U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#25-2013

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: August 16 - 22, 2013

Turbine Operation

McNary had 9 to 11 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
4	Jun 24 – Jun 30, 2014	About one year.	Rewind contract.
11	Jun 28 – Jun 30, 2014	About one year.	Rewind contract.
3	Jun 4 – Sep 27	About four months.	Turbine bearing issue.
13 & 14	Aug 15 to 16	Two days.	Transformer 7 testing and maintenance.
8	Aug 19 - 22	Four days.	Annual maintenance.
9	Aug 21	Five hours.	Wicket gate adjustment and packing.

Adult Fish Passage Facilities

On August 16, 18 and 21, McNary fisheries biologists performed measured inspections of the adult fishways. Project personnel continue to clean the picketed leads at both exits regularly. Visual fish and video lamprey counts continued along with temperature monitoring and the nightly lowering of Oregon ladder entrance weirs, SFEW1, SFEW2, NFEW2 and NFEW3 in support of adult lamprey passage. Monitoring of the weirs has revealed no problems.

Fish Ladder Exits: The project cleaned picketed leads at both exits regularly. Eurasian milfoil continues to be a problem. Except as mentioned below, both ladders exits met all Fish Passage Plan criteria during inspections.

At the Washington exit, on August 18, the count station differential measured 0.6 feet. The fisheries staff cleaned the picketed leads reducing the differential to 0.1 feet. The regulating weir triggered an alarm once this week. Normal operation resumed after the alarm and the weir set points were adjusted.

At the Oregon exit, on August 21, the head over weir measured 0.9 feet. We could determine no reason for the reading. Our differential monitoring of the traveling screens revealed no problems. Due to encoder (electronic control) issues, weir 340 remains in manual operation.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria except on August 16 when W2 measured depths of 7.4 feet. Later we measured the weir at 8.4 feet. Since both weirs were moving continuously, we asked the operators to resolve the problem which they did. The technical staff has informed us that the digital encoder at weir, W2, is keeping the weir in calibration. However, they had to unplug the LED at the weir's control panel so a digital reading has to come from the control room. Spill turbulence continues to cause calibration drifts at weir W3, which are very difficult to correct. The motor for weir, W1, has been sent out for rehabilitation. The project will rotate out the other weir motors over time for rehabilitation.

At the Oregon ladder entrances, all points were in criteria. We noted no major calibration drifts this week. However, project personnel will continue to examine all weir problems. The Oregon ladder collection channel velocities averaged 1.2 feet per second from surface readings. Several power outages have affected velocity meter settings.

Auxiliary Water Supply System: Auxiliary water outages are recorded in Table 2. The PUD is located in the Washington ladder and the fish pumps supply the Oregon ladder.

Table 2. Auxiliary Water Outages.

Water Source	Date	Outage	Description
PUD	Aug 15 - 16	Two days.	Transformer 7.
PUD	Aug 16	55 minutes.	Trip out.
PUD	Aug 21	31 minutes.	Fire alarm test.
Fish Pumps 1 & 3	Aug 16	27 minutes.	Bus switch.
Fish Pumps 1 & 3	Aug 20	25 minutes.	Bus switch & breaker replaced.
Fish Pump 3	Aug 22	52 minutes total.	Low cooling water flow twice.
Fish Pumps 1 & 3	Aug 22	9 minutes total.	Two bus switches.

The Wasco County PUD bypass system operated well while the turbine unit was down. When operational, fish pumps 1 and 3 ran with blade angles of 30 degrees.

Fish pump 2 remains out of service for major overhaul which will require a contract. In preparation for this, on August 19, project personnel utilized the underwater camera to examine the pump intake bulkheads.

The juvenile facility continues to supply the usual 450 cfs to the north powerhouse pool.

Juvenile Fish Passage Facility

The season continues with alternating days of primary and secondary bypass with the switch occurring every morning at 0700 hours, with no deviations from this schedule to report for this week. We bypassed 10,627 smolts and 9,640 juvenile lamprey. Recent thunderstorms appear to

have stimulated lamprey passage. Juvenile shad numbers have increased. The additional shad should not adversely affect operations since we are not transporting fish by truck (as we typically were by this time in recent years).

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse and spillway was very light consisting mostly of Eurasian milfoil which continues to arrive on project in light patches. Winds and project operations affected debris dispersal. The fisheries staff found no problems when measuring trash rack differentials and no racks were cleaned. We noted no problems in the gatewell slots other than a broom handle being removed from slot 2C.

ESBSs/VBSs: ESBSs are deployed in all units except at unit 11which is out of service until June 3, 2014. The screens in slots 2A, 3A, 7B, 8C and 10C slots remain in timer mode. On August 20, camera inspections conducted in units 5 to 8 revealed no problems. The units were in standby during the examination. During the inspection, we did encounter difficulties with the camera cable. A new camera is being manufactured by a contractor at this time.

