**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#05-2019**

**Project: McNary**
Biologist: Bobby Johnson and Denise Griffith
Dates: March 29 to April 4, 2019

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 14 turbine units available for service. (See table & comments below for details). | **Hard** | **Soft** |
| X | X | Available turbines operated within 1% peak efficiency? Constraint in effect.* | X | X |

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

| | **OOS** | | **RTS** | | |
|---|---|---|---|---|---|
| **Unit(s)** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 5 | 03/29 | 2130 | 04/02 | 2010 | Oil leak. (No oil reached the water.) |
| 1 | 04/02 | 0644 | 04/02 | 1142 | Semi-annual maintenance & ESBS installation. |
| 14 | 04/02 | 1145 | 04/02 | 1557 | Semi-annual maintenance & ESBS installation. |
| 10 | 04/03 | 1436 | 04/04 | 0909 | High thrust bearing oil temperature. |
| 13 | 04/03 | 0605 | 04/03 | 0958 | Semi-annual maintenance & ESBS installation. |
| 12 | 04/03 | 1001 | 04/03 | 1453 | Semi-annual maintenance & ESBS installation. |
| 11 | 04/04 | 0618 | 04/04 | 1024 | Semi-annual maintenance & ESBS installation. |
| 9 | 04/04 | 1027 | 04/04 | 1722 | Semi-annual maintenance & ESBS installation. |

*Comments: The hard one percent constraint began on April 1. No units ran outside the hard constraint. Before that date, units ran outside the soft constraint as requested by BPA.

## Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 29, 31 and April 3. Picketed leads were installed on March 29. Adult fish counting began with video review on April 3. Despite issues with the video recorders, fax machines, phones and the count program, fish counts were recorded manually. Ladder temperature monitoring is now automated.

Fish Ladder Exits:

| Yes | No | Location | Criteria | Comments |
|---|---|---|---|---|
| X | | Oregon Exit | Head over weir 1.0’ to 1.3’ | |
| X | | Oregon Count Station Differential | 0.0’ to 0.5’ | |
| X | | Washington Exit | Head over weir 1.0’ to 1.3’ | |
| X | | Washington Count Station Differential | 0.0’ to 0.5’ | |

Comments: Debris loads were minimal to light near the Oregon exit and minimal near the Washington exit. On April 1, at 0200 hours, Washington exit weir 335 was reset.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Comments |
|---|---|---|---|---|---|
| X | | | North Oregon Entrance Head Differential | 1.0' – 2.0' | |
| X | | | NFEW2 Weir Depth | ≥ 8.0' | |
| X | | | NFEW3 Weir Depth | ≥ 8.0' | |
| X | | | South Oregon Entrance Head Differential | 1.0' – 2.0' | |
| | X | | SFEW1 Weir Depth | ≥ 8.0' | 7.9' on April 3. |
| | X | | SFEW2 Weir Depth | ≥ 8.0' | 7.9' on April 3. |
| X | | | Oregon Collection Channel Velocities | 1.5 to 4.0 fps | Averaged 2.3 fps. |
| X | | | Washington Entrance Head Differential | 1.0' – 2.0' | |
| X | | | WFE2 Weir Depth | ≥ 8.0' | |
| X | | | WFE3 Weir Depth | ≥ 8.0' | |

Comments: The Oregon ladder out of criteria points listed above could be due to calibration drifts. The control system panel view by the south powerhouse entrances remained out of service. On March 31, entrance weir NFEW1 was raised above the water as the tailwater elevation increased. On April 1, entrance weir WFE2 was in manual mode for 2.5 hours for painting. In active entrance weir WFE1 was also painted.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| Yes | | | WA shore Wasco County PUD Turbine Unit |
| | Yes | | WA shore Wasco PUD Bypass |
| | | Yes | Oregon shore Fish Pump 1, OOS. |
| Yes | | | Oregon shore Fish Pump 2, Blade angle: 20 to 28° |
| Yes* | | | Oregon shore Fish Pump 3, Blade angle: 24 to 29° |
| Yes | | | OR North Powerhouse Pool supply from juvenile fishway |

*Comments: Fish pump 1 removed from service for bearing inspection and system overhaul. With fish pump 1 out of service, the other two pumps are being operated near maximum blade angles. On March 29, from 0931 to 0941 hours and 1044 to 1049 hours, fish pump 3 was out of service for bus switching.

