U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#08-2015

Project: McNary
Biologists: Carl Dugger and Bobby Johnson
Dates: April 17 - 23, 2015

Turbine Operation

McNary had 12 to 13 of 14 units available for power generation. The hard 1 percent constraint continued. No turbine units ran outside the constraint. Turbine unit outages are recorded in Table 1 below.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
12	Feb 8 – Oct 9	About 8 months.	Rewind contract.
2	Apr 20	8.3 hours.	High lift-pump timer replacement.
3	Apr 21	6.7 hours.	High lift-pump timer replacement.
7	Apr 21 to 23	53.8 hours.	High lift-pump timer replacement.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on April 18, 20 and 22. National Marine Fisheries Service personnel conducted their monthly inspection on April 20. Visual adult fish counts continued. Pacific State Marine Fish Commission (PSMFC) staff reported the Oregon ladder passive integrated transponder (PIT) tag station system underwent telecommunication provider maintenance on April 17 for approximately two hours. No data was lost as the backup system stored and later transmitted data when telecommunication service returned.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were minimal. The general maintenance staff cleaned the picketed leads as required. The both ladder exits set points were adjusted on April 18.

Other activities this week included scheduled picketed leads hoist maintenance at the Washington exit on April 20, the roving operator resetting a ladder exit alarm without incident on Aril 22 and the fisheries staff repairing the water cooler at the Oregon ladder count station.

Fishway Entrances and Collection Channel: All entrance inspection points met criteria. The ladder control panel display by the south Oregon ladder entrances failed to “light up” on April 20.

The electrical staff was asked to check the heater in the unit. Collection channel surface velocities averaged 1.5 feet per second.

Auxiliary Water Supply System: The Wasco County Public Utility District (PUD) turbine unit in the Washington ladder had no interruptions in service even though PUD personnel reset one alarm. The cause of the alarm is unknown and the turbine bypass system did not engage.

Two of the 3 Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees. Pump 2 is currently under contract for major overhaul. Repairs should be completed by September, 2015. The juvenile facility continued to supply 450 cubic feet per second to the north powerhouse pool.

Juvenile Fish Passage Facility

The fish passage season consists of alternating days of primary and secondary bypass modes. The switch occurs every morning at 0700 hours. There were no deviations in the schedule this week. Secondary bypass occurred on April 18, 20 and 22. Ninety six juvenile lamprey and 40,031 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load remained very light and centered on the powerhouse. There was minimal incoming debris. No high trash rack differentials were recorded and no trash racks were cleaned. No problems were observed in the gatewell slots. Several piece of woody debris were removed this week.

ESBSs/VBSs: All operational turbine units have extended-length submersible bar screens (ESBSs) installed. Screens were not installed in unit 12 as this unit is out of service. The first ESBS camera inspections will occur on May 5. Vertical Barrier Screen (VBS) rehabilitations continued. No high VBS differentials were recorded and no VBSs were cleaned.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use, with no issues to report. The fisheries mechanic replaced orifice attraction light bulbs as needed. The fisheries staff continued to operate the transition screen cleaner on day shifts, Monday through Thursday.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are to the river. PIT tag detection occurs in the full flow pipe during primary bypass and throughout the facility during secondary bypass. Smolt monitoring occurs only on secondary bypass days.

The sample gates are turned on and off every other day so that they are in service only during secondary bypass. The gates and all operational systems functioned well. The PIT tag sample gates remained turned off. The facility bypass lines provide a superior route for the fish over the PIT tag sample release lines downstream of the PIT tag sample gates. PSMFC maintenance staff continued their weekly checks of the PIT tag detection system. The A and B side flume bypass gates remain off and open for secondary bypass.

From 0700 to 1200 hours, on April 22, the sample rate was five percent. With an increase in fish numbers, the sample rate was reduced to two percent from 1200 hours on April 22 to 0700 hours on April 23.

A couple of sticks were removed from the "wye" where the sample raceway release and the secondary bypass lines meet on April 22. There appeared to be no fish injured.

River Conditions

River conditions during the week are outlined in Table 2 below as provided by the smolt monitoring staff. The data period runs from 0700 to 0700 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperature is recorded in degrees Fahrenheit. Routine spring spill in support of fish passage continued with both top spillway weirs (TSWs) opened. Forty percent of river flow is spilled in the spring season. The spill pattern was altered for navigation as required.

Table 2. River conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature		Water Clarity* (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
163.6	151.2	65.7	60.4	51.7	48.0	6.0	6.0

*****Control room data.

Other

Inline Cooling Water Strainers: The next cooling water strainer examination will occur May 5.

