Out of Criteria – NWW Weekly Report #28 – September 6 – 12, 2024

## 1. McNary

At the Washington shore exit, weir 339 remains in bypass mode. The control system continued to regulate the exit without this weir moving. High picketed lead differential alarms were noted on September 6 and 8. The leads had been cleaned and the alarms were reset.

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| | X | | NFEW2 Weir Depth | $\geq$ 8.0' | 7.8' to 7.9' |
| | X | | NFEW3 Weir Depth | $\geq$ 8.0' | 7.8' to 7.9' |

NFEW2 and NFEW3 were out of criteria all week. These out of criteria points may be due to low tailwater elevations and calibration drifts. As will be discussed below, fish pump 3 was out of service on September 12 (24MCN11). Per FPP, the Oregon ladder entrances were adjusted for one functional fish pump. NFEW3 was raised out of the water by 0659 hours. NFEW2, SFEW1, and SFEW2 were adjusted to a depth that allowed both entrance pool differentials to remain in criteria. All weirs were returned to their normal settings at 1021 hours.

Fish pump 1 remained out of service for a scheduled 5-year overhaul. Return to service dates are subject to change.

After investigation, it was determined fish pump 3's blade actuator motor was not functioning as designed. The motor was overloaded which was causing the motor protection to trip. In that state, there was a risk of damaging the motor, which is needed to adjust the blade angle. Blade angle adjustment occurs whenever you need to start or stop a fish pump, adjust for changing ladder water levels, or adjustments made when another pump goes out of service. Since this is a critical function, the electrical staff quickly requested a fish pump outage in order to replace the motor and gearbox assembly (24MCN11). The work began on September 12, at 0647 hours. An early start was required in the advent into any issues arouse and could be dealt with before close of business. Fish pump 2's blade angle was increased to 26 degrees. Fish pump 1 is still out of service for overhaul. The blade actuator motor and gearbox were replaced and fish pump 3 returned to service that day, at 1021 hours.

The juvenile bypass system did not provide the usual auxiliary flow to the Oregon shore north powerhouse entrance from September 11, at 0900 hours to September 12, at 1345 hours. The system was in emergency bypass during this time and the reason will be outlined below (24MCN12).

The juvenile system has not been alternating between primary and secondary bypass every 24 hours at 0700 hours since September 5, when secondary bypass was halted due to channel water elevation fluctuations, which will be described more below (24MCN12). The juvenile system was switched from primary to emergency bypass on September 11, at 0900 hours. The system was switched back from emergency bypass to primary bypass on September 12 at 1345 hours. It is hoped secondary bypass and sampling collection will resume on September 15 at 0700 hours. Five sample days will be missed September 5, 7, 9, 11, and 13.

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

When in emergency bypass, there were 41 orifices in use with 3A slot north orifice being closed. The orifice in 1B slot was found closed on September 9. It appears an orifice exchange for VBS cleaning was forgotten on September 8, with two orifices open in 1A slot. No issues or mortality were observed, and protocols were reviewed

One unclipped adult steelhead mortality was found on the channel walkway grating on September 10.

After switching from secondary to primary bypass on September 4, at 0700 hours, the adult flush line's drive system failed, and the valve remained open instead of closing. The failure was first noted on September 6. The added water during primary bypass is not a serious issue as this has happened once before. We manually closed the valve on September 10. The electrical staff found a failed capacitor, which was the same issue last time. We manually reopened the valve on September 12 so it would be available for the resumption of secondary bypass on September 15. The capacitor will be replaced as soon as possible.

## 2. Ice Harbor

South shore AWS pump #6 has been out of service since March 1, 2024, due to high vibration readings coming from the motor and gearbox. The gearbox was replaced with a refurbished one and will require an overhead 115 kv line outage to remove the pump bulkhead.

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

The replacement actuator for the water regulating weirs in the collection channel is in local control due to a problem with the actuator being undersized for this application. The actuator will be replaced to enable it to work in automatic mode. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

## 3. Lower Monumental

| 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 | |

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

The cleaning system for the primary dewatering structure’s incline screen was found inoperable on August 30. JFF personnel manually operated the incline screen brush twice a shift to mitigate debris build-up. The system returned to service at 1330 on September 9.

## 4. Little Goose

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | X | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | 9/10- 0.9 |

Fish pumps 1 and 3 were returned to service February 22. Fish pump 2 was returned to service on February 28. Fish pump 2 was taken out of service on September 10 at 7:14 due to a failed mechanical seal (MFR 24LGS11). The pump was returned to service on September 12 at 1540. Fish pump 1 and 3 were briefly removed from service on September 12 from 10:49 to 10:58 to remove discharge bulkheads from pump 2.

## 5. Lower Granite Dam

| Yes | No | Sill | Location | Criteria | Comments |
|---|---|---|---|---|---|
| | X | | North Powerhouse Entrance (NPE-1) Weir Depth | ≥ 8.0’ or on sill | 7.5’ |
| | X | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | |
| | X | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

**U.S. ARMY CORPS OF ENGINEERS**
**WALLA WALLA DISTRICT**
**FISH FACILITIES WEEKLY REPORT**
**#28-2024**

**Project: McNary**
Biologist: Bobby Johnson and Paul Bertschinger
Dates: September 6-12, 2024

## Turbine Operation

| Yes | No | Turbine Unit Status | | |
|---|---|---|---|---|
| | X | All 14 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 |

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

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 14 | 5/13 | 1232 | 11/18 | NA | Isophase replacement and headgate work |
| 13 | 5/21 | 0955 | 11/18 | NA | Isophase replacement and headgate work |
| 3 & 4 | 5/29 | 0634 | 11/15 | NA | Control system upgrades |
| 5 | 8/21 | 1057 | 9/30 | NA | Turbine noise, annual maintenance |
| 8 | 9/8 | 0355 | 9/23 | NA | Failed ESBS in 8B slot, intake crane main hoist OOS |
| 1, 2 & 6 | 9/10 | 1000 | 9/10 | 1111 | ESBS camera inspections, rotated through units |

Comments: RTS dates are subject to change. For unit 5, cleaning the access to the area needed to dewater the unit was completed this week. Slight variations outside the soft one percent are not recorded here. The sawtooth unit priority pattern for temperature abatement has not yet concluded.

