**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#36-2013**

**Project: McNary**
Biologists: Carl Dugger and Bobby Johnson
Dates: November 1 - 7, 2013

## Turbine Operation

McNary had 6 to 10 units available for power generation this week. On November 1, the soft one percent constraint began. On November 1 and from November 5 to 7, turbine units ran outside this criterion due to flow in excess of power house capacity. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

| Units | Outage Dates | Outage Length | Reason |
|---|---|---|---|
| 4 | Jun 24 – Jan 30, 2014 | About seven months. | Rewind contract. |
| 11 | Jun 28 – Jan 30, 2014 | About seven months. | Rewind contract. |
| 3 | Jun 4 – Feb 4, 2014 | About eight months. | Turbine thrust bearing issue. |
| 10 | Oct 30 – Nov 15 | About 17 days. | Turbine guide bearing issue. |
| 5 to 8 | Oct 30 – Nov 1 | About three days. | BPA transmission line outages. |
| 12 | Nov 4 – 8 | About 5 days. | Annual maintenance. |
| 9 | Nov 5 – 8 | About 4 days. | Governor filter replaced. |
| 5 to 7 | Nov 4 | 18.6 hours total. | Dive to remove research equipment. |
| 5 to 8 | Nov 5 | 25 hours total. | Dive to remove research equipment. |
| 6 to 8, 13 | Nov 6 | 14.5 hours total. | Dive to remove research equipment. |
| 13 & 14 | Nov 7 | 9.4 hours total. | Complete removal of research equipment. |

## Adult Fish Passage Facilities

On November 1, 3 and 6, the McNary fisheries biologists performed measured inspections of the adult fishways. On October 31, visual fish counts concluded. On November 1, project staff raised picketed leads to reduce the need for cleaning. Both count stations were winterized the same day.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria. At the Washington exit, one low water alarm occurred, which the operators reset. The exit's count station window cleaning brush will be repaired prior to the next season. At the Oregon exit, due to encoder

issues, weir 340 remains in manual mode of operation. Our differential monitoring of the traveling screens revealed no problems. One regulating weir alarm occurred, which the operators reset.

Fishway Entrances and Collection Channel: At the Washington ladder entrance, all inspection points were in criteria. W2 is operating well with the digital encoder. The LED remains unplugged. W3 is still occasionally experiencing calibration drifts. On November 3, the biologist again found W3 moving excessively and asked the operators to investigate the problem. This issue appears to have been resolved.

At the Oregon ladder entrances, all points were in criteria. At the south powerhouse entrance, SFEW2 had one calibration drift. Oregon ladder collection channel surface velocities averaged 1.3 feet per second.

Auxiliary Water Supply System: The Wasco county PUD turbine unit in the Washington ladder had no interruptions in service. The Oregon ladder fish pumps also had no interruptions in service. Both pumps operated satisfactorily 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 juvenile system remains in primary bypass for the fall season. The facility also remains watered up to avoid freeze breakage. Light maintenance continues. The fisheries staff continues to monitor the juvenile channel around the clock.

Forebay Debris/Gatewell Debris/Oil: For the week, forebay debris along the powerhouse was light consisting mainly of woody material. Changes in wind, weather and project operations continue to redistribute the debris. Trash rack differential measurements revealed no problems and no racks were cleaned. We noted no problems in the gatewell slots. However, on November 1, an ESBS rope was removed from the orifice inflow at slot 12B slot.

ESBSs/VBSs: ESBSs are deployed in all units except in slots associated with unit 11. The screens stored at unit 11 will be used as spares. The ESBSs in slots 2A, 3A, 7B, 8C, 10C and 13A remain in timer mode. On November 5, we installed the camera in our truck canopy with help from the factory representative. The next day, we tested the camera at slot 3C slot. It functioned flawlessly. The next camera inspection will occur on November 12.

On November 2, the project found an ESBS brush bar in slot 10B. The bar was blocking the headgate as it was lowered. The next day, the project used a magnet to move the bar so the headgate could seal. This bar came off the ESBS last winter when the screen was raised. The project will retrieve the bar at a later date. We also have a brush bar in slot 2A that needs to be retrieved. Unit 10's outage was delayed because of this problem.

