

RESEARCH AND NATURAL RESOURCES HIGHLIGHTS

August 2002

Director's Office (Washington, DC and Denver, Colorado)

The call for research project proposals for FY03 is out! Proposals were due August 30. We received over 170 proposals. See www.usbr.gov/research for additional details. (Siegie Potthoff, 303-445-2136).

Briefed the Secretary of the Interior on Reclamation's desalination research activities. This briefing generated a great deal of interest in furthering these activities. (Shannon Cunniff, 202-513-0682; Kevin Price)

Submitted draft report on Unmet Water Needs in the West to the steering team for review. This effort supports the ASWS project to develop a strategy for meeting the water needs of the next 25 years, (Shannon Cunniff, 202-513-0682; Chuck Hennig)

Briefed the **Reclamation Leadership Team, GP Region, and Montana Area Office** on new business practices implemented by the Science and Technology (S&T) Program. (Chuck Henning, 303-445-2134)

Upcoming Events

September

- 6** Conference call and meeting with Council on Environmental Quality regarding best practices for technology and science in support of NEPA; Regions. OP and TSC participating. (Shannon Cunniff, 202-513-0682)
- Report to Congress on the Study of the Tularosa Basin, **NM**, Brackish Water Desalination Research Center. (Shannon Cunniff, 202-513-0682; Tom Jennings)
- 11-13** River Systems Modeling Workshop, **Billings, MT** Breakout sessions include developing modeling research priorities for the S&T Program (Don Frevert, 303-445-2473; Shannon Cunniff)
- 16-18** Performance Institute's R&D conference and workshops in Washington, DC (Chuck Hennig, 303-445-2134)
- 17-18** AWRA Water Policy Workshop, **Washington, DC** (Shannon Cunniff, 202-513-0682)
- 19** National Research Council meeting on water resources research. (Shannon Cunniff, 202-513-0682)
- 24** Water Management Technologies Outreach Planning with **El Paso, TX**. (Shannon Cunniff 202-513-0682; Susan Martella)

Upcoming Events (continued)

September

25-26 Cooperative Ecosystem Studies Units Executive Council strategic planning meeting. (Shannon Cunniff, 202-513-0682)

27 Water Resources Research Coordinating Committee meeting. (Shannon Cunniff, 202-513-0682)

October

8-10 Bureau of Reclamation Environmental Conference (Shannon Cunniff, 202-513-0682)

Improving Decision Support

The Watershed and River Systems Management Program (WaRSMP) Technical Review Panel met to review progress on the program and recommend future priorities. The panel includes experts from Colorado State University, Utah State University, Louisiana State University, the Corps of Engineers and the US Geological Survey's Biological Resources Division. This year's program included an expanded format to allow for presentations by economists, biologists and stochastic hydrologists. Informal comments from the panel were very favorable in regard to the overall effort. (Don Frevert, 303-445-2473)

The WaRSMP team held a conference call to discuss and resolve technical questions related to the **Columbia Basin Project** new start. The questions relate to crop distribution information, how to utilize it in interfaces which are being developed between RiverWare and the AWARDS - ET Toolbox program and the more effective use of precipitation and runoff forecast data for efficient water management on the **Columbia Basin** project. (Don Frevert, 202-445-2473)

The WaRSMP Truckee River work group held a 4-day work session at the University of Colorado in Boulder. Key areas of emphasis included improvement of RiverWare rule sets for use in the **Truckee River** Operational Forecast effort and extension of the natural flow data set for the basin to further improve the quality of water resource management decisions (Don Frevert, 303-445-2473)

Upcoming Events

September

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| 6 | Meet with Dr. Jose D. Salas of Colorado State University in Boulder. Dr. Salas will present recent improvements to the Stochastic Analysis Modeling and Simulation (SAMS) program and how they can best be deployed on the Colorado River System (Don Frevert, 202-445-2473; Terry Fulp) |
| 30 | Formal report of the WaRSMP Technical Review Panel to be out. (Don Frevert, 202-445-2473) |

Improving Water Supply Technologies

Presented a paper entitled, "Measuring Selective Withdrawal Characteristics using an Argonaut Acoustic Doppler Velocimeter in **Folsom Lake, California**" at the EWRI/IAHR Conference on Hydraulic Measurements and Experimental Methods, held in Estes Park, Colorado. This paper is a product of the S&T Program's Folsom Dam Penstock Shutter Evaluation Research Program (Tracy Vermeyen, 303-445-2154)

Improving Infrastructure Reliability

Began work on completing the prototype development of our winding fault detector. The fault current testing probe was redesigned to allow for more precise measurements and increased ease of use. The probe is being fabricated in our machine shop, and once completed, testing will follow. Also worked on creating a program in LabView that will allow the fault data to be processed efficiently while supplying the end user with an easy-to-use, stand-alone program with a friendly graphical user interface. The prototype system is expected to be ready to lab test in September, with field testing to follow. The winding fault detector has demonstrated the capability of pinpointing the location of electrical faults in the stator windings of large rotating machines. Reclamation currently experiences approximately five 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, Nathan, Carmela Salas)

