U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#34-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: October 17 – 23, 2014

Turbine Operation

McNary had 10 to 11 units available for power generation this week. The hard constraint one percent criterion continues until November 1, with no units having run outside the criteria. Unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Main Reason for Outage
11	Sep 18, 2013 to Jan 31, 2015	About one year and 4.5 months.	Turbine bearing issue continues.
4	Mar 27 to Jan 31, 2015	About 10 months.	Turbine bearing issue continues.
9	Aug 11 to Mar 25, 2015	About 7.5 months.	Maintenance, then rewind contract.
12	Oct 20 to 23	About 3.5 days.	Annual maintenance.

Adult Fish Passage Facilities

On October 17, 18, 20 and 22, the McNary fisheries staff performed measured inspections of the adult fishways. The fisheries staff is checking the exits on all shifts as the juvenile system is in primary bypass. Visual adult fish counts will conclude at the end of the day on October 31.

Fish Ladder Exits: During measured inspections, both ladders met all Fish Passage Plan criteria. The project staff continues to clean the picketed leads as required, including weekends.

At the Washington exit, the amount of milfoil in the area is very light.

Oregon exit debris loads, though slowly dissipating, continue to fluctuate depending on wind direction. As a result the exit's picketed leads are being cleaned more often than picketed leads in the Washington ladder.

The Oregon exit traveling screen differentials remain low. However, trash rack differentials ranged from 1.0 to 1.3 feet, which is a decrease from previous weeks. We will continue to monitor both differentials regularly.

Fishway Entrances and Collection Channel: All Washington ladder entrance inspection points met criteria. In the near future, the project will replace the LEDs (Light Emitting Diodes) for W2 and W3 with a panel view.

All Oregon ladder entrance inspection points also met criteria. At the south entrance, SFEW1 and SFEW2 were occasionally slightly out of calibration. At the north entrance, lower tailwater elevations are causing a reduction in criteria point values. Electrical upgrades of the Oregon entrances will be completed in the near future.

Surface collection channel velocities averaged 1.4 feet per second. Lower tailwater elevations are probably affecting our readings.

Auxiliary Water Supply System: For the report week, the PUD turbine unit in the Washington ladder had no interruptions in service.

Fish pumps 1 and 3 satisfactorily operated with blade angles of 30 degrees. Pump 2 is currently out of service for major overhaul under contract. This work should be completed by September, 2015.

The juvenile facility continues to supplying the usual 450 cfs to the north powerhouse pool with no interruptions in service to report.

Juvenile Fish Passage Facility

Fall primary bypass season continues. We continued light winter facility maintenance and phased in winterization.

Forebay Debris/Gatewell Debris/Oil: Floating forebay debris consisting mostly of milfoil and woody material was light. Fresh incoming debris was minimal. Changes in wind direction moved the woody debris from the powerhouse to the Oregon shore and back. There was no debris at the spillway. Trash rack differential readings revealed no problems and no racks were cleaned this week. On October 30 and 31, the project staff will clean trash racks for the upcoming adult steelhead fallback study. We observed no problems in the gatewell slots.

ESBSs/VBSs: ESBSs are installed at all units except units 4 and 11, which are out of service. The screens in slots 1A, 7A and 13C remain in timer mode. On October 18, the screen in slot 1B tripped a breaker and the operator reset it without incident. No camera inspections occurred on October 21 as previously planned as ESBS inspections are well ahead of schedule

VBS differential monitoring revealed no screens out of criteria. On October 23, project personnel cleaned 3 screens as a preventative measure. We observed no ESA listed fish mortalities or lamprey mortalities. VBS rehabilitation continues with unit 11 as the staging area.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Forty two orifices were open all week. During VBS cleanings, we closed the orifices in the slots where the work was being performed and opened spare orifices in adjacent slots.

On October 22, an electrical technician resolved a control panel issues by replacing backlight panel bulbs. These bulbs had been recently ordered.

There were no other technical problems to report as all systems functioned well in automatic mode. This week, we lubricated the rectangular screen cleaning device.

With the system in primary bypass 24 hours per day, 7 days per week, the fisheries staff continued to monitor the channel around the clock. On October 20, the maintenance staff repaired the forebay elevation dial on the intake deck. We regularly record this elevation reading in the collection channel log.

