

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#32-2018**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: October 5 to 11, 2018

Turbine Operation

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

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

| Unit | OOS | | RTS | | Outage Description |
|---------|-------|------|-------|------|--------------------------|
| | Date | Time | Date | Time | |
| 6 | 10/01 | 0740 | 12/04 | NA | Nine year overhaul. |
| 9 to 11 | 10/09 | 1000 | 10/09 | 1108 | ESBS camera inspections. |

Comments: There are no problems to report.

Adult Fish Passage Facilities

McNary fisheries biologists performed adult fishways measured inspections on October 5, 7 and 10. Adult fish counting continued.

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' | 0.6' on Oct 5. |

Comments: Debris loads were minimal to moderate near the Oregon ladder exit and minimal to light near the Washington ladder exit. Picketed leads and trash racks were cleaned by the general maintenance staff as needed, including the weekend. Due to aquatic vegetation near the Washington exit, the leads were cleaned multiple times.

At the Oregon exit, on October 10, a large piece of woody material was removed from tilting weir 337. The exit traveling screens debris trough was cleaned as needed.

At the Washington exit, on October 5, cleaning the picketed leads resolved the out of criterion issue. On October 7, one regulating weir alarm came in and 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' | |
| X | | | SFEW2 Weir Depth | ≥ 8.0' | |
| X | | | Oregon Collection Channel Velocities | 1.5 to 4.0 fps | Averaged 2.1 fps. |
| X | | | Washington Entrance Head Differential | 1.0' – 2.0' | |
| X | | | WFE2 Weir Depth | ≥ 8.0' | |
| X | | | WFE3 Weir Depth | ≥ 8.0' | |

Comments: There are no problems to report.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|------------------------|---------|----------------|--|
| X | | | WA shore Wasco County PUD Turbine Unit. |
| | X | | WA shore Wasco PUD Bypass. |
| X | | | Oregon Ladder Fish Pump 1, Blade angle: 20 to 22. |
| X | | | Oregon Ladder Fish Pump 2, Blade angle: 20 to 21. |
| X | | | Oregon Ladder Fish Pump 3, Blade angle: 21 to 22. |
| X | | | OR North Powerhouse Pool supply from juvenile fishway. |

Comments: There are no problems to report.

Juvenile Fish Passage Facility

Partial winterization, maintenance and cleaning continued at the juvenile fish facility.

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|-----|----|----|--|--|
| X | | | Forebay debris load acceptable? (amount) | Minimal to very light near powerhouse. |
| X | | | Trash rack differentials measured this week? | Daily. |
| X | | | Trash rack differentials acceptable? | |
| | X | | Any debris seen in gatewells? (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: The forebay debris loads near the powerhouse were minimal to very light. Debris accumulations along the spillway were minimal. New incoming debris loads were minimal. Most woody material moved back and forth along the Oregon shoreline.

No trash racks were cleaned and no problems were noted in the gatewell slots this week.

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: The brush cycles for the screens in 3A, 3C and 4A slots remained in timer mode. ESBSs were inspected in units 9 through 11 with no problems found.

VBS differential monitoring occurred daily. No high differentials were measured. Two screens were cleaned on October 6. No fish mortalities were noted.

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

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

Comments: There were no problems to report. Orifices were adjusted for the VBS cleaning as required.

Bypass Facility:

| Yes | No | NA | Item |
|-----|----|----|---|
| | | X | Sample gates on? |
| | | X | PIT-tag sampling system on? (Remain off unless a study is occurring.) |

Comments: All systems are out of service as winter maintenance begins.

TSW Operations: The TSWs remained out of service.

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 |
| 108.6 | 70.0 | 0.2 | 0.0 | 63.0 | 61.0 | 6.0 | 6.0 |

Comments: The above data is supplied by McNary control room. Spillway hoist maintenance continued. On October 9, the spill recorded was a result of hoist testing.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur in December.

Avian Activity: Casual avian observations were made during other inspections.

Pelicans and terns were not observed on project this week. Gull and cormorant numbers appeared to fluctuate with the juvenile shad outmigration. Gulls were feeding in the powerhouse flow along with cormorants at the outfall. Both species were roosting on structures around the tailwater area. One loon was observed.

Grebes were occasionally noted in the forebay area. They were not observed elsewhere. A few cormorants were roosting on the rocks by the Washington shore boat dock.

Large gull flocks were noted roosting around the project outside the observation zones.

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

Fish Rescue/Salvage: None occurred.

