



# RESEARCH HIGHLIGHTS



## DIRECTOR'S OFFICE (WASHINGTON, DC AND DENVER, COLORADO)

Participated in the Harvard School of Design's Conference of Integrated Ecological Engineering for Water Resources. Presented information on the role of federal research programs to create opportunities and markets for integrated engineering. Highlighted the Reclamation/National Park Service partnership on sustainable development. (Shannon Cunniff, 202-513-0682)

Participated in U.S. Geological Survey (USGS) Program Coordinators/Regional Executives annual meeting. Presented information on research priorities for water resources. The meeting concluded after generating several specific ideas for USGS activities to support the Department of the Interior bureau mission needs. These ideas will be further vetted with USGS and bureau managers. (Shannon Cunniff, 202-513-0682)

Attended the National Water Research Institute Research Advisory Board meeting. (Shannon Cunniff, 202-513-0682)

The Research Office held a conference call with operations and resource management representatives from each of Reclamation's five regions to discuss the merits of conducting a Reclamation management review of modeling and decision support capabilities. The intent of the review would be to:

- Establish a more corporate approach for guiding research, development, and application needs

- Implement more effective corporate mechanisms to support the development, update, and maintenance of essential Reclamation modeling and decision support tools
- Establish more effective Reclamation-wide coordination and sharing of modeling development and capability
- Increase the cost effectiveness and efficiency of modeling applications and expenditures.

The general consensus of the conference call participants was that such a review could be beneficial and timely. Karl Wirkus, Shannon Cunniff, and Chuck Hennig will discuss options for organizing and leading the review. (Chuck Hennig, 303-445-2134)

Announcement of the award of FY2004 Science and Technology (S&T) Program research and development (R&D) proposals is planned for November. A web-enabled data base interface of all funded proposals will be made available to broadly share the R&D efforts with program customers and other researchers. The data base interface provides an easy-to-use summary of all proposals with various sorting and key word search capabilities. (Siegie Potthoff, 303-445-2136; Dan Levish 303-445-3175)

**UPCOMING EVENTS**

- November 4 Water 2025 Science Workshop, **Denver, Colorado**
- November 13-14 Satellite Imagery for Water Management: A NASA/ Reclamation Planning Session and Workshop, **Albuquerque, New Mexico** (Doug Clark, 303-445-2271)
- November 17-20 Partnership 2003 Conference (Shannon Cunniff, 202-513-0682; Angela Adams, 928-343-8114)
- November 21 Infocast Conference on Federal Research and Development Priorities (Shannon Cunniff, 202-513-0682)
- December 8-9 Desalination/Salinity Summit (Shannon Cunniff, 202-512-0680; Kevin Price, 303-445-2260)

**IMPROVING INFRASTRUCTURE RELIABILITY**

The report is being finalized on the feasibility of the doubly fed machine for **Mt. Elbert Pump-Generating Plant**, as well as possible efficiency gains and construction costs. This research is being conducted in conjunction with the Mt. Elbert Powerplant rehabilitation project. The doubly fed machine, if proven viable, would be an option for increasing efficiency at Mt. Elbert and other locations. (Gary Cawthorne, 303-445-2817)

In a cooperative effort, the Hydroelectric Research and Technical Services Group and the **Eastern Colorado Area Office** installed a 1-kilowatt hydrogen fuel cell at **Pole Hill Powerplant**. Commissioning of the fuel cell was completed, and it is now ready to provide up to 144 hours of emergency power to the Pole Hill communications equipment. This is the first fuel cell system to be installed at a Reclamation facility. The fuel cell costs less than an equivalently sized battery and is

expected to require significantly less annual maintenance. Through the Science and Technology Program, available fuel cell systems were identified and evaluated, lifecycle cost comparisons with batteries were calculated, specifications were developed, and installation and safety issues were addressed. The Eastern Colorado Area office handled the procurement, purchase, and installation of the fuel cell. (Jim DeHaan, 303-445-2305)



Proton exchange membrane (PEM) fuel cell system. An outdoor enclosure houses the Avista Labs, Inc. Independence 1000 fuel cell, associated controls, and six hydrogen fuel cylinders. The fuel cell is rated at 1,000 watts at 54 volts. This system provides about 30,000 watt-hours of backup power for the Pole Hill Powerplant communication system.

Conrep West applied for a license to market and commercialize a patented hydrophilic polyurethane-impregnated rubber developed under the S&T Program by **Technical Service Center** (TSC) researchers. The product effectively seals concrete cracks and prevents associated water loss and deterioration. Conrep West is a firm specializing in developing, producing, and marketing advanced concrete repair products. The firm is very excited about the product, and according to the company president, “The concrete repair industry has needed a product like this for years.” (Michael Messaros, 303-744-3125; Kurt VonFay, 303-445-2399)

## IMPROVING DECISION SUPPORT

The Watershed and River Systems Management Program's (WaRSMP) Independent Technical Review Panel met in **Boulder** and **Denver** to evaluate progress in the program and provide recommendations for improvements. The panel includes experts from leading water resources universities and the Corps of Engineers. The annual report of the panel will be provided in the next several weeks. (Don Frevert, 303-445-2473)



WaRSMP team members from Reclamation, USGS, and other collaborating organizations met to review progress and discuss major tasks of the program and technical priorities for the coming months given anticipated budget shortfalls. The meetings were followed by

meetings of the Hydrologic Data Base and RiverWare technical teams at the Desert Research Institute in **Reno, Nevada**. (Don Frevert, 303-445-2473).