## Adult Fish Passage Facilities

McNary fisheries staff performed measured inspections of the adult fishways on September 6, 8, and 10. No inspections of the Oregon shore ladder occurred during auxiliary water outages that will be discussed below. Adult fish counting, and video review of nighttime lamprey passage continued.

Fish Ladder Exits:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | Oregon Exit | Head over weir 1.0’ to 1.3’ | 1.0’ |
| X | | Oregon Count Station Differential | 0.0’ to 0.5’ | 0.1’ to 0.2’ |
| X | | Washington Exit | Head over weir 1.0’ to 1.3’ | 1.0’ to 1.1’ |
| X | | Washington Count Station Differential | 0.0’ to 0.5’ | 0.2’ |

Comments: Debris loads were light near the Oregon exit and minimal near the Washington exits. However, large clumps of aquatic vegetation were near both exits. The general maintenance staff came in on Friday, Saturday, and Sunday mornings, along with being called in on Saturday, at 0218 hours and on Sunday at 1700 hours.

At the Washington shore exit, weir 339 remains in bypass mode. The control system continued to regulate the exit without this weir moving. High picketed lead differential alarms were noted on September 6 and 8. The leads had been cleaned and the alarms were reset.

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | North Oregon Entrance Head Differential | 1.0' – 2.0' | 1.2' to 1.4' |
| | X | | NFEW2 Weir Depth | ≥ 8.0' | 7.8' to 7.9' |
| | X | | NFEW3 Weir Depth | ≥ 8.0' | 7.8' to 7.9' |
| X | | | South Oregon Entrance Head Differential | 1.0' – 2.0' | 1.5' to 1.6' |
| X | | | SFEW1 Weir Depth | ≥ 8.0' | 8.0' to 8.2' |
| X | | | SFEW2 Weir Depth | ≥ 8.0' | 8.0' to 8.2' |
| X | | | Oregon Collection Channel Velocities | 1.5 to 4.0 fps | 1.8 fps |
| X | | | Washington Entrance Head Differential | 1.0' – 2.0' | 1.3' to 1.5' |
| X | | | WFE2 Weir Depth | ≥ 8.0' | 9.9' to 10.5' |
| X | | | WFE3 Weir Depth | ≥ 8.0' | 8.6' to 9.0' |

Comments: NFEW2 and NFEW3 were out of criteria all week. These out of criteria points may be due to low tailwater elevations and calibration drifts. As will be discussed below, fish pump 3 was out of service on September 12 (24MCN11). Per FPP, the Oregon ladder entrances were adjusted for one functional fish pump. NFEW3 was raised out of the water by 0659 hours. NFEW2, SFEW1, and SFEW2 were adjusted to a depth that allowed both entrance pool differentials to remain in criteria. With the outage expected to last less than a day, no other adjustments were made. All weirs were returned to their normal settings at 1021 hours. For the juvenile system switch to emergency bypass, which will also be discussed below, no adjustments to entrance weirs were made.

Auxiliary Water Supply System:

| Operating Satisfactory | Standby | Out of Service | Blade angle | Auxiliary Water Supply System (AWS) |
|---|---|---|---|---|
| X | | | | WA shore Wasco County PUD Turbine Unit |
| | X | | | WA shore Wasco PUD Bypass |
| | | X | NA | Oregon Ladder Fish Pump 1, return to service Sept 30 |
| X | | | 20° to 26° | Oregon Ladder Fish Pump 2 |
| X* | | X* | 23° to 24° | Oregon Ladder Fish Pump 3 |
| X* | | X* | | OR North Powerhouse Pool from juvenile fishway |

*Comments: Fish pump 1 remained out of service for a scheduled 5-year overhaul. Return to service dates are subject to change.

After investigation, it was determined fish pump 3's blade actuator motor was not functioning as designed. The motor was overloaded which was causing the motor protection to trip. In that state, there was a risk of damaging the motor, which is needed to adjust the blade angle. Blade angle adjustment occurs whenever you need to start or stop a fish pump, adjust for changing ladder water levels, or adjustments made when another pump goes out of service. Since this is a critical function, the electrical staff quickly requested a fish pump outage in order to replace the motor and gearbox assembly (24MCN11). The work began on September 12, at 0647 hours. An early start was required in the advent into any issues arouse and could be dealt with before close of business. Fish pump 2's blade angle was increased to 26 degrees. Fish pump 1 is still out of service for overhaul. The blade actuator motor and gearbox were replaced and fish pump 3 returned to service that day, at 1021 hours.

The juvenile bypass system did not provide the usual auxiliary flow to the Oregon shore north powerhouse entrance from September 11, at 0900 hours to September 12, at 1345 hours. The system was in emergency bypass during this time and the reason will be outlined below (24MCN12).

