## 2025 Fish Passage Plan Appendix A Special Project Operations & Studies

# **Table of Contents**

1. INTI	RODUCTION1			
1.1.	Purpose1			
1.2.	Schedule1			
1.3.	Spill for Juvenile Fish Passage1			
1.4.	Navigation Lock Maintenance1			
1.5.	Doble Testing2			
2. BON	NEVILLE DAM			
21	BON Special Operations 3			
2.1.	BON Studies			
3. THE	DALLES DAM			
3.1.	TDA Special Operations			
3.2.	TDA Studies6			
4. JOH	4. JOHN DAY DAM			
4.1.	JDA Special Operations9			
4.2.	JDA Studies9			
5 McN				
5.1	MCN Special Operations 10			
5.2	MCN Studies 11			
5.2.				
6. ICE	HARBOR DAM			
6.1.	IHR Special Operations12			
6.2.	IHR Studies12			
7. LOV	VER MONUMENTAL DAM 13			
7.1.	LMN Special Operations13			
7.2.	LMN Studies14			
8 LITTLE GOOSE DAM 15				
82	LGS Special Operations 15			
83	LGS Studies			
• • • • •				
9. LOV	VER GRANITE DAM			
9.1.	LWG Special Operations			

## 1. INTRODUCTION

## 1.1. Purpose

This Appendix to the annual *Fish Passage Plan* (FPP) describes special project operations and studies planned to occur during the current year that may affect fish passage at the four Lower Snake River and four Lower Columbia River projects. All special operations and studies will be coordinated with the project and appropriate regional agencies. The Corps RCC will issue a teletype to authorize all necessary operational changes and provide guidance to project operators.

## 1.2. Schedule

All dates defined for special operations and studies are approximate and could shift earlier or later due to a variety of factors, including river flow, contractor schedules, equipment failures, or other real-time conditions. Some studies in this Appendix may not be implemented. Therefore, a final description of studies and outages/operations being conducted will be regionally coordinated prior to April 1 as part of the Corps' Anadromous Fish Evaluation Program (AFEP) via the Fish Facilities Design Review Workgroup (FFDRWG) and/or the Studies Review Workgroup (SRWG). The Action Agencies will coordinate all significant operational requests and/or schedule changes with fish agencies and tribes through the appropriate regional forum to inform the final decision.

## **1.3.** Spill for Juvenile Fish Passage

Spring and summer spill operations for juvenile fish passage will be implemented as defined in the *Fish Operations Plan* (FOP; included in the FPP as **Appendix E**), or as otherwise coordinated in-season through TMT.

## **1.4.** Navigation Lock Maintenance

Annual navigation lock outages are scheduled for routine maintenance and inspections, as well as non-routine work (e.g., gate cleaning, structural inspections and repairs, equipment/machinery repair and replacement). The 2025 schedule is as follows:

Project	Lock Outage
BON	March 9–22
TDA	March 9–22
JDA	March 9–22
MCN	March 8–29

Project	Lock Outage
IHR	March 8–29
LMN	March 8–29
LGS	March 8–29
LWG	March 8–29

## **1.5.** Doble Testing<sup>1</sup>

The current year's transformer outage schedule for Doble testing at lower Snake projects and Dworshak Dam is in **Table A-1**.

## 1.5.1. Lower Snake River Projects:

At the Lower Snake projects, Doble testing of transformers is required every three years to ensure they are functioning correctly and to identify issues that need repair. The testing must be conducted during warm, dry conditions (July–August) and requires an outage of the transformer and associated units. Testing is performed during already scheduled outages to the extent possible and timed to avoid or minimize impacts to fish. In years that Doble testing isn't required, the project may still require an outage during the same timeframe to perform necessary transformer maintenance and repairs that were identified in previous Doble tests and inspections. For more information, see project-specific **sections 6-9** below.

## 1.5.2. Dworshak Dam:

At Dworshak Dam, required transformer maintenance and Doble testing occurs every two out of three years starting September 21. For more information on Dworshak maintenance and testing, see **Appendix I**.