**Juvenile Fish Passage Facility**

Primary bypass continued until April 4, at 0700 hours, when the first day of secondary bypass for sample collection began. The sampling season will consist of alternating days of primary and secondary bypass. The first sample will be examined on April 5.

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | Moderate to heavy. |
| X | | | Trash rack differentials measured this week? | Six times. |
| X | | | Trash rack differentials acceptable | |
| | X | | Any debris seen in gatewells (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: New incoming debris was minimal to light and accumulated at the powerhouse. Attempts to remove this debris will begin with the start of spill season. There was minimal debris at the spillway. No trash racks were cleaned.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

| Yes | No | NA | Item |
|---|---|---|---|
| | X | | ESBSs deployed in all slots and in service? |
| | | X | ESBSs inspected this week? |
| | | X | ESBSs inspection results acceptable? |
| X | | | VBSs differentials checked this week? |
| X | | | VBSs differentials acceptable? |

Comments: On April 2 to 4, ESBS installation occurred in units 1, 9 and 11 through 14. The brush cycles for the screens in 11B, 12B and 13B slots were reset after installation. ESBSs will be installed by unit priority and is scheduled to be completed by April 15. Camera inspections will begin about one month after ESBS installation is completed.

On April 2, VBS differential monitoring began. No high differentials were recorded and no screens were cleaned.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

| Yes | No | NA | Item | Number of orifices in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 42 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: Orifice valve operator rehabilaiton began this week. There are no issues with the channel systems to report.

On April 2, two joint leaks in the full flow flume/pipe were addressed.

Bypass Facility:

| Yes | No | NA | Item |
|---|---|---|---|
| X* | | X | Sample gates on? |
| | | X | PIT-tag sampling system on? |

*Comments: On April 4, at 0700 hours, the sample gates were turned on. The gates will only be operated on secondary bypass days. The PIT-tag system will remain out of service as there are no studies requiring its use.

On April 2, the fisheries staff repaired a bolt hole where a water supply line and the separator join. On April 4, the full flow flume adult flush line supply valve over heated and tripped off line. (This valve is open when the system is in secondary bypass in order to improve the passage of adult fish released from the separator.) The fisheries and electrical staffs resolved the issue. All other systems operated properly.

TSW Operations: The TSWs installation was completed this week.

**River Conditions**

Table 2. River Conditions at McNary Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 168.6 | 128.2 | 0.0 | 0.0 | 46 | 44 | 4.3 | 3.0 |

Comments: The above data is supplied by the control room. The spring spill program will begin on April 10.

**Other**

Inline Cooling Water Strainers: On April 2, the cooling water strainer examinations reveal one live and 57 juvenile lamprey mortalities. No other fish were observed.

Avian Activity: Avian counts began on April 1. These counts are reflected in Table 3 below. Before the counts began, gulls, pelicans, osprey, cormorants and grebes were observed in low numbers.

Table 3. McNary Project's Daily Avian Count.

| Date | Zone | Gull | Cormorant | Tern | Pelican |
|---|---|---|---|---|---|
| April 1 | Spill | 0 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 |
| | Outfall | 0 | 0 | 0 | 0 |
| April 2 | Spill | 0 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 |
| | Outfall | 2 | 0 | 0 | 0 |
| April 3 | Spill | 4 | 2 | 0 | 0 |
| | Powerhouse | 0 | 1 | 0 | 0 |
| | Outfall | 0 | 2 | 0 | 0 |
| April 4 | Spill | 7 | 0 | 0 | 1 |
| | Powerhouse | 3 | 0 | 0 | 0 |
| | Outfall | 4 | 0 | 0 | 0 |

Most of the birds observed at the outfall were roosting on the full flow pipe due to the lack of bird wire, which was lost last spring. The laser was deployed across from the juvenile bypass outfall on April 4. However, due to weather conditions, the laser has not yet been program and remains out of service.