## Juvenile Fish Passage Facility

The juvenile system has not been alternating between primary and secondary bypass every 24 hours at 0700 hours since September 5, when secondary bypass was halted due to channel water elevation fluctuations, which will be described more below (24MCN12). The juvenile system was switched from primary to emergency bypass on September 11, at 0900 hours. The system was switched back from emergency bypass to primary bypass on

September 12 at 1345 hours. It is hoped secondary bypass and sampling collection will resume on September 15 at 0700 hours. Five sample days will be missed September 5, 7, 9, 11, and 13.

Forebay Debris/Gatewell Debris/Oil:

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

Comments: The debris load near the powerhouse was minimal to very light. New incoming debris and debris loads at the spill were minimal. Most of the debris was aquatic vegetation that moved from the Oregon shore and back.

No trash rack cleaning is scheduled.

The emergency bulkhead remained in 14A slot. The slots in units 7, 13, at 14A and 14B slots remained covered. This improved contractor access by units 13 and 14.

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: ESBS's are installed in all units except 14A slot. With the emergency bulkhead in 14A slot, the ESBS remained uninstalled. The control program for the fish screens in unit 10 is not currently communicating with the panel view on the 8th floor. When the unit is in service, the brush cycle sequences will be monitored in the control room until repairs can occur in the future. With units 3, 13 and 14 being out of service, the ESBS's remained in manual mode so the brush cycle sequence would not occur. Testing of ESBS screen brush programming continued with the screens in unit 4. Camera inspections occurred in units 1, 2, and 6 with no issues found on September 10.

The ESBS in 1B slot was found short cycling, not completing a full brush cycle, on September 8. The chief operator was able to resolve the issue. The ESBS in 1C slot alarmed and was reset on September 10. The screen in 8B slot failed on September 8, at 0350 hours. The unit was removed from service. The intake deck crane has a main hoist issue, so the ESBS has not been replaced yet.

Daily VBS monitoring continued, and no high differentials were recorded. A total of three screens were cleaned on September 8 and 12. No fish were observed.

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

| Yes | No | NA | Item | Number open and in service |
|---|---|---|---|---|
| X | | | Orifices operating satisfactory? | 41 to 42 |
| | X | | Dewaterer and cleaning systems operating satisfactory? | |

Comments: With headgate testing in 14A slot, the orifices in units 13 and 14 remained closed. Make-up north orifices are opened in units 3 and 4. Due to water elevation fluctuations, orifice cycling remained reduced to once a day. Orifices were adjusted for VBS cleaning as required. When in emergency bypass, there were 41 orifices in use with 3A slot north orifice being closed. The orifice in 1B slot was found closed on September 9. It appears an orifice exchange for VBS cleaning was forgotten on September 8, with two orifices open in 1A slot. No issues or mortality were observed, and protocols were reviewed. A large number of juvenile and adult shad were noted in 1B slot the next day during the camera inspection. Unit 1 had been operating at low loads.

Last year, we noted severe juvenile channel water elevation fluctuations starting in October. The issue was investigated but no cause was found. This year severe fluctuations, which adversely effected the facility separator and sampling, began in the end of July. From July 31 to September 5, there were 40 high and one low water elevation alarms. The low alarm occurred during orifice cycling.

As stated above, it was decided on September 4 to suspend sampling (separator operation) until the cause of these channel fluctuations and alarms could be determined. Again, this year, the electrical staff found no issues with the channel control system. It was determined the issue must be below water in the elevation meter's still well. The juvenile system was switched from primary to emergency bypass on September 11, from 0900 to 1300 hours. We discovered the shroud around the water elevation meter still well to be covered in freshwater sponge, which was not allowing for proper water flow to the still well. The shroud was cleaned the next day. The system was switched back from emergency bypass to primary bypass on September 12, from 1200 to 1345 hours. Since that time, there have been no severe water fluctuations in the channel or channel elevation water alarms. As stated above, every other day sample collection will resume on September 15, at 0700 hours. Table 2 below shows additional channel alarms before the still well was cleaned.

Table 2. Channel Water Elevation Alarms

| Date | Time | Alarm Type | Comments |
|---|---|---|---|
| 9/7 | 0615 | High | |
| 9/8 | 1512 | High | |
| | 1546 to 1548 | High | 3 alarms together |
| | 1656 | High | |
| | 2043 | High | |
| 9/9 | 1600 | High | |

While switching into emergency bypass, there was a delay so the electrical staff could repair the hoist which installs the emergency bypass stop logs. When switching back to primary bypass, the brush cycle sequence timer had to reset itself, which has happened it the past.

The transition screen cleaning brush appeared to briefly stall before parking on September 7. While in emergency bypass, the cobwebs around all screen cleaning brushes' limits were removed in hopes of curing such problems.

During the switching mentioned above, about two adult Chinook, 12 adult steelhead, and four adult lampreys along with one channel catfish, several adult shad, a few small mouth bass, and walleye were observed. Several hundred juvenile shad were noted. No smolts or juvenile lamprey were observed. Only one adult shad mortality and a few juvenile shad mortalities were noted.

One unclipped adult steelhead mortality was found on the channel walkway grating on September 10. This fish will be recorded on the next available data day. The netting around 12C south orifice will be repaired on September 16.

After switching from secondary to primary bypass on September 4, at 0700 hours, the adult flush line's drive system failed, and the valve remained open instead of closing. The failure was first noted on September 6. The added water during primary bypass is not a serious issue as this has happened once before. We manually closed the valve on September 10. The electrical staff found a failed capacitor, which was the same issue last time. We manually reopened the valve on September 12 so it would be available for the resumption of secondary bypass on September 15. The capacitor will be replaced as soon as possible.

Bypass Facility:

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

Comments: The sample system was being used when in secondary bypass for sample collection. The PIT tag system will not be in use again this season, which is similar to past years. No sampling occurred this week due to

the issue described above. When in emergency bypass, the facility was dewatered from September 11 to 12. After rewatering, the facility was cleaned to ensure the system was ready for the resumption of sample collection.

