ladder exits met all Fish Passage Plan criteria.

At the Oregon exit, our differential monitoring of the traveling screens revealed no problems. For the week, the operators reset one traveling screen alarm and two weir alarms.

Project personnel cleaned picketed leads at both exits regularly. Debris loads along the Washington shore have been fluctuating yet overall it is decreasing. Tumbleweeds also remain along some of the Oregon shoreline.

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. Weir, W3, has a slight amount slack in its south cable. The project will address this issue at a later date.

At the Oregon ladder entrances, all points were in criteria. At the north power house entrance, NFEW2 and NFEW3 each had very little slack in their cables at times. Also on May 28, the biologist again noted that the south cable on NFEW2 had slightly more slack than the north cable. The project will continue to examine the issue of these weirs having slack cables at times.

At the south power house entrance, we continue to note calibration drifts at SFEW1. The project is monitoring the issue.

The Oregon ladder's collection channel velocity averaged 1.8 feet per second. We used surface readings. We are preparing to send the velocity meter to the factory for programming when funds become available.

Auxiliary Water Supply System: For the report week, the Wasco county PUD in the Washington ladder had no interruptions.

For the 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, continues. No deviations from this schedule occurred. We bypassed 69,578 smolts and 10,500 juvenile lamprey this week.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was very light to light. New incoming debris, most of which was tumbleweeds, has decreased and much of it went over the TSW's. Weather and project operations also affected debris dispersal.

The fisheries staff found no problems when measuring trash rack differentials so this week the project did not clean trash racks. Even with the cleaning done last week, for three samples this week, descaling ran from 4.7 to 9.7 percent. It appears regionally that fish are not in as good condition as previous years.

A moderate amount of debris remains on the spillway. On June 5, the project plans to spill this debris.

We noted no problems in the gatewell slots. This week, the fisheries staff removed woody debris from the slots that entered them during last week's trash rack cleaning. On May 26, the general maintenance crew removed a large piece of wood which had the ESBS rope in 6B slot pinned in the corner.

ESBSs/VBSs: All ESBSs are installed except at unit 14 which is out of service. The screen at 2A slot remains in timer mode. On May 29, after triggering alarms, operators put the screen in

3A slot in timer mode where it remains. The biologist noted that the screens PLC had not yet been reprogrammed as the screen said bypass mode. The technical staff will examine the PLC at a later date.

As mentioned last week, on May 23, the PLC for the screens at unit 4 failed. The technical staff returned the PLC and unit to service early the next morning. As mentioned above, the project removed a piece of wood from 6B slot, which was rubbing the ESBS rope. On May 28, our camera inspections at units 10 to 13 revealed no problems.

VBS differential monitoring revealed no screens out of criteria. The project cleaned one screen as a preventative measure. On May 28, the project concluded scheduled VBS maintenance examinations by raising, cleaning and inspecting 8 screens. The general maintenance crew straightened out a small bend in one screen's dogging points. When raising the VBS, we observed only one smolt mortality.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with two problem observed. We removed a stick from the orifice flow at 1A and 4B slots. We observed no harm to fish. During VBS cleaning and the stick incidences, we closed the orifices at the slot and opened spares at adjacent slots.

All systems operated well in automatic mode. On May 27, we noted a slight noise coming from the side screen cleaning device. The biologist set the mechanism to run from 180 to 360 minutes over night. The next day, the mechanical staff found the motor shroud was loose and tightened it back on.

On May 30, when the units tripped off line as mentioned above, this caused a swift change in orifice flow, which resulted in channel water alarms. It took the side dewatering valves from about 1625 hours to 1700 hours to stabilize the channel elevation. The fisheries staff examined the channel and found no problems. It is fortunate that the project had removed debris the previous week otherwise dewatering screens may have become obstructed with debris, which could have resulted in a channel dewatering.

Finally, the fisheries staff monitored the channel during VBS cleaning and inspection along with primary bypass.

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

We turned the sample gates on and off every other day to be on with secondary. The gates 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.

On May 30, we noted an air leak in the primary gate actuator. The fisheries mechanics repaired the leak. However, due to the importance of the primary gate, the biologist will order two new actuators.

Also, that day, as described above, the channel water elevation was affect by the units tripping off line. During the 35 minutes it took the channel to stabilize, the technician on duty made adjustments to the porosity unit in order to keep it wet and the separator at the proper water level.

We continue to do ice block checks of the return to river lines, though the bypass outfall is too far away to see the blocks exit the pipe even with binoculars.

Transport Summary: There is nothing to report.

River Conditions

River conditions during the week are outlined in Table 2 as provide the smolt monitoring staff, PSMFC. The data day runs from 0700 to 0700 hours.

The spring spill season which calls for 40 percent of flow being spilled and both TSWs in operation continues. All week, due to flow in excess of powerhouse capacity, 42 to 51 percent of flow was spilled. The project will remove the TSWs on June 10.

