U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#06-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 5 - 11, 2013

Turbine Operation

McNary had 11 units available for power generation this week. On April 1, the hard constraint one percent criteria began. No units ran outside the criteria. For most of the week, the project test ran unit 3, which remains out of service. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4 – May 31	One year.	After rewind, thrust bearing.
14	Sep 18 – May 2	Seven months.	Turbine bearing issues continue.
10	Mar 31 – Unknown	Unknown.	Turbine bearing issue.
6 & 7	Apr 5	2.3 & 1.2 hours each.	Trash rack cleaning.
1 & 2	Apr 5	5.4 & 3.5 hours each.	ESBS installation & semiannual maintenance.
5, 6, 7 & 8	Apr 5	3.3, 8.2, 8.2 & 4.8 hours each.	Dive for installation of study equipment.
6 & 9	Apr 8	2.7 & 4.0 hours each.	Trash rack cleaning.
12& 13	Apr 8	3.8 & 3.6 hours each.	Semiannual maintenance.
5, 6 & 7	Apr 8	7.3, 7.3 & 6.3 hours each.	Dive for installation of study equipment.
8	Apr 9	10.3 hours.	Trash cleaning, ESBS installation & semiannual maintenance.
6	Apr 9	5.3 hours.	Trash cleaning & dive for study.
5 & 7	Apr 9	4.7 hours each.	Dive for installation of study equipment.
6	Apr 10	6.3 hours.	ESBS installation, semiannual maintenance & tap the hub.
7	Apr 10	3.0 hours.	Semiannual maintenance.
4 & 5	Apr 11	4.5 & 5.5 hours each.	ESBS installation & semiannual maintenance. Trash racking at unit 5.

Adult Fish Passage Facilities

On April 5, 8 and 10, the McNary fisheries personnel 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. Picketed leads at exits are being cleaned regularly. Tumbleweeds accumulations along the Washington shore have decreased. On April 10, the Washington exit experienced multiple alarms. In each case, normal operation resumed after the alarms were reset. The Oregon traveling screen differentials continued to be satisfactory.

Fishway Entrances and Collection Channel: All Washington and Oregon fishway inspection points met criteria. Due to spill turbulence and hydraulic gradients, some entrance weir calibration drift is occurring. The biologist has asked maintenance staff to recalibrate weir SFEW1. Collection channel velocities averaged 2.9 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 operated satisfactory this week with blade angles of 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract. The juvenile fish facility continues to supply the the usual 450 cfs to the north powerhouse pool. The Wasco County PUD turbine unit had no interruptions in service this week.

Juvenile Fish Passage Facility

On April 6, the spring fish passage season began with alternating days of secondary and primary bypass, with the switch occurring every morning at 0700 hours. There were no deviations from this schedule. Bypassed fish this week included 3,373 smolts and 150 juvenile lamprey.

Forebay Debris/Gatewell Debris/Oil: Forebay debris accumulations ranged from heavy to light. Trash rack cleaning operations and spill removed much of the debris present at the beginning of the week. The amount of incoming debris also decreased. On April 7, trash rack differentials in slot 9A measured 4.9 feet. To reduce trash rack differentials, project personnel cleaned racks associated with units 5, 8 and 9. Trash racks associated with units 6 and 7 were also raked to improve conditions for the FGE study dive. Approximately 47 ten-yard truck loads (approximately 170 cu yds) of debris were removed. Most of this debris consisted of tumbleweeds. The operating project plans to clean all trash racks next week. No salmonids or lamprey were found in any of the debris.

On April 7, facility staff noted low water elevation in slot 9A due to trash rack debris. Cleaning the racks the next day resolved this issue. No other problems were seen in the gatewell slots.