Bypass Facility: The Fall primary bypass season is in progress. All systems are off, light maintenance and partial winterization continues. PIT tag detection occurs only in the full flow pipe during the fall season. Scheduled maintenance continued this week. A contractor completed facility roof repairs and another contractor replaced the weather stripping on the shop doors. A third contractor will complete the installation of three access gates in the back fence.

River Conditions

River conditions during the week are outlined in Table 2 as provided by COE data. Our data day runs from 0000 to 2400 hours each day. The project staff has completed rehabilitation of the spillway crane buses. Scheduled spillway hoists maintenance continues.

Table 2. River conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temp. (^{o}F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
97.1	72.5	0.0	0.0	63	61	6.0	6.0

*Temperature taken from the Unit 1 scroll case.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on November 4.

Invasive Species: The next zebra mussel station examination will occur on October 26.

Avian Activity: Bird counts are no longer occurring.

We continued to examine, monitor temperature and add oil to the outfall water cannon supply pump. We also continued to check and clean the pump intake as needed. Repairs to the pump are being arranged.

The bird distress calls deployed along the navigation lock wing wall and other project locations appeared to have discouraged roosting. The fisheries staff monitors and adjust the calls as needed.

During other inspections, we noted in the tailwater area, gulls feeding in the powerhouse flow. In addition, gulls and cormorants were roosting on the navigation lock wing wall, which is part of the spill zone. At times, we noted grebes and mergansers on the water below the spillway. Finally, we occasionally observed gulls and cormorants at the bypass outfall. Bird numbers are affected by the juvenile shad out migration and avian migratory patterns.

In the forebay area, we observed an occasional cormorant, and an occasional gull or group of gulls. Grebe numbers increased to a high of 15 this week. We observed gulls and cormorants on the rock by the Washington boat dock.

We observed one grebe in gatewell slot 1B. Later in the week, the grebe passed into the juvenile collection channel where it remains.

Research: The adult lamprey passage study continues to be phased out; with equipment at the count station picketed leads requiring removal. Preparations for the adult salmonid fallback study have been moved to November, when installation of transducers will begin. The University of Idaho continues preparations for a winter adult steelhead radio tracking study.

Project: Ice Harbor
Biologist: Ken Fone
Dates: October 17 – 23, 2014

Turbine Operation

Unit 3 was taken out of service on July 7 at 1346 hours to investigate a generator electrical grounding problem, for annual maintenance, and remains out of service due to an oil leak. Unit 6 was taken out of service at 1048 hours on October 6 for annual maintenance. Unit 2 was removed from service on October 14 at 0940 hours for digital governor installation. Units were taken out of service one at a time for STS inspections on October 20 and 22. Unit 5 was out of service on October 21 from 0800 hours to 1135 hours to accommodate an ROV inspection of the unit 6 stop log guide slots.

All available units were operated within 1% of peak turbine efficiency as specified in the Fish Passage Plan.

Adult Fish Passage Facilities

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

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) met criteria on all inspections. The south fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in criteria on all inspections. Criteria for head differentials at ladder exits and picketed leads, and depth over the weirs are 0.5 feet or less, 0.3 feet or less, and 1.0-1.3 feet, respectively. Fish ladder exits were clear of debris and the bubblers were operating satisfactorily. Both the north and the south shore picketed leads are in their deployed positions.

Fishway Entrances and Collection Channel: The south shore entrance (SFE) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria on all inspections. The north shore entrance (NSE) depth and channel/tailwater differential met criteria on all inspections. Fishway entrance criteria are 8 feet depth or greater, or on sill. Channel/tailwater differential criteria are 1 – 2 feet.

Auxiliary Water Supply System: Two of the 3 north shore fish pumps were operated throughout the week. Six of the 8 south fish pumps were operated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was little to no debris observed in the forebay and gatewells. An oil sheen was observed in gatewell slot 2C during this reporting period. An oil absorbent sock is deployed in the slot.

STSs/VBSs: STSs are in position for juvenile fish guidance and have been in cycle-run mode since July 21. Unit 1, 2, 4, 5, and 6 STS inspections were performed on October 20 and 22. No significant problems were found.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed in operation on March 17. The collection channel operated with 20 orifices open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: Sampling operations began on April 2 and ended on July 15.