No fish were sampled this week.

TSW Operations: The TSW bay 19 remained closed. The TSW in bay 20 was opened every morning for four hours for adult fallback passage.

## River Conditions

Table 3. 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 |
| 94.1 | 79.1 | 1.8 | 1.6 | 70.2 | 69.6 | 6.0 | 6.0 |

Comments: The above data is from the smolt monitoring staff, with the data day starting at 0700 hours. Water clarity comes from the control room. With the juvenile facility dewatered, the water temperature for September 12 came from the control room.

No spill in excess of available powerhouse capacity occurred this week.

Rehabilitated of downstream wall dogs continued. The dogs from bays 14 and 17 are being rehabilitated currently.

## Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 3.

Avian Activity: Bird counting continued, and the results are reflected in Table 4 below.

In the spill zone, gulls in lower fluctuating numbers along with a few cormorants were noted roosting or feeding in the TSW flow.

In the powerhouse zone, fewer gulls were observed feeding and roosting, with the birds moving here when the TSW closed, at times.

In the outfall zone, gulls and cormorants in fluctuating numbers were noted roosting with occasional feeding observed.

For the forebay zone, an occasional fly by gull was noted. Small gull flocks and a few cormorants were noted outside the zone.

The LRAD remained redeployed and was somewhat effective.

The laser on the navigation lock wing wall opposite the outfall was shipped to the manufacture for a repair evaluation.

The two distress calls on the navigation lock wing wall remained in service and have been functioning well.

There is no other hazing.

Table 4. McNary Project's Daily Avian Count.

| Date | Zone | Gull | Cormorant | Tern | Pelican | Grebe |
|---|---|---|---|---|---|---|
| Sept 6 | Spill | 28 | 0 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 2 | 2 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |
| Sept 7 | Spill | 101 | 0 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 2 | 10 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |
| Sept 8 | Spill | 27 | 0 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 16 | 12 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |
| Sept 9 | Spill | 53 | 0 | 0 | 0 | 0 |
| | Powerhouse | 2 | 0 | 0 | 0 | 0 |
| | Outfall | 14 | 12 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |
| Sept 10 | Spill | 63 | 2 | 0 | 0 | 0 |
| | Powerhouse | 20 | 0 | 0 | 0 | 0 |
| | Outfall | 55 | 6 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |
| Sept 11 | Spill | 17 | 0 | 0 | 0 | 0 |
| | Powerhouse | 20 | 0 | 0 | 0 | 0 |
| | Outfall | 3 | 15 | 0 | 0 | 0 |
| | Forebay | 2 | 0 | 0 | 0 | 0 |
| Sept 12 | Spill | 160 | 10 | 0 | 0 | 0 |
| | Powerhouse | 0 | 0 | 0 | 0 | 0 |
| | Outfall | 37 | 17 | 0 | 0 | 0 |
| | Forebay | 0 | 0 | 0 | 0 | 0 |

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

Siberian Prawn: No sampling occurred. The season total of prawns remained at 18.

Fish Rescue/Salvage**:** None occurred this week. Fish noted while switching into and out of emergency bypass are recorded in the Channel section above.

Research: PNNL will remove their spillway equipment at a later date.

For the CRITFC study, no tissue samples were taken this week from juvenile lamprey due to no sampling. The yearly total remained at 514 fish.

**Project: Ice Harbor**
Biologist: Ken Fone
Biological Science Technician: Ben McArthur
Dates: September 6-12, 2024

## Turbine Operation

| Yes | No | Turbine Unit Status |
|---|---|---|
| | x | All 6 turbine units available for service (see table & comments below for details). |
| x | | All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan |

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

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 1 | 6/27/23 | 0708 | --- | --- | Turbine runner replacement and stator rewind |
| 3 | 9/9/2024 | 1000 | --- | --- | Annual Maintenance |

Comments: None.

## Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on September 9, 10, 11.

Fish Ladders:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| x | | North ladder exit differential | Head ≤ 0.3’ | |
| x | | North ladder picketed lead differential | Head ≤ 0.3’ | |
| x | | North ladder depth over weirs | Head over weir 1.0’ to 1.3’ | |
| x | | South ladder exit differential | Head ≤ 0.3’ | |
| x | | South ladder picketed lead differential | Head ≤ 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 fish entrance (SFE-1) weir depth | ≥ 8.0’ or on sill | |
| x | | | South fish entrance channel/tailwater differential | 1.0’ – 2.0’ | |
| x | | | South shore channel velocity | 1.5 – 4.0 fps | |
| | | x | Central fish entrance (CFE-2) weir depth | ≥ 8.0’ or on sill | |
| x | | | Central fish entrance channel/tailwater differential | 1.0’ – 2.0’ | |
| | | x | North fish entrance (NFE-1) weir depth | ≥ 8.0’ or on sill | |
| x | | | North fish entrance channel/tailwater differential | 1.0’ – 2.0’ | |

Comments: North fish entrance channel and tailwater sensors were calibrated on September 9.