VBS differential monitoring revealed no screens out of criteria. However, on August 22, the project cleaned 3 screens as a preventative measure. When cleaning the VBSs, we did not observe juvenile lamprey mortalities or smolt mortalities. We will use slots in units 4 and 11 to cycle in rehabilitated VBSs over time.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 42 orifices open with no problems observed. For the VBS rehabilitation, we will close orifices at units 4 and 11 as needed with spares being opened nearby. The fisheries staff continued to monitor the collection channel during VBS cleaning and primary bypass operations. All systems functioned well in automatic mode except as described in Table 3. During these events, the screens never became obstructed and the channel remained stable.

Table 3. Screen Cleaning Mechanism Issues.

Brush	Date/Time	Issue	Result.
Rectangular	Aug 22/0635	Alarm/Stop in the upstream lowered position.	Fisheries staff reset. The alarm occurred for 1 hour or less.
Rectangular	Aug 23/0026	Inadvertently turned off. Wanted to turn off side brush.	At 0815, fisheries staff restarted.
Side	Aug 22/0635	Device would not function properly during scheduled check.	Electricians found water in the motor.
Side	Aug 22/1438	Brush restarted in auto.	Rectifier failed so brake disabled.
Side	Aug 22/2235	Device would not function properly on scheduled check.	Fisheries staff reset and left in auto.
Side	Aug 23/0200	Alarmed/Stopped in the upstream clean position. Incomplete cycle.	At 0645, turned off. Device would not stay on limit without brakes.
Side	Aug 23/0949	Need new motor.	Staff will run brush and manually operated limit switch to complete cycle.

The fisheries staff constantly monitored the channel during the difficulties with the cleaning devices. Due to the issues with the side cleaning device, the system will remain in primary bypass. Project staff found a spare motor on site which will be installed on August 27. Two days of secondary bypass will be missed on August 24 and 26. We will resume secondary bypass on August 28.

Transportation Facility: 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 operations and throughout the facility during secondary bypass operations. Smolt monitoring occurs only during secondary bypass days. Sample gates are turned on and off as need daily to insure that sample gates function only during secondary bypass operations. On August 22, even with the channel issues mentioned above, we completed secondary bypass operations as scheduled. On August 21, one of the "B" side counters failed and we replaced it.

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.

The fisheries mechanics continued to add welds to the porosity control unit's perforated plate. This week, we noted lawn sprinklers inundating the transport flume adult flush supply line motor and asked the resources staff to adjust the sprinklers. Handles were also installed on the flume covers.

Transport Summary: Transport will not occur at McNary this year.

River Conditions

River conditions during the week are outlined in Table 4 as provide the smolt monitoring staff, PSMFC. The data day runs from 0700 to 0700 hours. The summer spill season which requires 50 percent of flow being spilled continues.

Table 4. 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
168.9	146.0	84.5	73.1	71.9	71.3	6.0	6.0

*****Control room data.

As flows decrease, at times, the chief operator has been adjusting the spill pattern for barge traffic entering and exiting the navigation lock.

PSMFC continued their daily temperature monitoring and reports.

Other

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

Invasive Species: The next zebra mussel station examination will occur on August 28.

Avian Activity: We continue bird counts with each zone being observed once a day usually in the morning. In the forebay area, we observed high counts of 17 grebes with an occasional gull and osprey observed. Also, we noted a few gulls and cormorants on the rocks by the Washington boat dock.

We observed no grebes elsewhere on project.

In the tailwater area, we had high counts of 30 gulls, 15 cormorants and 30 terns with an occasional pelican observed. Most all of the birds were in the spill basin.

We observed high counts of 4 gulls, 6 cormorants and 3 terns by the bypass outfall.

The fisheries staff continues to work with the propane and water hazing cannons to keep them functioning well. On August 18, we had to reset the water sprinkler.

Research: The Oregon exit traveling screen and adult lamprey passage studies continued as did GBT examinations.

Project: Ice Harbor
Biological Science Technician: Donald Dennis
Dates: August 16 - 22, 2013

Turbine Operation

Turbine unit 1 was in operation, while turbine units 2, 3, and 6 were on standby the entire reporting period. Turbine unit 4 remained out of service for annual maintenance. Unit 4 came back to service August 22nd at 1745 hours. Turbine unit 5 remained out of service due to blade crack repairs. Turbine units 3, 4, 5, and 6 were out of service in support of STS and strainer inspections on August 20th. STS and strainers inspections were conducted in turbine units 1 and 2 on August 22nd.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on August 19, 21, and 22.

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. The south fish ladder picketed leads require frequent cleaning due to aquatic vegetation fowling.