Dr. John Wilkens-Wells from Colorado State University assisted the Utah Association of Conservation Districts in conducting a one day workshop in **Logan, Utah** on Urban Encroachment Issues Facing Canal Companies and Irrigation Districts. Dr. Wilkens-Wells and Thayne Coulter in the TSC have been conducting research sponsored by the S&T Program to evaluate the social impacts of urban encroachment on western irrigated agriculture and mechanisms to deal with such impacts. More than 75 people attended the workshop. Topics covered included an overview of urban

encroachment issues, how municipalities can help reduce the negative impacts of canal encroachment and urban stormwater runoff into canals, the role of developers in reducing subdivision encroachment on canal rights of way, canal company involvement in pressurized secondary water management, experiences in canal company consolidation to improve canal management, and assistance in the formation of a consortium of canal companies in the **Cache Valley, Utah**. A videotape of the workshop can be obtained from Dr. Wilkins-Wells at johnww@lamar.colostate.edu. (Thayne Coulter, 303-445-2706; John Wilkins-Wells, 970-491-5635)

The Office of Management and Budget has approved a study for measuring visitor satisfaction at varying reservoir elevations for **Blue Mesa Reservoir**. Surveys will begin at the reservoir in the 2004 recreation season. The research will model both the quantity and quality of reservoir recreation at fluctuating water levels, which are being considered to meet flows for endangered fish in the **Gunnison and Colorado Rivers**. This R&D effort, sponsored by the S&T Program, the **Upper Colorado Region**, and the National Park Service, will be valuable in adapting lake and river management to help maintain the greatest level of visitor satisfaction and economic benefits. (Dawn Munger, 303-445-2734)

## UPCOMING EVENTS

November 17 The WaRSMP **Columbia Basin Project** task group will hold a conference call to discuss technical issues related to the development and deployment of technology on the Columbia Basin Project. (Don Frevert, 303-445-2473)

## IMPROVING WATER DELIVERY TECHNOLOGIES

Sixteen species of native shrubs, forbs, and grasses were seeded in July, 2002, following various experimental combinations of simulated biocontrol treatment. First year establishment results from the **Socorro, New Mexico** study site indicate promising emergence and vigor of six species. Sideoats grama (*Bouteloua curtipendula*) also exhibited positive response to mycorrhizal inoculation, suggesting that mycorrhizal colonization and association with seeded native species can occur on highly saline/sodic sites characteristic of mature, monotypic saltcedar infestations. This capability will be critical in enabling and accelerating establishment of desirable, mycorrhizae-dependent native species on these sites, with particular importance for more rapid establishment and spread of competitive, transitional (“eco-bridging”) native species that will help suppress encroachment of secondary invasive species following saltcedar control. (Ken Lair, 303-445-2005)

## REGIONAL S&T PROGRAM REPORTS

The **Albuquerque Area Office** has issued a *Progress Report On Rio Grande Silvery Minnow Egg Habitat Study—FY 2003*. The results are promising. Information gained from this project will help Reclamation and others design and construct effective habitat restoration projects for the endangered silvery minnow. It is believed that additional inlet construction in specific locations in the Albuquerque Reach can assist silvery minnow conservation without committing additional supplemental water supplies. (Michael Porter, 505-462-3596)

The **South-Central California Area Office** is studying artificial dens to mitigate the effects of Reclamation canals on the endangered kit fox. This study will help answer questions about design and materials for the dens. Kit foxes were detected using dens at 4 of the 12 den complexes. A radiocollared female kit fox was tracked to the dens at one complex on four occasions. She was located in one of the dens on three different days, and at the other den on one day. There weren't any obvious external signs of use, which indicates that not all use is being detected. It also means that estimates of use were probably conservative, and this is not surprising. Temperature measurements were taken on natural dens during the first week in October. These has been some very interesting data. "Winter" temperature measurements will be taken in early December on all of the artificial dens and a sample of natural dens. (Rosalie Faubion, 559-487-5138)

Insects and spiders collected on tamarisk have been sorted and sent to four organizations for identification. Identified insects and spiders will be used to estimate the biomasses of different trophic levels (herbivores, carnivores, etc.) on tamarisk and the plant's capability to provide food for wildlife. Variation of insect and spider populations among trees and through time also will be examined. Tamarisk is an invasive tree that covers thousands of acres owned and managed by Reclamation. These results will help in our understanding of tamarisk's value as wildlife habitat and improve our efforts to mitigate for its change in abundance. (William Wiesenborn, 702-293-8699)