Project	Dates	Outage (Transformer & Units)	Notes <sup>b</sup>
IHR	July 14–17	TW1 & TW2 (Units 1, 2) all hours	Remaining available units (3-6) operated per FPP priority order.
LMN	N/A		No Doble Testing in 2025. All units will be OOS August 18-28 for isophase work. See section 7.1 below for details.
LGS	August 4–9	T2 (Units 5, 6) continuous; T1 (Units 1–4) first / last day	All units OOS 0500-1700 first and last day with Unit 4 providing station service. Units 5-6 will remain OOS during the continuous T2 outage with Units 1 – 4 operating per FPP priority order.
LWG	August 11–13	T1, T2 (Units 1–6) continuous	All units OOS all hours. T1 (Units 1-4) RTS Aug 14. T2 (Units 5, 6) RTS Oct 2.
DWR	Sep 22-26	T1 (Units 2, 3) all hours	Unit 3 and T1 500kv line outage for Doble. Unit 2 also OOS for T1 outage.

## Table A-1. Doble Testing Schedule in 2025.<sup>a</sup>

**a**. The lower Columbia projects (BON, TDA, JDA, MCN) perform Doble testing concurrent with outages for maintenance and do not have specific outages for Doble tests.

**b.** OOS = Out of Service (unavailable to operate); RTS = Return to Service (available to operate).

<sup>&</sup>lt;sup>1</sup> "Doble test" is a common term referring to a power factor test of transformers to measure performance of electrical insulation. Doble is the name of a manufacturer of the test equipment.

## 2. BONNEVILLE DAM

## 2.1. BON Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage and navigation lock maintenance.

## 2.2. BON Studies

## 2.2.1. Juvenile Lamprey Passage and Survival (SRWG study code LMP-S-23-1)

- a) <u>Dates</u>: February 28 June 27, 2025
- **b)** <u>Description</u>:

Address management questions about the potential effects of Federal Columbia River Power System (FCRPS) dam operations and configurations on behavior and survival of larval (aka ammocoete) and juvenile (aka macrophthalmia) Pacific lamprey (Entosphenus tridentatus).

## **Objectives**:

- 1. Determine the distribution and approach routes (including vertical, horizontal, and temporal) of acoustic-tagged juvenile (and larval if needed) lamprey in the forebay of The Dalles Dam (TDA) and Bonneville Dam (BON).
- 2. Determine passage route (e.g., spillway, juvenile bypass system [JBS], sluiceway, corner collector, turbine) proportions for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON during period from February through July.
- 3. Estimate forebay-to-tailrace dam passage survival for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON dams.
- 4. Relate project operations and environmental conditions at the time of passage, to assage route selection for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON.
- 5. Estimate reach survival and travel times for acoustic- and PIT-tagged (and larval if needed) lamprey and estimate travel times. Estimate reservoir survival through TDA and BON pools. May require additional detection arrays.

## Methodology:

Juvenile (and larval if needed) Pacific lamprey collected from the bypass systems of Snake and Columbia River dams will be implanted with a juvenile Eel/Lamprey Acoustic Tag (ELAT) or a passive integrated transponder (PIT) and released at two locations in the Columbia River. In 2025, a total of 1,200 juvenile (and larval if needed) lamprey will be implanted with an ELAT and released upstream of TDA (n = 600) or upstream of BON (n = 600). Up to 1,200 juvenile lamprey will be implanted with PIT tags and released concurrently with ELAT-tagged juveniles upstream of BON. Receivers will be deployed on the upstream faces of TDA and BON and at transects across the river channel at multiple locations downstream of TDA to the confluence of the Columbia and Willamette rivers. Detection and reach survival probabilities will be estimated using the singlerelease/recapture model. In addition, 120 dead tagged juvenile lamprey will be released from TDA and 120 from BON to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at TDA and BON, estimate reach survival downstream of TDA, and evaluate travel time between detection arrays.

c) <u>Impact to FPP Criteria</u>: None expected.

## 2.2.2. <u>Adult Pacific Lamprey Passage and Migration Behavior at Lower Columbia River</u> <u>Dams (SRWG study code LMP-P-25-1)</u>

- a) <u>Dates</u>: June 3 August 21, 2025
- **b)** <u>Description</u>:

Evaluations of adult lamprey migration behavior and fate aid interpretation of low conversion rates observed between Lower Columbia dams, particularly those observed from Bonneville Dam (BON) to The Dalles Dam (TDA). Results will provide evaluations of completed lamprey passage projects, help influence prioritization of future fishway modifications at BON, and enlighten the overall strategy for conveyance of adult lamprey past Lower Columbia River dams, including BON, TDA and John Day Dam (JDA).