Research: The University of Idaho adult lamprey passage telemetry study continued.

Project: Ice Harbor
 Biologist: Ken Fone
 Dates: October 5-11, 2018

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 | |

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

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

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on October 9, 10, and 11.

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-2) 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' | |

Comments: None.

Auxiliary Water Supply (AWS) System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System (AWS) |
|------------------------|---------|----------------|---------------------------------------|
| 5 pumps | 3 pumps | | Status of the 8 South Shore AWS Pumps |
| 2 pumps | 1 pump | | Status of the 3 North Shore AWS Pumps |

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|-----|----|----|---|----------------|
| x | | | Forebay debris load acceptable? (amount) | 30 square yard |
| x | | | Gatewell drawdown measured this week? | |
| x | | | Gatewell drawdown acceptable | |
| x | | | Any debris seen in gatewells (% coverage) | 0 to 7% |
| | 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: The STSs are in cycle-run mode.

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: None.

Juvenile Fish Facility: The fish facility is being operated in primary bypass.

Fish Sampling: Sampling is done for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done for the year.

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 |
| 27.0 | 12.6 | 0 | 0 | 64 | 62 | 8.1 | 7.0 |

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly inspections for lamprey ended in June and will start up again in December.

Avian Activity: There were low amounts of pelicans and gulls, and moderate amounts of cormorants observed around the project. Most of the cormorants were observed roosting on Eagle Island, with some foraging downstream of the powerhouse.

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. Sampling is done for the year.

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

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

Project: Lower Monumental

Biologists: Chuck Barnes and Raymond Addis

Dates: October 5 - 11, 2018

Turbine Operation

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

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

| Unit | OOS | | RTS | | Outage Description |
|--------|------------|------|------------|------|--|
| | Date | Time | Date | Time | |
| Unit 1 | 12/10/2014 | | 10/26/2018 | ERTS | Rehabilitation Overhaul |
| Unit 3 | 6/25/2018 | 0700 | 10/19/2018 | ERTS | 6 Year Overhaul |
| Unit 4 | 9/19/2018 | 1600 | 12/28/18 | ERTS | Inspection of Oil Governor System/Blade Seal Replacement |

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

Adult Fish Passage Facility

The adult fishways were inspected by Corps and Anchor QEA biologists on October 6, 10 and 11.

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:

Fishway Entrances and Collection Channel:

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

Comments:

South Powerhouse Entrance (SPE-1) was at sill during all inspections with readings of 6.7, 6.4 and 7.9 feet respectively.

South Powerhouse Entrance (SPE-2) was at sill during all inspections with readings of 6.7, 6.4 and 7.9 feet respectively.

South Shore Entrance (SSE-1) was at sill during all inspections with readings of 7.0, 7.9 and 7.9 feet respectively.

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 estimated return to service date.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

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

Comments.

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: STS's operating on cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.

Orifices, Collection Channel, Dewatering Structure, and Flume:

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

Comments: PDW mechanical cleaning brush was turned off due a possible bad electrical break on the motor.

Collection Facility: Collection for truck transport ended at 0700 on October 1 and the facility operation was changed to primary bypass. The facility was dewatered at 1230 on October 3 for cleaning and winter maintenance.

Transport Summary: Alternate day trucking ended at 0700 on October 1

Spillway Weir: RSW went into service when Spring Spill began at 0001 on April 3. RSW was closed at 1245 on August 8 due to TMT decision. Summer Spill ended at 00:00:00 on September 1.

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 |
| 24.2 | 13.5 | 0 | 0 | 62.3 | 61.0 | 5.1 | 4.2 |

*Scroll case temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers are not inspected in October.

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

The piscivorous bird species observed during fish ladder inspections ended on October 1.

| Date | Time | Gulls | Cormorants | Terns | Grebes | Pelicans |
|------|------|-------|------------|-------|--------|----------|
| | | | | | | |

Comments: Bird hazing efforts by USDA personnel ended at 2000 on June 2.

Tailrace observations for bird hazing effectiveness ended with the June 30 observation.

Outfall pipe bird water cannons were turned off on June 11, due to a damaged water cannon at pipe exit. The standby set of cannons have a missing water cannon and were already out of service.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on October 1.

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. Juvenile fish collection ended at 0700 on October 1.

| Date | Sample (euthanized) | Collection* |
|--------|---------------------|-------------|
| Totals | 0 | 0 |

Fish Rescue/Salvage: No fish rescue during this reporting period.