Removable Spillway Weir: Spill in support of fish passage began on April 3 and ended on August 31. The contractor for the spill bay 2 ogee and flow deflector modifications began concrete cutting and chipping of the ogee this week, with these activities occurring between the hours of 1300 and 2400 when there are generally fewer adult fish present in the fish ladders.

River Conditions

River conditions during the week are outlined in Table 1 below.

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
19.7	13.5	0	0	63	61	8.3	6.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections took place on October 20 and 22. One Siberian prawn mortality and approximately 250 juvenile shad mortalities were recovered.

Invasive Species: No new exotic species have been found.

Avian Activity: Contracted hazing of piscivorous birds for 16 hours per day began on April 1 and ended on June 30. The piscivorous bird count program at the project began on April 1 and ended on July 15. Relatively low numbers of cormorants, gulls, and pelicans, and grebes were seen around the project during the week.

Research: Researchers plan to release sensor fish through unit 1 between November 7 and December 15 for the turbine characterization study. Pipes for the release of the sensor fish will be installed on the framework of the STS in gatewell slot 1B.

Project: Lower Monumental
Biologists: Bill Spurgeon and Ray Addis
Dates: October 17 – 23, 2014

Turbine Operation

All available units are being operated within the hard 1% peak efficiency criteria. Unit 5 was out of service from October 20 to October 23 to repair an oil leak. Unit 6 remains out of service for six year overhaul.

Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on October 20, 22, and 23.

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 NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections. SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings were 7.4', 7.1'and 7.2 feet. South powerhouse channel/tailwater head was in of 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 8.4', 8.2' and 8.1 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections. The collection channel velocity remained in criteria (1.5 - 4.0 ft/sec) this week.

Any criteria violations at the fishway entrances are related to the failure of the PLC (Programmable Logic Circuit) for automated control. Without automated control, the FCRG (Fishway Control Regulating Gate) drifts closed causing the fishway entrance head to go out of criteria at the south shore entrances. Operators are manually controlling the FCRG and fish pumps to maintain head and depth criteria at fishway entrances. The loss of the fishway PLC also caused all weir gates to be placed in local control. This results in criteria violations if monitoring and adjustment does not occur as tailwater level fluctuates. To minimize this, SPE1 and SPE2 are placed on sill.

The replacement PLC for automated control of the fishway has been received. It is currently undergoing programming. The automated system was estimated to return to service in August. The operators have been instructed to conduct a physical inspection on night shift to replace the FPP inspection via data screen conducted normally on that shift.

Auxiliary Water Supply System: AWS pumps were rotated out of service one at a time on October 18 for quarterly inspections. All AWS pumps were in service and operating on the remaining days of the report period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 57 square yards of forebay debris observed during this period. Gatewell debris ranged from 0 - 10% surface coverage. Oil absorbent pads were placed in 4 gatewells due to a sheen that was likely caused by grain dust.

STSs/VBSs: STSs are operating in cycle-run mode. STSs were inspected October 7 and 8. All screens passed inspection.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel is operating with 18 orifices open.

Collection Facility: The facility was dewatered for winter maintenance on October 15.

Transport Summary: Transport is not occurring at this time.

River Conditions

Summer spill ended at 0000 hours on September 1. River conditions during the week are outlined in Table 1 below.

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
18.9	13.1	0.0	0.0	62.0	61.0	7.0	5.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 7. No live fish were recovered. Mortalities included l prawn.

Invasive Species: No zebra mussels were observed at the monitoring stations on October 9.

Avian Activity: Daily tailrace counts ceased at end of collection season on October 1. No additional action trigger points were met from the avian action plan through this time period.

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

Project: Little Goose
Biologists: Towns Burgess and Richard Weis
Dates: October 17 – 23, 2014

Turbine Operation

Turbine units 1, 2, 4, 5 and 6 were available for most of this report period. Unit 3 was placed out of service on July 7 at 0700 hours for a planned six year overhaul. Unit 5 was placed back into service after transformer repair on October 21. Unit 4 was placed back into service following completion of annual repairs on October 22. All available turbine units were operated within 1% peak efficiency range.

