U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#06-2016

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: April 1 - 7, 2016

Turbine Operation

McNary had available 14 units (out of 14 total units) for power generation this week. Turbine unit outages are recorded in Table 1 below. The hard 1 percent peak efficiency constraint criteria began April 1. No turbine units ran outside the constraint.

Table 1. Unit Outages at McNary Project.

Units	Outage Dates	Outage Length	Reason
1 & 2	Apr 5	4.4 & 3.7 hours each.	Extended-length submersible bar screens (ESBSs) installed & semiannual maintenance.
5 & 6	Apr 6	4.4 & 5.3 hours each.	ESBSs installed & semiannual maintenance. Unit 6 hub tapped.
3 & 4	Apr 7	4.1 & 4.4 hours each.	ESBSs installed & semiannual maintenance.

Adult Fish Passage Facilities

The McNary fisheries biologist performed measured inspections of the adult fishways on April 4, 6 and 7. Fisheries technicians monitored the ladders as shifts allowed. Adult fish counts resumed April 1.

The Oregon ladder fish counter found the count station phone out of service April 1. The phone line was repaired April 4. The counters were provided a two way radio for emergency use. The fish counter also found the computer time off by two hours on April 1, which did not allow them to enter data. The issue was resolved by 0848 hours. The Oregon ladder fish counter informed the project biologist the computer had a “not cleared to summit” message April 5. The computer system contractor was immediately informed. The contractor restored service and sent the biologist a message confirming resolution on April 11.

At the Washington exit, issues with the outside area lighting were reported and resolved this week.

Fish Ladder Exits: The head over weir criteria at both exits are differentials to be within 1.0 to 1.3 feet. The differential criteria at the count stations are to be within 0.0 to 0.5 feet. Debris loads were minimal at both exits.

At the Washington exit, all criteria were met during measured inspections. The regulating weir tripped an alarm and was reset April 6. Tilting weir 337 was in manual mode in support of drive system painting on April 5. Weir 337 tripped encoder alarms and was reset April 6 and 7.

At the Oregon exit, all criteria were met during measured inspections and no problems occurred.

Oregon exit traveling screen differential monitoring revealed no problems.

Fishway Entrances and Collection Channel: Criteria for all entrances are pool differentials measuring between 1.0 and 2.0 feet, and weir depths measuring 8.0 feet or deeper.

At the Washington ladder, all inspection points were in criteria.

At the Oregon south powerhouse entrance, weir SFEW1 measured 7.8 to 7.9 feet in depth all week. Weir SEFW2 measured 7.8 feet in depth April 7. Higher tailwater elevations possibly contributed to these readings.

All other Oregon ladder inspection points were in criteria.

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 remains out of service for runner replacement, which has been delayed to an undetermined date. The bypass continues to function satisfactorily.

Two of the three Oregon ladder fish pumps operated satisfactorily with no interruptions in service this week. Both operated with blade angles of 25 degrees. Fish pump 2 is currently under contract for major overhaul with completion scheduled for September 2016.

The juvenile facility continues to supply 450 cubic feet per second (cfs) to the north powerhouse pool.

Juvenile Fish Passage Facility

The juvenile system remained in primary bypass mode until April 6, the first day of secondary bypass. 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 April 6. This week, eight juvenile lamprey and 1,657 smolts were bypassed.

Forebay Debris/Gatewell Debris/Oil: The forebay debris load remained heavy, consisting mostly of woody material. New incoming debris was light along the powerhouse. However, the operators flushed a large number of tumbleweeds down the navigation lock April 7.

No high trash rack differential measurements were recorded this week.

No problems were observed in the gatewell slots. Woody material was removed from the gatewell slots as ESBSs were installed.

ESBSs/Vertical Barrier Screen (VBSs): ESBSs were installed in units 1 through 6 from April 5 to 7. The remaining ESBSs will be installed from April 11 to 14. ESBS camera inspections will begin one month after installation.

VBS differential monitoring resumed with ESBS installations. No high VBS differentials were recorded and no screens were cleaned. VBS rehabilitations continued.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: Forty two orifices were in use. Orifice valve operator rehabilitations continue.