On November 6, an operator found unit 5's ESBSs were not in communication with the system's program. The electrical staff determined the screens were still cycling properly and resolved the issue.

VBS differential monitoring revealed 16 screens out of criteria when units were operating at 77 to 80 megawatts. On November 1, 5 and 7, the project cleaned these screens and 11 others as a precautionary measure. No fish mortalities of interest were found this week during VBS inspection and cleaning operations. Since units 3 and 11 are out of service, slot 3C and slots associated with unit 11 are being used to cycle in rehabilitated VBSs. The replacement of the VBS in slot 6B has been again delayed to next week.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: For the week, we had 40 orifices in service. Two orifices in unit 4 are closed as this unit is out of service. This reduced the opening of the side dewatering valves, which in turn will reduce the likelihood of the side screen becoming obstructed with debris. Since technicians are monitoring the collection channel around the clock, orifice adjustments and screen cleaning equipment can be operated or adjusted as required. Fisheries staff continued to monitor the channel during VBS cleaning operations. The only problem we observed was the ESBS rope mentioned above.

All systems operated well in automatic mode. However, on November 5, between 0700 and 0930 hours, the south side dewatering valve jammed, which may explain an early water alarm. The biologist reported it immediately. Interestingly, by 1100 hours, before the technical staff could examine the valve, it returned to normal operation. The next day, the technical staff crew leader looked at the side dewatering valves and found no problems.

On November 8, from about 1000 to 1200 hours, the south side dewatering valve jammed in the same location. From about 1200 to 1400 hours, the technical staff found nothing wrong with the PLC or electrical system and returned the valve to automatic operation. At this time, we will assume the problem is mechanical, which will require the channel to be dewatered during the winter maintenance season. Until then, the fisheries staff will monitor the channel 24 hours per day, 7 days per week.

Early in the week, PSMFC reported interference with the detectors in the full flow pipe. Before the project could respond, the breaker to the lights thought to be causing the interference tripped. Project personnel left the breaker open. However, late in the week, PSMFC again reported interference. The maintenance staff will continue to look into the problem.

Transportation Facility: Since we are in fall primary bypass season, we have removed all systems from service. PIT tag detection occurs only in the full flow pipe. Light maintenance continues and the facility will remain watered to avoid freeze breakage. This week, we replaced the outside phone ringer.

Transport Summary: Transport did not occur at McNary this year. After regional discussion, transport will no longer occur at McNary in the future.

## River Conditions

River conditions during the week are outlined in Table 2 as provide by the COE. Our data day runs from 0000 to 2400 hours. Scheduled spill gate maintenance continued. On November 1, spill occurred due to flows in excess of powerhouse capacity.

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 |
| 118.5 | 101.0 | 5.8 | 0.0 | 57 | 55 | 6.0 | 6.0 |

## Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur on November 12.

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

Avian Activity: On September 30, bird counts concluded. While doing other inspections, we did casual bird observations. In the forebay area, we observed a small group of grebes with an occasional gull, cormorant or blue heron. On the rocks by the Washington boat dock, we observed gulls.

In the tailwater area, we noted gulls and cormorants with an occasional merganser or kingfisher. Most of the feeding birds were in powerhouse area. The roosting birds were on the navigation lock wing wall. Bird numbers maybe fluctuating with their seasonal movements and the juvenile shad out migration.

We observed gulls with an occasional gull, merganser or cormorant by the bypass outfall.

The hazing sprinkler system remains out of service. A new system will be installed this winter with the full flow bypass clean up contract. The 3 gull distress calls remain deployed.

Research: This week, a dive contractor removed transducers from the trash racks at units 6, 7, 12 and 13, which were left there from the emergency gate closure and FGE study.

Fish Savage: The fisheries staff removed one 6-inch bass from the unit 10 scroll case. Two juvenile carp and 2 juvenile shad were also removed.