## **Objectives**:

- 1. Lamprey passage bottleneck identification and prioritization at BON.
  - a. Collect and tag adult Pacific lamprey at BON, release below BON at locations used historically by others (see Noyes et al. 2015). Estimate dam-wide and route specific passage efficiencies and identify remaining passage bottlenecks in the BON fishways using methods comparable to Keefer et al. (2013a).
- 2. Post-construction evaluations of lamprey passage improvements at BON.
  - a. Monitor tagged adult salmonid passage time through the Washington Shore control section to ensure neutral to beneficial effects on salmonid passage through the redesigned (primarily for lamprey) ladder segment. (Analyze PIT detections the first year, evaluate the need for additional objectives in second year.)
  - b. Monitor tagged adult lamprey passage timing and success through the Washington Shore control section to quantify beneficial effects on lamprey passage through the redesigned (primarily for lamprey) ladder segment.
- 3. Determine final fate of adult Pacific lamprey between the tailrace of BON and TDA.
  - a. Collect and tag adult Pacific lamprey from the tailrace or lower ladder segments at BON, release below BON at locations used historically by others (see Noyes et al. 2015), and describe the final fate (distribution, mortality, tributary use, travel times, holdover rates, etc.) of tagged adult Pacific lamprey between BON tailrace and TDA forebay.

## Methodology:

A total of 700 adult Pacific lamprey collected from BON will be equipped with highpower acoustic tags (Sturgeon tags) and passive integrated transponders (PIT) before being released at two locations below the dam: 350 will be released at the Hamilton Island boat ramp on the Washington shore, and 350 will be released at the mouth of Tanner Creek on the Oregon shore.

The acoustic tags will transmit every 5 seconds for half of the tagged fish and every 15 seconds for the other half, allowing for tag lifespans of four months and one year, respectively. This strategy ensures effective monitoring within the BON fishway and helps assess the fate of lamprey that delay their migration.

Detection of the tagged lamprey will be achieved through a combination of autonomous and cabled acoustic telemetry receivers. These receivers will be strategically deployed to evaluate lamprey passage and survival in the BON tailrace, within the fishways, in the BON pool, and throughout tributaries between BON and TDA. They will also be placed in the TDA tailrace, fish ladders, and forebay.

Data from acoustic and PIT detections at the entrances, within, and at the exits of the BON fishways will be used to analyze dam-wide and route-specific passage efficiency, as well as to identify any bottlenecks, following the metrics established by Keefer et al. (2013a) for comparison with previous studies. Acoustic detections upstream and downstream of BON will provide insights into the survival and fate of the tagged adult lamprey for up to one year after tagging.

c) <u>Impact to FPP Criteria</u>: None expected.

## **3.** THE DALLES DAM

## **3.1. TDA Special Operations**

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage and navigation lock maintenance.

## 3.2. TDA Studies

## 3.2.1. Juvenile Lamprey Passage and Survival (SRWG study code LMP-S-23-1)

- a) <u>Dates</u>: February 28 June 27, 2025
- **b)** <u>Description</u>:

Address management questions about the potential effects of Federal Columbia River Power System (FCRPS) dam operations and configurations on behavior and survival of larval (aka ammocoete) and juvenile (aka macrophthalmia) Pacific lamprey (Entosphenus tridentatus).

## **Objectives**:

- 1. Determine the distribution and approach routes (including vertical, horizontal, and temporal) of acoustic-tagged juvenile (and larval if needed) lamprey in the forebay of The Dalles Dam (TDA) and Bonneville Dam (BON).
- 2. Determine passage route (e.g., spillway, juvenile bypass system [JBS], sluiceway, corner collector, turbine) proportions for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON during period from February through July.
- 3. Estimate forebay-to-tailrace dam passage survival for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON dams.
- 4. Relate project operations and environmental conditions at the time of passage, to assage route selection for acoustic-tagged juvenile (and larval if needed) lamprey at TDA and BON.
- 5. Estimate reach survival and travel times for acoustic- and PIT-tagged (and larval if needed) lamprey and estimate travel times. Estimate reservoir survival through TDA and BON pools. May require additional detection arrays.