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

Project: Little Goose

Biologists: Scott St. John and Richard Weis

Dates: October 05-11, 2018

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)

| Unit | OOS | | RTS | | Outage Description |
|-------|----------|-------|----------|-------|--|
| | Date | Time | Date | Time | |
| 5 | 04/14/17 | 14:11 | 11/16/18 | 17:00 | Spider and upper guide bearing repair. |
| 4 | 09/10/18 | 07:00 | 09/27/18 | 15:39 | Unit Annual |
| 1 & 2 | 10/09/18 | 19:00 | 10/18/18 | 17:00 | T1 Transformer Bushing |
| 3 & 4 | 10/09/18 | 19:00 | 10/12/18 | 19:18 | T1 Transformer Bushing |

Comments: Little Goose Dam experienced two forced outages this report period related to ground faults. After extensive troubleshooting, it was determined that a through bushing for Unit 1 near the T1 transformer had failed. This caused Little Goose keep T1 transformer offline, therefore leaving Unit 6 as the only available unit for operation due to buss configuration. Little Goose was able to disconnect Unit 1 and Unit 2 from the T1 transformer on October 12, allowing the operation of Unit 3 and Unit 4. For additional information, see recent MFR's.

Adult Fish Passage Facility

Little Goose fish facility and Anchor QEA staff inspected the adult Fishway on October 07, 10 and 11.

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:

Fishway Entrances and Collection Channel

| Yes | No | Sill | Location | Criteria | Measurements |
|-----|----|------|--|------------------------|--------------|
| 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 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 | |
| X | | | North Shore Entrance (NSE-2) Weir Depth | \geq 6.0' or on sill | |
| | X | | North Shore Channel/Tailwater Differential | 1.0'–2.0' | 0.9 |
| X | | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: Adult fishway control system is currently operating in manual mode. North shore entrance was out of criteria and measured at 0.9 feet on October 10. Fishway is currently operating within criteria.

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) | |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| | X | | Any debris seen in gatewells (% coverage) | |
| | X | | Any oil seen in gatewells? | |

Comments: There is currently 200 sq. ft. of floating woody debris inside the trash shear boom in the forebay. Drawdown measurements were conducted October 04 on units 1 and 3 and were in criteria.

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? |
| | X | | VBSs inspected this week? |

Comments: VBS differentials were measured October 04 on units 1 and 3 and were in criteria.

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: None.

Collection Facility: Juvenile fish facility is currently operating. Every other day transport has ended with the last truck leaving on September 15. Little Goose is now operating in primary bypass with condition sampling every third day with sample fish being returned to the river. (MFR 18 LGS 19).

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 69 fish were collected, and 68 were by-passed back to river. The descaling and mortality rates were 2.2% and 2.4% respectively. A total of 0 adult lamprey were removed from the separator and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: Adjustable spillway weir was closed for the season on August 03 at 15:30.

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 |
| 21.7 | 16.1 | 3.0 | 0.0 | 62.5 | 61.6 | 6.0 | 5.3 |

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted every other week.

Avian Activity: Average daily piscivorous bird counts by zone for the report period at Little Goose Dam.

| Zone | Gull | Cormorant | Tern | Pelican | Grebe |
|-------------------------|------|-----------|------|---------|-------|
| Unmodified boat barrier | 0 | 0 | 0 | 0 | 0 |
| Modified boat barrier* | 0 | 0 | 0 | 0 | 0 |
| Forebay debris | 0 | 0 | 0 | 0 | 0 |
| Trash/shear boom | 0 | 0 | 0 | 0 | 0 |
| Forebay count | 12 | 15 | 0 | 0 | 12 |
| Tailrace count | 37 | 4 | 0 | 0 | 0 |

*modified and unmodified boat barrier section was removed on 7 buoys directly upstream of the ASW.

Invasive Species: No invasive species have been observed on the mussel station.

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

| Date | Sample (euthanized) | Collection* |
|--------------|---------------------|-------------|
| 10-05 | | 0 |
| 10-06 | | 34 |
| 10-07 | | 0 |
| 10-08 | | 0 |
| 10-09 | | 43 |
| 10-10 | | 0 |
| 10-11 | | 0 |
| Total | | 77 |

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

Gas Bubble Trauma (GBT): GBT monitoring ended for the year.

