U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#04-2014

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: March 21 – 27, 2014

Turbine Operation

McNary had 11 to 12 units available for power generation this week. On April 1, the hard constraint one percent criteria will begin. Until then, units may run outside the soft constraint at BPA's request. Unit outages are recorded in Table 1.

Table 1. Unit Outages at McNary Dam.

Units	Outage Dates	Outage Length	Reason
3	Jun 4, 2013 – Apr 10, 2014	About 10 months.	After rewind, thrust bearing.
11	Sep 18 – Unknown	Unknown.	Turbine bearing issue continues.
4 & 5	Mar 24	3.6 hours total.	Trash rack cleaning.
9, 10 & 12	Mar 24	Out twice in 48 minutes.	For unit 11 testing for one about hour.
1 & 2	Mar 25	7.8 hours total.	Trash rack cleaning.
1, 8 & 14	Mar 26	7.5 hours total.	Trash rack cleaning.
6	Mar 27	3.7 hours.	Trash rack cleaning.
4 to 10	Mar 27	14.7 hours total.	Take units in and out of service to remove forebay debris. Trash rack cleaning at unit 7.
4	Mar 27 – Unknown	Unknown.	Turbine bearing issue.

Adult Fish Passage Facilities

On March 21, 23 and 25, the McNary fisheries biologist performed measured inspections of the adult fishways. Visual adult fish counting will resume April 1. On March 25, at approximately 1400 hours, the Washington ladder lost power during spillway backup power system tests. The ladder remained in criteria during this brief 21 minute outage.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan criteria. During the week, debris loads fluctuated near the exits. The Washington exit trash rack was cleaned almost daily.

At the Oregon exit, traveling screens differentials were satisfactory. Multiple differential alarms did occur, which the operator reset without incident. Project personnel returned the rehabilitated picketed leads to the exit.

Fishway Entrances and Collection Channel: At the Washington ladder entrances, all inspection points were in criteria. In the near future, the project will replace the LEDs for W2 and W3 with PLCs (Programmable Logic Circuits), which will integrate into the new control system.

At the Oregon ladder, at the north powerhouse entrance, NFEW2 and NFEW3 measured depths of 7.7 and 7.8 feet all week. This is probably due to the juvenile system not supplying the usual 450 cfs to the north powerhouse pool at this time. The facility staff will look into other possible causes. On March 23 and 25, SFEW1 measured depths of 7.8 and 7.3 feet, respectively. The weir has drifted out of calibration and the technical staff has been notified. All other Oregon entrance inspection points were in criteria.

Collection channel surface velocities averaged 1.7 feet per second.

Auxiliary Water Supply System: For the report week, the PUD turbine had no interruptions in service. Pumps 1 and 3 operated satisfactorily with blade angles of 30 degrees. Pump 2 remains out of service for major overhaul which will require a contract for the winter of 2014–2015. The juvenile facility remains out of service for maintenance and is not yet supplying the usual 450 cfs to the north powerhouse pool. This system will return to service on March 28.

Juvenile Fish Passage Facility

The facility remains shut down for winter maintenance, which is near completion. On March 28, we will re-water the system.

Forebay Debris/Gatewell Debris/Oil: This week, floating forebay debris was moderate to heavy and was mostly at the powerhouse. Project operations and weather patterns have move the debris somewhat. Although trash rack cleaning removed some of the debris, tumbleweeds continued to arrive from upriver. The remaining debris is mostly woody material. From March 24 to 27, project personnel removed approximately 320 cubic yards of debris from units 1 through 8 and 14. Facility staff recovered 15 juvenile lamprey mortalities and 1 juvenile Chinook mortality in this debris. All mortalities were recovered from debris removed in front of slot 2B. On March 27, project staff attempted a debris spill by using the intake deck crane boom to move debris across the powerhouse towards the spillway. Forebay currents did not allow debris movement towards the spillway, so no debris was spilled.

