

## **2008 OSU Federal Agenda (Federal FY 2009)**

### **Proposal Category I: New Project**

**Name of Project:** Oregon Water Institute (OWI)

**Amount of Funding Requested:** \$1.5 million per year for 5 years

**Likely Sources of Federal Funds for this Project:**

U.S. Department of the Interior (Dol) is a likely source because of its strong resource-management responsibility and its role as funder of the state water resources research institutes (IWW is Oregon's institute). US Geological Survey.

**Summary of the Project:**

***Problem***

Oregonians are witnessing the difficulties caused by water limitations and facing critical choices about fresh water. Climate change is causing earlier melting of the Cascades snowpack, resulting in the loss of "free water storage" and its implications for water deliveries that are out of phase with the existing water resource systems and ecosystems. Sustainable water supplies for development, ecosystem maintenance, and power generation may be adversely affected by increased population, climate change, and renegotiation of the Columbia River Treaty. Conflict over water exists in places like the Klamath River Basin. Communities are seeking more voice in managing their water resources. And since water is "virtually" embedded in all Oregon products, whether natural or manufactured, the state's economic vitality is tied directly to water.

Current water-related challenges are on an unprecedented scale and require solutions incorporating a wide range of knowledge, necessitating multidisciplinary teams of researchers. Resources must be dedicated to obtaining and implementing solutions. New and more effective educational and outreach models are required to communicate the latest science and policy options to stakeholders so they can make informed, intelligent decisions. Water education at K-20+ levels must contribute to the shaping of responsible, water-wise citizens and exemplary water professionals.

***Proposal***

The ***Oregon Water Institute (OWI)***, a partnership among OUS universities, will harness the collective expertise of Oregon University System researchers by building upon each university's strengths and creating synergies in all three university activities: research, teaching, and outreach. OSU, PSU, and UO, the three major universities of the Oregon University System (OUS), are ideally positioned to assume a leadership role in addressing water problems. The three institutions have a combined 175 water faculty who will contribute their expertise to the OWI.

The OWI will offer a scientific water resource assessment and management platform that will provide a basis for dramatically improved knowledge of water quantity, quality, distribution, and timing as well as the legal, social, and economic framework of Oregon's water resources. It will also develop and implement innovative educational and outreach programs and community governance models. The OWI will serve the public by helping citizens, decision makers, and scientists improve their understanding of water resources and the natural factors (e.g., climate and geology) and human activities (e.g., land and water use) that shape Oregon's water environment.

The Institute will focus mainly, but not exclusively, on the hydrologic and related societal issues in Oregon's Columbia River Basin (CRB). In Oregon the CRB encompasses both humid (west of the Cascades) and semi-arid (east of the Cascades) watersheds with different characteristics. For example, the humid Willamette River Basin has high drainage density and rapid runoff response, whereas the Deschutes River Basin is primarily a semi-arid watershed with very low drainage density and delayed runoff response. Together, these basins contain the largest and fastest growing population centers in Oregon and represent a full range of landscape gradients and societal problems relating to water quantity and quality in the Pacific Northwest.

By focusing on the CRB, the OWI will align more closely with another proposed institute, the Joint Northwest Water Institute (JoNWI), now being pursued separately by the Pacific

Northwest National Laboratory (PNNL) and Idaho National Laboratory (INL). The OWI will coordinate with INL and PNNL regarding studies in the Oregon portion of the CRB.

Oregon's coastal region, not part of the CRB, is experiencing rapid growth and the concomitant water issues, mainly related to availability, quality, and ecosystem/fisheries degradation. The OWI's purview will encompass this important area, along with other non-CRB basins such as the Klamath River Basin.

The OWI will have the capability to analyze issues including: how climate and snow affect water availability; the function of large rivers and their floodplains; how hydrologic regimes interact with ecosystems; and how changes in hydrologic factors affect water use, quality, and supply. This broad approach will provide a coherent understanding of water and will improve our ability to forecast the impacts of changes in climate, population or other factors, thus providing high-value, useful information to decision makers and other stakeholders.

Examples of OWI deliverables include the design of and/or research involving:

- 1) regional water budgets and water plans;
- 2) forecasting models for supply, demand, and interactions among all water uses;
- 3) scientific foundations for environmental flow requirements/ecosystem maintenance;
- 4) science, models, and techniques for stream and watershed restoration;
- 5) integrated assessments and decision support for the water-energy system;
- 6) education and outreach models;
- 7) water conflict management and dispute resolution programs;
- 8) water governance models; and
- 9) joint degree programs.

**OSU Contact:**

Dr. Michael E. Campana, Director, Institute for Water and Watersheds  
[aquadoc@oregonstate.edu](mailto:aquadoc@oregonstate.edu); 541-737-2413

**Partners that will be contributing to the work conducted under this request:**

- 1) University of Oregon, Dr. Patricia F. McDowell, [pmcd@uoregon.edu](mailto:pmcd@uoregon.edu); 541-346-4567
- 2) Portland State University, Dr. David A. Jay, [djay@cecs.pdx.edu](mailto:djay@cecs.pdx.edu); 503-725-4247
- 3) Pacific Northwest National Laboratory; Dr. Richard Skaggs; [Richard.Skaggs@pnl.gov](mailto:Richard.Skaggs@pnl.gov)
- 4) Idaho National Laboratory; Dr. Paul Wichlacz; [Paul.Wichlacz@inl.gov](mailto:Paul.Wichlacz@inl.gov); 208-526-1292

**Potential Partnerships:**

We anticipate partnering with a number of governmental agencies:

- Federal: Bonneville Power Administration, Corps of Engineers, Bureau of Reclamation, Bureau of Land Management, Fish and Wildlife Service, Forest Service, Geological Survey, Energy, State, Homeland Security, Defense, U.S. Agency for International Development, EPA; Idaho National Laboratory; Pacific Northwest National Laboratory
- State: Water Resources, Environmental Quality, Forestry, State Lands, Agriculture, Fish and Wildlife, Energy
- Local: Various agencies (e.g., City of Portland, Multnomah County, City of Eugene, Lane County, Benton County, Washington County, Deschutes County, City of Bend, Corvallis School District 509J, etc.)

Formal partnership arrangements have not yet been established.

The partnership with INL and PNNL occurs through the aforementioned Joint Northwest Water Institute (JoNWI), funding for which the two national laboratories are pursuing. The JoNWI will focus on that portion of the Columbia River Basin outside of Oregon and also emphasize the strictly scientific and engineering aspects of the water-energy nexus. The OWI and JoNWI will seek to partner on selected projects and coordinate work to avoid duplication.

**Interested Parties (willing to provide letters of support):**

We anticipate receiving letters of support from the Oregon Departments of: Water Resources; Environmental Quality; Energy; Forestry; Agriculture; Fish and Wildlife; Natural Resources; and State Lands. In addition, regional power and water purveyors, utilities, and trade associations (e.g., Portland General Electric, PacifiCorp, Portland Water Bureau, Oregon Water Resources Congress, Northwest Power and Conservation Council, Eugene Water and Electric Board) will be requested to provide letters of support.