In the forebay, an occasional osprey, gull or cormorant was observed.

Invasive Species: On March 31, the mussel stations examined revealed no problems.

Fish Rescue/Salvage**:** None occurred.

Research: None is occurring at this time.

**Project: Ice Harbor**
Biologist: Ken Fone
Dates: March 29 – April 4, 2019

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | X | X |

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 2 | 4/25/16 | 0606 | --- | --- | Runner replacement |
| 4 | 9/20/18 | 1619 | --- | --- | Investigate for possible oil leak |

Comments: Units went into Hard Restraint at 0001 on April 1.

## Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on April 1, 2, and 3.

Fish Ladders:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | North Ladder Exit Differential | Head $\leq$ 0.3’ | |
| X | | North Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | North Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| X | | South Ladder Exit Differential | Head $\leq$ 0.3’ | |
| X | | South Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | South Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SFE-1) Weir Depth | $\geq$ 8.0’ or on sill | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| X | | | South Shore Channel Velocity | 1.5 – 4.0 fps | |
| X | | | North Powerhouse Entrance (NFE-1) Weir Depth | $\geq$ 8.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| X | | | North Shore Entrance (NEW-1) Weir Depth | $\geq$ 8.0’ or on sill | |
| | X | | North Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | 0.7’ |

Comments: The north shore entrance channel/tailwater differential was below criteria on the April 1 inspection. Turbulent tailwater conditions from spill make it difficult to obtain accurate tailwater elevation readings, especially at the north shore.

Auxiliary Water Supply (AWS) System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| 6 pumps | 1 pump | 1 pump | Status of the 8 South Shore AWS Pumps |
| 2 pumps | 1 pump | | Status of the 3 North Shore AWS Pumps |

Comments: South shore AWS pump #8 has been out of service since March 1, due to the pump needing an oil change and heater installation.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 25 square yards |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| X | | | Any debris seen in gatewells (% coverage) | 0-5% |
| | X | | Any oil seen in gatewells? | |

Comments: None.

STSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| | X | | STSs deployed in all slots and in service? |
| | X | | STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode) |
| | | X | STSs inspected this week? |
| | | X | STSs inspection results acceptable? |
| | | X | VBSs differentials checked this week? |
| | | X | VBSs differentials acceptable? |

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 20 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: Orifices were backflushed twice per day from March 28 to March 31, and three times per day starting April 1. The light for orifice 1AN was burned out on April 1 and 2. Orifice 1AS was opened in place of 1AN until the light was replaced on April 3. The pump for the bird deterrent hydrocannon was not installed, due to a leak from the hydrocannon water line (see 19IHR05MFR for details).

Juvenile Fish Facility: The fish facility is being operated in primary bypass, except when collecting fish for sampling.

Fish Sampling: Sampling began on April 1 and will be occurring on Mondays and Thursdays each week. See the table below for a summary of the sampling results.