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Granite

Biologists: Elizabeth Holdren and Stephen Hampton

Dates: October 5 – October 11, 2018

Turbine Operation

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

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

| Unit | OOS | | RTS | | Outage Description |
|------|-------|------|------|------|---|
| | Date | Time | Date | Time | |
| 3 | Oct 1 | 0700 | | | Annual Maintenance and Digital Governor Upgrade |

Comments:

Adult Fish Passage Facility

Lower Granite and Anchor QEA staff inspected the adult fishway on October 5, 6, 10 and 11.

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 Cooling Water Pumps Operating Satisfactorily | | |

Comments:

Fish Ladder Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|-----|----|------|--|------------------------|--------------|
| x | x | | South Shore Entrance (SSE-1) Weir Depth | \geq 8.0' | 7.9 on 10/06 |
| x | x | | South Shore Entrance (SSE-2) Weir Depth | \geq 8.0' | 7.9 on 10/10 |
| x | | | South Shore Channel/Tailwater Differential | 1.0' – 2.0' | |
| x | | x | North Powerhouse Entrance (NPE-1) Weir Depth | \geq 8.0' or on sill | |
| x | | 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 | OOS |
| x | | | North Shore Channel/Tailwater Differential | 1.0'–2.0' | |
| x | x | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | 1.4 on 10/06 |

Comments:

NPE 2 gate set point for sill position is 628.2 feet to prevent cable spooling though the actual gate elevation is on sill at 628.0 feet. SSE-1 out of criteria reading was likely due to the delay in fish ladder control system adjustment to changes in tailwater elevations. SSE-2 out of criteria reading was taken during unit flow changes and returned to criteria when tailwater conditions stabilized.

Auxiliary Water Supply System:

| Operating Satisfactorily | Standby | Out of Service | Auxiliary Water Supply (AWS) |
|--------------------------|---------|----------------|------------------------------|
| x | | | AWS Fish Pump 1 |
| x | | | AWS Fish Pump 2 |
| | x | | AWS Fish Pump 3 |

Comments:

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|-----|----|----|---|---------------------|
| x | | | Forebay debris load acceptable? (amount) | 2.8 yd ² |
| x | | | Gatewell drawdown measured this week? | |
| x | | | Gatewell drawdown acceptable | |
| | x | | Any debris seen in gatewells (% coverage) | |
| | x | | Any oil seen in gatewells? | |

Comments:

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:

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: Primary dewaterer floor screen brushes, side screen brushes, and the pneumatic screen cleaners are being operated in manual mode by powerhouse operators due to mechanical and programming issues with the new system. Overflow weirs in groups A, B, and C remain in auto; weir group D continues to be operated in manual to achieve optimal flow from the PDW to the transport flume. Problems are being investigated and troubleshooting the system for needed repairs during the winter outage is ongoing.

Collection Facility: Operational modifications continue as needed. The facility sample rate was reduced to 25% October 09 and 10 due to increased fish passage numbers. Facility returned to 100% sample on 11 October.

Transport Summary: Every other day truck transport to below Bonneville Dam continues.

Spill/Spillway Weir: No Spill is occurring.

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 |
| 22.1 | 16.7 | 0 | 0 | 62.5 | 60.7 | 5.0+ | 5.0+ |

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No mussels were present on the October 1 inspection. During the reporting period 55 Siberian prawns were euthanized and 11 Siberian prawn mortalities were collected in the condition sample.

Siberian Prawn:

| Date | 10/05/2018 | 10/06/2018 | 10/07/2018 | 10/08/2018 | 10/09/2018 | 10/10/2018 | 10/11/2018 |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Euthanized | 4 | 13 | 3 | 19 | 7 | 8 | 1 |
| Dead | 2 | 0 | 4 | 1 | 1 | 3 | 0 |

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

| Date | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|------------|------|-------|------------|---------------|----------|
| 10/05/2018 | 1517 | 12 | 26 | 0 | 0 |
| 10/06/2018 | 1300 | 8 | 16 | 0 | 0 |
| 10/07/2018 | 1438 | 11 | 26 | 0 | 0 |
| 10/08/2018 | 0812 | 19 | 20 | 0 | 0 |
| 10/09/2018 | 1550 | 30 | 20 | 0 | 0 |
| 10/10/2018 | 0946 | 7 | 21 | 0 | 0 |
| 10/11/2018 | 1541 | 6 | 20 | 0 | 0 |

Gas Bubble Trauma (GBT) Monitoring: N/A.

Adult Fish Trap Operations: The adult trap is operating seven days a week with a 20% sample rate for WDFW and Nez Perce hatcheries brood stock collection.

Fish Rescue/Salvage: N/A

Research: N/A