U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#14-2015

Project: McNary
Biologist: Bobby Johnson
Dates: May 29 – June 4, 2015

Turbine Operation

McNary had 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 – Aug 1	About 6 months.	Rewind contract.
5, 6 & 7	Jun 2	66 minutes total.	Extended-length submersible bar screen (ESBS) camera inspections.
6	Jun 3	3.3 hours.	Hub tapped.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on May 30, June 1 and 3. Visual adult fish counts continued. The adult lamprey passage structure at Oregon powerhouse entrance, SFEW2, was opened on June 1 at 0920 hours.

Fish Ladder Exits: Both ladder exits met all Fish Passage Plan (FPP) criteria. Debris loads in the area of the exits were generally minimal with only brief influxes.

At the Washington ladder exit, the operators adjusted the regulating weir set point on May 30. After receiving an adverse flow report on June 4, the operators found exit weir 338 lying down. The electricians immediately resolved the problem.

Fishway Entrances and Collection Channel: All entrance inspection points met criteria.

The Oregon ladder north powerhouse pool elevation transducer was out of service from May 20 to June 1. The entrance was set on level of set, which adjusts the entrance based on weir depth instead of pool differential. The operators monitored the readouts and the entrance remained in criteria.

Also, at the north powerhouse entrance, the electricians began to install a new controller for weir NFEW1 on June 1. This weir is not in use.

Collection channel surface velocities averaged 1.6 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.

Two of the three Oregon ladder fish pumps operated satisfactorily with blade angles of 30 degrees. The operators reset an exciter alarm at fish pump 1 on May 30. Pump 2 is currently under contract for major overhaul. The 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. Secondary bypass occurred on May 30, June 1 and 3. This week, 650 juvenile lamprey and 38,600 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load was light to moderate and generally centered on the powerhouse except when northeast winds would temporarily move accumulations toward the Oregon shore. A wind storm caused a brief influx of aquatic vegetation on May 29.

No high trash rack differentials were recorded and no trash racks were cleaned. This week, descaling rates ranged from 3.7 to 8.5 percent. The arrival of subyearling Chinook appears to be lowering the rate.

No problems were observed in the gatewell slots.

ESBSs/VBSs: All operational turbine units have ESBSs installed. Screens were not installed at unit 12 as this unit is out of service. ESBS camera inspections conducted on June 2 in units 5 through 7 revealed no problems.

The ESBS brush bar on the screen in 11C slot began to “short cycle” on June 3. “Short cycle” means the cleaning brush reverses direction before reaching the desired amount of travel at the end of the screen. After four recalibrations and examination, the operators switched the brush mechanism to timer mode on June 4. The biologist found unit 3 local ESBS controller malfunctioning on June 4. The electrical staff immediately replaced the Programmable Logic Controller (PLC). Also, that day, after finding a damaged electrical cord on the ESBS in 3B slot, the electricians switched the brush mechanism to timer mode.

Rehabilitation of vertical barrier screens (VBSs) continued. No high VBS differentials were recorded. The VBSs in slots 1A, 1B, 2A, 2B, 3A and 5A were cleaned on June 1, 2 and 4. The fisheries staff observed one juvenile lamprey mortality.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. During VBS cleaning, orifices in the affected slots were closed, with makeup water coming from orifices in adjacent slots. The fisheries mechanics repaired the orifice valve actuators in slots 4B and 8C.

All systems functioned satisfactorily in automatic mode.

Bypass Facility: During the bypass season, primary and secondary bypass modes return all fish are to the river. Passive integrated transponder (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. Pacific State Marine Fish Commission (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.

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. The TSWs will be closed on June 8 as per the FPP. Forty percent of river flow is spilled in the spring season. The spill pattern was altered for navigation as required. A new PLC was instated on the hoist at spill bay 7 on June 2.

The smolt monitoring staff installed their temperature probes this week and will begin reporting the data on June 15.

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
208.7	179.2	83.8	72.1	62.3	61.3	6.0	6.0

*Control room data.

Other

Inline Cooling Water Strainers: The cooling water strainer examinations on June 2 are recorded in Table 3 below. Unit 12 was out of service. The three unclipped smolt mortalities included 1 sockeye, 1 yearling Chinook and 1 steelhead.

Table 3. Cooling Water Strainer Examination Results.

Unit	Live Lamprey	Lamprey Mortalities	Live Smolts	Smolts Mortalities
1	0	6	0	3
2	2	2	0	0
3	0	2	0	0
4	0	0	0	0
5	0	2	0	0
6	0	2	0	0
7	0	5	0	0
8	0	2	0	0
9	0	0	0	0
10	0	5	0	0
11	0	31	0	0
12	NA	NA	NA	NA
13	0	1	0	0
14	1	8	0	0
Total	3	66	0	3

Invasive Species: The next zebra mussel station examinations will occur in late June.