Fish condition sampling results at Ice Harbor Dam:

Date: April 1

| Species, Run, Rear type | Sampled | #Descaled | Morts | Avian Marks |
|---|---|---|---|---|
| Chinook yearling clipped | 28 | 0 | 0 | 1 |
| Chinook yearling unclipped | 39 | 0 | 0 | 0 |
| Chinook subyearling clipped | --- | --- | --- | --- |
| Chinook subyearling unclipped | --- | --- | --- | --- |
| Steelhead clipped | 8 | 0 | 0 | 0 |
| Steelhead unclipped | --- | --- | --- | --- |
| Coho clipped | --- | --- | --- | --- |
| Coho unclipped | --- | --- | --- | --- |
| Sockeye clipped | --- | --- | --- | --- |
| Sockeye unclipped | --- | --- | --- | --- |
| Total | 75 | 0 | 0 | 1 |

Date: April 4

| Species, Run, Rear type | Sampled | #Descaled | Morts | Avian Marks |
|---|---|---|---|---|
| Chinook yearling clipped | 49 | 0 | 0 | --- |
| Chinook yearling unclipped | 46 | 2 | 0 | 0 |
| Chinook subyearling clipped | --- | --- | --- | --- |
| Chinook subyearling unclipped | --- | --- | --- | --- |
| Steelhead clipped | 14 | 1 | 0 | 0 |
| Steelhead unclipped | 1 | 0 | 0 | 0 |
| Coho clipped | --- | --- | --- | --- |
| Coho unclipped | --- | --- | --- | --- |
| Sockeye clipped | --- | --- | --- | --- |
| Sockeye unclipped | --- | --- | --- | --- |
| Total | 110 | 3 | 0 | 0 |

Removable Spillway Weir (RSW): Voluntary spill for fish passage began on April 3 with the RSW operating.

## River Conditions

River conditions at Ice Harbor Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 83.30 | 61.90 | 54.70 | 16.20 | 47 | 43 | 3.6 | 3.2 |

*Unit 1 scroll case temperature.

## Other

Inline Cooling Water Strainers: Monthly turbine cooling water strainer inspections for lamprey occurred on March 28. A total of 2 clipped juvenile steelhead, 1 unclipped juvenile steelhead, 10 juvenile lamprey, and 20 Siberian prawns were found (all dead except for two of the lamprey).

Avian Activity: There were very few piscivorous birds seen around the project.

Daily maXimum piscivorous bird counts at Ice Harbor Dam.

| Date | Gulls | Cormorants | Caspian Terns | Grebes | Pelicans |
|---|---|---|---|---|---|
| April 1 | 1 | 3 | 0 | 0 | 0 |
| April 2 | 1 | 4 | 0 | 0 | 0 |
| April 3 | 0 | 8 | 0 | 0 | 0 |
| April 4 | 0 | 8 | 0 | 0 | 0 |

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are reported below.

| Date | Sample (euthanized) | Collection* |
|---|---|---|
| April 1 | 45 | 45 |
| April 4 | 14 | 14 |
| Totals | 59 | 59 |

*Collection and sample numbers are the same as the facility when sampling at 100%

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur.

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

**Project: Lower Monumental**
Biologists: Chuck Barnes and Raymond Addis
Dates: March 29 – April 4, 2019

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| X | | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | X | |

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| Unit 1 | 4/2/2019 | 10:17 | 4/2/2019 | 12:25 | STS Inspection |
| Unit 2 | 4/3/2019 | 07:00 | 4/3/2019 | 12:50 | STS Inspection/Hub Tapping |
| Unit 3 | 4/2/2019 | 12:49 | 4/2/2019 | 15:45 | STS Inspection/Brush Cleaning |
| Unit 4 | 3/1/2019 | 11:00 | 3/29/2019 | 15:40 | Dislodged Rotor Counterweight |
| Unit 4 | 4/3/2019 | 13:00 | 4/4/2019 | 08:45 | STS Inspection/Torn STS screen |
| Unit 5 | 4/4/2019 | 07:25 | 4/4/2019 | 09:20 | STS Inspection |
| Unit 6 | 4/2/2019 | 07:00 | 4/2/2019 | 10:15 | STS Inspection/Hub Tapping |

Comments: Units went into Hard Restraint at 0001 on April 1.