Auxiliary Water Supply (AWS) System:

| Operating Satisfactory | Standby | Out of Service | Auxiliary Water Supply System |
|---|---|---|---|
| 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 #6 has been out of service since March 1, 2024, due to high vibration readings coming from the motor and gearbox. The gearbox was replaced with a refurbished one and will require an overhead 115 kv line outage to remove the pump bulkhead.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comments |
|---|---|---|---|---|
| x | | | Forebay debris load acceptable? (amount) | Average of 7 square yards |
| x | | | Gatewell drawdown measured this week? | |
| x | | | Gatewell drawdown acceptable | |
| x | | | Any debris seen in gatewells (% coverage) | 0-3% coverage |
| | x | | Any oil seen in gatewells? | |

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

| Yes | No | NA | Item |
|---|---|---|---|
| x | | | STSs deployed in all slots that are 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: The replacement actuator for the water regulating weirs in the collection channel is in local control due to a problem with the actuator being undersized for this application. The actuator will be replaced to enable it to work in automatic mode. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

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

Fish Sampling: Juvenile fish sampling has ended for the season.

Removable Spillway Weir (RSW): The RSW is opened daily from approximately 0600 hours to 1000 hours to facilitate downstream passage back to the Columbia River for steelhead that strayed into the Snake River.

## 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 |
| 26.9 | 17.2 | 1.6 | 1.4 | 70 | 70 | 9.1 | 7.0 |

*Unit 1 scroll case temperature.

**Other**

Inline Cooling Water Strainers: Cooling water strainer differential pressure is routinely monitored. The strainers will be cleaned if there is indication of clogging caused by debris or juvenile shad, and inspection results will be reported.

Avian Activity: There were variable numbers of piscivorous birds observed around the dam. The birds were roosting on Eagle Island and opportunistically foraging downstream of the spillway and at the discharge of the navigation lock while it was being drained.

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

Siberian Prawn: Siberian prawns that were collected in the sample at the Juvenile Fish Facility were humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill. Fish sampling has ended for the season.

Fish Rescue/Salvage: None.

Research: No on-site research is occurring.

**Project: Lower Monumental**
Biologists: Denise Griffith and Raymond Addis
Dates: September 6 - 12, 2024

## Turbine Operation

| Yes | No | Turbine Unit Status |
|---|---|---|
| | 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. |

Comments: See Unit Outages and Return to Service comments below.

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

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| Unit | Date | Time | Date | Time | Outage Description |
| Unit 4 | 9/09/24 | 0745 | 9/19/24 | ERTS | Annual |
| Unit 6 | 7/08/24 | 0850 | 9/19/24 | ERTS | DC low voltage upgrade |

Comments: None.

## Adult Fish Passage Facility

Lower Monumental fish facility and EAS staff inspected the adult fishways on September 6, 7, 8 and 10.

Fish Ladder Exit:

| Yes | No | Location | Criteria | Measurements |
|---|---|---|---|---|
| X | | North Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | North Ladder Picketed Lead Differential | Head ≤ 0.4’ | |
| X | | North Ladder Depth over Weirs | Head over weir 1.0’ to 1.3’ | |
| X | | South Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | South Ladder Picketed Lead Differential | Head ≤ 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 | South Powerhouse Entrance (SPE-1) Weir Depth | ≥ 8.0’ or on sill | |
| | | 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 SPE-1 weir was at sill during all inspections with readings of 6.6, 6.4, 6.4 and 7.0 feet respectively. South Powerhouse Entrance SPE-2 weir was at sill during all inspections with of 6.6, 6.4,

6.4 and 7.0 feet respectively. South Shore Entrance SSE-1 weir was at sill during all inspections with readings of 8.5, 7.5, 7.4 and 7.9 feet respectively.

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 | Comments |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | 124 yrd² |
| 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 | VBS screens checked this week? |
| | | X | VBS screens acceptable? |

Comments: STSs were running on cycle-run mode due to the 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: The cleaning system for the primary dewatering structure's incline screen was found inoperable on August 30. JFF personnel manually operated the incline screen brush twice a shift to mitigate debris build-up. The system returned to service at 1330 on September 9.

Collection Facility: The facility ran in primary bypass for two days and secondary bypass for condition sampling the third day, every-third day, this entire reporting period. A total of 8 fish were collected with 8 being bypassed this reporting period.

The flush water pipe for the truck transport recovery tank was removed during a repair and the truck tank cannot be used until this is addressed. It will be replaced during the winter.

Due to the issues with the lamprey overshoot system, raceways 2 through 4 were drained to take the pressure off the system. An engineer from the powerhouse said the lamprey overshoot pipe adds so much water to the main flume piping that it creates a pressurized system. It is not deemed as a critical issue and will not impede fish passage. Plans for the repair will occur over the winter maintenance period.

Transport Summary: Transport at Lower Monumental has ended for the season.

Spillway Weir: Surface spill for fall steelhead continues: RSW spill (~7.5kcfs) for 4 hours in the morning, 7 days a week.

## 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 | 17.7 | 1.4 | 1.3 | 68.5 | 67.9 | 6.1 | 5.2 |

*Scrollcase temperatures.

## Other

Inline Cooling Water Strainers: Cooling water strainers inspections are done until December.

Avian Activity: Tailrace counts of foraging piscivorous birds at Lower Monumental Dam began on April 1.

| Date | Time | Gulls | Cormorants | Terns | Grebes | Pelicans |
|---|---|---|---|---|---|---|
| 9/6/2024 | 1345 | 26 | 35 | 0 | 0 | 0 |
| 9/7/2024 | 1300 | 32 | 0 | 0 | 0 | 0 |
| 9/8/2024 | 1300 | 86 | 46 | 0 | 0 | 0 |
| 9/9/2024 | 1055 | 134 | 61 | 0 | 0 | 0 |
| 9/10/2024 | 1126 | 66 | 7 | 0 | 0 | 0 |
| 9/11/2024 | 911 | 152 | 3 | 0 | 0 | 0 |
| 9/12/2024 | 930 | 207 | 0 | 0 | 0 | 0 |

Comments: Bird hazing by USDA personnel ended on June 30.