## Methodology:

Juvenile (and larval if needed) Pacific lamprey collected from the bypass systems of Snake and Columbia River dams will be implanted with a juvenile Eel/Lamprey Acoustic Tag (ELAT) or a passive integrated transponder (PIT) and released at two locations in the Columbia River. In 2025, a total of 1,200 juvenile (and larval if needed) lamprey will be implanted with an ELAT and released upstream of TDA (n = 600) or upstream of BON (n = 600). Up to 1,200 juvenile lamprey will be implanted with PIT tags and released concurrently with ELAT-tagged juveniles upstream of BON. Receivers will be deployed on the upstream faces of TDA and BON and at transects across the river channel at multiple locations downstream of TDA to the confluence of the Columbia and Willamette rivers. Detection and reach survival probabilities will be estimated using the singlerelease/recapture model. In addition, 120 dead tagged juvenile lamprey will be released from TDA and 120 from BON to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at TDA and BON, estimate reach survival downstream of TDA, and evaluate travel time between detection arrays.

c) <u>Impact to FPP Criteria</u>: None expected.

## 3.2.2. <u>Adult Pacific Lamprey Passage and Migration Behavior at Lower Columbia River</u> <u>Dams (SRWG study code LMP-P-25-1)</u>

- a) <u>Dates</u>: June 3 August 21, 2025
- **b)** <u>Description</u>:

Evaluations of adult lamprey migration behavior and fate aid interpretation of low conversion rates observed between Lower Columbia dams, particularly those observed from Bonneville Dam (BON) to The Dalles Dam (TDA). Results will provide evaluations of completed lamprey passage projects, help influence prioritization of future fishway modifications at BON, and enlighten the overall strategy for conveyance of adult lamprey past Lower Columbia River dams, including BON, TDA and John Day Dam (JDA).

## **Objectives**:

- 1. Lamprey passage bottleneck identification and prioritization at BON.
  - a. Collect and tag adult Pacific lamprey at BON, release below BON at locations used historically by others (see Noyes et al. 2015). Estimate dam-wide and route specific passage efficiencies and identify remaining passage bottlenecks in the BON fishways using methods comparable to Keefer et al. (2013a).
- 2. Post-construction evaluations of lamprey passage improvements at BON.
  - a. Monitor tagged adult salmonid passage time through the Washington Shore control section to ensure neutral to beneficial effects on salmonid passage through the redesigned (primarily for lamprey) ladder segment. (Analyze PIT detections the first year, evaluate the need for additional objectives in second year.)
  - b. Monitor tagged adult lamprey passage timing and success through the Washington Shore control section to quantify beneficial effects on lamprey passage through the redesigned (primarily for lamprey) ladder segment.
- 3. Determine final fate of adult Pacific lamprey between the tailrace of BON and TDA.
  - a. Collect and tag adult Pacific lamprey from the tailrace or lower ladder segments at BON, release below BON at locations used historically by others (see Noyes et al. 2015), and describe the final fate (distribution, mortality, tributary use, travel times, holdover rates, etc.) of tagged adult Pacific lamprey between BON tailrace and TDA forebay.

## Methodology:

A total of 700 adult Pacific lamprey collected from BON will be equipped with highpower acoustic tags (Sturgeon tags) and passive integrated transponders (PIT) before being released at two locations below the dam: 350 will be released at the Hamilton Island boat ramp on the Washington shore, and 350 will be released at the mouth of Tanner Creek on the Oregon shore.

The acoustic tags will transmit every 5 seconds for half of the tagged fish and every 15 seconds for the other half, allowing for tag lifespans of four months and one year, respectively. This strategy ensures effective monitoring within the BON fishway and helps assess the fate of lamprey that delay their migration.

Detection of the tagged lamprey will be achieved through a combination of autonomous and cabled acoustic telemetry receivers. These receivers will be strategically deployed to evaluate lamprey passage and survival in the BON tailrace, within the fishways, in the BON pool, and throughout tributaries between BON and TDA. They will also be placed in the TDA tailrace, fish ladders, and forebay.

Data from acoustic and PIT detections at the entrances, within, and at the exits of the BON fishways will be used to analyze dam-wide and route-specific passage efficiency, as well as to identify any bottlenecks, following the metrics established by Keefer et al. (2013a) for comparison with previous studies. Acoustic detections upstream and downstream of BON will provide insights into the survival and fate of the tagged adult lamprey for up to one year after tagging.

c) <u>Impact to FPP Criteria</u>: None expected.