Avian Activity: Avian counts are recorded in Table 4 below.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel continued bird hazing at the project. A second shift and boat hazing continued. However, on June 3, boat hazing did not occur so abatement efforts could be concentrated on the grebes in the forebay. Limited lethal take of gulls and cormorants continued.

Grebe numbers remained high in the forebay along with an occasional gull, cormorant, pelican, night heron, blue heron, tern or osprey being observed. No grebes were noted elsewhere. Gulls, pelicans and cormorants were roosting on the rocks by the Washington shore boat dock, which is outside the forebay zone.

Gulls and cormorants were observed in the tailwater area feeding in the spillway flow along with pelicans along the north edge. Pelicans were also observed along the Oregon shore at night by the juvenile facility. Gulls, cormorants and pelicans were noted feeding at the juvenile bypass outfall. The fisheries staff completed installing bird wire on the outfall walkway handrail this week. This has deterred gulls from roosting.

Bird hazing distress calls remain deployed around the project and continued to function satisfactorily. From May 30 at 1140 hours to June 1 at 0730 hours, the bird hazing water cannon was out of service due to the pump intake being obstructed by algae. The fisheries mechanics cleaned the intake from June 1 to June 3.

Table 4. Daily Avian Counts at McNary Dam.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
May 29	Forebay	0	0	0	0	75
	Spill	12	0	0	5	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
May 30	Forebay	1	1	0	0	81
	Spill	31	6	0	3	0
	Powerhouse	0	1	0	0	0
	Outfall	6	3	0	1	0
May 31	Forebay	0	0	0	1	29
	Spill	29	4	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	2	2	0	4	0
Jun 1	Forebay	0	0	0	0	28
	Spill	63	7	0	7	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	1	0
Jun 2	Forebay	2	0	0	0	72
	Spill	52	3	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	10	0	0	0	0
Jun 3	Forebay	0	0	0	1	49
	Spill	71	1	0	2	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Jun 4	Forebay	3	0	0	0	77
	Spill	71	1	0	3	0
	Powerhouse	0	1	0	0	0
	Outfall	0	2	0	0	0

Research: Gas bubble trauma (GBT) examinations and preparations for the adult lamprey passage study continued.

Project: Ice Harbor
Biologists: Ken Fone and Charlie Dennis
Dates: May 29 – June 4, 2015

Turbine Operation

All units were available for service. Units were operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on June 1, 2, 3, and 4.

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 all inspections. The north powerhouse entrance (NFE) depth and channel/tailwater differential were in criteria. 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 three north shore AWS pumps were operated throughout the week. North shore pump 3 was taken out of service at 0846 hours on April 22 to replace the pre-lubrication pump. Six of the eight 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: STS operation was changed from cycling mode to continuous-run mode on June 3 due to the average fork length of subyearling Chinook being less than 120 mm at the Lower Monumental Fish Facility. Monthly inspection of each unit's STSs last occurred on May 19 and

21. Inspection of unit 3 VBSs and the slot 1A VBS also occurred. No screen problems were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The bypass is operating with 20 orifices open. Orifices were routinely cycled and back-flushed three times per day.

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

Fish Sampling: Sampling continues to alternate from Monday and Wednesday, to Tuesday and Thursday, each week. Sampling occurred on June 1 and 3. Sampling results are outlined in Table 1 below. The descaling rate was 9% on June 1 and 1% on June 3. Fish facility personnel will continue to inspect fish passage routes for possible causes of descaling.

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

Table 1. Fish condition sampling results at Ice Harbor Dam.

June 1:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	2	0	0	0
UC-CH	4	0	0	0
C-CH-O	9	0	0	0
UC-CH-O	15	0	0	0
C-SH	38	4	0	1
UC-SH	23	4	0	1
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	1	0	0	0
UC-SOCK	0	---	---	---
TOTAL	92	8	0	2

June 3:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	0	---	---	---
UC-CH	1	0	0	0
C-CH-O	59	1	0	0
UC-CH-O	31	0	0	0
C-SH	9	0	0	2
UC-SH	2	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	102	1	0	2

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
66.7	59.7	50.2	18.9	61	60	5.9	5.9

*Unit 1 scrollcase temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections last occurred on May 19 and 21. The fish (all mortalities) found were 7 juvenile steelhead, 2 juvenile lamprey, approximately 74 Siberian prawns, and 1 juvenile walleye.

Invasive Species: No new exotic species have been found.