Adult Fishway Performance: The center fish way weir 2 remains out of service. The south adult fish pumps will need to be shut down to remove the bulkhead in front of the weir. Currently, center fishway weir 1 is being operated. Fishway entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fishway entrances were within criteria on sill with less than 8 feet of depth. 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 were operated without problems. All are available for operation.

Juvenile Fish Passage Facility

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

STSs/VBSs: STSs are in cycle run mode operation. No problems were found during the August inspections. STS/VBS inspection were performed August 20 and 22. No problems to report as all screens appeared to be in good condition. Turbine strainer inspections conducted simultaneously with the STS/VBS inspections. One juvenile lamprey mortality was recovered from the unit 2 strainer.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile bypass is watered up with 20 open orifices. The incline screen cleaner brush operated satisfactorily.

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample was conducted on April 8 and the last sample of the season was performed July 15.

Removable Spillway Weir: Spill in support of fish passage began April 3, 2013. The RSW was in service until August 21 when closure became necessary due to the lack of river flow and the need to maintain minimum generation. Spill continued in the non-RSW spill bays. This change in operation was coordinated through TMT.

Fish Sampling: Juvenile fish sampling concluded July 15.

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
23.40	19.00	12.10	8.60	70	70	6.6	6.0

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water inspection results for July 2013 are outlined in table 2 below. August inspection results will be included in next week's report.

Table 2. Cooling Water Inspection Results for July 2013, Ice Harbor Dam.

Date	Unit	Results
23-July	6	None
23-July	5	Not inspected – unwatered for blade repair.
23-July	3	None
23-July	2	None.
25-July	4	1 juvenile lamprey mortality
25-July	1	1 juvenile lamprey mortality

Invasive Species: No new invasive species were detected this week.

Avian Activity: APHIS hazing activities ended June 30. Fish facility personnel are conducting bird observations when possible.

Research: No on-site researchers are present at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: August 16 - 22, 2013

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 6 was out of service from 0703 hours on July 29 to 1530 hours on August 17 for annual maintenance. Unit 3 was removed from service at 0800 hours on August 12 for annual maintenance. Units 1, 2, 4, 5, and 6 were taken out of service at 0659 hours on August 19 and remained out of service to conduct Doble testing of transformers. During this period unit 5 ran at speed-no-load for station service through the day (0700-1800 hours). Units 5 and 6 were available for generation nightly from 1800-0700 hours.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on August 16, 17, 18, and 21.

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 5.2', 5.3', 5.2', and 4.4 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections with the exception of a 2.2 feet reading on August 21. This out of criteria reading may be due to the inspection being performed during simultaneous changes in powerhouse and spill operations. The channel/tailwater was in criteria when inspected later that day.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 6.0', 6.2', 5.9', and 5.1 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 operations will continue until bearing repair and shaft alignment work is completed on pump 2, approximately August 30.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 0.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle run mode.

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

Collection Facility: Facility operation was changed to primary bypass mode at 1500 hours on August 14 due to increased mortality rates. Collection for condition sampling occurred on August 17 and August 20. Mortality and columnaris rates were 0.0% for both days. Daily collection for condition sampling and transport resumed 0945 hours on August 21.

Transport Summary: Collection for truck transport began at 0945 hours on August 21 with the first truck departing on August 22.

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
22.5	19.2	10.7	8.2	69.0	68.0	5.0+	5.0+

*Scrollcase temperatures.

Other

Summer spill began on June 21. A modified spill pattern was implemented on August 21 due to river flows being insufficient to operate the RSW while maintaining minimum generating requirements within the 1% operating criteria. Summer spill will resume when inflows are sufficient to provide minimum generation and RSW spill. During the periods unit 5 was ran at speed-no-load for station service (0700-1800 hours) the RSW was operational.

Inline Cooling Water Strainers: Cooling water strainers were inspected on August 6. No live lamprey were recovered. Mortalities included 1 juvenile lamprey and 2 juvenile catfish.

Invasive Species: No zebra mussels were observed at the monitoring stations on August 2.

Avian Activity: Bird hazing has ceased for the season.

Research: No researchers are present on site at this time.

Project: Little Goose
Biologist: George Melanson and Richard Weis
Dates: August 16 - 22, 2013

Turbine Operation

Turbine units 1 through 6 were available for most of this report period. Unit 2 was returned to service on August 16 following completion of six year overhaul maintenance. Unit 6 was removed from service on August 19 for its annual maintenance and inspection. All turbine units were operated within the 1% criteria.