ESBSs/VBSs: With the completion of maintenance this week, project personnel installed ESBSs in units 1, 2, 4 to 6 and 8. Strong winds, the dive and trash rack cleaning delayed the installations. Following regional discussions, the project was given a two day extension to April 17 to complete the deployment of ESBSs. All VBS differentials met criteria this week and

none were cleaned.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty-two orifices were in service. One obstruction was cleared from an orifice in slot 8B without incident or harm to fish. Orifices were closed when the associated turbine unit trash racks were cleaned. Spare orifices in adjacent units were temporality open during raking operations. On April 7, the biologist noted reduced flow in turbine unit 9 orifices. Few fish were being directed through these orifices since associated ESBSs were not yet installed. No unusual fish injuries or unusual channel conditions were observed. Normal orifice flow was restored the next day following the cleaning of the trash racks.

On April 8, the biologist noted reduced flow at unit 8's orifices. Again, trash rack debris was suspected to be the cause. In addition the forebay elevation dropped about one foot overnight. With the reduced orifice flow, a channel low water alarm occurred. When the operators removed unit 8 from service the next morning for trash rack cleaning, the trash racks were "burped" resulting in return of normal orifice flow and a high water alarm. Like unit 9, few fish were being directed through the unit 8 orifices since associated ESBSs were not yet installed. No unusual fish injuries or unusual channel conditions were observed. Normal orifice flow was restored the next day following the cleaning of the trash racks. During these incidences, the fisheries staff monitored unit 8 and 9 orifice flows overnight.

Over the week, facility staff noted moisture in the orifice air supply line and slow recovery times for the rectangular dewatering screen air burst system. The powerhouse is having an issue with the air system, which might be the cause of the channel air burst problems. Powerhouse personnel are working to resolve air system difficulties. All systems operated well in automatic mode. As a precaution, the transition screen cleaner is being operated only during the day shift.

Transportation Facility: Secondary bypass began on April 6, at 0700 hours. Both both primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs only in the full flow pipe during primary bypass operations and throughout the facility during secondary bypass operations. Smolt monitoring occurs only during 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 lines. On April 8, PSMFC personnel performed the weekly test of the PIT system. The secondary PIT/bypass gates remain off and open for bypass season. Ice block checks of the return to river lines continued even though the bypass outfall is too far away to see the blocks exit the pipe, even with binoculars. The ice blocks clear obstructions that may be present in the line.

On April 6, when switching to secondary bypass mode, the new main flume flush line took 45 minutes to open. No problems were found, but the supply valve winter maintenance protocol was revised. The anesthesia pump did not function properly. Closer investigation revealed a valve that had been inadvertently left closed. The new porosity control unit screens appear to be functioning well.

On April 8, GBT water supply pump foot pump was replaced. Also, that day, district personnel examined the hydraulic jump in the return to river line just downstream of the barge line dewatering unit. Hydraulic jump removal will require a design change.

During the week, project personnel calibrated most of the water supply and dewatering unit valves at the facility.

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 hours to 0700 hours. Water temperature was taken from the control room until the start of fish sampling when PSMFC staff began supplying this information.

The spring spill season began April 10, at 0001 hours. Criteria calls for 40 percent spill of total river flow and both TSWs to be in operation. Spill in excess of powerhouse capacity occurred all week. Since April 10, spill has exceeded 40 percent of total river flow.

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
269.6	187.7	135.5	65.8	48.1	47.0	6.0	5.4

*****Control room data.

Other

Inline Cooling Water Strainers: Project personnel examined the main unit cooling water strainers on April 9. Twenty-four juvenile lamprey mortalities were recovered and no salmonid smolts were observed.

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

Avian Activity: Bird counts continued with each zone being observed once a day, usually in the morning. In forebay locations, we observed a high count of 8 grebes with an occasional tern and osprey. One grebe was observed in slot 6B where it remains.

In tailwater locations, an occasional gull, cormorant or blue heron were seen. No birds were seen by the bypass outfall. Hazing personnel continued to work 7 days a week. A second hazing shift will begin April 21 to cover the day light hours each day. The lethal take of gulls has been allowed for this year. The hazing water cannon continued to function well. On April 15, the Bonneville COE Fisheries Field Unit will review bird data entry protocol with McNary personnel.