Trash rack differentials continued to be monitored, with the highest differential reading being 3.8 feet in slot 9B slot at 75 megawatts. For the week, we observed no problems in the gatewell slots. Also, mechanics removed debris from the forebay stilling. Debris can block openings in the stilling well, leading to erroneous forbay meter readings.

ESBSs/VBSs: All ESBSs remain raised and maintenance is nearing completion. Project staff plan to install screens from April 5 to 15 similar manners as the last 5 seasons in support of

juvenile lamprey passage. VBS differential monitoring will resume when ESBS installation begin.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The orifices remain closed for winter maintenance which is nearing completion. Water in the orifice air lines remains noticeable at times. On March 24, the assistant biologist found one of the transition area over flow screens eroded, requiring replacement, which occurred the next day. Also on March 24, we found the rectangular brush stalled on its downstream limit. The next day, the electrical staff repaired faulty control wires. The wires became crossed during winter maintenance season. On March 26, the assistant biologist found the west floor dewatering valve unresponsive. The electrical staff resolved the problem later that day. The collection channel will be re-watered and bypass operations will resume March 28 after trash rack raking and debris removal.

Bypass Facility: The facility remained dewatered for winter maintenance, which is nearing completion. We also double checked all systems for the upcoming season. Finally, we finished rebuilding the sample tank net frames.

River Conditions

River conditions during the week are outlined in Table 2 as provide by control room data, which runs from 0000 to 2400 each day. Water temperature is taken from the unit 1 scroll case. Involuntary spill occurred all week.

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
253.2	196.3	59.2	9.6	43	38	3.7	2.0

TSW2, previously installed at bay 20, will remain in place for the spring spill program. On March 24, the spill gate at bay 22 was split in support of debris removal. On March 27, the gate was raised to 18 feet for 2.3 hours in an attempt to spill the forebay debris.

Other

Inline Cooling Water Strainers: The next examination will occur in early April.

Invasive Species: On March 23, the zebra mussel station examination was satisfactory and no zebra mussels were found.

Avian Activity: Bird counts will resume later in the month when technicians are on shifts. This week, we observed an occasional gull, grebe or cormorant near the project. The bypass system is not functional so there are no birds to observe at the outfall. When counts resume, we will add a table reflecting observation results.

This week, the fisheries staff deployed the bird distress calls. Deployment needed to be completed before the birds arrive. The outfall's new water hazing cannon was activated March 27. To date, operation appears to be satisfactory. APHIS bird hazing activity is set to begin March 30, and is scheduled to occur up to August 2.

Research: Preparations continued for the juvenile survival study.

Project: Ice Harbor
Biologist: Mark Plummer
Dates: March 21 – 27, 2014

Turbine Operation

Turbine units 1 – 5 were out of service for short periods from March 24 through 27 to install STSs and complete cooling water strainer inspections. Turbine unit 5 was out of service March 26 from 0654 hours to 1900 hours in support of a line outage. Turbine unit 6 is out of service for digital governor installation and is scheduled return to service on March 28. The STS for this unit will be installed March 31.

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on March 24, 25, and 26.

Fish Ladders: The north fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria on all inspections. The south fish ladder inspection areas (picketed leads, head differentials, fishway exits, and depth over weirs) were in criteria during all inspections. Both the north and the south shore picketed leads are down (i.e.: deployed).

Fishway Entrances and Collection Channel (inspection date order): The south shore entrance (SFE) and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE) and channel/tailwater differential were also in criteria during all inspections as were the north shore entrance (NSE) and channel/tailwater differentials. Fishway entrance weir depth criterion is 8 feet depth, greater than 8 feet depth, 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 without any 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: Fish ladder exits are clear of debris and the bubblers are operating satisfactorily. Turbine unit trash rack raking occurred March 25. Turbine unit 1 had 25 cubic yards and turbine unit 2 had cubic 15 yards removed. Very little debris was present in the other units.

STSs/VBSs: STSs are in position for juvenile fish guidance.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass was placed into operation March 17. Twenty orifices are open.