**Project: Ice Harbor**
Biologist: Mark Plummer
Dates: November 1 - 7, 2013

## Turbine Operation

Main turbine units 1, 2, 3, and 5 were available for operation. Turbine unit 1 and 2 went out of service November 4 at 0800 hours. Turbine unit 1 went out for annual maintenance and turbine 2 went out of service in support of a scheduled line outage. Turbine unit 4 went out of service October 15 at 0831 hours for governor installation and remains out of service. Turbine unit 6 remains out of service.

## Adult Fish Passage Facilities

Fish facility personnel inspected the adult fish ways November 4, 5, and 6.

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.

Fishway Entrances and Collection Channel: Fish way entrance criterion is 8 feet depth, greater than 8 feet depth, or on sill. All fish way entrances were within criteria, on sill, or greater than 8 feet of depth. All channel/tail water differentials were in criteria, except on 2 of the inspections when the south channel/tailwater differential exceeded 2 feet. South channel velocities remained in criteria (1.5 – 4.0 fps). 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

Fore bay Debris/Gate well Debris/Oil: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily.

STSs/VBSs: STSs are in cycle run mode operation. The STS/VBS inspection were performed October 21 and 23. No problems to report. Turbine strainer inspections were done concurrently with the STS inspections. Results are listed below. The next inspections are scheduled for November 18 and 20.

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

Juvenile Bypass Facility: No problems to report.

Fish Sampling: The first sample took place April 8 and the last sample was performed July 15.

Removable Spillway Weir: The RSW is not in operation. Spill for fish began April 3, 2013 and ended August 31 at 2359 hours.

## 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 |
| 27.8 | 12.9 | 0.0 | 0.0 | 57 | 56 | 7.8 | 7.8 |

*Unit 1 scrollcase temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on October 21 (units 2, 4 & 5) and October 23 (units 1 and 3). Unit 6 was not inspected as it remains out of service. No lamprey were seen or recovered during these inspections.

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

Avian Activity: The fish facility is conducting bird observations when possible. Observable predation has decreased as juvenile fish numbers decline.

Research: No on site research is in progress at this time.

Fish Salvage: Fish were recovered from turbine unit 1 scroll case on November 4. Several juvenile shad were recovered. No ESA-listed fish species were found.

**Project: Lower Monumental**
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: November 1 - 7, 2013

## Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Unit 5 was removed from service at 1300 hours on October 29 for annual maintenance. Units were rotated out of service on November 5 and 6 for STS inspections.

## Adult Fish Passage Facility

The adult fishway was inspected by Corps biologists on November 4 and 7.

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 with the exception of a north shore reading of 0.8 feet on November 4. This discrepancy was due to leaves accumulating on the lower picketed leads following high winds. Picketed leads were cleaned when the problem was reported.

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. NSE 2 remains in local mode until electricians complete transducer replacement.

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 7.2' and 6.4 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill the gate depth readings was 7.1 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 November 15.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 15.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-25% surface coverage. No oil was observed in gatewells.

STSs/VBSs: STSs are operating in cycle mode. STSs were inspected on November 5 and 6. All screens passed inspection.

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

Collection Facility: The facility is in winter maintenance mode.

Transport Summary: Transport is not 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 |
| 23.9 | 15.5 | 0.0 | 0.0 | 53.0 | 52.0 | 4.4 | 4.4 |

*Scrollcase temperatures.

## Other

Spill for fish passage ended at 0000 hours on September 1.

Inline Cooling Water Strainers: Cooling water strainers were inspected on November 5. No live lamprey was recovered. Mortalities included about 220 juvenile shad and 19 Siberian prawns.

Invasive Species: No zebra mussels were observed at the monitoring stations on November 4.

Avian Activity: Bird hazing has ceased for the season.

Research: No on site research is in progress at this time.

**Project: Little Goose**
Biologists: Richard Weis
Dates: November 1 - 7, 2013

## Turbine Operation

Turbine units 2 - 6 were available for most of this report period. Turbine unit 1 has been removed from service in support of scheduled exciter replacement. Turbine unit 3 was removed from service on October 28 at 0700 hours for its annual inspection and maintenance. 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 November 4 and 6.