Invasive Species: The next zebra mussel station examinations will occur on April 24.

Avian Activity: Avian counts are recorded in Table 3 below.

Gulls, cormorants and grebes were observed in the forebay in low numbers along with an occasional loon or osprey. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone. No grebes were observed in the gatewell slots or in the juvenile bypass system.

Gulls were observed in the tailwater area feeding at the southern edge of the spillway flow along with an occasional pelican. Gulls along with an occasional cormorant or pelican were noted feeding at the juvenile bypass outfall.

Bird hazing distress calls remain deployed around the project and the bird hazing water cannon continues to function without incident.

United States Department of Agriculture (USDA-APHIS) personnel continued bird hazing at the project. A second shift and boat hazing began on April 19. The boat will be used on Monday, Wednesday and Friday each week. Limited lethal take will again be used this year from the boat.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Apr 17	Forebay	0	0	0	0	2
	Spill	0	0	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	6	0	2	0
Apr 18	Forebay	0	0	0	0	0
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 19	Forebay	0	0	0	0	0
	Spill	3	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	1	0	0	0
Apr 20	Forebay	0	0	0	0	0
	Spill	28	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	2	0	0	0
Apr 21	Forebay	6	2	0	0	3
	Spill	15	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	3	0	0	0	0
Apr 22	Forebay	1	0	0	0	9
	Spill	65	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	25	0	0	0	0
Apr 23	Forebay	0	0	0	0	1
	Spill	95	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	40	0	0	0	0

Research: Gas bubble trauma (GBT) examinations continued. Fish Passage Center (FPC) personnel were at McNary on April 22 to monitor fish sampling and examination protocols.

Pacific Northwest National Laboratory (PNNL) began removing adult fallback study equipment from the intake deck this week.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 17 - 23, 2015

Turbine Operation

Units were taken out of service one at a time for STS inspections on April 21 and 23. Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on April 20 and 22.

Fish Ladders: The north fish ladder inspection areas (head differentials at fishway exit and picketed leads, and depth over weirs) were in 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. The water surfaces above the fish ladder exits were clear of debris and the bubblers were operating satisfactorily.

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

The south shore channel velocity was in criteria on all inspections. The channel velocity criterion is 1.5-4.0 feet/second.

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

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was no surface debris observed in the forebay. There was little to no surface debris coverage in the gatewells.

STSs/VBSs: Inspection of each unit's STSs occurred on April 21 and 23. Inspection of slot 1B and slot 1C VBSs occurred on April 23. No screen problems were observed.

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

Juvenile Fish Facility: Fish are being routed through the bypass, except when sampling operations are occurring.

Fish Sampling: Sampling occurred on April 20 and 22. Sampling days will alternate from Monday and Wednesday, to Tuesday and Thursday, each week. There were two clipped juvenile steelhead mortalities in the April 22 sample that appeared to have died a few days before being collected and sampled. There was an increase in bird marks observed on the fish sampled on April 22. Sampling results are outlined in Table 1 below.

Table 1. Fish condition sampling results at Ice Harbor Dam

April 20:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	16	0	0	0
UC-CH	17	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	23	1	0	2
UC-SH	2	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	58	1	0	2

April 22:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	32	1	0	3
UC-CH	22	1	0	2
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	31	3	2	3
UC-SH	5	1	0	2
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	1	0	0	0
TOTAL	91	6	2	10

Removable Spillway Weir (RSW): Mandated spill for fish passage began on April 3. The RSW is in operation.

River Conditions

River conditions during the week are outlined in Table 2 below.

Table 2. 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
58.1	43.4	46.2	33.4	50	50	7.2	5.6

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Turbine cooling water strainer inspections occurred on April 21 and 23. The fish (all mortalities) found included 1 juvenile steelhead, 5 juvenile lamprey, 3 Siberian prawns, and 1 sandroller.

Invasive Species: No new exotic species have been found.

Avian Activity: Cormorant numbers increased this week (Table 3) over what was observed last week. The majority of piscivorous birds were counted in zones further away from the dam. The bird counts occurring on Fridays, Saturdays, and Sundays are done by the bird hazers when they are not actively hazing. Contracted hazing of piscivorous birds for 8 hours per day began on April 1, and increased to 16 hours per day on April 12. Additionally, boat-based hazing for 8 hours per day, 3 days per week, began the week of April 12. The hazing program has been effective at pushing birds away from the dam.