Juvenile Bypass Facility: The bypass is in operation.

Fish Sampling: The first sample is scheduled for April 2. Sampling days will occur on Mondays and Wednesdays and Tuesdays and Thursdays in alternate weeks.

Removable Spillway Weir: The RSW is in operation position. Spill for fish is expected to begin April 3, 2014.

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
66.4	51.7	0.0	0.0	45	44	2.8	1.1

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Cooling water strainer inspections took place on March 24 and 25. A total of 379 lamprey were recovered, of which 2 were found live and the rest were mortalities. Unit 6 was out of service and not inspected. Combined unit run times totaled 2,944.5 hours.

Invasive Species: During ladder and facility maintenance, surfaces were examined for invasive species, none were found.

Avian Activity: Bird hazing will begin April 1. The water cannon at the end of the bypass pipe is repaired and is functioning satisfactorily.

Research: No research is in progress at this time.

Project: Lower Monumental
Biologists: Bill Spurgeon and Elizabeth Holdren
Dates: March 21 – 27, 2014

Turbine Operation

The units are being operated in soft constraint of the 1% operation criteria. Units were operated outside the 1% criteria per BPA request. No 1% violations occurred outside BPA request periods. Units were rotated out of service for STS installation on March 25 and 26. Unit 5 was removed from service at 1300 hours on October 29 for 6 Year Overhaul/Thrust Bearing Replacement with an estimated return to service date of April 11, 2014.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and PSMFC/State biologists on March 24, 25, 26, and 27.

Fish Ladders: 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 (≤ 0.4' 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 depth or sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 7.2', 7.2', 7.8', 7.8', 7.6', and 7.6 feet. South powerhouse channel/tailwater head was in criteria (1.0'-2.0') on all inspections.

SSE1 weir gate was in depth criteria (criteria: ≥ 8' or on sill) on all inspections. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all inspections except March 24 when the channel/tailwater head was 0.6'.

All criteria violations at the fishway entrances are related to the failure of the PLC (Programable Logic Circuits) 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 were placed on sill.

A replacement for the PLC for automated control of the fishway has been ordered. Upon arrival it will require programming prior to returning to service. The automated system is estimated to return to service in May. 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 1and 3 were operated throughout this period. AWS pump 2 was removed from service on March 20 at 1715 hours as facility staff suspected woody debris was plugging the wicket gates. The problem is currently being investigated.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 1,350.0 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-5% surface coverage. No oil was observed in the gatewells.

STSs/VBSs: STSs were installed March 24 through 26 and are being operated in cycle run mode.

Orifices, Collection Channel, Dewatering Structure, Flume: The bypass was watered up on March 25.

Collection Facility: The load and hold facility was watered up for testing on March 25. Collection for condition sampling will begin on April 1. Subsequent collection for condition monitoring will occur every third day.

Transport Summary: Fish transport is not occurring at this time.

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
69.8	52.6	0.0	0.0	45.0	44.0	2.5	2.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 3. Twelve live lamprey were recovered. Mortalities included approximately 166 juvenile lamprey, 6 peamouth, and 40 Siberian prawns.

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

Avian Activity: Gulls and cormorants were the dominant piscivorous bird species observed during fish ladder inspections this week. Formal daily tailrace counts of feeding piscivorous birds will be reported starting April 1in Table 2 (the chart below is meant to show the format only).

Table 2. LMO Tailrace Counts of Feeding Piscivorous Birds (Hazing Effectiveness Monitoring).

Date	Time	Tail Race	Species			Total	Observer	Notes
			Gull	Cormorant	Tern			
3/28/14								
3/29/14								
3/30/14								
3/31/14								
4/1/14								
4/2/14								
4/3/14								

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

Project: Little Goose
Biologist: George Melanson
Dates: March 21 – 27, 2014

Turbine Operation

Turbine units 1 through 6 were available for service this report period except for short term planned outages on units 1 and 2 in support of ESBS deployments. Turbine unit 5 was removed from service for planned maintenance from March 24 at 0743 hours to March 27 at 1710 hours. Soft constraints of 1% peak efficiency criteria are in effect.

