



RESEARCH HIGHLIGHTS

JANUARY 2004



DIRECTOR'S OFFICE (DENVER, COLORADO)

Shannon Cunniff and Chuck Hennig presented the Science and Technology Program Proposal and Contract Management (PropC) System to Jim Tate, the Department Science Advisor; Scott Cameron, the Deputy Assistant Secretary for Performance, Management, and Budget; Tom Weimer, the Deputy Assistant Secretary for Water and Science; and other Department staff. PropC is a web-enabled data base that processes research and development (R&D) proposals submitted to the Bureau of Reclamation's (Reclamation) Science and Technology Program that:

- Allows researchers to create proposals
- Allows reviewers to review proposals
- Allows the Research Office to fund and manage proposals
- Tracks research progress and program goal accomplishments
- Brings researchers, resource managers, and stakeholders together
- Consolidates diverse information with a single web portal
- Puts information into the hands of those who need it when they need it

PropC was well received by the Department and labeled as an example of best practices.

Later in January, Mr. Tate visited Denver to meet other people involved in the PropC development and implementation. The Department asked for another PropC

presentation in February for the bureau science advisors, e-government representatives, and information officers. (Shannon Cunniff, 303-445-2132; Chuck Hennig, 303-445-2134)

A list of [current FY2004 research studies](#) is available in our PropC System. See all the exciting, innovative approaches, and you can contact principal investigators if you would like more information on a specific project. This list is on a public site; therefore, all sensitive information, such as the amount of funding, has been removed. (Siegie Potthoff, 303-445-2136)

IMPROVING INFRASTRUCTURE RELIABILITY

Technical Service Center (TSC) personnel performed a series of stator winding fault location tests on the 28-MVA, 13.8-kV generator at Crystal Powerplant. A unique research opportunity arose to field test Reclamation's stator fault location equipment (power system diagnostics research) with the decommissioning and replacement of the existing generator. Several winding faults were created in the winding and successfully located with the test equipment. In addition, valuable new information characterizing faults deep within the winding was gained for improving the test equipment location software. Reclamation experiences approximately five stator winding insulation failures a year. This device can save upwards of \$50,000 per failure. Technology transfer of the prototype will be sought as part of this study. (Phil Atwater, 303-445-2304)

Findings presented in a draft report on the implementation of the Doubly Fed Machine at Mt. Elbert Powerplant indicate that, due to unit size and powerhouse space constraints, Mt. Elbert may not be the most cost-effective candidate for this technology. Other alternatives presented in the report are being investigated for possible application at Mt. Elbert. This research investigation is being conducted in conjunction with the Mt. Elbert Powerplant rehabilitation project. Research into the application of the Doubly Fed Machine technology will continue, however, as this technology may be an option for increasing efficiency at other locations. (Gary Cawthorne, 303-445-2817)

IMPROVING DECISION SUPPORT

Demonstrated the beginnings of the Western Water Resource Management Information System to James Tate, Jr., Science Advisor, Department of the Interior, when Dr. Tate was visiting the TSC. This system is being designed to provide Western water resource data to Reclamation managers on demography, soil, climate, snowpack, agriculture, endangered species, hydrology, Indian lands, crops, and other resources. (Dr. Douglas Clark, 303-445-2271)

Watershed and River Systems Management Program team members held an extended work session in **Carson City, Nevada** completed work on the RiverWare Forecasting Model for the Truckee Basin. The model was presented to the Truckee River stakeholders, and the response was quite favorable. The model is expected to be used during the upcoming runoff season. Work continues on RiverWare-based operations and accounting models. (Don Frevert, 303-445-2473; Jeff Rieker 303-445-2484)

UPCOMING EVENTS

February 24 and 25 The RiverWare Users Group will meet February 24 and 25 at the University of Colorado in **Boulder**. Users from Reclamation, the Tennessee Valley Authority, the U.S. Army Corps of Engineers, several water users groups, and consulting firms will meet with researchers with the Center for Advanced Decision Support for Water and Environmental Systems to discuss new developments and applications. (Don Frevert, 303-445-2473)

IMPROVING WATER SUPPLY TECHNOLOGIES

As part of technology transfer activities, a display was presented at the Four States Irrigation Council Annual Meeting in **Fort Collins, Colorado**, featuring affordable flow measurement and canal control technologies—Automated Farm Turnout (AFT) and Continuous Flow Measurement (CFM)—developed at Reclamation’s Water Resources Research Laboratory. Efforts to deploy these technologies are funded through a Reclamation Science and Technology Program project for Development and Deployment of Affordable Technologies for Flow Measurement and Delivery Control. Alternatives for addressing flow measurement challenges was the most frequently expressed item of interest by participants of the meeting that visited the display. AFT and CFM technologies were also presented as part of a Reclamation-sponsored canal modernization workshop held in conjunction with the Four States meeting. Approximately 50 participants attended the workshop. (Tom Gill, 303-445-2201)

MODSIM is a generic river basin network flow model, which is unique in its abilities to simulate the complex physical, hydrologic, and administrative aspects of river basin management, including natural flow water rights under the Doctrine of Prior Appropriation, and storage rights consistent with Reclamation contracts and agreements. MODSIM's graphical user interface (GUI), in the past, has discouraged new users and frustrated experienced users by its complexity and obscurity. Also, after years of revisions and debugging, MODSIM source code—the simulation part of the model—had become mired in superfluous and entangled code. Colorado State University and the **Pacific Northwest (PN) Regional Office** have cleaned up the MODSIM source code and moved it to the more widely compatible .NET framework. MODSIM is now more reliable, easier to use, and easier to maintain with limited funding resources. In addition, its more accessible user interface should encourage new users, create wider deployment, and reduce learning time and model input errors. MODSIM was developed at Colorado State University and can be downloaded from their [website](#) for free. (Leslie Stillwater, 208-378-5202)

IMPROVING WATER DELIVERY TECHNOLOGIES

Preliminary analyses indicate that hyperspectral remote sensing of tamarisk (salt cedar) does not offer advantages over more traditional 3- or 4-band (blue green red near infrared) imagery. Submeter resolution at seasons with special plant colors is needed for identification and mapping of this invasive species. Hyperspectral detail may still be useful for visualizing water vapor emissions from several riparian tree species. (Ed Holroyd, 303-445-2276)

The evaluation of six wetland and riparian projects associated with Cascade Reservoir was recently completed in cooperation with staff from the TSC, PN Regional Office, **Snake River Area Office**, **Cascade Field Office**, and the Idaho Department of Environmental Quality. These studies support the role of wetlands and riparian areas in ameliorating challenging reservoir and water management issues by slowing and intercepting runoff, controlling flood damage, removing various pollutants and sediments, and regulating stream temperatures. These low-cost, self-sustaining, passive features can contribute toward multiple water management goals. Integrating wildlife habitat and public use benefits without compromising water resource objectives can also improve the economic value of water development projects. The project report is now available and will soon be available in PDF form. This information was recently presented at the 14th Annual Nonpoint Source Workshop held in **Boise, Idaho**. (Eric Stiles, 303-445-2458)



Duck Creek Osprey Point site near Cascade Reservoir, Idaho.