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
316.3	274.7	162.6	115.4	55.4	53.9	6.0	5.5

*****Control room data.

Other

Inline Cooling Water Strainers: The next examination will be on June 4.

Invasive Species: The zebra mussel station examination on May 27 revealed no problems. Also, we replaced the station at the Oregon ladder exit.

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

We noted no grebes in the gatewell slots or elsewhere in the juvenile bypass system.

In the tailwater area, we had high counts of 43 gulls and 10 terns with an occasional pelican or cormorant noted. All of the birds were in the spill basin. We observed a high count of 12 gulls

with an occasional tern or cormorant noted by the bypass outfall. This week, all staff members observed terns.

Hazing personnel continue to work 7 days a week with 2 shifts covering the day light hours. The fisheries staff continues to work with the propane hazing cannons to keep them functioning well. After complaints from barge companies, the fisheries staff removed the cannons from the navigation lock wing wall and placed them on the outfall pipe. The water hazing cannon had no issues this week.

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

Project: Ice Harbor
Biologist: Mark Plummer
Dates: May 24 – May 30, 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 May 28, 29, and 30.

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.

Table 1. Adult Fishway Performance:

	15-May	20-May	21-May	22-May	28-May	29-May	30-May
CHANNEL VELOCITIES IN SOUTH FISHWAY:	1.2	1.7	NA	1.7	1.8	2.0	1.4
DIFFERENTIALS/DEPTHS:							
South Fish Ladder							
Ladder Exit	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Ladder Weirs	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Counting Station	0.1	0.1	0.1	0.2	0.1	0.1	0.1
North Fish Ladder							
Ladder Exit	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ladder Weirs	1.2	1.1	1.1	1.1	1.2	1.2	1.2
Counting Station	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Collection Channels							
South Shore	1.7	1.7	1.7	1.9	1.6	1.5	1.2
North Powerhouse	1.5	1.5	1.5	1.4	1.2	1.1	1.3
North Shore	1.3	1.1	1.2	1.3	1.9	1.3	1.3
Weir Depths							
SFE 1	9.5	8.9	11.5	8.7	8.9	8.9	9.1
NFE 2	10.3	8.5	11.0	8.4	9.4	9.1	8.3
NSE 1	10.8	9.8	11.3	8.4	7.0	7.7	8.6

Table 1. Adult Fishway Performance Continued:

CRITERIA POINTS:							
Channel Velocities	NO	YES	NA	YES	YES	YES	NO
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
Collection Channels							
South Shore	YES	YES	YES	YES	YES	YES	YES
North Powerhouse	YES	YES	YES	YES	YES	YES	YES
North Shore	YES	YES	YES	YES	YES	YES	YES
Weir Depths							
SFE	YES	YES	YES	YES	YES	YES	YES
NFE	YES	YES	YES	YES	YES	YES	YES
NSE	YES	YES	YES	YES	NO	NO	YES

The south adult fish way velocities on May 15 and 30 were out of criteria. This was thought to be caused by high tail water elevations, but now appears to be intermittent. We are trouble shooting the problem. The velocity meter appears to be malfunctioning. The north adult fish way entrance was out of criteria on May 28 and 29. The amount of spill in the area of the entrance makes criteria difficult to maintain. The entrance is being operated in manual mode to prevent excessive up and down weir movements. The shift operator adjusted the entrance to the lowest possible depth before losing the collection channel differential. It is a constant battle to maintain both 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 satisfactory.

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 mort was found lodged in the STS during the inspections.

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

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample is scheduled to begin 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:

May 28:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	9	0	0	0
UC-CH	12	0	0	0
C-CH-O	3	0	0	0
UC-CH-O	4	0	0	0
C-SH	61	3	0	5
UC-SH	37	0	0	1
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	1	0	0	0
UC-SOCK	1	1	0	0
TOTAL	128	3	0	6

May 30:

Species	Sampled	#De-scaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	1	0	0	0
C-CH-O	1	0	0	0
UC-CH-O	1	0	0	0
C-SH	5	1	0	0
UC-SH	3	0	0	1
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	12	1	0	1

River Conditions

River conditions during the week are outlined in Table 2.

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
73.4	59.8	51.8	17.8	55	54	3.8	3.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Results of the main turbine cooling water inspections for May are outlined in Table 3 below.

Table 3: Fish Recovered from Inline Cooling Water Strainers

Date	Turbine Unit	Fish Recovered
21-May	3	8 juv. lamprey morts.
	4	56 juv. lamprey morts, 1 adult lamprey mort, 1 juv. catfish
	5	Un-watered for blade repair
	6	54 juv. lamprey morts, 1 live juv. lamprey (released)
22-May	1	4 juv. lamprey morts
	2	1 alive juv. lamprey (released)

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 used to capture Chinook. The jib crane that lifts the adult fish trap tripped breakers while being operated. The Project removed the trap from the fish ladder with the mobile crane. The jib crane motor was reset, however I still have concerns as to if it will happen again and will it happen while there are ESA listed fish are lifted between the fish ladder and the release into the anesthetic tank. Further investigations continue into the cause and fix.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: May 24 – May 30, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on May 24, 25, 27, and 29.