## 4. JOHN DAY DAM

## 4.1. JDA Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage and navigation lock maintenance.

## 4.1.1. Blalock Islands Operation

- a) <u>Dates</u>: April 10 June 1 (or as feasible based on river flows).
- b) <u>Description</u>: As described in the 2020 CRS BA (page 2-57) and included in the 2025 Water Management Plan, the John Day reservoir will be held between elevation 264.5 feet and 266.5 feet (an average of 265.5 feet) from April 10 through June 1 (or as feasible based on river flows) to deter Caspian terns from nesting in the Blalock Islands Complex. The Action Agencies intend to begin increasing the forebay elevation prior to initiation of nesting by Caspian terns to avoid take of tern eggs; operations may begin earlier than April 10 (when the reservoir is typically operated between 262.0 to 266.5 feet). The operation may be adaptively managed due to changing run timing; however, the intent of the operation is to begin returning to reservoir elevations of 262.5–264.5 feet on June 1, but no later than June 15, which generally captures 95% of the annual juvenile steelhead migration. The results of this action will be monitored and communicated with USFWS and NMFS. During the operation, safety-related restrictions will continue, including but not limited to maintaining ramp rates for minimizing project erosion and maintaining power grid reliability. Following this operation, the John Day reservoir elevation will return to MIP through August 31.
- c) <u>Impacts to FPP Criteria</u>: None planned. Any modification to FPP criteria will be coordinated through FPOM.

## 4.2. JDA Studies

No studies planned at JDA in 2025.

## 5. McNARY DAM

## 5.1. MCN Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage and navigation lock maintenance.

## 5.1.1. Fish Ladder Exit, Entrance, Regulating/Tilting Weir Maintenance

- a) <u>Dates</u>: Monthly (Long-Term).
- **b)** <u>Description</u>: The *Oil Accountability Program* PMs maintenance efforts require the project to operate all equipment monthly and semi-annually to assess oil/grease requirements and to ensure seals do not dry out or stick to shafts. The motors for each weir can be operated during the winter outage to exercise seals.
- c) <u>Impacts to FPP Criteria</u>: None planned. Minimal impact due to coordination of outages and use of non-peak adult fish passage times. Any modification or deviation from FPP criteria will be coordinated with FPOM.

## 5.1.2. Spillway Safety Restrictions

- a) <u>Dates</u>: Long Term (year-round).
- **b)** <u>Description</u>: Due to the overloaded condition of the spillway hoists and cranes, most gates will be operated in a split leaf configuration, which splits the upper gate section from the lower gate section. If a gate is operating in the full gate configuration, where the upper gate section is pinned to the lower gate section, the gate must be set down on seal and tagged out before being approached by personal for work. If hoists adjacent to the hoist being worked on are also operating in a full gate configuration, those gates must also be set down on seal and tagged out. This ensures the safety of personnel and equipment.
- c) <u>Impacts to FPP Criteria</u>: Spill pattern changes to support spillway cranes and potential intermittent spill pattern changes due to unforeseen hoist maintenance. Any modification or deviation from FPP criteria will be coordinated with FPOM.

## 5.1.3. Outages for Digital Excitation/Governor Upgrades.

- a) <u>Dates</u>: FY22 FY26
- **b)** <u>Description</u>: Replacing Exciters and Governors with digital systems to upgrade generators to current electrical standards, Mechanical Governor Upgrades, Power House Control Systems Upgrades, Isophase, HV Bus and XJ Switch upgrades.
- c) <u>Impacts to FPP Criteria</u>: Unit priority will be affected, and commissioning requirements will require exceeding 1% during testing of Over Speed Protection, Upper and Lower Excitation Limits, Mechanical Governor Response Times, and other reliability tests necessary. Some specific testing will require raising ESBSs during testing, especially

when determining new Generator Capability Curve data. Due to the extended period of these contracts, raising ESBSs and exceeding 1% may occur at any time of year.

## 5.1.4. <u>Waterfowl Nesting</u>

- a) <u>Dates</u>: April through July (annually).
- **b)** <u>Description</u>: Since 1982, McNary pool is operated for waterfowl nesting on Lake Wallula annually from late April through early July. During this operation, the McNary pool may be restricted to an operating range of 337'-340' elevation. Pool elevations are also operated in the range of 338.5'-339.5' for 4-6 hours during daylight hours at least once every 4 days.
- c) <u>Impacts to FPP Criteria</u>: None. Provided for informational purposes only.

## 5.1.5. Transformer Gasket Replacement, Capitol Project.

- a) <u>Dates</u>: April to October.
- b) <u>Description</u>: Transformer gasket replacement will occur with associated unit outages.
- c) <u>Impacts to FPP Criteria</u>: When a unit is out of service for transformer gasket replacement, the next available unit in the priority order will be operated.