Avian Activity: Daily total bird numbers observed this week (Table 3) fluctuated up and down, but overall decreased from what was observed last week. The bird counts occurring on Fridays, Saturdays, and Sundays are done by the bird hazers when they are not actively hazing. Contracted land-based hazing of piscivorous birds occurred for 16 hours per day. Additionally, concurrent boat-based hazing took place for 8 hours per day, 5 days per week through May 30, changing to 3 days per week beginning May 31. The hazing program has generally 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
May 29	4	14	0	0	4
May 30	18	28	0	0	2
May 31	26	42	0	0	8
June 1	0	24	0	0	8
June 2	0	6	0	0	12
June 3	0	12	0	0	4
June 4	0	13	0	0	4

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: May 29 – June 4, 2015

Turbine Operation

The units are being operated within the hard constraint 1% operational 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. Units 2, 3 and 4 were rotated out of service on June 2 and Units 5 and 6 on June 3 for STS inspections.

Adult Fish Passage Facility

The adult fishway was inspected by Corps and Blue Leaf Environmental biologists on May 29, 30, 31 and June 3.

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 6.0 to 7.0 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 6.6 to 7.1 feet. SSE2 was in criteria (6' above sill) on all inspections. South shore channel/tailwater head was in criteria (1'-2') on all.

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 17 square yards of forebay debris observed during this period. Gatewell debris ranged from 0-10% surface coverage.
No problems observed in gatewells.

STSs/VBSs: STSs are operating in continuous-run mode due to average sub-yearling length being less than 120 mm. STS inspections were conducted June 2 and 3 with all screens found in good operating condition.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 18 orifices open except on June 3 when only 16 orifices were observed open during STS inspections. Orifices with irregular flows were seen on June 3 and back flushed by the powerhouse operator.

Collection Facility: Operated in collection for transport mode. No facility problems his period.

Transport Summary: Alternate day barging began on May 22.

River Conditions

Spring spill operation was initiated at 0001 hours on April 3. Spill was either halted or limited during barge docking and loading operations. 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
66.1	58.8	24.0	22.4	62.0	61.0	4.7	2.9

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on June 3. There was one live juvenile lamprey recovered. Mortalities included 12 juvenile lamprey, 2 salmon smolts, and 1 steelhead smolt.

Invasive Species: No zebra mussels were observed at the monitoring stations on May 3.

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

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
May 29	1100	3	2	0	0
May 30	1100	2	1	0	0
May 31	1130	5	0	0	0
June 01	1100	3	2	0	0
June 02	1110	1	1	0	0
Jun 03	1110	25	3	0	0
June 04	1130	17	2	0	0

*Bird counts are taken from a single observation, Forebay and Tailrace.

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

Project: Little Goose
Biologist: Richard Weis
Dates: May 29 – June 4, 2015

Turbine Operation

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

Adult Fish Passage Facility

Adult fishway inspections were performed on May 30, June 01 and 04.

Fish Ladder: The ladder exit head differentials held steady at 0.0 feet (criteria $\leq$ 0.5 ft.). Water depths over the ladder weirs held steady at 1.2 feet (criteria 1.0-1.3 ft.) and picketed lead head differentials held steady at 0.0 feet (criteria $\leq$ 0.3 ft.). No debris was observed at the picketed leads or the ladder exit 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 Automatic mode. RJS was here on May 20 to update hardware and software. We are still getting incorrect gate elevation readings when the gate is in the lower quarter of the fish channel at NSE. NSE 1 and 2 are in manual mode. Channel to tailwater head differentials ranged between 1.0 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 8.1 and 8.6 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 4.5 and 5.5 feet and were on sill (criteria $\geq$7.0 ft. or on sill). NSE weir depths ranged between 6.3 and 6.7 feet (criteria $\geq$ 6.0 ft.). Collection channel surface water velocity measured at the North powerhouse ranged between 1.9 and 2.7 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 2.6 fps.

Auxiliary Water Supply System: Fish pumps 2 and 3 operated as designed. Fish pump 1 gear box was rebuilt and is waiting on parts to allow the placement of the gear box into position.

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 0 square feet for the week.

Spillway Weir: The spillway weir is operating in the High Crest position.

ESBS/VBS: ESBSs are all deployed and gatewells are clean except gatewell 5A which has oil absorbent pads deployed as a slight sheen of oil has had seen. Drawdown measurements were not performed this week.

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

Transportation Facility: The JFF was transporting fish every other day. GBT (Gas Bubble Trauma) sampling was performed on June 01. No signs of GBT were seen.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 140,553 fish were collected for transport. The descaling and mortality rates were 0.8% and 0.07% respectively. This weekly report period saw 2 adult lamprey removed from the sample and released upstream at Little Goose Landing.