Research: On April 5, 8 and 9, a dive contractor completed the installation of FGE (fish guidance efficiency) study equipment at units 6 and 7. This study is slated to begin April 15. The first GBT examination of the season occurred April 8.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: April 5 - 11, 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 fishways April 8, 9, and 10.

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

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) was off sill with a depth of 9.0 feet, off sill with a depth of 8.8 feet, and off sill with a depth of 8.9 feet. The north powerhouse entrance (NFE) was off sill with a depth of 10.3 feet, off sill with a depth of 9.5 feet, and off sill with a depth of 8.8 feet. The north shore entrance (NSE) was off sill with a depth of 9.7 feet, off sill with a depth of 9.3 feet, and on sill with a depth of 7.7 feet. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All channel/tailwater differentials were in criteria. Channel/tailwater differential criteria are 1 – 2 feet.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: No problems to report. Debris is accumulating in the forebay in front of the powerhouse. Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in operation. April STS/VBS inspections are scheduled for April 23 and 24. Turbine strainer inspections will be conducted at the same time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices.

Juvenile Bypass Facility: The cable which lowers and raises the screen cleaner brush was found off the pulley. It was replaced and the problem has not occurred since.

Fish Sampling: The first sample is scheduled for 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 in support of fish passage began April 3, 2013.

Fish Sampling:

April 8:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	4	0	0	3
UC-CH	6	0	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	---	---	---	---
UC-SH	---	---	---	---
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	10	0	0	3

April 10:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	2	0	0	0
UC-CH	3	0	0	0
C-CH-O	---	---	---	---
UC-CH-O	---	---	---	---
C-SH	---	---	---	---
UC-SH	2	0	0	0
C-COHO	---	---	---	---
UC-COHO	---	---	---	---
C-SOCK	---	---	---	---
UC-SOCK	---	---	---	---
TOTAL	7	0	0	0

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
81.9	63.1	58.0	45.5	48	46	5.6	4.8

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Main turbine cooling water inspections are scheduled for April 23 and 24.

Invasive Species: No invasive species were detected this week.

Avian Activity: Formal bird counts are not occurring at this time. Hazing activities began April 1.

Research: There is no research is in progress at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Lindsey
Dates: April 5 - 11, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. On April 8, units 2 and 3 tripped out of service due to the supply breaker failing to close from 1700-1708 hours and 1700-1713 hours, respectively.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on April 5, 6, 7, 8, 9, and 11.

Fish Ladders: Fishway exit head differentials and depths over the weirs were within criteria ($\leq$ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria ($\leq$ 0.4' and $\leq$ 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: $\geq$ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.8', 7.0', 7.1', 7.6', 7.2' and 6.7 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: $\geq$ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.0', 7.5', 7.8', 7.6', and 7.2 feet. SSE 2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') this week.

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 376.9 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-40% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STS operation was changed to continuous run mode on April 9 due to the average length of sampled sockeye being less than 120 mm.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 19 orifices open. The bypass outfall bird sprinklers are currently under repair due to freeze damage.

Collection Facility: Collection for condition sampling began on April 1 and continued on April 4, 7 and 10. Subsequent collection for condition monitoring will occur every third day.

Transport Summary: No transport.

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
80.1	60.9	30.0	27.9	49.0	46.5	3.1	2.9

*Scrollcase temperatures.

Other

Spring spill operations were initiated at 0010 hours on April 3.

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 2. No live lamprey were recovered. Mortalities included 13 juvenile lamprey, 1 juvenile salmon, 1 juvenile channel catfish, and 26 Siberian prawns.

Invasive Species: There were no zebra mussels observed at the monitoring stations on April 1.

Avian Activity: Formal bird counts are not occurring at this time. Bird hazing activities began April 1.

Research: There is no research is in progress at this time.

Project: Little Goose
Biologists: George Melanson and Richard Weis
Dates: April 5 - 11, 2013

Turbine Operation

Turbine units 1, 2, 3, 4 and 6 were available for service throughout this report period. Unit 5 was returned to service on April 10 following governor repairs. Turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway April 5, 7 and 9.