Adult Fish Passage Facility

USACE and ODFW fisheries biologists performed measured inspections of the adult fishway on August 17, 19, 20 and 21.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs remained steady at 1.1 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held 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 1.3 and 2.0 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 7.9 (sill) and 8.3 feet (criteria $\geq$8.0 ft). NPE2 was lowered and opened on August 20 with the return to service of fish pump 3. NPE weirs rested on sill and depths ranged between 4.9 and 5.4 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 4.9 and 5.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured near NPE ranged between 1.8 and 1.9 fps (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on August 5 using the Rickly Hydrologic Current Meter. Three measurements were conducted from near surface, mid depth and near bottom. The subsurface velocity averaged 3.1 fps with 2 pumps operating and NPE 2 raised and closed.

Auxiliary Water Supply System: Fish pumps 1 and 2 operated within criteria ranging between 74 and 77 rpm. Fish pump 3 was returned to service on August 20.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. Gatewells remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1 at 0915 hours.

ESBS/VBS: All ESBS operated within criteria this report period. 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 265 and 751 and totaled 2,943 for this report period. The descaling and mortality rate was 0.5% and less than 0.9% respectively. The facility switched to 100% sample rate on August 17 to accommodate midi-tank truck loading.

Transport Summary: Every-other-day barging operations concluded with the last barge departing on August 16. Every-other-day trucking operations began with the first truck on August 18. Fish are being transported to below Bonneville Dam and released at the Smolt Monitoring Facility outfall pipe. A total of 2,590 fish were transported. All loading and transport operations were completed satisfactorily.

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
24.2	18.9	7.5	5.6	70.9	69.2	6.0	5.7

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on August 21. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on August 20. No mussels were observed. The next inspection is scheduled for September 19.

Avian Activity: The maximum bird count from a single survey included 19 cormorants, and 21 gulls.

Research: UC Davis researches are performing underwater video monitoring of the new lamprey orifices in the adult fish ladder. University of Idaho personnel are performing Adult Salmon Passage Studies using radio telemetry.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: August 16 - 22, 2013

Turbine Operation

Lower Granite had turbine units #1, 2, 4 and 5 available for power generation at the beginning of the report period. Turbine unit #6 was removed from service on June 24 for cavitation repair, followed by annual maintenance. The expected return to service date is December 7. Turbine unit #3 was returned to service on August 22 at 1243 hours after the completion of annual maintenance. Doble testing/T1 and T2 maintenance was completed on August 16 at 2259 hours. Special unit operations for adult passage did not take place this week because of unit constraints due to powerhouse roof repair work (although auxiliary pumps 1 and 2 were operated all week). Roof repair requires a powerhouse outage from approximately 0930 hours to approximately 2230 hours Monday thru Saturday for the next 4 to 5 weeks. During these outages, turbine unit #5 is run at speed no-load (5 kcfs) for maintenance of station service.

Adult Fish Passage Facility

On August 16, 18 and 22 COE fish biologists conducted inspections of the adult fishway system.

Fish Ladder: All criteria were met.

Fishway Entrances and Collection Channel: Head differential readings remained within criteria at all fishway entrances during the period inspections.

Weir depths at the south shore fishway entrances also met criteria during all weekly inspections with depths ranging from 8.0 to 8.1 feet. The north powerhouse fishway entrances were on sill during all inspections this week with depths ranging from 5.2 to 5.6 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 3.2 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 1.00 to 1.21 feet per second and averaged 1.10 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week without any problems. Fish pump 2 is now in standby mode.

Juvenile Fish Passage Facility

The sample rate was increased from 50% to 100% at 0700 hours on August 16 to facilitate trucking operations.

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 June 14 - 15. The next inspections are planned for August 23 - 24.

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 very light during the report week.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind with fish collection, fish sampling, or fish transportation equipment. Fish collection numbers at Lower Granite increased somewhat during the week with an average daily collection of smolts of 274 (versus a daily average of 226 last week). 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: Every other day fish barging operations concluded on August 16. All fish barges have been returned to Lower Granite and are docked for maintenance work and winter storage. Fish trucking operations began on August 18 using the pickup midi-tanker. Collected fish numbers have been relatively low and well within the capacity of this transport vehicle.

Removable Spillway Weir: Mandatory summer spill operations began at 0001 hours on June 21. The RSW continued to be 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
22.4	18.1	14.0	7.1	65.0	63.6	5.0+	5.0+

*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.

In Line Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on July 30. A total of 2 lamprey were found in the strainers over a combined run

time of 1,056.9 unit hours. The next cooling water strainer inspections are scheduled for late August.

Invasive Species: The zebra mussel substrate near the adult fishway exit was last examined for zebra mussels on August 2. No evidence of zebra mussels was found. The next inspection will take place in early September.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30.

Adult Fish Trap: The NOAA adult ladder fish trap did not operate during the week due to low water supply during auxiliary pump operations.

There are 3 auxiliary pumps that draw water from elevation 705 feet (about 30 feet down); these pumps were designed to supply water to the fish ladder during the reservoir drawdown test in 1992. Auxiliary pumps #1 and #2 were run for the duration of the report week.