Unit 4 went from a planned outage for STS inspection to forced outage at 14:10 on April 3 due to a torn screen on the STS deployed in gatewell 4A. The STS was repaired and redeployed with Unit 4 returning to service at 08:45 on April 4.

## Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on March 29, 30, 31 and April 3.

Fish Ladder:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | North Ladder Exit Differential | Head $\leq$ 0.5’ | |
| X | | North Ladder Picketed Lead Differential | Head $\leq$ 0.4’ | |
| X | | North Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| X | | South Ladder Exit Differential | Head $\leq$ 0.5’ | |
| X | | South Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | South Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |

Comments: None.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | North Shore Entrance (NSE-1) Weir Depth | ≥ 8.0' or on sill | |
| X | | | North Shore Entrance (NSE-2) Weir Depth | ≥ 8.0' or on sill | |
| X | | | North Shore Channel/Tailwater Differential | 1.0'–2.0' | |
| X | | X | South Powerhouse Entrance (SPE-1) Weir Depth | ≥ 8.0' or on sill | |
| X | | X | South Powerhouse Entrance (SPE-2) Weir Depth | ≥ 8.0' or on sill | |
| X | | | South Powerhouse Entrance Channel/Tailwater Differential | 1.0'–2.0' | |
| X | | X | South Shore Entrance (SSE-1) Weir Depth | ≥ 8.0' | |
| | X | | South Shore Entrance (SSE-2) Weir Depth | ≥ 6.0' | |
| | X | | South Shore Channel/Tailwater Differential | 1.0' – 2.0' | |

Comments: South Powerhouse Entrance weir (SPE-1) was on sill during the April 3 inspection with reading of 6.5 feet.
South Powerhouse Entrance weir (SPE-2) was on sill during the April 3 inspection with reading of 6.5 feet.
South Shore Entrance weir (SSE-1) was on sill during the April 3 inspection with reading of 7.7 feet.
South Shore Entrance weir (SSE-2) was out of criteria during the March 29 inspection with reading of 5.0 feet. The weir appeared not to be staying at its set position of 437 feet elevation. Powerhouse operator repositioned weir to 437 feet. SSE – 2 stayed at 437 feet elevation the remainder of the reporting period.
South Shore Channel/Tailwater Differential was out of criteria during the April 3 inspection with a reading of 0.4 feet. Powerhouse operator was informed and the system was adjusted.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| No | | X | AWS Fish Pump 1 |
| Yes | | | AWS Fish Pump 2 |
| Yes | | | AWS Fish Pump 3 |

Comments: AWS Fish pump 1 is out of service for seized Wicket Gate Bushings. There is no current return to service estimate date.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 1875 $yd^2$ |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| X | | | Any debris seen in gatewells (% coverage) | 0 – 20% |
| | X | | Any oil seen in gatewells? | |

STSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | STSs deployed in all slots and in service? |
| | X | | STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)? |
| X | | | STSs inspected this week? |
| | X | | STSs inspection results acceptable? |
| | | X | VBSs differentials checked this week? |
| | | X | VBSs differentials acceptable? |

Comments: The STS in gatewell 4A was found with three tears in the screen during inspection on April 3. The STS was lifted and the screen was repaired prior to the next morning. The STS was redeployed on April 4.

(see Turbine Operation comments)

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 18 -19 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: None.

Collection Facility: Every other day fish condition sampling began at 0700 on March 8. A total of 33,950 fish were collected with 33,950 fish bypassed back to the river during this reporting period.

Transport Summary: No transport at this time.

Spillway Weir: Spring spill began and the RSW went into service at 0001 on April 3.

**River Conditions**

River conditions at Lower Monumental Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature (°F)* | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 82.4 | 59.9 | 44.0 | 0.0 | 47.7 | 44.5 | 1.9 | 1.7 |

*Scrollcase temperatures.