All systems functioned satisfactory in automatic mode. The rectangular screen cleaning brush mechanism was lubricated.

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.

On April 7, at 0730 hours, after sample inspection had begun, the biologist found one of the two B side count tunnels partially obstructed. B side descaling was 6.8 percent. The sample rate was 25 percent and woody material was prevalent throughout the system. Due to the small diameter of the count tunnels, a reduction in sample rate is being considered.

River Conditions

River condition data during the week was provided by the McNary control room and is outlined in Table 2 below. The data period runs from 0000 to 2400 hours each day. Flows and spill are recorded in one-thousand cubic feet per second. Temperatures are recorded in degrees Fahrenheit.

Spill occurred every day of the week except April 3. TSW testing occurred on April 4. All other spill was due to river flows being in excess of powerhouse capacity. Spillway crane and hoist preparations continued.

This week, the TSW hoist stand issues mentioned last week were resolved. The TSW in spillbay 19 was attached to a spillway crane. The TSW in spillbay 20 was attached to a hoist on a stand, which was rotated 180 degrees from its initial installation. These solutions will allow both TSWs to function properly.

Table 2. River Conditions at McNary Dam.

Daily Average River Flow		Daily Average Spill		Water Temperature (Unit 1 scroll case)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
242.5	159.9	72.2	0.0	50.0	46.0	5.2	4.5

Other

Inline Cooling Water Strainers: The cooling water strainer examination results for April 5 are recorded in Table 3 below. No smolts were observed.

Table 3. Cooling Water Strainers at McNary Dam.

Unit	Lamprey Alive	Lamprey Lost	Unit Total
1	0	3	3
2	1	2	3
3	0	0	0
4	0	1	1
5	0	2	2
6	0	5	5
7	0	4	4
8	1	2	3
9	0	2	2
10	0	3	3
11	0	2	2
12	0	6	6
13	0	5	5
14	0	7	7
Total	2	44	46

The next cooling water strainer examinations will occur May 3.

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

Avian Activity: Avian counts, which began April 1, are recorded in Table 4 below.

Table 4. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
Apr 1	Forebay	2	0	0	2	0
	Spill	0	0	0	0	0
	Powerhouse	0	1	0	0	0
	Outfall	0	0	0	0	0
Apr 2	Forebay	1	1	0	0	1
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 3	Forebay	0	0	0	0	3
	Spill	0	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 4	Forebay	0	0	0	0	2
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 5	Forebay	0	0	0	0	5
	Spill	1	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 6	Forebay	2	0	0	0	0
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
Apr 7	Forebay	0	0	0	0	0
	Spill	0	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0

Night and blue herons were observed also. A gull flock was noted near the project.

United States Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA–APHIS–WS) personnel began bird hazing April 3 with one day shift crew member hazing seven days a week.

The bypass outfall sprinklers have been functioning satisfactory. The sprinklers supply pump intake is being cleaned twice a week. Two failed bird distress calls were replaced.

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

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 1 - 7, 2016

Turbine Operation

Unit 5 was taken out of service on March 14 at 1117 hours, due to an oil leak from the blade packing. The packing is being replaced to fix the leak. Units are being operated within the 1% peak efficiency range (hard constraint).

Adult Fish Passage Facilities

Fish facility personnel inspected the adult fishways on April 5, 6, and 7.

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 surface 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-1) depth and channel/tailwater differential were in criteria on all inspections. The north powerhouse entrance (NFE-2) depth and channel/tailwater head differential were in criteria, except for a depth of 7.9' on April 5 and a head differential of 0.7' on April 7. These out of criteria readings resulted from NFE-2 being in manual control and fluctuating tailwater from spill making it difficult to get an accurate tailwater reading. The north shore entrance (NSE-1) depth and channel/tailwater differential were in criteria on all inspections. 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. 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 during the week. Six of the eight south shore AWS pumps were operated throughout the week.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was approximately 3 square yards of debris observed in the forebay. The surface debris coverage in each gatewell slot ranged from 0% to 10%. Oil sheens were observed in the 5A and 5C gatewell slots during the week. Oil absorbent pads were in the slots. The sheens were residual oil from the unit 5 blade packing oil leak. The

maintenance bulkhead is installed in gatewell slot 5B and the slot is unwatered to reduce the water leakage into unit 5.