Adult Fish Passage Facility

Adult fishway inspections were performed on March 23, 24 and 26.

Fish Ladder: The ladder exit head differential measured 0.1 feet (criteria $\leq$ 0.5 ft.) on all three inspections. Water depths over the weirs measured between 1.1 and 1.2 feet (criteria 1.0-1.3 ft.) and no differential was observed at the picketed leads (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit area. 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 1.1 and 1.6 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.4 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 7.1 and 7.5 feet (criteria $\geq$7.0 ft. or on sill). NSE weirs were manually operated and depths ranged between 6.0 and 6.4 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocities ranged between 1.5 and 1.8 fps near the junction pool and between 1.8 and 2.3 fps near the north shore entrance (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: Woody debris in the immediate forebay was estimated at 400 sq ft. An estimated 3.5 cubic yards of woody debris was removed from unit 1 and 2 gatewells following ESBS were deployments.

Spillway Weir: The spillway weir is scheduled to be placed back in service April 3 at the start of spring spill for fish passage.

ESBS/VBS: ESBSs in slots 2A – 2C were lowered into position on March 24 from 0930 to 1500 hours and those in slots 1A through 1C were lowered into position on March 25 from 0655 to 1520 hours. Initial drawdown measurements were performed March 27.

Orifices, Collection Channel, Dewatering Structure, and Flume: The Juvenile Bypass System operated in primary bypass during the report period. Nineteen orifices are open.

Transportation Facility: The transportation facility was "watered up" March 26.

Transport Summary: Fish transport is scheduled to begin in late April.

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
66.0	49.4	0	0	44.5	43.3	3.6	2.7

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor is scheduled for inspection on April 2.

Inline Cooling Water Strainers: All cooling water strainers were inspected on March 25. A total of 139 juvenile Pacific Lamprey mortalities were removed. The majority were Macropthalmia.

Avian Activity: Bird counts and hazing will resume in April.

Research: University of Idaho has resumed adult salmon and steelhead monitoring.

Project: Lower Granite
Biologists: Mike Halter and Ches Brooks
Dates: March 21 – 27, 2014

Turbine Operation

Lower Granite had turbine units 1, 2, 3, 4, 5 and 6 available for power generation at the beginning of the report period. Turbine unit 2 was taken out of service between 0657 and 1002 hours on March 24 for ESBS installation. Turbine unit 2 was then forced out of service between 0725 hours and 1125 hours on March 25 due to a grounding issue. Turbine unit 1 was taken out of service from 1025 to 1403 hours on March 24 for ESBS installations. Unit 1 was then forced out of service between 1742 hours on March 24 and 1125 hours on March 25 hours due to ESBS cable issues and excessive cycle time. Turbine unit 5 was taken out of service at 0816 hours on March 24 for exciter recommissioning. It was returned to service at 1453 hours on March 25. Turbine unit 4 was taken out of service for exciter recommissioning at 1512 hours on March 25. This unit was returned to service at 0919 hours on March 27. Turbine unit 6 was taken out of service for exciter work at 0938 hours on March 27. The unit returned to service at 1315 hours the same day. All turbine units are being operated in soft constraint of the 1% operation criteria.

Adult Fish Passage Facility

On March 21 – 24, 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 week.

Weir depths at the south shore fishway entrances also met criteria on all inspections this week. Weir depths at the north powerhouse fishway entrances were on sill this week due to tailrace elevations below 636.0 feet (at which depths the gates bottom out). Weir depths at the north powerhouse entrances ranged from 6.5 to 7.5 feet. Weir depths at north shore entrance 1 ranged from 4.9 to 5.0 feet (criterion $\geq$ 7.0 feet). Weir depths at north shore entrance 2 ranged from 4.5 to 5.7 feet (criterion $\geq$ 7.0 feet). North shore entrance 2 remains damaged, as it cannot adjust for weir depths automatically, and has been manually set at a compromise depth of 630.0 feet. Due to a lack of water at the north shore entrances, weir depth readings are being sacrificed in attempt 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 1.24 feet per second and averaged 1.12 feet per second.