#### 5.2. MCN Studies

#### 5.2.1. Spill Evaluation Study

- a) <u>Dates</u>: March June 2025
- b) <u>Description</u>: Juvenile Chinook salmon yearlings and steelhead will be collected and transferred to contractors for outfitting with acoustic transmitters and release upstream of McNary Dam. Fish will be tracked during their downstream migration past Bonneville Dam.
- c) <u>Impacts to FPP Criteria</u>: None anticipated. Any modification to FPP criteria will be coordinated through FPOM.

## 6. ICE HARBOR DAM

## 6.1. IHR Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage, navigation lock maintenance, and Doble testing.

## 6.1.1. <u>Unit 1 Turbine Runner Replacement</u>

- a) <u>Dates</u>: Ongoing through 2026.
- **b)** <u>Description</u>: Unit 1 will be out of service through 2026 to replace the runner. After the unit is returned to service, commissioning will require full load rejection testing (10 days), which needs to be completed with no submerged traveling screens (STS) installed.
- c) <u>Impacts to FPP Criteria</u>: While Unit 1 is out of service and unavailable for operation, the project will operate the next available unit in the FPP priority order. Full load rejection testing will be coordinated with FPOM via a separate MOC.

#### 6.1.2. <u>Doble Testing (see section 1.5 above for more information)</u>

- a) <u>Dates</u>: Summer (annually). In 2025, the outage is scheduled for July 14–17
- **b)** <u>Description</u>: The outage in 2025 is required to perform Doble testing of TW1 and TW2, which will take Unit 2 out of service continuously during testing (Unit 1 will already be out of service for runner replacement). Remaining available units (3–6) will be operated per FPP priority order.
- c) <u>Impacts to FPP Criteria</u>: None. Since Ice Harbor has multiple transformer banks and transmission lines and redundant switching capability, remaining available units will be available and operated pursuant to FPP priority order.

#### 6.2. IHR Studies

There are no studies planned at Ice Harbor Dam in 2025.

## 7. LOWER MONUMENTAL DAM

## 7.1. LMN Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage, navigation lock maintenance, and Doble testing.

## 7.1.1. Lower Monumental Head Gate Rehab

- a) <u>Dates</u>: Ongoing through 2029.
- b) <u>Description</u>: Under the BPA Large Cap Program, parts and materials have been acquired to rehabilitate the head gates at Lower Monumental Lock and Dam. The work started in December 2012. To facilitate the process, units will be scheduled out of service to remove or replace head gates. The head gates will be serviced in the repair pit and then placed back into service.
- c) <u>Impacts to FPP Criteria</u>: Deviation from unit priority will be necessary to swap head gates from the unit to the pit. The duration of the outage is expected to be one day.

## 7.1.2. Model Validation Testing

- a) <u>Dates</u>: January through March
- b) <u>Description</u>: Western Electricity Coordinating Council (WECC) requires steady state model validation testing periodically to ensure generating equipment will meet real and reactive power ratings. All units are tested on a one to two-year cycle. Tests are also required when equipment is replaced or upgraded. Tests will require running the unit out of FPP priority and outside the 1% range. Testing can occur any time from January 1 March 31 and will not occur during peak juvenile fish passage (April 1 August 31). Test will preferably be conducted just after annual maintenance but may happen at other times. Test durations will be minimized to the extent possible and will only be run for the purpose of completing required model validation testing.
- c) <u>Impacts to FPP Criteria</u>: May require running a unit out of FPP priority and outside 1%.

## 7.1.3. T-1 Iso phase Work and Insulator Cleaning

- a) <u>Dates</u>: August 18–28
- b) <u>Description</u>: During the outage, T-1 (Units 1–4) and T-2 (Units 5, 6) will be out of service from 0700 hours August 18 to 1700 hours August 28 to support the cleaning of the insulators and Iso Phase work on T-1. The Iso Phase work entails the removal of the insulated outer clamshell sections of the transformer to replace the gasket and insulating material. This work prevents water intrusion into the Iso Phase system and prevents

circulating currents and excess voltage from damaging the equipment. Both transformers will need to be taken OOS due to human and equipment impacts.

c) <u>Impacts to FPP Criteria</u>: All units will be OOS service during the work. Unit 5 will likely be used for station service (approximately 8 kcfs) and the rest of project outflow spilled.

