

WATER QUALITY

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Summary of Research

Dr. Wells conducts research in the areas of water quality and hydrodynamic modeling of surface water systems - lakes, reservoirs, rivers, estuaries. This research focuses on the development of mathematical computer models to simulate the flow, water level, temperature, and water quality (algae, nutrients, suspended solids, bacteria) of surface waters. These models are used to evaluate what management strategies can be used to improve water quality and bring the water body in line with state and federal water quality standards.

Faculty have modeled almost 100 different water body systems that are located in the Northwest and around the world. Currently faculty are working closely with Oregon DEQ and Washington Ecology of several very controversial water-body TMDL (Total Daily Maximum Load) projects.

Potential for Commercialization and Job Creation

Potential commercialization would be in the copyrighting of the software tools. But since much of this work is federally funded, the software is available in the public domain.

Total Research Funding

Over the last 14 years, total funding is approximately \$3 million. Sources include: Federal: Corps of Engineers, Forest Service, EPA, NOAA, NSF, USGS; State: Oregon DEQ, Washington Dept of Ecology; Local and Private: Clackamas County; City of Portland, METRO; City of Spokane WA; King County WA, Middle Fork Irrigation District; CDS Technologies Inc., Montgomery Watson; Indian Tribes: Spokane Tribe of Indians

Student Involvement

Graduate students work on development of a computer simulation model specific to a body of water. For example on the Willamette basin model which included over 100 km of river, three Master's students, one PhD student and one Post-doc worked on various aspects of the model for a period of from 1-2 years. High school students routinely work in this research group over the summer through the Apprenticeship in Science and Engineering. Currently, a research group including 1 post-doc and 2 PhD students are involved in this work.

Website

<http://www.cce.pdx.edu/w2>