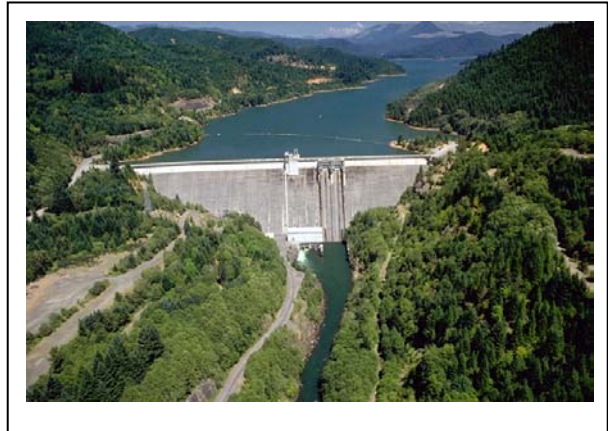




Green Peter and Foster Reservoirs CE-QUAL-W2 Modeling

WEST Consultants, Inc. (WEST) was tasked by the Portland District, U.S. Army Corps of Engineers (District) to investigate impacts to downstream temperatures due to varying flows in the reach of Green Peter and Foster Reservoirs located southeast of Salem, Oregon. The CE-QUAL-W2 model was used to perform this analysis in conjunction with the Watershed Modeling System (WMS) model interface. This work was conducted under IDIQ contract DACW57-02-D-0005 Delivery Order 0005 with the District.



The District recognizes an increasing need for temperature models of the large storage projects in the Willamette System because of upcoming temperature Total Maximum Daily Loads (TMDLs) and ESA issues. Models of the large storage reservoirs in the Willamette System would help in producing temperature TMDLs for the Willamette. The models would allow the District to play “what if” scenarios that allow determination of impacts to downstream temperatures resulting from target temperature releases of water discharged from the projects. The models also would allow the Corps of Engineers to address Reasonable and Prudent Alternatives (RPAs) in the Willamette Biological Opinion regarding salmon and steelhead. The model will help the District predict the impact of operations on in-lake water quality.



The CE-QUAL-W2 model consists of two water bodies, the Green Peter and Foster Reservoirs, and inflows from Quartville Creek, Middle Santiam River, and South Santiam River. Local inflow to the two reservoirs is accounted for by performing an annual water balance between the inflow of these three major rivers, outflow from the dams (power and spillway discharge), and change in storage. The models are being tested for sensitivity to segment and layer dimensions, as well as model variables. Calibration will be conducted to both discrete and time series values of temperature. The calibrated model will then be applied to simulate approximately 30 years of reservoir operation using continuous flow and meteorologic data. District personnel will be trained in use of the model upon completion of the project.

Project Owner:

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Completion Date: *December 2004 (Estimated)*