STSs/VBSs: The STSs were installed on March 28 and 29, except for the STS in slot 5B. The STS controls were switched to continuous run mode on April 6 due to the presence of Chinook fry and a few yearling Chinook measuring under 120 mm in the fish sample.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe: The juvenile fish bypass is operating with 20 orifices open. The lights for orifice 1CN and 2AN were found burnt out on March 29. Those orifices were closed and orifices 1CS and 2AS were opened until the lights were replaced on April 7.

Juvenile Fish Facility: The juvenile fish facility is operating in bypass mode except when collecting fish for the sample.

Fish Sampling: Fish sampling occurs twice a week, on Mondays and Thursdays. The first two fish sampling events of the season were on April 4 and 7. Sampling results are contained in Table 1 below.

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

April 4:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	1	0	0	0
UC-CH	11	0	0	0
C-CH-O	0	---	---	---
UC-CH-O	1	0	0	0
C-SH	1	1	0	0
UC-SH	5	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	19	1	0	0

April 7:

Species	Sampled	#Descaled	Morts	Avian Marks
C-CH	11	0	0	0
UC-CH	6	0	0	1
C-CH-O	0	---	---	---
UC-CH-O	0	---	---	---
C-SH	3	0	0	1
UC-SH	10	0	0	0
C-COHO	0	---	---	---
UC-COHO	0	---	---	---
C-SOCK	0	---	---	---
UC-SOCK	0	---	---	---
TOTAL	30	0	0	2

Removable Spillway Weir: Spill for fish passage began on April 3 at midnight. The RSW is operating normally.

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
71.8	59.1	55.1	0.0	48.0	46.0	5.2	5.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections occurred on March 28 and 29. A total of 23 juvenile lamprey and 1 Siberian prawn (all mortalities) were found.

Invasive Species: No new exotic species have been found.

Avian Activity: Daily total piscivorous bird numbers observed around the project during the week (Table 3 below) remained relatively low. Beginning April 1, contracted land-based hazing of piscivorous birds occurred for 8 hours per day.

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

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 1	2	9	0	3	8
April 2	0	7	0	0	0
April 3	5	17	0	0	0
April 4	0	3	0	0	4
April 5	1	5	0	0	1
April 6	1	12	0	0	0
April 7	4	18	0	0	6

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

Project: Lower Monumental
Biologists: Bill Spurgeon and Raymond Addis
Dates: April 1 - 7, 2016

Turbine Operation

Turbine unit operations changed to hard constraint 1% peak efficiency criteria on April 1. 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 Anchor QEA biologists on April 1, 2, 3 and 6.

Fish Ladders: Fishway exit head differentials and depths over the weirs were within criteria (≤ 0.5' and 1.0'-1.3', respectively) on all inspections. Picketed lead head differentials were in criteria (≤ 0.4' and ≤ 0.3' for north and south shore fishways, respectively) on all inspections.

Fishway Entrances and Collection Channel: NSE1 and NSE2 weir gates were in depth criteria (criteria: ≥ 8' or on sill) on all inspections. North shore channel/tailwater head was in criteria (1'-2') on all inspections.

SPE1 and SPE2 weir gates were in sill criteria (criteria: ≥ 8' or on sill) on all inspections. While on sill, the gate depth readings were 6.8, 7.4, 6.4 and 6.6 feet respectively. 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 were 7.7, 6.8, and 6.9 feet respectively. 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 2 and 3 were operated throughout this period. Pump 1 was out of service throughout this period and will be out of service throughout this season unless an emergency occurs. This unit has a bushing problem.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: There was an average of 1230 square yards of forebay debris observed during this period. No oil was observed in gatewells.

STSs/VBSs: All STS's are operating in cycle mode.

Orifices, Collection Channel, Dewatering Structure, Flume: The collection channel was operated with 18 orifices open. Debris blockage was observed at orifice 17. Operator was informed and a TR (trouble report) was written to install the caisson to allow stick removal.

Collection Facility: Every third day twenty-four hour condition sampling took place on April 1, 4 and 7. Alternate day condition sampling begins April 15.