Fish Ladder: The ladder exit head differentials ranged between 0 and 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 held steady at 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 1.3 and 2.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.7 feet (criteria $\geq$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 5.3 and 5.5 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 5.1 and 5.8 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities (criteria 1.5 fps) ranged from 0.7 to 1.0 fps near the SSE. The velocity near the NSE held steady at 2.8fps.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria ranging between 77 and 81 rpm. Fish pumps one and two were momentarily shut down on April 11 at 0615 hours to perform station bus switching. 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 5,000 to 11,000 square feet inside the trash shear boom and up to 2,000 square feet outside the trash shear boom. Initial drawdown measurements were performed on Turbine units 1 – 3 on April 9 and Turinbe units 4 and 6 on April 10. All measurements were within proper operating range and indicated no significant buildup of debris on trashracks, ESBS and VBS.

Spillway Weir: The spillway weir was placed into service on April 3 at 0720 hours in the high crest position.

ESBS/VBS: All ESBS operated within criteria this report period.

Orifices, Collection Channel, Dewatering Structure, Flume: The juvenile collection system was operated throughout this period with 22 open orifices.

Transportation Facility: The facility switched from primary to secondary bypass operations on April 8 at 0700 to April 9 at 0700 to sample fish for condition. A total of 2,002 juvenile fish were collected and bypassed. The descaling rate was 3.2% and mortality rate was 0%.

Transport Summary: Transport operations are expected to begin in late April or early May.

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
77.0	59.0	25.8	17.7	49.2	47.3	4.4	3.0

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on April 7. No mussels were observed.

Cooling Water Strainers: On April 10 cooling water strainers were inspected; one salmonid and 17 juvenile lamprey were removed.

Avian Activity: Up to 11 cormorants and 8 gulls were observed. USDA-APHIS bird hazing started on April 1.

Research: Gas Bubble Trauma research was conducted on April 8. No signs of disease were observed.

Project: Lower Granite
Biologist(s): Mike Halter and Ches Brooks
Dates: April 5 - 11, 2013

Turbine Operation

Lower Granite had all turbine units except for unit 5 available for power generation at the beginning of the report period. Turbine unit 5 returned to service on April 11 at 1041 hours after completion of cavitation repairs. Turbine unit 6 was taken out of service at 0601 hours the same day because the project does not yet have an ESBS fish screen ready to be installed in slot 6C. Previously, a screen taken from unit 5 was utilized in this slot.

Adult Fish Passage Facility

On April 6-8 the Lower Granite fisheries biologists performed measured 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 of 6.0 – 6.4 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 3.9 to 5.3 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 1.03 to 1.23 feet per second and averaged 1.11 feet per second.

Auxiliary Water Supply System: Fish pumps 2 and 3 were operated during the week. Fish pump 1 is out of service in order to perform a motor re-wedge. The tentative return to service date for this pump is now late April.

Juvenile Fish Passage Facility

The sample rate was reduced from 5% down to 1% on the morning of April 7 due to an increase in fish numbers. All fish other than those sampled are being diverted back to mid-river through the bypass pipe (secondary bypass). The sample rate will have to be adjusted upwards at times to

accommodate the upcoming research marking needs for the evaluation of the 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 are scheduled for April 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.

Transportation Facility: General barge transport operations are uncertain at this time but will probably begin in early May. Research barging operations are tentatively scheduled to begin on April 18.

Transport Summary: Nothing to report.

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
75.8	62.7	23.8	20.3	51.0	49.3	4.4	3.8

*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 April 1. No evidence of zebra mussels was found. The next inspection is scheduled for early May.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on March 27. A total of 44 lamprey were found in the strainers over a combined run time of 1,389.3 unit hours. The next cooling water strainer inspections are scheduled for late April.

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

Adult Fish Trap: The adult fish trap was watered up and sampling began on March 4. The initial sample rate is 21%. Since in 2013 adult trapping will only be conducted Monday thru Friday the 21% sample rate represents an overall weekly sample rate of 15%. 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 for biological testing from April 15-June 30. These will be evaluated by UC Davis, Biomark and Blue Leaf Environmental starting the next report period.