**Other**

Inline Cooling Water Strainers: Cooling water strainers were inspected on March 19. No live fish were recovered. Mortalities included 33 juvenile lamprey and 11 juvenile salmon.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam.

| Date | Time | Gulls | Cormorants | Terns | Grebes | Pelicans |
|---|---|---|---|---|---|---|
| 3/29/2019 | 1300 | 0 | 0 | 0 | 0 | 0 |
| 3/30/2019 | 1100 | 6 | 0 | 0 | 0 | 0 |
| 3/31/2019 | 1230 | 10 | 3 | 0 | 0 | 0 |
| 4/1/2019 | 1130 | 2 | 0 | 0 | 0 | 0 |
| 4/2/2019 | 1200 | 0 | 0 | 0 | 0 | 0 |
| 4/3/2019 | 1215 | 0 | 0 | 0 | 0 | 0 |
| 4/4/2019 | 1145 | 0 | 0 | 0 | 0 | 0 |

Comments: Bird hazing efforts by USDA personnel began on April 1.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on March 3.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. No Siberian prawn were collected at Lower Monumental Dam for this reporting period.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: PNNL is installing equipment needed for the Fish Guidance Efficiency Study, which is scheduled to begin approximately April 20, 2019.

**Project: Little Goose**
Biologists: Scott St. John and Richard Weis
Dates: March 29-April 04, 2019

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| X | | Available turbines operated within 1% peak efficiency? Constraint in effect. | X | |

Little Goose Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 5 | 04/21/17 | 00:54 | 03/31/21 | 17:00 | Spider and Upper Guide Bearing Repair |
| 2 | 04/01/19 | 01:53 | 04/01/19 | 10:59 | Governor HMI communication failure-86 GT Trip |
| 4 | 03/29/19 | 17:10 | 04/01/19 | 07:23 | ESBS brush fault |

Comments: Little Goose turbine operating range hard constraint began on April 01. The ESBS installed in 4B malfunctioned on March 29 and the unit was forced out of service over the weekend. The brush motor was recalibrated and returned to service on April 01.

## Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult fishway on April 01, 02 and 04.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head $\leq$ 0.5’ | |
| X | | | Fish Ladder Picketed Lead Differential | Head $\leq$ 0.3’ | |
| X | | | Fish Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| | | X | Fish Ladder Cooling Water Pumps in Service | | |
| | | X | Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily | | |

Comments: None.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurement |
|---|---|---|---|---|---|
| | X | | South Shore Entrance (SSE-1) Weir Depth | $\geq$ 8.0’ | 7.3, 7.7, 7.1 |
| | X | | South Shore Entrance (SSE-2) Weir Depth | $\geq$ 8.0’ | 7.7, 7.7, 7.2 |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| | | X | North Powerhouse Entrance (NPE-1) Weir Depth | $\geq$ 7.0’ or on sill | |
| | | X | North Powerhouse Entrance (NPE-2) Weir Depth | $\geq$ 7.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| | X | | North Shore Entrance (NSE-1) Weir Depth | $\geq$ 6.0’ or on sill | 4.2, 5.1, 5.2 |
| | X | | North Shore Entrance (NSE-2) Weir Depth | $\geq$ 6.0’ or on sill | 4.8, 5.0, 4.8 |
| X | | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: The adult fishway continues to operate in manual mode. Project staff have struggled to maintain entrance criteria during Spring spill. Rickly water velocity was measured at 2.8 feet per second average for the adult channel on March 19.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|---|---|---|---|
| X | | | AWS Fish Pump 1 |
| X | | | AWS Fish Pump 2 |
| X | | | AWS Fish Pump 3 |

Comments: None.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comment |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 11,200 $ft^2$ |
| X | | | Trash rack differentials measured this week? | |
| X | | | Trash rack differentials acceptable | |
| | | X | Any debris seen in gatewells (% coverage) | |
| | | X | Any oil seen in gatewells? | |

Comments: Trash rack differentials were measured on April 04 and were in criteria. There is approximately 11,200 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

ESBS/VBS:

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | ESBSs deployed in all slots and in service? |
| | X | | ESBSs inspected this week? |
| | | X | ESBSs inspection results acceptable? |
| X | | | VBSs differentials checked this week? |
| X | | | VBSs differentials acceptable? |

Comments: VBS differentials were measured on April 04 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 19 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: None.