Invasive Species: Zebra or quagga mussel traps were examined on September 6. None were detected.

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

| Date | Sample (euthanized) | Collection* |
|---|---|---|
| 9/6/2024 | --- | --- |
| 9/7/2024 | 22 | 22 |
| 9/8/2024 | --- | --- |
| 9/9/2024 | --- | --- |
| 9/10/2024 | 49 | 49 |
| 9/11/2024 | --- | --- |
| 9/12/2024 | --- | --- |
| Total | 71 | 71 |

*Collection refers to extrapolated values based on sampling percent.

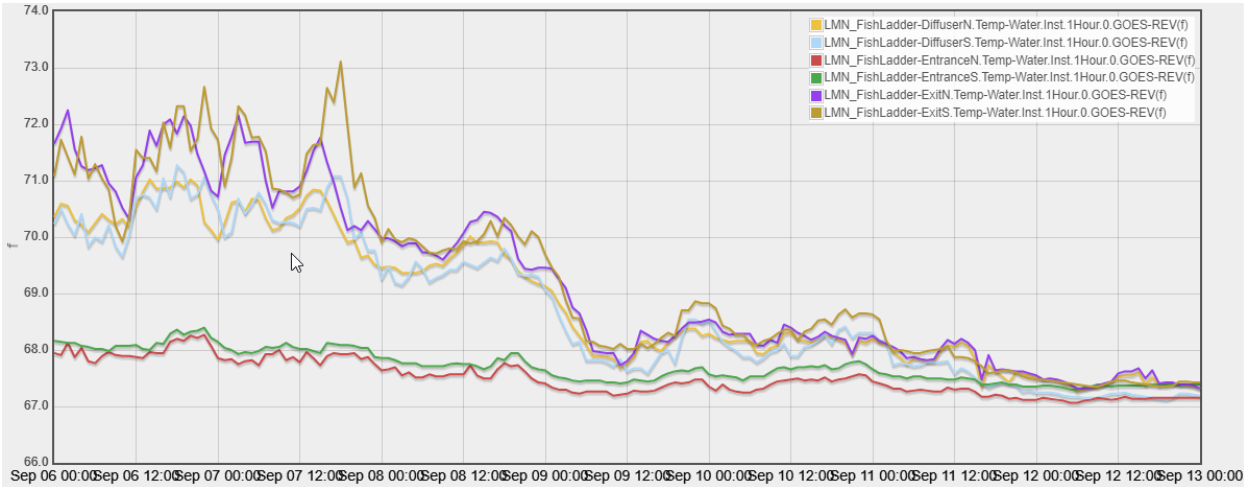
Fish Rescue/Salvage: No fish rescues were performed during this reporting period.

Research: The collection of lamprey for the PNNL study of the behavior and survival of Pacific lamprey has ended.

GBT sampling has ended for the 2024 season.

The Nez Perce steelhead kelt study and rehabilitation collection ended on for the season.

Temperature Probes: The adult passage temperature probes operated correctly during this reporting period.
The graph below shows the temperatures per recording point for the reporting period.



**Project: Little Goose Dam**
Biologist: Deb Snyder, Brooke Gerard
Dates: September 6 – September 12, 2024

## Turbine Operation

| Yes | No | Turbine Unit Status |
|---|---|---|
| | X | All 6 turbine units available for service? (See table and comments below for details) |

*All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

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

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| Unit | Date | Time | Date | Time | Outage Description |
| 3 | 8/19/2024 | 07:00 | 9/27/2024 | 17:00 | Annual 6-year overhaul. |
| 5 | 4/14/2017 | 14:11 | 11/30/2024 | ERTS | Spider and upper guide bearing repair. |

Comments: Contractual obligations, performance issues, and projected flow data once again realigned the Unit 5 ERTS date into late fall 2024.

## Adult Fish Passage Facility

EAS Bio staff inspected the adult Fishway on September 7, 9, and 10.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | | Fish Ladder Picketed Lead Differential | Head ≤ 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 | | |

Fishway Entrances and Collection Channel:

| Yes | No | Sill | Location | Criteria | Measurements |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SSE-1) Weir Depth | ≥ 8.0’ | |
| X | | | South Shore Entrance (SSE-2) Weir Depth | ≥ 8.0’ | |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| | | X | North Powerhouse Entrance (NPE-1) Weir Depth | ≥ 7.0’ or on sill | |
| | | X | North Powerhouse Entrance (NPE-2) Weir Depth | ≥ 7.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | | North Shore Entrance (NSE-1) Weir Depth | ≥ 6.0’ or on sill | |
| X | | | North Shore Entrance (NSE-2) Weir Depth | ≥ 6.0’ or on sill | |
| X | X | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | 9/10- 0.9 |
| X | | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: The adult fishway was returned to service on February 15. The AWS pumps returned to service on February 22. The Collection Channel Surface Velocity is measured at NPE. The fish system control program is proving unreliable and inadequate to balance the adult fishway in “automated” mode. Biologist personnel are manually adjusting and balancing the adult fishway with increasing frequency. EAS Bio personnel report the FSC board reflects weir and channel height readings with notable discrepancies compared to actual physical hand measurements taken during inspection periods. FSC board readings of SSE Channel elevation continue to report discrepancies an average of 8.2 feet below physical staff gauge measurements documenting the same channel

elevation. Criteria evaluations default to physical staff gauge measurements in this area. All other channel staff gauge and NPE and NSE FSC board channel heights reflect similar and corresponding readings. On May 29 the new fish ladder cooling pump installation was completed. The newly installed pump unit was commissioned for seasonal use June 9 at 1420 hours upon reaching criteria per FPP 2.4.2.14.i the prior evening of June 8 at 1900 hours.