Adult Fish Passage Facility

Adult fishway inspections were performed on October 22 and 23.

Fish Ladder: Ladder exit differentials ranged between 0.0 and 0.1 ft. (criteria $\leq$ 0.5 ft.). Water depths over the weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.). No differentials were observed at the picketed leads (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 held steady at 1.5 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.2 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weirs rested on sill and ranged between 7.1 and 7.3 feet (criteria $\geq$7.0 ft). NSE weirs are in manual mode and depths ranged between 7.0 and 7.4 feet (criteria $\geq$ 6.0 ft.). North powerhouse surface water velocities measured between 1.9 and 2.3 fps. Collection channel surface water velocities near north shore entrance ranged between 2.1 to 2.4 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: All fish pumps operated within criteria.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Estimated amounts of woody debris in the immediate forebay ranged between 25 and 50 sq ft.

Spillway Weir: The spillway weir was removed from service on August 4.

ESBS/VBS: ESBSs operated within criteria this report period. All brushes operated as designed. Monthly ESBS screen tests were performed on October 20. The screen in slot 2C was found inoperative. Electricians subsequently reset the limit switches, restoring screen service. All other screens met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile system operated with 19 open orifices.

Transportation Facility: The collection and transportation facility operated within criteria this report period. Daily fish collection ranged between 18 and 50 and totaled 218 for the week. The descaling and mortality rates were 5.4% and 1.0% respectively.

Transport Summary: Every other day trucking continues with no problems encountered.

River Conditions

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
17.8	15.1	0	0	62.1	61.7	6.0+	5.6

*Ladder Temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were checked on October 19. Nothing was found.

Invasive Species: No zebra mussels were observed on the substrate monitor on October 21. The next inspection is scheduled for November 21.

Avian Activity: USDA-APHIS bird hazing ended on June 20. Single observation, maximum bird counts are listed in Table 2 below.

Table 2. Tailrace counts of foraging piscivorous birds at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
October 17	1407	23	23	0	0
October 18	1130	15	19	0	0
October 19	1230	24	16	0	0
October 20	1500	24	15	0	0
October 21	1100	22	10	0	0
October 22	1214	21	15	0	0
October 23	1200	24	11	0	0

Gas Bubble Disease: WDFW Gas Bubble Trauma monitoring concluded July 28.

Research: The University of Idaho continued their adult salmonid and adult lamprey passage study.

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: October 17 – 23, 2014

Turbine Operation

Units are being operated within the hard 1% operational criteria. Unit 1 was removed from service for annual maintenance at 0716 hours on October 21. The expected return to service date for unit 1 is November 24. Unit 5 was removed from service for annual maintenance at 0657 hours on September 2. A contact issue with the unit 5 blades and the liner is being investigated during this outage. The expected return to service date for unit 5 is now October 31. Turbine unit 4 returned to service at 1421 hours on October 22; the governor/speed issue was traced to a faulty governor speed signal generator.

Adult Fish Passage Facility

The fish ladder was inspected by Corps/PSMFC biologists on October 17, 18, 19 and 20. The October 20 inspection was conducted with the ODFW biologist from Little Goose Dam. Visual adult fish counts are scheduled to continue through October 31.

Fish Ladder: Fishway exit head differentials and depths over the weirs were in criteria (≤0.5' and 1.0-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.3') on all inspections.

Fishway Entrances and Collection Channel: NSE1 was out of criteria (criteria ≥7' or on sill) on all inspections. NSE1 depth readings ranged from 4.8 to 5.1 feet. NSE2 was out of criteria on all inspections with depth readings ranging from 6.3 to 6.7 feet. North shore channel/tailwater head differentials were out of criteria (criteria 1'-2') on all but the October 17 inspection. The out of criteria head differential readings were 0.9, 0.9 and 0.8 feet respectively. NSE2 has been out of service since 2011 and is currently suspended with a hoist system at a compromised depth of 630.0 feet. The gate requires a complete rehab and will remain out of service until funding is available. Entrance weir depths are being sacrificed in an attempt to maintain channel/tailwater head differential.

