Sustainable Rivers Program

Summary of Process to Develop E-Flow Implementation Guidance Willamette River, Oregon

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Prepared by Portland District, U.S. Army Corps of Engineers

Sustainable Rivers Project (SRP)
Summary of Process to Develop Environmental Flow Implementation Guidance

The Army Corps of Engineers (Corps) Portland District (NWP) approved the memorandum titled "Implementation of Environmental Flows in the Willamette Valley" on July 17, 2015. The goal of the memorandum was to document district approval for implementation of environmental flows (e-flows) on the Middle Fork Willamette, the McKenzie, and Santiam rivers and to provide implementation guidance for current and future water regulators and operators in the Willamette Valley. On October 1, 2015, the Corps of Engineers Northwest Division (NWD) approved the environmental flow recommendations as described in the July memorandum for incorporation into Portland District's Willamette Valley Project water control manuals (WCMs).

The incorporation of environmental flows into the Willamette Valley WCMs was a culmination of a coordinated process between the Corps and The Nature Conservancy (TNC), under the Sustainable Rivers Project (SRP). The SRP resulted from a partnership between the Corps and TNC and is described in three Memorandum of Understanding (MOU), including a local MOU that was signed in 2004 between TNC Oregon Chapter and Portland and Walla Walla districts, a National MOU signed in 2007, and a Regional MOU signed in 2009. The partnership between TNC and the Corps has the objective of developing, implementing, and refining a framework for producing beneficial flows downstream of Corps dams. For the Portland district the focus was on the Willamette River and its tributaries. The Corps' Institute of Water Resources (IWR) partially funded and facilitated the work between TNC and Portland District.

Under the SRP e-flow targets are developed through a process of collecting and synthesizing relevant hydrologic, ecological, and expert knowledge into a set of e-flow recommendations. For the Willamette, environmental flow recommendations were developed through a series of workshops focusing on three principal subbasins: 1) the Middle Fork Willamette River, 2) McKenzie River, and 3) the Santiam River. These workshops were conducted with regional water resource and ecosystem/biological experts for the development of the basin environmental flow recommendations in 2007, 2010, and 2013 respectively. Separate summary reports were written for each workshop to document the process and development of the recommendations.

Several analyses were performed to evaluate how e-flow releases might be "operationalized" and to determine their potential downstream impacts. These studies were conducted to identify and minimize the risk from e-flow implementation. Two reports were prepared documenting these studies; a technical memorandum titled "Middle Fork/Coast Fork Willamette Uncertainty Forecast Analysis", completed September 30, 2011, and the "Final Report Sustainable Rivers Project Evaluation of E-flow Implementation and Effects in the Willamette Basin using ResSim Modeling", completed in July 2013.

Results from these studies demonstrated that 1) forecast uncertainty (within the limitations of the data used) was not higher than current operational assumptions, in light of an analysis of the observed forecasts, and 2) Reservoir System Simulation (HEC-ResSim) modeling verified that e-flow operations were feasible and that these operations were permissible under the current WCM

regulations. With these results in hand the team proceeded to map out a framework for implementing e-flows that would be acceptable under Corps regulations.

A meeting was held on December 5, 2013 to discuss study results and to develop a process that would culminate with an SRP implementation plan. Personnel from Portland District, including Hydrology and Hydraulics sections and Willamette Valley Project, Northwestern Division Water Management, IWR, and TNC attended the meeting. The attendees were in agreement that e-flows could be implemented under the WCM constraints. The final determination on an appropriate path forward was that a memorandum for the record (MFR) would be written and circulated for approval within the District and Division. The MFR would outline the applicable Standard Operating Procedures (SOPs), and include the language (goals, constraints, communication, etc.) that would go into the WCM updates. The MFR would be short and reference the reports and studies that formed the basis for the implementation guidance. The MFR was considered the best tool for documenting the background, implementation guidelines, and District and Division approval for e flow operations.

The memorandum was drafted by Portland District with input and review by TNC. Portland District Office of Counsel reviewed the MFR and provided feedback that resulted in specific operational considerations being included in the document as well as inclusion of adaptive management components. This process resulted in modifications of the original e-flow recommendations from the expert workshops. Additionally, monitoring of e-flow effects (e.g., using HOBO stage and flow data loggers) was made part of the memorandum recommendations for e-flow implementation.

Part of the approval process included an evaluation for compliance with the National Environmental Policy Act (NEPA). A Record of Environmental Consideration (REC) was prepared by Portland District with a finding of no effect, again with legal review and approval.

In July 2015, the final environmental flow implementation MFR was circulated and signed by the District Commander. Northwestern Division approved incorporation of the environmental flow recommendations into the WCM on October 1, 2015.