Auxiliary Water Supply System:

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

Comments: Fish pumps 1 and 3 were returned to service February 22. Fish pump 2 was returned to service on February 28. Fish pump 2 was taken out of service on September 10 at 7:14 due to a failed mechanical seal (MFR 24LGS11). The pump was returned to service on September 12 at 1540. Fish pump 1 and 3 were briefly removed from service on September 12 from 10:49 to 10:58 to remove discharge bulkheads from pump 2.

## Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

| Yes | No | NA | Item | Comment |
|---|---|---|---|---|
| X | | | Forebay debris load acceptable? (amount) | High 220 ft² - Low 10 ft² |
| X | | | Gatewell drawdown measured this week? | |
| X | | | Gatewell drawdown acceptable | |
| X | X | | Any debris seen in gatewells (% coverage) | 9/6- 6C:2% 9/7- 2C:2% 9/8- 2C:2% 9/12- 2C:1%, 4B:1% |
| | X | | Any oil seen in gatewells? | |

Comments: The forebay had minimal floating debris inside the trash shear boom with the highest measurement occurring on September 11 at 60 ft². The overall total forebay debris high occurred on September 8 at 220 ft$^2$.

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: Installation of ESBS's were fully functional and deployed the week of March 18. The third round of gatewell camera inspections was completed July 8-11. Unit 2 annual camera inspections were completed July 31.

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: The juvenile bypass system was watered up on March 7 without incident.

Collection Facility: The juvenile collection facility was successfully watered up on March 20. Every other day collection for condition monitoring in conjunction with secondary bypass commenced March 25 with the first sample being conducted on March 26. Every day collection began April 23 coinciding with barge transportation

operations. Every-other day collection was initiated on July 8 due to water temperatures above 68°F. Every day collection resumed at 0700 on August 1st corresponding with the start of every other day trucking operations as per the FPP. During this reporting period a total of 249 fish were collected, 295 were trucked, 0 were bypassed, and there were 4 sample or facility mortalities. The descaling and mortality rates were 2.5% and 1.6%, respectively. The collection and transport facility operated within criteria; 2 adult lampreys were removed from the collection facility during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every day barging continued through May 16 upon transition to every other day barge operations. The last barge for the season departed on June 19. Collection for truck transport operations began August 1 with the first truck departure on August 3.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. On March 21, the ASW transitioned to 625 ft. crest height spilling 24 hours 7 days per week per CBR LGS R 022724 1735. Spring spill operations began on April 3 spilling 24/7 up to the 125% gas cap. On April 16th we hit the 50 adult Chinook threshold at Ice Harbor and began spilling at performance spill (30% of outflow) from 0400 to 1200 to facilitate adult fish passage. On May 14 the ASW was positioned to Low Crest. On June 13 the ASW position changed to High Crest. Summer spill operations began as scheduled on June 21. On August 1 at 00:15 hours the ASW was closed per FPP Chapter 8 section 2.3.2.7.e.i, diminished outflows below the 35 kcfs threshold. The ASW was opened on September 1 for 4 daily hours of steelhead overshoot spill operations from 0600 to 1000 hours.

## 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 |
| 23.5 | 17.8 | 1.2 | 1.2 | 67.1 | 66.4 | 6.0 | 5.0 |

*Ladder temperature.

## Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2023. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place.

| Date | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|---|
| 9-6 | 1100 | 0 | 0 | 0 | 0 |
| 9-7 | 1100 | 0 | 0 | 0 | 0 |
| 9-8 | 1100 | 0 | 0 | 0 | 0 |
| 9-9 | 1140 | 0 | 0 | 0 | 0 |
| 9-10 | 1330 | 0 | 0 | 0 | 0 |
| 9-11 | 0745 | 5 | 0 | 0 | 0 |
| 9-12 | 1145 | 0 | 0 | 0 | 0 |

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

Siberian Prawn: Juvenile fish collection will begin March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility will be humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill.

| Date | Sample | Collection* |
|---|---|---|
| 9-6 | 192 | 192 |
| 9-7 | 117 | 117 |
| 9-8 | 133 | 133 |
| 9-9 | 150 | 150 |
| 9-10 | 184 | 184 |
| 9-11 | 123 | 123 |
| 9-12 | 339 | 339 |
| Totals | 1,238 | 1,238 |

*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring on April 4 and completed final monitoring activities on July 23.

Fish Rescue/Salvage: No fish rescue activities took place during the report period.

Research: The Nez Perce Tribe (NPT) commenced adult steelhead kelt collection efforts on March 27 and concluded July 1.

**Project: Lower Granite**
Biologists: Elizabeth Holdren and Steve Lee
Dates: September 6-12, 2024

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

| | OOS | | RTS | | |
|---|---|---|---|---|---|
| **Unit** | **Date** | **Time** | **Date** | **Time** | **Outage Description** |
| 5 | 08/26 | 0717 | 09/11 | 1514 | ANNUAL PM |
| 1 | 09/09 | 0700 | 09/11 | 1139 | Repair bar and repair VBS mesh in slot 1A |

Comments: Unit 1 was scheduled to be out of service to address a minor issue with a VBS bar observed during August inspections that had the potential to damage screen mesh if not addressed. No additional damage was reported.

## Adult Fish Passage Facility

Lower Granite Biologists and EAS staff inspected the adult fishway September 6, 7, 9, and 11.