Collection Facility: The juvenile bypass system is currently operating. Collection for condition sampling began on April 01 at 07:00. Sampling is occurring every other day with the first sample on April 02.

Transport Summary: Collection for fish transport will begin on April 23 with the first barge departing Little Goose on April 24.

Spillway Weir: Spring spill started on April 03 with the ASW in the high crest position.

## River Conditions

River conditions at Little Goose Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 79.6 | 59.3 | 41.0 | 33.7 | 46.9 | 46.1 | 1.9 | 1.3 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Cooling water strainers are currently being inspected every other week and results are sent to district for FPOM distribution.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam commenced on April 01.

| Date | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|---|
| 4-1 | 1330 | 15 | 9 | 0 | 0 |
| 4-2 | 1310 | 2 | 4 | 0 | 0 |
| 4-3 | 0752 | 5 | 2 | 0 | 0 |
| 4-4 | 1315 | 1 | 12 | 0 | 0 |

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Siberian prawns collected this week are recorded below:

| Date | Sample | Collection* |
|---|---|---|
| 4-2 | 1 | 10 |
| 4-6 | 0 | 0 |
| Totals | 1 | 10 |

*Collection and sample numbers are the same as the facility when sampling at 100%

Gas Bubble Trauma (GBT): Gas bubble monitoring will begin on April 07.

Fish Rescue/Salvage: N/A

Research: N/A

**Project: Lower Granite**
Biologists: Elizabeth Holdren
Dates: March -29-April 4, 2019

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 6 turbine units available for service (see table & comments below for details). | **Hard** | **Soft** |
| | | Available turbines operated within 1% peak efficiency? Constraint in effect. | X | X |

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 2 | 02/11 | 0830 | 04/04 | 1130 | Annual Maintenance/Digital Governor Install/OPTO |

Comments: Units went into Hard Restraint at 0001 on April 1.

## Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor QEA biologist's inspected the adult fishways on March 30 and April 2, 3, and 4.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Comments |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head $\leq$ 0.5' | |
| X | | | Fish Ladder Picketed Lead Differential | Head $\leq$ 0.3' | |
| X | | | Fish Ladder Depth over Weirs | Head over weir 1.0' to 1.3' | |
| | X | | Fish Ladder Cooling Water Pumps in Service | | |
| | | X | Fish Ladder Cooling Water Pumps Operating Satisfactorily | | |

Comments: None.

Fish Ladder Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Comments |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SSE-1) Weir Depth | $\geq$ 8.0' | |
| X | | | South Shore Entrance (SSE-2) Weir Depth | $\geq$ 8.0' | |
| X | | | South Shore Channel/Tailwater Differential | 1.0' – 2.0' | |
| X | | | North Powerhouse Entrance (NPE-1) Weir Depth | $\geq$ 8.0' or on sill | |
| X | | | North Powerhouse Entrance (NPE-2) Weir Depth | $\geq$ 8.0' or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0'–2.0' | |
| | X | | North Shore Entrance (NSE-1) Weir Depth | $\geq$ 7.0' or on sill | |
| | | | North Shore Entrance (NSE-2) Weir Depth | $\geq$ 7.0' or on sill | Closed |
| X | | | North Shore Channel/Tailwater Differential | 1.0'–2.0' | |
| | X | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: NSE-1 out of criteria reading were due to the fish ladder automatic control system water surface elevation sensor failing to communicate to the gate control. NSE-1 automatic control was repaired and the gate returned to auto April 3. The collection channel out of criteria readings of 1.3 fps and 1.2 fps were likely due to a

fault in the powerhouse collection channel velocity meter but is yet to be confirmed. The north shore collection channel velocity was in criteria on all inspections.