## 7.1.4. <u>Doble Testing</u> (see section 1.5 above for more information)

- a) <u>Dates</u>: N/A (no outage for Doble in 2025)
- **b)** <u>Description</u>: N/A
- c) Impacts to FPP Criteria: N/A

## 7.2. LMN Studies

There are no studies planned at Lower Monumental Dam in 2025.

## 8. LITTLE GOOSE DAM

#### 8.2. LGS Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage, navigation lock maintenance, and Doble testing.

#### 8.2.1. <u>Doble Testing (see section 1.5 above for more information)</u>

- a) <u>Dates</u>: Summer (annually). In 2025, the outage is scheduled for August 4–9.
- b) <u>Description</u>: The 2025 outage is required to perform T2 Doble testing. T2 (Units 5, 6) will be Doble tested and out of service continuously through the entire outage period. T1 (Units 1-4) will be out of service August 4 (first day) and August 9 (last day) from 0500–1700 for LGS 500 kv line isolation allowing prework disconnect and post work reconnect activities. During all other hours, Units 1–4 will be operated per FPP priority order with Unit 4 providing station service.
- c) <u>Impacts to FPP Criteria</u>: On August 4 and August 9, all units will be out of service from 0500-1700 and all project outflow spilled.

#### 8.3. LGS Studies

#### 8.3.1. Kelt Collection & Reconditioning

- a) <u>Dates</u>: April to July
- b) <u>Description</u>: The Nez Perce Tribe (NPT) Department of Fisheries Resources Management will collect wild/natural post-spawned, emigrating steelhead from the separator at Little Goose Juvenile Fish Facility. These fish will be transported to the Nez Perce Tribal Hatchery (NPTH) or Dworshak National Fish Hatchery (DNFH) to be utilized in the kelt reconditioning program.
- c) <u>Impacts to FPP Criteria</u>: None.

## 9. LOWER GRANITE DAM

## 9.1. LWG Special Operations

Special project operations that may require deviations from FPP criteria will be coordinated with FPOM either by inclusion in this Appendix or in-season via a Memo of Coordination (MOC), pursuant to **FPP Chapter 1 (Overview)**. See **section 1** above for special operations related to spill for juvenile fish passage, navigation lock maintenance, and Doble testing.

#### 9.1.1. <u>Head Gate Repair</u>

- a) <u>Dates</u>: Bi-Monthly (long-term).
- b) <u>Description</u>: This is a long-term program to return head gates to a safe operating condition by adding new roller chain, seals, anodes, and other miscellaneous components. The plan will require brief unit outages throughout the year while transporting rebuilt gates from the turbine units to the repair pit and back. Each swap will take 4–6 hours to complete and occur approximately every 2 months.
- c) <u>Impacts to FPP Criteria</u>: None anticipated. Head gate movements are expected to take place concurrently with other outages. As the program progresses and fewer head gates need repair, it may require an occasional outage on a priority unit. Available units will be operated pursuant to FPP priority order within  $\pm 1\%$  of peak turbine efficiency.

## 9.1.2. ESBS Repair

- a) <u>Dates</u>: Bi-Monthly (long-term).
- **b)** <u>Description</u>: This is a long-term program to return ESBSs to a safe operating condition by tearing down, repainting, and rebuilding the screens. The plan will require brief unit outages throughout the year while transporting rebuilt ESBSs from the turbine units to the repair pit and back. Each swap will take 4–6 hours to complete and occur approximately every 2 months.
- c) Impacts to FPP Criteria: None anticipated. ESBS movements are expected to take place concurrently with other outages. As the program progresses and fewer screens need repair, it may require an occasional outage on a priority unit. Available units will be operated pursuant to FPP priority order within  $\pm 1\%$  of peak turbine efficiency.

## 9.1.3. <u>Doble Testing</u> (see section 1.5 above for more information)

- a) <u>Dates</u>: Summer (annually). In 2025, the outage is scheduled for August 11–13.
- b) <u>Description</u>: The outage in 2025 requires T1 and T2 (all units) out of service all hours August 11–13 to install a bus connection. T1 (Units 1-4) will return to service August 14. T2 (Units 5, 6) will remain out of service through October 2 to perform Doble testing and additional transformer work. A second outage of all units will be required September 29– October 2 to reconnect the bus.
- c) <u>Impacts to FPP Criteria</u>: All units will be out of service all hours from August 11 through August 13 and from September 29 through October 2. During these hours, all project

outflow will be spilled except approximately 8 kcfs through Unit 5 for station service power.