Table 3. Daily maximum piscivorous bird counts at Ice Harbor Dam

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 17	6	33	2	1	12
April 18	6	69	0	0	1
April 19	2	80	0	0	0
April 20	0	33	0	0	0
April 21	3	40	0	0	0
April 22	1	79	3	0	0
April 23	---	---	---	---	---

Research: Hydroaccoustic transducers mounted on the STS frame in gatewell slot 1B, and on 1B trash rack, are collecting data for the turbine intake fish distribution study.

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: April 17 - 23, 2015

Turbine Operation

The units are being operated in hard constraint of the 1% operation criteria. Unit 1 was removed from service on December 10, 2014 for unit rehabilitation with an estimated return to service date of January 12, 2017.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on April 17, 18, 19, 21 and 22.

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 both gate depth readings ranged from 5.5 to 6.0 feet. South powerhouse channel/tailwater head was in criteria (1'-2') on all inspections.

SSE1 weir gate was in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill gate depth readings ranged from 5.7 to 6.5 feet. SSE2 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, 2, and 3 were operated throughout this period.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 22.6 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-30% surface coverage. No oil was observed in the gatewells.

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

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 19 orifices from April 17 to April 19 and with 18 orifices from April 20 to April 23. On

April 21st, the unit 5 operating gate was again being cleaned. Orifices were reopened by 1350 hours. The primary dewaterer mechanical screen cleaner was out of service from 0805 hours on April 20 until 1015 hours on April 22 to correct drive belt alignment on the idler/drive pulley.

Collection Facility: Every other day, 24 hour condition sampling took place on April 18, 20 and 22.

Transport Summary: Transport is not occurring at this time.

River Conditions

Spring spill operations in support of fish passage were initiated at 0001 hours on April 3. 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
57.1	41.1	31.0	28.0	51	49	5.0	3.5

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 8. In all, 1 live lamprey was recovered. Mortalities included 26 juvenile lamprey and 1 juvenile steelhead.

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

Avian Activity: Daily tailrace counts of feeding piscivorous birds are summarized in Table 2. Gulls were the dominant species observed during inspections this week. Hazing met the standard from the avian action plan through this time period.

Table 2. Lower Monumental Dam Tailrace Counts of Foraging Piscivorous Birds.

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
April 17	1100	0	0	0	0
April 18	1130	2	0	0	0
April 19	1100	0	0	0	0
April 20	1100	0	4	0	0
April 21	1120	5	0	0	0
April 22	1115	70	2	0	0
April 23	1100	3	0	0	0

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

Project: Little Goose
Biologist: Richard Weis
Dates: April 17 - 23, 2015

Turbine Operation

All turbine units were available for service throughout this report period. Hard constraint 1% peak efficiency criteria are in effect. No violations were seen.

Adult Fish Passage Facility

Adult fishway inspections were performed on April 18, 19 and 23.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials ranged between 0.0 and 0.3 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or in the ladder exit area. The air bubbler used to prevent debris from collecting near the ladder exit operated satisfactorily.

Fishway Entrances and Collection Channel: The Adult Fishway system is in manual mode. Channel to tailwater head differentials ranged between 1.0 and 2.0 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.4 and 8.8 feet and weirs are on sill (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.6 and 5.8 feet and weirs are on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.1 and 6.9 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.9 and 2.1 fps (criteria 1.5 to 4.0 fps). The monthly April water velocity measured at the north powerhouse using the Rickly velocity equipment measured 1 foot from bottom, mid depth and surface averaged 2.6fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. Fish pump 1 is waiting on parts.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: The trash/shear boom is currently still on shore. Efforts are underway to have it repaired. Woody debris in the immediate forebay was estimated between 0 to 200 square feet.

Spillway Weir: The spillway weir was placed back in service on April 2 at 1530 hours in the High Crest position.

ESBS/VBS: ESBSs are all deployed and gatewells are clean. Drawdowns tests were conducted on April 22 on units 1, 2 and 3. All drawndown test results met criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is in service with 21 open orifices.

Transportation Facility: The JFF is currently sampling fish every other day and is in secondary by-pass.

Transport Summary: Fish collection for transport will begin on May 1. The first barge leaves LGS on May 2.

River Conditions

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

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
54.1	40.9	16.4	12.2	51.6	51.2	5.0	4.8

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on April 2. No zebra mussels were detected. Next inspection is scheduled for May 4.

Cooling Water Strainers: Cooling water strainers were not checked this week.

Avian Activity: Bird counting and hazing resumed on April 01. See Table 2 below for the most current counts..