NPE1 and NPE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. North powerhouse channel/tailwater head differentials were in criteria (criteria 1'-2') on all inspections. SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. South shore channel/tailwater head was in criteria (criteria 1'-2') on all inspections

Collection channel velocities were out of criteria (criteria 1.5-4.0 fps) on all inspections. The daily average channel velocity readings averaged 1.1 feet per second. The powerhouse electrical crew is investigating the velocity meter and looking into alternatives for replacement. Physical surface velocity readings were taken at the north and south shore channels. The north shore

channel surface velocity readings were 1.5 and 1.9 fps and the south shore channel readings were 1.5 and 2.4 fps.

Auxiliary Water Supply System: All AWS pumps were available for service. Pumps 1 and 3 were operated. AWS pump 2 was in standby mode. Fish pump 1 is operating at fast speed to supply additional water to the fishway channel.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied during the week due to wind strength and direction. Daily monitoring and removal of gatewell debris continues.

ESBSs/VBSs: ESBSs are deployed in all operational units. The brush cleaning cycle is set for once every two hours.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are backflushed every three hours.

Collection Facility: The sample rate was reduced from 100% to 50% on October 21 due to an increase in subyearling Chinook. The weekly descaling rate was 3.68%. Descaling for the season is 1.24%, compared to a seasonal rate of 2.73% in 2013 and 1.95% for the 2008-2012 seasonal average. The smaller separator bars used to screen jacks out of the sample were removed at 0700 on October 10 to investigate if the bars had an influence on descaling rates – the results are inconclusive.

Inadvertent Bypass - Lower Granite Juvenile Fish Collection Facility: On 21 October, 279 juvenile fish were bypassed directly from the sample to the river via the sample recovery tank release pipe. The sample recovery tank release pipe diverts fish either to the river/barge or to the truck loading pit. Typically the valve is in the bypass position with the exception of when fish collection exceeds the 150 pound capacity of the midi-tank. Under these conditions, the valve is positioned to divert fish to the truck pit for semi-truck loading. On 21 October sample fish were being released directly into the recovery tank release pipe from the wet lab after being sampled per standard protocol. During the procedure PSMFC personnel noticed fish were not being directed to the truck loading pit. Fish facility staff then discovered that the sample recovery release pipe valve was in the bypass/barge position resulting in fish going directly into the river. The valve was placed in the correct position immediately after the problem was discovered. The remaining sample fish were loaded directly from the wet lab to the truck tank for transport without incident. Bypassed fish included 5 clipped subyearling Chinook, 272 unclipped subyearling Chinook, and 2 unclipped juvenile sockeye. Corps and PSMFC biologists will both double-check to ensure the valve is in the correct position whenever a change in transport operations occurs.

Transport Summary: Every-other-day truck transport is occurring with trucks departing on odd numbered days this month. The 300 gallon midi tank was utilized for transport on October 17 and 19, while the semi-truck was used on October 21 and 23.

River Conditions

River conditions during the week are outlined in Table 1. No spill is occurring at this time.

Table 1: River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (F^o)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
18.5	15.9	0.0	0.0	62.0	61.5	5.0	3.8

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections are scheduled for October 27 and 28.

Invasive Species: No zebra/quagga mussels were observed at the monitoring station on October 13.

Avian Activity: Daily piscivorous bird counts are taken from the juvenile fish separator platform one hour after sunrise and one hour before sunset. Maximum piscivorous bird counts are summarized in Table 2.

Table 2. Daily maximum tailrace piscivorous bird counts at Lower Granite Dam.

Date	Time (hours)	Gulls	Cormorants	Terns
October 17	0815	3	1	0
October 18	0815	2	3	0
October 19	0815	6	0	0
October 20	0815	2	1	0
October 21	1700	6	0	0
October 22	0820	7	15	0
October 23	0820	9	6	0

Adult Fish Trap Operations: The adult fish trap facility was in 24 hour operations. Collection of fall adult Chinook for truck transportation to Cherry Lane Hatchery has concluded as brood stock needs have been met. Collection of fall adult Chinook for truck transportation to Lyons Ferry Hatchery resumed in order to obtain additional brood stock and for run reconstruction modeling.

Research

Research: Onsite juvenile fish research has concluded for the year.