Auxiliary Water Supply System:

| Operating Satisfactorily | Standby | Out of Service | Auxiliary Water Supply (AWS) |
|---|---|---|---|
| No | | Lower guide repair | AWS Fish Pump 1 |
| Yes | | | AWS Fish Pump 2 |
| Yes | | | AWS Fish Pump 3 |

Comments: AWS pump 1 remains out of service for lower guide bearing repair.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 170 $yd^2$ |
| X | | | Trash rack differentials measured this week? | |
| X | | | Trash rack differentials acceptable | |
| X | | | Any debris seen in gatewells (% coverage) | ≤ 5% |
| | X | | Any oil seen in gatewells? | |

Comments: None.

ESBSs/VBSs:

| Yes | No | NA | Item |
|---|---|---|---|
| X | | | ESBSs deployed in all slots and in service? |
| | X | | ESBSs inspected this week? |
| | X | | ESBSs inspection results acceptable? |
| X | | | VBSs differentials checked this week? |
| X | | | VBSs differentials acceptable? |

Comments: Baseline gatewell drawdowns and VBS differentials for units 1, 3, 4, 5, were measured March 25.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 18 |
| X | | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: The collection channel is operating with 18 orifices open.

Collection Facility: The collection facility is in secondary bypass mode with daily 24 hour condition sample occurring.

Transport Summary: The first research barge departed LWG April 4 with 20,665 smolts transported as part of NMFS Seasonal Effects study.

Spillway Weir: Spring spill began at 0000 hours April 3.

**River Conditions**

River conditions at Lower Granite Dam.

| Daily Average River Flow (kcfs) | | Daily Average Spill (kcfs) | | Water Temperature* (°F) | | Water Clarity (Secchi disk - feet) | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 78.3 | 60.2 | 40.3 | 0.0 | 47.1 | 44.6 | 2.2 | 1.0 |

*Cooling water intake temperature.

**Other**

Inline Cooling Water Strainers: Unit cooling water strainers were inspected April 1. Mortalities included 251 juvenile lamprey and 10 unidentifiable decomposed fish.

Invasive Species: Zebra/Quagga mussel traps were inspected March 29. No mussels were found. One Siberian prawn mortality was collected in the sample.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam began April 1.

| Date | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|---|
| 1_Apr | 0728 | 45 | 0 | 0 | 0 |
| 2-Apr | 0726 | 12 | 0 | 0 | 0 |
| 3-Apr | 1431 | 17 | 0 | 0 | 0 |
| 4-Apr | 1500 | 15 | 0 | 0 | 0 |

Gas Bubble Trauma (GBT) Monitoring: First GBT sample was collected from the fish entering the separator April 4 with no signs of GBT observed.

Adult Fish Trap Operations: The adult trap was watered up and ready for trapping March 28. Adult trap Monday-Friday collection operation began at 1600 hours April 4 at a 28 % sample rate.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Granite are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release 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 goals are to characterize 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 2018 in natal streams and are diverted to the Sort-By-Code tanks at LGR.

National Marine Fisheries Service (NMFS) In-River Survival:

NMFS PIT-tag Chinook and steelhead smolts for their Survival Study April through early June 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 LWG tailrace.

National Marine Fisheries Service (NMFS) Seasonal Effects of Transporting Fish from the Snake River to Optimize Transportation Strategy:

This study aims to build on the current database of information on the seasonality of smolt-to-adult return rates (SARs). LWG biological staff began collection for the early non-transport season Monday April 1. Fish are being collected Monday and Tuesday for tagging on Tuesday and Wednesday with the barge departing LWG on Thursdays. Collection will occur Sunday-Thursday with fish being tagged Monday-Friday once general every day fish transport begins.

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring:

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.