Table 2. Counts of Foraging Piscivorous Birds at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
April 17	1200	19	29	0	0
April 18	1500	11	1	0	0
April 19	1200	16	17	0	0
April 20	1600	13	1	0	0
April 21	1430	6	2	0	0
April 22	1600	6	9	0	0
April 23	1230	6	3	0	0

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: April 17 - 23, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Unit 2 was out of service from 0022 hours on April 19 until 1230 hours on April 20 to repair an air cooler water line. Unit 2 was out of service from 0708 until 1308 hours on April 22 for removal and repair of the ESBS screen cleaner in slot 2C.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on April 17, 18, 19, 21 and 22.

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

Fishway Entrances and Collection Channel: SSE1 and SSE2 weir gates were in depth criteria (criteria ≥8' or on sill) on all inspections. South shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the weir gate depths reading were 5.4', 5.6', 5.4', 5.2', 5.5', and 5.2 feet. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 and NSE2 operations were changed on April 8. NSE1 is in the closed position. NSE2 is set with a chain fall hoist at 626.0 feet (elevation). NSE2 met depth criteria (criteria ≥7' or on sill) on all inspections. North shore channel/tailwater head differentials were in criteria (criteria 1'-2') on all inspections with the exception of a 0.9 feet reading on April 22. Monitoring will continue.

Collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 0.9 - 1.2 fps, averaging 1.1 fps for the week. Alternative methods of measuring collection channel velocity are being investigated for installation as part of the adult fish ladder control system upgrade.

Auxiliary Water Supply System: The ladder is in two pump operation with AWS pumps 1 and 3 in service. Operation of AWS pump 1 motor in "fast speed" mode trips the overload safety relay during low tailwater conditions. Pump 2 is out of service for lower guide bearing repairs.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris quantities varied due to wind strength and direction. Daily gatewell surface inspections continued with floating debris being removed with a hand basket to prevent orifice obstructions. At 0705 hours April 19, a sheen was reported in gatewell slot 5B. Oil absorbent socks were deployed. No oil was observed during thorough inspections of the remaining gatewell slots, the intake deck, and the collection facility. The source of oil was traced to a recently moved ESBS stored on the intake deck.

ESBSs/VBSs: The screen brush cleaner in slot 2C was repaired on April 22 and is operating in the normal 'encoder' mode. The brush cleaning cycle is set to run every two hours. Video inspections are scheduled for April 24 - 25.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: Orifices are being back-flushed every three hours. Debris levels were light. Both orifices in slot 5B were closed from 1120-1611 hours on April 19 due to a slight sheen being detected in the sample recovery tank. Orifice 5BN was reopened at 1611 hours after the sheen cleared considerably (see above for more details).

Collection Facility: The juvenile facility operated in secondary bypass mode. Daily collection for condition sampling continues. Fish were collected for index barge transport on April 21 and 22.

Transport Summary: The second research specific barge departed Lower Granite on April 23. Everyday barge transport is scheduled to start May 2.

River Conditions

Spring spill in support of fish passage is in progress. River conditions during the week are outlined in Table 1 below.

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
56.1	43.0	20.4	20.2	50.0	49.5	5.0	4.7

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainers were last inspected March 26. The next inspections are scheduled for late April.

Invasive Species: The zebra/quagga mussel observation station was last examined April 4. The next inspection is scheduled for early May.

Avian Activity: Hazing activities began April 1. Piscivorous bird counts began March 26 with observations being 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
April 17	1840	9	0	0
April 18	1840	8	0	0
April 19	0700	12	0	0
April 20	1840	7	0	0
April 21	1840	0	0	0
April 22	1840	0	0	0
April 23	1840	0	0	0

GBT: PSMFC personnel conducted gas bubble trauma (GBT) examinations April 24.

Adult Fish Trap Operations: The adult fish trap is operating at a sample rate of 11% Monday through Friday with an average weekly sample rate of 8%.

Fish Rescue Operation: No fish rescues occurred this week.

Research

Idaho Fish and Game (IDFG) Genetic Stock Identification: This study aims to enumerate and characterize natural production of yearling Chinook and juvenile steelhead above LGR with regards to age composition and genetic stock profiles. IDFG will sample Monday through Friday through mid June with a goal of collecting 2,000-5,000 genetic samples from yearling Chinook and juvenile steelhead.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study: NPT began steelhead kelt collection March 29. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. NPT will transport up to 150 kelts to the Dworshak National Fish Hatchery as part of this study.