Transport Summary: Transport is not occurring at this time.

River Conditions

Spring spill operations 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
68.9	58.0	28	0.0	48.6	47	3.9	2.3

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were inspected on April 5. There were no live fish recovered. Mortalities included 51 juvenile lamprey.

Invasive Species: No zebra mussels were observed during monitoring station inspections on April 1.

Avian Activity: Gulls and cormorants were the dominant piscivorous bird species observed during fish ladder inspections this week.

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

Project: Little Goose
Biologist: Richard Weis
Dates: April 1 - 7, 2016

Turbine Operation

All turbine units were available for service for most of this report period. Unit 5 was placed out of service to inspect for stator cracks on April 04 at 0700 hours. Unit 6 was out of service during VBS inspections on April 06 from 1410 to 1640 hours. Hard constraint 1% peak efficiency criteria are in effect. No violations to report.

Adult Fish Passage Facility

The new Fishway Control System still does not work properly. The system will be in manual mode until repairs can be made. Adult fishway inspections were performed on April 03, 05 and 07.

Fish Ladder: The ladder exit head differentials ranged between 0.0 and 0.1 feet (criteria $\leq$ 0.5 ft.). Water depths over the weirs ranged between 1.2 and 1.3 feet (criteria 1.0-1.3 ft.) and picketed lead differentials ranged between 0 and 0.1 feet (criteria $\leq$ 0.3 ft.). 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 1.3 and 1.8 feet (criteria 1.0 to 2.0 ft.). SSE weir depths ranged between 7.4 and 8.3 feet (criteria $\geq$ 8.0 ft). NPE weir depths ranged between 5.9 and 6.3 feet (criteria $\geq$7.0 ft. and were on sill). NSE weir depths ranged between 5.1 to 5.5 feet (criteria $\geq$ 6.0 ft.) and were on sill. Collection channel surface water velocity measured at the North powerhouse ranged between 1.9 and 2.4 fps (criteria 1.5 to 4.0 fps).

Auxiliary Water Supply System: Fish pump 1 is still waiting to be installed. Presently fish pump 2 and 3 are running. Water velocity measured at the north Powerhouse using the Rickly velocity equipment was not conducted this week.

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 2,000 to 5,000 square feet.

Spillway Weir: The spillway weir was placed back into service April 3 at the start of spring spill for fish passage. Repairs to spillbay 1 was completed by cannibalizing parts from spillbay 5 and a special spill pattern was approved and implemented.

ESBS/VBS: All ESBSs are deployed. Initial drawdowns were performed on April 06 for units 1, 2 and 3.

Orifices, Collection Channel, Dewatering Structure, and Flume: The juvenile bypass system is presently running with 21 open orifices in primary by-pass mode.

Transportation Facility: Repair to the 18 inch pipe was performed on April 6 and 7. Repairs consisted of replacing a flanged collar that rusted from the interior of the pipe. Inspection of failed collar showed a solid metal collar that was thin only on the bottom of the collar where the failure occurred. The 30 inch pipe and the JFF (Juvenile Fish Facility) was watered up on the following Friday. Sampling will occur on odd days this month starting on Saturday, April 09.

Transport Summary: Fish transport is estimated to begin early May.

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
67.3	57.1	20.2	0.0	48.9	48.7	4.8	3.4

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers in all units were last inspected on April 02. A total of 9 juvenile lampreys (Ammocoete) mortalities were removed.

Invasive Species: The zebra mussel substrate monitor is scheduled for inspection in late April.

Avian Activity: Bird counting and hazing commenced on April 01. See Table 2 below for bird count results.

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

Date	Time (hours)	Gulls	Cormorants	Caspian Terns	Pelicans
Oct 16	1100	12	21	0	0
Oct 17	1130	14	9	0	0
Oct 18	1400	0	1	0	0
Oct 19	1430	6	0	0	0
Oct 20	1230	14	1	0	0
Oct 21	0800	3	0	0	0
Oct 22	1400	4	3	0	0

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

Project: Lower Granite
Biologists: Elizabeth Holdren, Robert Horal
Dates: April 1 - 7, 2016

Turbine Operation

Units are being operated within the hard constraint 1% peak efficiency criteria.

