# Fish Passage Plan (FPP) Change Request Form

**Change Form # & Title**: 17BON008 – Turbine Operating Range

**Date Submitted**: March 9, 2017

**Project**: BON

**Requester Name, Agency**: Corps NWP

**Final Action:** **APPROVED 3/9/2017**

**FPP Section**: BON 5.2. Turbine Unit Operating Range.

**Justification for Change**: The PH2 mid-range operation was coordinated in 2014 as a temporary solution to improve fish passage conditions until all gatewells were modified with FGE improvements (see Change Form [14BON001](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2014/changes/), as modified in [15BON006](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2015/changes/)). As of mid-March 2017, all PH2 gatewells have been modified with flow control plates and reduced-porosity VBS panels. A hydroacoustic study will be conducted in 2017/2018 to estimate fish passage metrics at all PH2 routes (see FPP Appendix A for more information).

Now that all PH2 gatewells have been modified, the FPP section on the temporary PH2 mid-range operation can be deleted. The project will resume operating PH2 within the full 1% range Apr 1-Oct 31, with a soft constraint to avoid the lower 1% Apr 10-Jun 15. PH1 may be operated up to the Best Operating Point (BOP), which was added to the FPP in 2013 based on TSP studies and ERDC modeling (see Change Form [13BON006](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2013/changes/), as revised in [14BON014](http://www.nwd-wc.usace.army.mil/tmt/documents/fpp/2014/changes/)).

**Proposed Change**: Revise 5.2.1, delete 5.2.3 (see below for edits in track changes)

**5.2. Turbine Unit Operating Range.**

**5.2.1.** From April 1 through October 31, turbine units will be operated within ±1% of peak efficiency (1% range), as specified in *BPA Load Shaping Guidelines* (**Appendix C**). Turbine units at PH1 may be operated up to the Best Operating Point (BOP). Lower and upper limits of the operating ranges at PH1 and PH2 are defined in **Tables BON-14** and **BON-15**, respectively.

**5.2.1.1.** From April 10 through June 15, as a soft constraint, PH2 units should not be operated below the 1% mid-range (<13 kcfs) to minimize turbulence that may impact fish that pass through the turbines.

**5.2.2.** While not required to do so in the off-season, November 1–March 31, units will normally be operated within the 1% range since it is the optimum point for maximizing energy output of a given unit of water over time. Operation outside the 1% range is allowed if needed for power generation or other needs.

**Comments**:

**Record of Final Action**: APPROVED at FPOM 3/9/17