Completed a research project paper entitled, "Report of Findings on Laboratory Research for Testing Personal Protective Ground Cable Using High-Current Pulses." The paper presents the technical aspects and results of performing cable resistance measurements with high-current pulse equipment and the merits of using this test approach vs. conventional test methods. (Malin Jacobs, 303-445-2306; Phil Atwater)

Began preparing an operations manual (user's manual) for our microwave tunnel radio equipment that was developed by the S&T program and leveraged with regional funding. These radio communication sets provide a means for work crews, who are often 5 miles or more from the nearest tunnel exit, to communicate with persons on the outside. Providing this communication link greatly increases the safety of performing work in a tunnel. (Phil Atwater, 303-445-2304)

Plans have been made to install (demonstration) a rotor turning gear at **Green Mountain Powerplant**. The design and a required parts list should be completed by September. The rotor

turning gear safety device was developed using S&T funding to improve safety when performing the hazardous task of slowly turning large hydroelectric generator and motor rotors. A similar prototype was successfully installed at **Glen Canyon** last year. (Roger Cline, 303-445-2293)

Presented a technical paper at the Hydro Vision 2002 Conference held in Portland, Oregon. The paper, entitled "Early Detection of a Shorted Turn Fault in Grand Coulee Generator G-7," described infrared images obtained using a thermal scanning system that was installed on G-7 as a pilot project to determine the possible benefits of this monitoring technology. The scanner was in operation prior to and during an unexpected in-service stator winding insulation failure, providing a rare and informative view of the failure initiation process. (Lori Rux, 303-445-2307)

Developed a test plan for laboratory testing of the prototype ramped voltage test set. A thorough preliminary evaluation of the instrument operation, software interface, and test set performance will be done to ensure there are no safety or accuracy issues that require correction before the unit is taken to the field for validation. Phil Atwater, 303-445-2304; Malin Jacobs, and Lori Rux

The prototype ramp tester, manufactured by Adwel, is expected to be delivered to Reclamation by the end of August for testing in the TSC high-voltage laboratory. (Lori Rux, 303-445-2307)

The draft proposal for a Life Extension assessment at Mt. Elbert Powerplant, which would be a pilot of the methodology developed under this research project, is in review and revision in the **GP Regional Office**. It is possible that the actual assessment will be funded in part by the Western States Power Corporation. A meeting was held in Portland, Oregon with other power utilities to continue development of equipment condition assessment tools. These will be used as a baseline for current equipment condition which affects Life Extension risk assessment. Through the remainder of the fiscal year, we will continue to refine these proposals and tools. Life Extension seeks to enhance reliability and dependability by providing decision-making tools to facility management for maintenance and/or system replacement. (Gary Osburn, 303-445-2297)

The High-Voltage Generation Powerformer™ S&T Program research effort concluded that conversion from medium-voltage to high-voltage generation is technically feasible and promises to be economically advantageous. Following the recommendations in the research report, the **Central Valley Operations Office** staff held meetings with the power customers and obtained agreement to fund installation of the technology on Folsom Unit 1. Technical Service Center (TSC) personnel provided information and assistance regarding technical issues relating to the specifications and future research activities. Final technical specifications have been provided by the TSC to the **MP Region** where the specifications will be coordinated and issued. The specifications will not be issued until final funding arrangements with power customers are complete; the **Central Valley Operations Office** is negotiating this funding. We expect that specifications issue will take place in the fall of 2002. (Gary Osburn, 303-445-2297 / Lori Rux, 303-445-2307)

Ancillary services data taken during the summer of 2002 were obtained from the **Central Valley Operations Office** for **Shasta Powerplant** and reviewed modifications to the report on the value of ancillary services has begun. During September, ancillary services data from **Hoover Powerplant** will be obtained for the past year and analyzed. The ancillary services report modifications will be completed. (Steve Stitt, 303-445-2316)

A new standard flow model was developed and applied to **Yellowtail Powerplant**. The new modeling techniques will be applied at **Grand Coulee** during FY 2003. A report on the standard flow modeling methods will be initiated in September. (Steve Stitt, 303-445-2316)

Improving Water Delivery Reliability

Much of what we have learned in research on wetland construction and development in the S&T Program will be applied to developing a wetland along **Las Vegas Wash**. We completed a field site visit with a Ducks Unlimited (DU) representative to develop a 100-acre wetland along Las Vegas Wash as part of a larger system of parks, trails, and open-space. Reclamation involvement is supported and funded by the **LC Regional Office** and includes representatives of DU, UNLV, Clark County Parks, Southern Nevada Water Authority, NRCS, and the Clark County Flood Control District. . (Rick Roline, 303-445-2213; Bob Davis, 303-445-2964)

Regional Reports

Mid Pacific Region

Upcoming Events

October

Michael Tansey will participate in the field review for California Cooperative Ecosystem Study Units at Berkeley, California