WATER QUALITY MODELING FOR THE WILLAMETTE VALLEY SYSTEM EIS AND BA

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The U.S. Army Corps of Engineers (USACE) Portland District manages a complex operation of the Willamette Valley System (WVS) that includes storing and releasing water from the 13 system reservoirs to balance various needs and demands throughout the year such as flood control, fish and wildlife, hydropower, recreation, irrigation, water supply, water quality, and navigation. USACE has prepared a draft Willamette Valley System Operations and Maintenance Programmatic Environmental Impact Statement (PEIS) and Biological Assessment (BA) in accordance with the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA). These documents outline a Proposed Action for continued operation and maintenance of the Willamette Valley System for specific, authorized purposes in compliance with the ESA and all other applicable treaties, laws, and regulations. The PEIS and BA describe and evaluate impacts related to a No Action Alternative and seven action alternatives, including a Preferred Alternative, that address the Proposed Action. The alternatives are suites of measures for Willamette Valley System management options that vary among the alternatives. Measures are characterized into general categories, including flow, water quality, downstream fish passage, and upstream fish passage. A series of models were used to simulate the water quantity and quality conditions in each alternative. In cooperation with U.S. Geological Survey Oregon Water Science Center, water temperature models previously developed for each major WVS reservoir and sub-basin were knitted together to form a network; simulating potential conditions under each alternative. Likewise, USACE developed and applied models of Total Dissolved Gas (TDG) for the major WVS tributaries to evaluate the impacts to aquatic life in each alternative. These water quality model results provide insights for many operations (e.g., drawdowns, delayed refill) and structures (e.g., selective withdrawal temperature towers) that have yet to be tested or implemented. The results were passed along to fish modeling teams for this project, summarized for the draft PEIS and BA, and presented here.