Adult Fish Passage Facility

The automatic fish ladder control system was upgraded during the winter maintenance outage. Ongoing adjustments to the automatic control system are being made to address internal functioning errors in the software program. Feat Engineering and a consultant software engineer from Go-Tek installed a new PLC control program and modified the Factory Talk screens and tags in the control room March 29. Problems with the system continue. Entrance gates found out of criteria during ladder inspections due to fish ladder control system problems are manually adjusted to depth or sill criteria and left in hand mode until programmers return to make adjustments. Adult fish facilities were inspected by Corps or Anchor QEA biologists on April 1, 2, 3, 4, and 6.

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. An average of about 1.0 square yards of debris was observed near the fish ladder exit.

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 was in criteria (criteria 1'-2') on all inspections. SSE1 and SSE2 were put in "HOLD" mode at a depth of 625.6 feet April 3 at 1030 hours due the control systems inability to accurately measure tailwater creating large gate fluctuations.

NPE1 and NPE2 weir gates were in sill criteria (criteria ≥8' or on sill) on all inspections. While on sill, the gate depth readings were 6.7', 6.2', 5.4', 6.0' and 5.7 feet. NPE2 was found with slack cables on April 1 at 0815 hours due to fish ladder control system running the gate below sill elevation. NPE2 was raised to 628.0 feet in local mode to prevent slack cable damage. North powerhouse channel/tailwater head differential was in criteria (criteria 1'-2') on all inspections.

NSE1 was in criteria (criteria ≥7' or on sill) on all inspections. NSE1 was placed in "HOLD" mode at a depth of 626.4 feet on April 7 at 0419 hours due the control system's inability to accurately measure tailwater elevation, creating large gate fluctuations. NSE2 has been out of service since 2011 and remains set with a chain fall hoist in the closed position to improve channel/tailwater head differentials. North shore channel/tailwater head differential was in criteria (criteria 1'-2') on all inspection.

The collection channel average velocity was in criteria (criteria 1.5-4.0 fps) on all inspections.

Auxiliary Water Supply System: The fish ladder is in two pump operation with AWS pumps 2 and 3 operating. The return to service of pump 1 is pending bulkhead installation.

Fish Ladder Temperature Control System: N/A.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil: Approximately 157.0 square yards of debris was observed in the forebay this week. A slight oil sheen was detected in gatewell slot 4B April 4 at 0757 hours. Oil absorbent booms were deployed in the gatewell.

ESBSs/VBSs: ESBSs and VBSs are scheduled to be inspected in late April.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe: The collection channel is in operations with no problems reported. Orifices are being cycled every three hours.

Collection Facility: The collection facility in secondary bypass mode with condition sampling taking place daily.

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

River Conditions

Spring spill started at April 3 at 0012 hours. 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
68.6	59.2	20.2	0.0	50.0	46.0	5.0	3.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling water strainer inspections are scheduled for late April.

Invasive Species: No organisms were found on the Zebra/quagga mussel substrate April 1.

Avian Activity: Piscivorous bird counts began March 26 with observations being taken from the top of the navigation lock. Avian hazing started April 1. On April 4, there were 24 pelicans observed resting on the island 2.5 miles below Lower Granite Dam and on April 5 there were 15

pelicans observed at this location. Daily piscivorous bird counts are summarized in Table 2 below.

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

Date	Time (hours)	Gulls	Cormorants	Terns	Pelicans
April 1	0815	0	0	0	0
April 2	1324	3	1	0	0
April 3	1008	0	0	0	0
April 4	1400	1	0	0	0
April 5	1522	10	0	0	0
April 6	1400	0	0	0	0
April 7	0858	0	0	0	0

GBT: PSMFC personnel conducted gas bubble trauma examinations April 7. No symptoms were found.

Adult Fish Trap Operations: The trap is in 24 hour operation Monday-Friday at a 17% sample rate.

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 on March 31. This research project investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitation strategies. NPT will transport up to 150 kelts to Dworshak National Fish Hatchery as part of this study.

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 2015 in natal streams and are diverted to the Sort-By-Code tanks at LGR.