Fish Ladder:

| Yes | No | NA | Location | Criteria | Comments |
|---|---|---|---|---|---|
| X | | | Fish Ladder Exit Differential | Head ≤ 0.5’ | |
| X | | | Fish Ladder Picketed Lead Differential | Head ≤ 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 | Comments |
|---|---|---|---|---|---|
| X | | | South Shore Entrance (SSE-1) Weir Depth | ≥ 8.0’ | 7.7’, 7.6’, 7.0’ |
| X | | | South Shore Entrance (SSE-2) Weir Depth | ≥ 8.0’ | 7.7’, 7.5’, 7.0’ |
| X | | | South Shore Channel/Tailwater Differential | 1.0’ – 2.0’ | |
| | X | | North Powerhouse Entrance (NPE-1) Weir Depth | ≥ 8.0’ or on sill | 7.5’ |
| | | X | North Powerhouse Entrance (NPE-2) Weir Depth | ≥ 8.0’ or on sill | |
| X | | | North Powerhouse Entrance Channel/Tailwater Differential | 1.0’–2.0’ | |
| X | | | North Shore Entrance (NSE-1) Weir Depth | ≥ 7.0’ or on sill | 6.8’ |
| X | | | North Shore Entrance (NSE-2) Weir Depth | ≥ 7.0’ or on sill | 6.8’ |
| | X | | North Shore Channel/Tailwater Differential | 1.0’–2.0’ | |
| | X | | Collection Channel Surface Velocity | 1.5 – 4.0 fps | |

Comments: Fish ladder control system operation and configuration is an ongoing issue that began when the system was installed in 2016. LWG is looking into inhouse design and install of fish ladder control system based on the system used at LMN. South shore channel velocity readings have been out of criteria for the majority of the season. This is likely due to a faulted sensor as the north collection channel has been in criteria.

Auxiliary Water Supply System:

| Operating Satisfactorily | Standby | Out of Service | Auxiliary Water Supply (AWS) |
|---|---|---|---|
| Yes | X | | AWS Fish Pump 1 |
| Yes | | | AWS Fish Pump 2 |
| Yes | | | 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) | 28.8 $yd^2$ |
| 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:

ESBSs/VBSs:

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

Comments: ESBS/VBS's were inspected August 25 and 26. Unit 1 was taken out of service to repair a section of VBS that a bar apparently went through and resecure the bar September 9-11.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments:

Collection Facility: Collection for truck transport continues.

Transport Summary: Truck transport continues with LWG supporting transport from LGO as necessary.

Spillway Weir: The RSW is operated daily for 4-consecutive hours from about 0600-1000 hours.

PIT tag interrogations: RSW detections included 64,390 juvenile and 119 adult Chinook salmon, 48,218 juvenile and 658 adult steelhead, 8,864 juvenile and 3 adult sockeye, and 2,592 juvenile coho salmon. Juvenile bypass system detections included 10,179 juvenile and 20 adult Chinook salmon, 14,579 juvenile and 86 adult steelhead, 221 juvenile and 4 adult sockeye, and 240 juvenile coho salmon through August 29 (DART).

## 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 | 18.5 | 1.7 | 1.4 | 64.5 | 63.0 | 5.0 | 5.0 |

*Cooling water intake temperature.

## Other

Inline Cooling Water Strainers: N/A

Introduced Species: No zebra/quagga muscles were detected on the trap substrate. Siberian prawns collected in the sample included 20,174 live and 2,255 mortalities this report week with a season total collection of 365,987. All live Siberian prawns are euthanized.

Avian Activity: Biologist daily piscivorous bird counts began April 1. Bird hazing concluded June 30.

| Date | Time | Gulls | Cormorants | Caspian Terns | Pelicans |
|---|---|---|---|---|---|
| Sept 6 | 1335 | 1 | 9 | 0 | 0 |
| Sept 7 | 1215 | 1 | 3 | 0 | 0 |
| Sept 8 | 1235 | 4 | 8 | 0 | 0 |
| Sept 9 | 1100 | 1 | 5 | 0 | 0 |
| Sept 10 | 1410 | 3 | 7 | 0 | 0 |
| Sept 11 | 1150 | 0 | 3 | 0 | 0 |
| Sept 12 | 1220 | 3 | 10 | 0 | 0 |

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: Collection for sampling continues with fish being collected 24-hours per day. Broodstock collection and transport continues. WDFW continues broodstock transport having met about 75% of their goal. Fish are being transported to Lyons Ferry Hatchery 7 days per week until collection goals are met.

Fish Rescue/Salvage: NA.
Research:

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.

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 March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder March 1-November 30. 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.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap will be PIT tagged to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

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.

United States Geological Survey (USGS) Wild Juvenile Fall Chinook Salmon Genetics Sampling:

The goal of this study is to determine the origin of unmarked subyearling Chinook salmon in LWG sample. The USGS has developed an approach to estimate the daily abundance of natural origin subyearling Chinook salmon passing LWG each year. The goal is to collect fin clips from 15 unmarked subyearling on Monday's, Wednesday's, and Friday's May 15 to August 31. Genetic samples will be used to determine origin of unclipped subyearling Chinook salmon thus validating estimates of origin and model abundance.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival study:

Juvenile lamprey (macropthalmia) were collected from LWG sample, as needed, to meet PNNL downriver study objectives. LWG collected a total of 1502 juvenile lamprey this season to support this study.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 1000 juvenile and 500 larval Pacific lamprey, not to exceed 10 juvenile and 5 larvae daily during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate the tribal Pacific lamprey program's efficacy and assist with guiding future management. LWG SMP have collected genetic samples from 930 juvenile and 500 larval lamprey this season.

Idaho Power Hells Canyon Sturgeon Recruitment:

LWG Corps bio techs continue collecting passage and estimated lengths and of White Sturgeon prior to removing them from the separator in support of Idaho Power Sturgeon program.