Auxiliary Water Supply System: Fish pumps 1 and 2 were run during the week. Fish pump 3 is out of service awaiting a part needed to complete lower guide bearing repairs; the pump is now expected return to service by early to mid April.

Juvenile Fish Passage Facility

Sampling operations at the Lower Granite JFF began at 0700 hours on March 25 with an initial sample rate of 10.0%. The first sample was "worked up" on the morning of March 26. All fish other than those being diverted to the sample are being diverted back to the river via the long outfall pipe (secondary bypass).

Forebay Debris/Gatewell Debris/Oil: The amount of forebay debris varied during the week due to wind strength and direction. The trash racks of turbine units 1 through 3 were raked last week.

ESBSs/VBSs: ESBS Installations began on March 17. Screen deployments in slots associated with turbine units 6, 5, 4 and 3 were completed last week. In addition, a screen in slot C slot of turbine unit 2 was deployed last week. The remaining fish screens in turbine units 1 and 2 were deployed March 24.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel and related structures were "watered up" on the morning of March 20. Orifices are being backflushed every 3 hours around the clock. In addition, gatewell surfaces are being checked on a daily basis and floating debris is being removed with a hand basket to circumvent orifice blockages. The 42-inch controller valve on the separator quit working early on the morning of March 24. Powerhouse electricians have traced the problem to a bad transformer and they estimate it will take a week to obtain the replacement part. At the present time, separator personnel are manually operating the valve (when needed) with a drill attached to the hand crank on the operator.

Transportation Facility: The juvenile collection gallery was watered up starting at 0800 hours on March 20. The separator was also watered up and fish (other than sample fish) are being diverted back to the river through the long bypass pipe (secondary bypass).

Transport Summary: No fish transport is in progress at this time. General fish barging is tentatively scheduled to begin somewhere in the April 21 – May 1 time period. The first research barge (index barge) is scheduled to depart on April 10. Things could very well change due to recent problems with the Little Goose navigation lock.

Removable Spillway Weir: The RSW will resume operation with normal spring spill activities on April 3.

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
68.0	55.8	0.0	0.0	45.8	46.2	5.0	3.0

*Scrollcase temperature.

Other

Video counts in the adult fish ladder counting room began on March 1. The recording hours are from 0400 to 2000 hours. Daytime visual counts from 0400 to 2000 hours are scheduled to start on April 1.

Inline Cooling Water Strainers: Cooling water strainers were inspected for lamprey on March 26. A total of 473 lamprey mortalities were found in the strainers over a combined run time of 2,840.4 unit hours. The next cooling water strainer inspections are scheduled for late April 2014.

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

Avian Activity: Formal bird counts and hazing activities are scheduled to begin on April 1.

Adult Fish Trap Operations: The adult fish trap was watered up and sampling began on March 10. The initial sample rate is 28%. As in 2013, adult trapping will only be conducted Monday thru Friday. The 28% sample rate represents an overall weekly sample rate of 20%. Genetic/scale samples will be taken from one out of every 10 hatchery steelhead. All wild steelhead captured will be PIT-tagged and have 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.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: The goal of this research project is to study the physiology and endocrinology of steelhead kelts to evaluate the feasibility and success of several strategies for rehabilitating and handling steelhead collected at LGR. Also, to understand and identify the suite of physiological changes that occurs in Snake River steelhead during the process of sexual maturity, and to determine changes that occur post spawning that are associated with successful downstream migration and recovery to spawn again. As part of this collaborative study to investigate approaches to increase adult steelhead returns the NPT will select up to 150 fish for transport to the Dworshak National Fish Hatchery holding facility.