# Fish Passage Plan (FPP) Change Form

**Change Form # & Title**: 22LWG004 – Orifice Operation

**Date Submitted**: 26-JAN-2022

**Project**: Lower Granite Dam

**Requester Name, Agency**: Elizabeth Holdren, USACE NWW

**Final Action: APPROVED 10-FEB-2022**

**FPP Section**: Chapter 9 – Lower Granite, sections 2.3.2.3.(i) & 3.2.2.2.

**Justification for Change**: Provide operating personnel with consistent language in the FPP to eliminate confusion. Sections 2.3.2.3. and 3.2.2.2. both state a unit will be taken out of service after 5 hours if both orifices need to be closed for maintenance and/or debris. Section 3.2.2.2. also states that a unit will be taken out of service if both orifices in a gatewell are closed. This has led to some confusion.

In the rare event that both orifices would need to be closed the 5-hour window allows the Project time to evaluate the problem, gather equipment and personnel, and address the issue.

**Proposed Change**:

* + - 1. **Collection Channel.**

Maintain orifices clean and operating. Operate at least one orifice per gatewell slot (preferably the south 14” orifice) unless a unit is scheduled out of service with non-operational fish screens. If the project is operating within the Minimum Operating Pool (MOP), additional orifices may be opened to increase water velocity in the collection channel and reduce passage time from the bulkhead slots to the primary dewatering structure. If orifices must be closed to repair any part of the facility, do not close orifices in operating units with ESBSs in place for longer than 5 hours, preferably less than 3 hours. Reduce turbine unit loading to the lower end of the 1% range if deemed necessary by the Project biologist. Monitor fish conditions in gatewells hourly or more frequently during orifice closure periods.

**3.2.2.2. Gatewell Orifices.** Each turbine intake slot has two pneumatically operated valves in the bulkhead slot for allowing the fish enter the juvenile bypass system. LWG gatewell slots have one 10” orifice (north side) and one 14” orifice (south side). A minimum of 18 orifices (one per gatewell slot) are operated with the 14” orifice in each gatewell prioritized to minimize debris obstruction. Additional orifices are operated to hasten fish departure based on forebay elevation and bypass system hydraulic capacity. Orifices are backflushed at least once per day to clear debris blockage that may or may not be visible during visual inspections. A damaged orifice will be closed and the alternate orifice for that gatewell operated until repairs can be made. Gatewells with both orifices closed shall be monitored hourly (operating unit) or every 2 hours (non-operating unit). The unit may be removed from service at the Project Biologist discretion depending on fish numbers and condition in the gatewell slot. If repairs take longer than 48 hours, juvenile fish will be dipped from the gatewell with a gatewell dip basket in accordance with the project dewatering and fish-handling plan. Gatewells will be dipped sooner if any signs of fish stress, condition issues, or high densities are observed at the Project Biologist discretion.

**Comments**:

1/27/22 FPOM FPP Meeting:

This was just submitted yesterday so FPOM needs more time to review.

PENDING further review and discussion at the Feb 10 FPOM meeting.

2/10/22 FPOM:

St. John noted that this change corrects the discrepancy between sections. The intent is to make the language clearer and consistent across the projects.

**Record of Final Action**:

Approved for MCN and the four Snake projects at FPOM on 2/10/22.