Willamette River Temperature TMDL

CE-QUAL-W2 Model

The CE-QUAL-W2 Model Version 3.1 has been applied to the Willamette River main stem system. The Oregon Department of Environmental Quality and the U.S. Army Corps of Engineers funded this project. Work elements were performed by the Department of Civil and Environmental Engineering, Portland State University , Oregon Department of Environmental Quality (ODEQ), and the Portland office of the U.S. Geological Survey (USGS) to set-up and calibrate the system model to field data for the summers of 2001 and 2002. The river basin model was originally divided into several reaches. Individual models were developed for each reach. These reaches were:

- **Columbia River** - from Beaver Army Terminal (Columbia River Mile 53.8) to Bonneville Dam (RM 144.5) (Willamette River enters the Columbia River at Columbia River Miles 87 and 101);
- **Tidal Willamette River** – Lower Willamette River from mouth to Willamette Falls (RM 26.5), including the Willamette Channel and the Multnomah Channel;
- **Non-tidal Willamette River** – Willamette Falls (RM 26.5) to confluence of Coast and Middle Forks (RM 187); this section was divided further into the following reaches: Middle Willamette from the Willamette Falls (RM 26.5) to the city of Salem (RM 85); Upper Willamette from the City of Salem (RM 85) to the confluence of Coast and Middle Forks (RM 187)
- **Clackamas River** up to River Mill Dam/Estacada Lake (RM 26);
- **Santiam River** (all 12 miles)[USGS], North Santiam River up to Detroit Dam (RM 49)[USGS], South Santiam River up to Foster Dam (RM 38)[ODEQ];
- **Long Tom River** to Fern Ridge Dam (RM 26);
- **McKenzie River** to RM 56, and South Fork McKenzie River to Cougar Dam (RM 4);
- **Middle Fork Willamette** to Dexter Dam (RM 17), Fall Creek to Fall Creek Dam (RM 7);
- **Coast Fork Willamette** to Cottage Grove Dam (RM 30), Row River to Dorena Dam (RM 7.5);

Reports for the model years 2001 and 2002 are downloadable below:

#	File	Comment	File Size	Posted
1	Model Boundary Conditions and Setup	for 2001 and 2002 Final Version, no changes since Draft Version.	30 MB	September 2, 2004
2	Model Calibration	for 2001 and 2002 Final Version	8 MB	September 2, 2004
3	Model Scenarios	for 2001 and 2002 Final Version, no changes since Draft Version.	12 MB	September 2, 2004

Calibrated model input files used by ODEQ for developing 2001 and 2002 TMDL model scenarios:

#	Model Piece	Description	Model Year	Model Year
3	Lower Willamette River (includes Columbia River)	RM 0.0 to 26.5	2001	2002
4	Middle Willamette River	RM 26.5 to 85.0	2001	2002
5	Upper Willamette River	RM 85.0 to 187.0	2001	2002
6	Coast Fork Willamette River and Middle Fork Willamette River (includes Row River and Fall Creek)	CF RM 0.0 to 28.9 MF RM 0.0 to 16.5	2001	2002
7	Lower Clackamas River	RM 0.0 to 26.5	2001	2002
8	Santiam/North Santiam River	RM 0.0 to 61.6	2001	2002
9	South Santiam River	RM 0.0 to 36.5	2001	2002
10	McKenzie River	RM 0.0 to 60.8	2001	2002
11	Long Tom River	RM 0.0 23.7	2001	2002

The North Santiam and Santiam models were developed by the Portland office of the U.S. Geological Survey. Information on the U.S. Geological Survey study on the North Santiam and Santiam River can be obtained via: http://oregon.usgs.gov/projs_dir/will_tmdl/model.html. For questions, please contact Dennis Ades, Oregon Department of Environmental Quality, at ades.dennis.r@deq.state.or.us.

The model input files for 2001 and 2002 were refined further to improve the calibration. The model refinements are minor and do not affect the the overall results provided by the models listed in the table above. The refined models are available below and a technical memorandum describing the model changes can be download here:

#	Model Piece	Description	Model Year	Model Year
1	Lower Willamette River (includes Columbia River)	RM 0.0 to 26.5	2001	2002
2	Middle Willamette River	RM 26.5 to 85.0	2001	2002
3	Upper Willamette River	RM 85.0 to 187.0	2001	2002
4	Lower Clackamas River	RM 0.0 to 26.5	2001	2002
5	McKenzie River	RM 0.0 to 60.8	2001	2002
6	Long Tom River	RM 0.0 23.7	2001	2002