#### 9.2. LWG Studies

#### 9.2.1. Collection of Juvenile Chinook salmon Yearlings and Steelhead for Spill Evaluation

- a) <u>Dates</u>: March June 2025
- b) <u>Description</u>: Juvenile salmon and steelhead will be collected at the JFF and transferred to contractors for outfitting with acoustic transmitters and release upstream of Lower Granite Dam. Fish will be tracked during their downstream migration past Bonneville Dam.
- c) <u>Impacts to FPP Criteria</u>: None anticipated. Any modification to FPP criteria will be coordinated through FPOM.

## 9.2.2. Genetic Stock Identification (Idaho Department of Fish & Game)

- a) <u>Dates</u>: March 1 June 28
- b) <u>Description</u>: Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling Chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling Chinook and juvenile steelhead genetic samples.
- c) Impacts to FPP Criteria: None.

## 9.2.3. Kelt Study (Nez Perce Tribe, University of of Idaho, CRITFC)

- a) <u>Dates</u>: March 1 June 29
- **b)** <u>Description</u>: This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. Selected kelts collected at Lower Granite are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study.
- c) Impacts to FPP Criteria: None.

## 9.2.4. <u>PIT-Tag Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal</u> <u>Monitoring (NOAA Fisheries)</u>

- a) <u>Dates</u>: TBD
- **b)** <u>Description</u>: The goal of this project is to PIT-tag up to 4,000 unclipped adult Chinook and 4,000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.
- c) <u>Impacts to FPP Criteria</u>: None.

#### 9.2.5. <u>Sampling of Adult Steelhead, Chinook, and Sockeye for Biological Data Collection</u> (IDFG and NOAA Fisheries)

a) <u>Dates</u>: April 4 – December 15

- b) <u>Description</u>: Upriver migrating adult steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap from April 4 through December 15. The goal is to collect 5–20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder. 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 may 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.
- c) <u>Impacts to FPP Criteria</u>: None.

#### 9.2.6. Bull Trout PIT-Tagging and Genetic Sample Collection for USFWS

- a) <u>Dates</u>: April 4 December 15
- b) <u>Description</u>: Bull trout will be collected as part of the normal adult trap daily sample and using the adult sort-by-code (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.
- c) Impacts to FPP Criteria: None.

#### 9.2.7. Subyearling Chinook Parentage-Based Tagging (USGS)

- a) <u>Dates</u>: June 1–15 and July 1–15
- b) <u>Description</u>: The goal of this project is to determine the abundance of unmarked, untagged, natural- and hatchery-origin subyearling Chinook in Lower Granite sample collection. Fin clips will be taken from 30 unclipped, untagged subyearling Chinook each day from June 1-15 and for another two weeks in July depending in fish passage numbers.
- c) <u>Impacts to FPP Criteria</u>: None.

# 9.2.8. <u>Collection of Adult Fall Chinook and Coho for Hatchery Broodstock – (WDFW and Nez Perce Tribe)</u>

- a) <u>Dates</u>: August 18 until broodstock requirements are met
- **b)** <u>Description</u>: Adult fish are collected in the adult trap. Fall Chinook are transported by WDFW employees to Lyons Ferry hatchery and by NPT employees to Dworshak hatchery. Coho are transported by NPT and transported to Dworshak hatchery.
- c) Impacts to FPP Criteria: None.

#### 9.2.9. <u>RSW Outage for Inspections and Maintenance</u>

a) <u>Dates</u>: September 8-25

- b) Description: Spillbay climbing inspections are performed annually in September-October on a four-year rotation with two spillbays inspected each year. Inspections require the spillbay to be removed from service and bulkheaded off and for the adjacent spillbays to be taken out of service. Spillbays 3-8 inspections will be completed after the four hours of RSW spill in the morning and will not impact FPP/FOP criteria. Spillbays 1 and 2 inspections are scheduled *every four years*, with the next inspection due in 2025. During these inspections, spillbays 1, 2, and adjacent bay 3, will be closed and an equivalent RSW spill rate (7 kcfs) will be diverted through available deep spillbays for 4 continuous hours every morning. In 2025, LWG will also be completing calibration of spillbay gate position indication sensors installed during the 2024 spillbay inspection outages.
- c) <u>Impacts to FPP Criteria</u>: Spillbays 1&2 (and adjacent bay 3) will be out of service from September 8 through September 25. During these dates, the daily 4-hour block of surface spill will be diverted through deep spillbays 4-8 at an equivalent RSW spill rate of 7 kcfs.