Fish Ladder: The ladder exit head differentials remained steady at 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 remained steady at 0.0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or at 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 1.5 and 2.0 feet (criteria 1.3 to 2.0 ft.). SSE weir depths ranged between 8.3 and 8.4 feet (criteria $\geq$8.0 ft). NPE weirs ranged between 6.6 and 7.3 feet (criteria $\geq$7.0 ft or on sill). NSE weirs are at fixed elevations of 532.0 feet and depths ranged between 6.9 and 7.5 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities ranged between 2.2 and 2.7 fps (criteria $\geq$1.5 fps). Collection channel subsurface water velocity was measured on October 14 using the hydrologic current meter. The velocity averaged 2.7 fps with 3 fish pumps operating and all weirs in open positions.

Auxiliary Water Supply System: All fish pumps operated within criteria ranging between 72 and 75 rpm.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Woody debris was minimal. Gatewells for the most part, remained clear of debris.

Spillway Weir: The spillway weir was removed from service on August 1. Spill for summer fish season ended on September 1.

ESBS/VBS: All ESBS operated within criteria this report period. ESBS screens were tested for proper operation on October 16. All ESBS operated as designed.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile collection system was operated throughout this period with 18 open orifices.

Transportation Facility: Facility was switched to primary bypass on October 31 at 0700 hours. All fish are routed to the tailrace mid-channel area. Seasonal maintenance work at the facility is in progress.

Transport Summary: Fish transport ended on October 31.

## 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 |
| 21.1 | 13.5 | 0 | 0 | 53.8 | 52.8 | 6.0+ | 6.0 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers on all units were checked on November 1. No fish were found.

Invasive Species: The zebra mussel substrate monitor was last inspected on October 25; no mussels were observed. The next inspection is scheduled for November 25.

Avian Activity: A maximum of 42 gulls, 19 cormorants and 3 grebes were counted during bird surveys.

Research: University of Idaho is performing Adult Salmon Passage Studies using radio telemetry.

**Project: Lower Granite**
Biologists: Mike Halter and Ches Brooks
Dates: November 1 - 7, 2013

## Turbine Operation

Lower Granite had turbine units 2, 3, and 4 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 31. Turbine unit 5 was returned to service at 1830 hours on November 1 following maintenance. Turbine unit 1 was returned to service at 1924 hours on November 1 following VBS repair work in slot 1B. Turbine unit 5 was forced out of service due to a blown fuse at 1703 hours on November 4. It was returned to service at 1820 hours the same day. Turbine unit 4 was taken out of service for governor work at 1347 hours on November 1. The planned return to service date is November 14. Turbine unit 2 was taken out of service for a 6 year overhaul on November 4. The planned return to service date is December 16, 2013.

## Adult Fish Passage Facility

On November 1, 2 and 4 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 the south shore and north powerhouse fishway entrances during the weekly inspections. Head differential readings at the north shore entrances were within criteria on the November 1 and 4 inspections but slightly below criteria on the November 2 inspection with a reading of 0.9 feet (criterion 1.0 – 2.0 feet).

Weir depths at the south shore and north powerhouse fishway entrances met criteria during all weekly inspections with depths ranging from 8.0 to 8.3 feet (criterion $\geq$ 8.0 feet). Weir depths at the north shore entrances ranged from 4.9 to 7.1 feet (criterion $\geq$ 7.0 feet). Only north shore entrance 1 can adjust its' depth relative to the tailwater elevation. North shore entrance 2 is manually set at a compromise depth of 630.0 feet. Normally weir depth readings at the north shore entrances are sacrificed in order to maintain the requisite 1.0 foot of head differential.

Velocity readings in the adult fishway collection channel transition pool area ranged from 0.99 to 1.11 feet per second and averaged 1.05 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 3 were run during the week. On October 31, fish pump 1's speed was changed from slow to fast which helped head differential readings at the fishway entrances. Fish pump 2 is in standby.