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
64.2	61.2	19.4	17.4	63.2	62.0	4.8	3.7

*Ladder temperature.

Other

Invasive Species: The zebra mussel substrate monitor was inspected on June 02. No zebra mussels were detected.

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

Avian Activity: Bird counts and hazing resumed on April 01. See Table 2 for count details.

Table 2. Daily maximum tailrace piscivorous bird counts at Little Goose Dam.

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
May 29	1245	50	7	0	1
May 30	1130	70	0	0	0
May 31	1030	133	1	0	0
June 01	1045	26	9	0	0
June 02	1330	38	1	0	1
June 03	1345	44	4	0	2
June 04	1313	33	5	0	0

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

Project: Lower Granite
Biologists: Elizabeth Holdren and Ches Brooks
Dates: May 29 – June 4, 2015

Turbine Operation

Units are operating within the hard constraint 1% criteria. Units were rotated out of service on May 29 and 30 for ESBS/VBS inspections. Unit 4 was out of service from 1053 hours May 29 to 1230 hours June 4 for VBS repair in gatewell slot 4A.

Adult Fish Passage Facility

The adult fishway was inspected by Corps or Blue Leaf Environmental biologists on May 29, 30, 31, and June 1, 2, and 3.

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 depth readings were 5.6', 5.6', 5.5', 5.8', 5.6', and 5.8 feet. The North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 remains in the closed position. NSE2 is set with a chain fall hoist at 626.0 feet. NSE2 was in depth criteria (criteria ≥7' or on sill) on all inspections. The north shore channel/tailwater head differential was out of criteria (criteria 1'-2') on all inspections with readings of 0.9', 0.9', 0.9', 0.8', 0.7', and 0.8 feet.

The collection channel velocity was out of criteria (criteria 1.5-4.0 fps) on all inspections with readings ranging from 1.0 - 1.1 fps and a weekly average of 1.1 fps. 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 fish ladder is in two AWS pump operation with pumps 1 and 2 in service.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Forebay debris varied with wind strength and direction. Daily gatewell surfaces inspections continued with floating debris being removed by hand basket to prevent orifice blockages. No oil was reported in gatewell slots.

ESBSs/VBSs: Video inspections were conducted on May 29 and 30. All screens passed inspection with the exception of the VBS in slot 4A. An 8" x 2" tear was observed during the inspection of the VBS in gatewell slot 4A. The powerhouse mechanical crew completely replaced the two lower screen panels rather than patching the hole to reduce the probability of the older brittle mesh becoming torn.

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

Collection Facility: Fish collection for transport continues.

Transport Summary: Every other day barge transport is occurring with barges departing on odd numbered days in June.

River Conditions

Routine 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
67.1	60.3	20.5	20.3	60.7	60.0	5.0+	4.2

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected May 28. Mortalities included 34 juvenile lamprey.

Invasive Species: No evidence of zebra or quagga mussels was observed May 3.

Avian Activity: Hazing activities began April 1. Piscivorous bird observation 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 below. Pelicans have been observed foraging in the Lower Granite tailrace since May 11. Though pelicans are not apparent on formal counts included below, 15 or more are frequently observed foraging in the tailrace and an addition 15-20 have been observed resting on the sand island downstream from Boyer Park.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
May 29	0600	4	0	0	0
May 30	1930	10	0	0	0
May 31	1930	3	0	0	0
June 01	0600	1	0	0	0
June 02	1930	11	0	0	0
June 03	0600	10	0	0	0
June 04	1930	12	0	0	0

GBT: PSMFC personnel conducted gas bubble trauma (GBT) examinations on May 28.

Adult Fish Trap Operations: The adult fish trap is operating at a sample rate of 15% Monday through Friday.

Fish Rescue Operation: No fish rescue occurred.

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 Dworshak National Fish Hatchery as part of this study.

National Marine Fisheries Service (NMFS) In-River Survival: NMFS staff has begun PIT-tagging Chinook and steelhead smolts for their Survival Study to compare smolt to adult returns of in-river migrating smolts to the smolt to adult returns of transported smolts. PIT-tagged fish are held for 24 hours before being bypassed to the LGR tailrace.

National Marine Fisheries Service (NMFS)-Monitoring the Migrations of Wild Snake River Spring/Summer Chinook: This study is monitoring the migration behavior and survival of wild spring/summer Chinook salmon. The specific goals are to characterize the migration timing and estimate parr-to-smolt survival to LGR of wild Chinook populations as they migrate from their natal rearing areas and determine migration patterns and what environmental factors influence those patterns. Fish were PIT-tagged during the summer of 2014 in natal streams and are diverted to the Sort-By-Code tanks at LGR.