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 7.0', 6.9', 6.7', and 6.6 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 7.5', 7.5', 7.1', and 7.4 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 11.3 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 subyearling Chinook length averaging less than 120 mm.

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

Collection Facility: The facility is in collection for transport mode. Collection for Battelle research on subyearling Chinook passage and survival occurred on May 27 and 28. A total of 20 fish were collected, 19 on May 27 and 1 on May 28. Due to low numbers of subyearlings in the sample no tagging occurred and collection for research was suspended until subyearling numbers increase.

Transport Summary: Every-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
72.5	59.1	29.3	28.1	54.0	53.5	4.1	3.0

*Scrollcase temperatures.

Other

Spring spill continues.

Inline Cooling Water Strainers: Cooling water strainers were inspected on May 1. No live lampreys were recovered. Mortalities included 5 juvenile lamprey, 16 juvenile salmon, and 3 juvenile steelhead.

Invasive Species: There were no zebra mussels observed at the monitoring stations on May 5.

Avian Activity: Bird counts and bird hazing activities are in progress. Hazing is taking place over 2 work shifts so that all daylight hours are covered.

Research: PNNL researchers temporarily suspended subyearling Chinook research (see above for details). Researchers continued to collect juvenile lamprey for use in overflow weir and orifice passage studies at Lower Granite Dam.

Project: Little Goose
Biologists: George Melanson and Richard Weis
Dates: May 24 – May 30, 2013

Turbine Operation

Turbine units 1 through 6 were available for service this report. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway May 24, 28, and 29.

Fish Ladder: The ladder exit head differentials ranged between 0 and 0.1 feet (criteria ≤ 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 feet (criteria ≤ 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 1.7 and 2.3 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.3 feet (criteria ≥8.0 ft). As a result of two pump operations and decreased channel to head differentials, NPE2 remained closed. NPE1 weir rested on sill and depths ranged 5.1 and 5.7 feet (criteria ≥7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.0 and 5.6 feet (criteria ≥ 6.0 ft.). Collection channel surface water velocity measured 1.9 fps (criteria ≥1.5 fps) near the NPE on two inspections. Collection channel subsurface water velocity was measured on May 22 using the Hydrologic Current Meter. Three measurements were conducted from near surface, mid channel and near bottom. The subsurface velocity averaged 2.1fps with two pumps operating.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria ranging between 77 and 79 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 500 to 800 square feet inside the trash shear boom. Drawdown measurements were performed on Turbine units 1 through 3 on May 30. All measurements were within proper operating range and indicated no significant buildup of debris on trashracks, ESBS and VBS screens.

Spillway Weir: The spillway weir is operating in the low crest position.

ESBS/VBS: All ESBS 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. Fish collection for the week ranged between 3,121 and 11,450 for a total of 45,161. The descaling and mortality rate was 0.8% and less than 0.1% respectively.

Transport Summary: Direct loading ended on May 28 with the 2000 and 4000 series barges removed from transport. Daily barging operations using only the 8000 series barges commenced May 29.

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
69.2	55.3	25.3	16.6	55.0	53.1	4.5	3.4

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on May 7. No mussels were observed. The next inspection is scheduled for June 7.

Inline Cooling Water Strainers: Cooling water strainers for all units were inspected on May 29. We removed 81 juvenile lamprey mortalities.

Avian Activity: Maximum bird count from single survey included 23 cormorants, 12 gulls, 2 Grebes and 6 pelicans. USDA-APHIS bird hazing continued through this report period.

Research: WDFW Gas Bubble Trauma research was conducted on May 29. 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 starting the second year of BiOp Performance Standard Tests.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: May 24 – May 30, 2013

Turbine Operation

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

Adult Fish Passage Facility

On May 24-26 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 during the period inspections.

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 5.7 to 6.0 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 6.5 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 1.01 feet to 1.21 feet per second and averaged 1.10 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were run during the week without any problems.

Juvenile Fish Passage Facility

The sample rate was increased from 4.0% to 10.0% on the morning of May 27 due to reduced fish collection numbers and remained at that level through the duration of the week.

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 17.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being backflushed at least every 3 hours around the clock in an attempt to keep them free of materials that might impact fish passage.

Transportation Facility: Fish numbers at Lower Granite were low but increased toward the end of the week as subyearling Chinook releases began to show up. 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.

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. Every day fish barging is scheduled to continue through the month of May. The smaller barges (direct loaded at Little Goose) were taken off line on May 28. As of this report, the projects are barging every day using the 8000 series barges until subyearling Chinook numbers drop off. Every-other-day barging will then take place until mid-August.

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
71.0	60.6	26.1	20.1	54.7	54.1	4.1	3.3

*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.

Inline Cooling Water Strainers: 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.

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