## Juvenile Fish Passage Facility

Juvenile fish collection and transportation operations ended at 0700 hours on October 31. The system was switched to secondary bypass (all juvenile fish routed out the pipe to mid-river release). This provides continued PIT-tag interrogation and weather permitting, will continue until December 15.

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 October 25-26. During the inspections a significant tear was found in VBS slot 1B about 50 feet down. Repairs quickly took place and the unit is now available for service. The next inspections are planned for late November.

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. High winds during the early part of the week put quite a few leaves into the river and they caused some minor clogging issues on the separator inclined screen.

Transportation Facility: The JFF operated smoothly during the week. There were no operational problems of any kind. The separator remains watered up to bypass fallback adult salmonids and enumerate PIT-tagged juvenile fish (Lower Granite does not have PIT-tag detection on a bypass pipe and the separator has to remain operational to track PIT-tags). Separator personnel also continued to monitor adult fallback salmonids for condition factors. Due to the continued presence of jack Chinook in the juvenile bypass system, the facility has continued to employ a smaller gap series of separator bars to keep smaller jack Chinook from falling through the separator bars and allow for enumeration. These bars have proven quite effective.

Transport Summary: Every other day fish barging operations concluded on August 16. The fish barges have been returned to Lower Granite and are docked for maintenance work and winter storage. The two 4000 series barges are down river for hull painting. Fish trucking operations concluded on October 31 and the semi tractor has been returned to the McNary Project.

Removable Spillway Weir: The RSW was operated in support of general spill operations during the season. Mandatory spill operations in support of fish passage ended on September 1.

## 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* ($F^{o}$) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 23.7 | 15.8 | 0.0 | 0.0 | 54.0 | 54.4 | 5.0 | 3.0 |

*Scrollcase temperature.

## Other

Visual counts in the adult fish ladder counting room between the hours of 0400 and 2000 began on April 1 and concluded on October 31. Video counts during the same hours began on November 1 and will continue through December 31.

Inline Cooling Water Strainers: Cooling water strainers were last inspected for lamprey entrainment on October 21. No lamprey were found in the strainers over a combined run time of 1,005 unit hours. The next cooling water strainer inspections are scheduled for late November.

Invasive Species: The zebra mussel substrate near the adult fishway exit was examined for zebra mussels on November 1. No evidence of zebra mussels was found. The next inspection will take place in early December.

Avian Activity: Formal bird counts and hazing started on April 1. Avian hazing activities concluded for the season on June 30. The project continues to make daily counts of avian predators from the separator platform.

Adult Fish Trap Operations: Adult fish trap operations continued with a sample rate of 20%. Scale samples will be taken from 1 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.

IDFG is radio tagging adult 'B' run wild and hatchery steelhead to examine the difference in movement, staging and if the fish are straying from predicted/natural areas.

WDFW is radio tagging fall Chinook that were PIT-tagged as juveniles by Tiffani Marsh over the last 4 years.

The Nez Perce are conducting a study to monitor the effectiveness of adult 'B' run steelhead hatchery (supplementation) in the Clearwater sub-basin. Utilizing sort-by-code; fifty each of known South Fork Clearwater adults – comprised of: Clearwater natural, supplementation and conventional steelhead will be radio tagged. The two main goals of this study are: 1. Compare the relative performance of these three groups. 2. Determine spatial overlap in the spawning distribution of these groups

Fall Chinook Transport: Collection of adult fall Chinook for transport to Lyons Ferry Hatchery continued during the week. The Nez Perce Hatchery at Cherry Lane needs have been met and

they are no longer trucking fish. Due to falling adult numbers trucking is now being conducted on an "as needed" basis. Trucking operations will continue into mid November (or until hatchery needs are met).

Fish Salvage Operation: Lower Granite Fish Facility personnel conducted a fish salvage operation in the scrollcase of turbine unit 2 on November 5 in support of a 6 year unit overhaul. All aspects of the operation went smoothly. Only 2 fish were encountered during the dewatering (1 wild juvenile subyearling Chinook, 1 wild juvenile sockeye). Both were released directly into the dam tailrace area.