

Wyoming Hydrogram

September 1991

Wyoming Water Research Center Newsletter

Vol. 3, No. 4

Water Research Projects Approved for Fiscal 1992 Funding

Twenty research projects were approved for fiscal 1992 support made available through the Wyoming Water Research Center (WWRC) at the University of Wyoming.

The projects, selected from among 31 proposals, include 11 new one-year projects, six projects continuing from fiscal 1991 start-ups supported by state grant-in-aid funding and three projects funded by a matching block-grant from the U.S. Geological Survey (USGS).

State grant-in-aid funding is awarded for research on water resource issues of particular interest to Wyoming. Proposals are solicited from among researchers at UW and faculty of the state's seven community colleges. All proposals are reviewed by at least three scientific peers at other universities, state agencies, and the district office of the USGS.

"Proposals for fiscal 1992 were solicited in six specific research priority areas," Steven P. Gloss, WWRC director, says. "All were

developed in response to requests from state agencies."

Project funding is effective July 1 and continues through June 30, 1992.

New projects receiving state grant-in-aid funding and the principal investigators, all at UW, are:

- **An evaluation of discharge coefficient for long-crested weirs, a study relevant to improved irrigating structure design and irrigating efficiency;** J. Mohan Reddy, associate professor of civil engineering, and Victor R. Hasfurther, professor of civil engineering; \$24,450.

- **Monitoring of the pesticides dicamba and picloram in the soil vadose (unsaturated) zone for groundwater protection;** George F. Vance, assistant professor of plant, soil and insect science; \$22,764.

- **A study of the hydrology and geochemistry of the New Fork Tongue of the Wasatch Formation to provide information for evaluation and management of this**

Continued on page 2

Water Quality Addressed by Farm Bill

Enhancement of the environment, reducing the federal deficit and improving agricultural competitiveness are the three primary objectives of the five year 1990 Food, Agriculture, Conservation and Trade Act. Water quality is addressed by the Integrated Farm Management Program Option (IFMPO) for enrolled acreage and the Water Quality Protection Program (WQPP). Both offer financial incentives and cost-share op-

tions to growers who develop farm management plans which will:

- reduce soil erosion to non-degradation levels
- improve soil fertility and soil tilth
- protect surface and groundwater from contamination by minimizing use of fertilizers and pesticides.

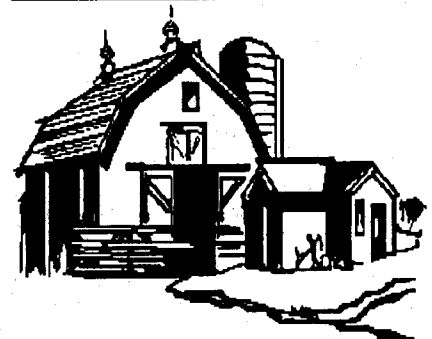
Continued on page 4

USGS Invites Research Proposals

The USGS has issued a request for proposals for Fiscal Year 1992 funds under Section 105 of the Water Research Act. It is anticipated that \$1.8 million dollars will be available for this national competitive grants program in 1992. Individual projects may range up to three years in length, dollar amounts up to \$175K in federal funds and must have a 1:1 match. The six research areas of highest interest and the approximate anticipated percentage distribution of funds are as follows:

1. Social Sciences (20%)
2. Groundwater Flow and Transport (15%)
3. Water Quality (15%)
4. Biological Sciences (15%)
5. Engineering (15%)
6. Climate and Hydrologic Processes (20%)

The deadline for applications is November 19, 1991. This year the solicitation is more explicit as to what research is considered priority. However, other topics may be addressed as well. Additional detail is provided in the USGS solicitation which is available from Pam Murdock at WWRC.



WWRC Grant Awards

continued

important Green River Basin aquifer; James I. Drever, professor of geology/geophysics; \$16,571.

- **An assessment of the "whole effluent" toxicity testing method as a means of regulating waters produced by the oil and gas industry in Wyoming;** Harold L. Bergman, professor of zoology and physiology, and Sheryl Hill, research associate; \$29,123.

- **Modeling economic impacts and institutional water management alternatives for severe drought and water shortages in the upper Green River Basin;** Ari M. Michelsen, WWRC associate director; \$18,624. This project also received \$18,822 in joint funding from the USGS.

- **A study of the flushing flow requirements of large rivers to maintain fishery and channel values;** Thomas A. Wesche, WWRC, and Wayne A. Hubert, Wyoming Fishery and Wildlife Research Unit; \$34,880.

- **Investigation of surface and ground water dynamics critical to the maintenance of subalpine riparian wetlands;** Thomas Wesche, \$17,400. This project also received \$19,960 in USGS funding for 1992.

- **Modeling of surface waters within the Green River Basin of Wyoming with a view to strategies for possible future development or severe drought condition management;** Victor Hasfurther; \$12,690.

- **Evaluation of possible small water storage projects relative to enhancing late season irrigation flows;** Victor Hasfurther; \$8,850.

- **Assessment of the impact of reduced surface stream flows on ground water recharge and spring discharge in the Little Snake drainage basin of Carbon County;** Peter Huntoon, professor of geology/geophysics, and Victor Hasfurther; \$13,201.

- **User education and the transfer of technology for water use effi-**

ciency and conservation in Wyoming; Donald J. Brosz and Ari Michelsen, WWRC; \$40,000.

Continuing projects for 1992 are:

- **Improved numerical modeling of ground water flow and contaminant transport in aquifers with varied permeability and porosity characteristics;** Myron B. Allen, associate professor of mathematics; \$25,000 in second-year funding.

- **A study of microbial transformations of herbicides known to contaminate Wyoming groundwaters, specifically the degradation or breakdown of dicamba and picloram under various conditions;** Patricia J.S. Colberg, assistant professor of molecular biology; \$30,800 in second-year funding.

- **A study of soil and water interactions as a control on surface water chemistry with emphasis on pollutants such as acid deposition;** James Drever; \$21,561 in third-year funding.

- **A long-term investigation of conveyance losses in Wyoming streams and rivers;** Victor Hasfurther; \$16,000 in continuation funding.

- **Quantification of consumptive use and irrigation water requirements for Wyoming;** Larry Pochop, professor of civil engineering; Greg Kerr, WWRC; Victor Hasfurther, and Ronald Delaney, plant, professor of soil and insect science \$26,940 in second-year funding.

- **Further development of a comprehensive water education program for Wyoming elementary schools;** Ronald Beiswenger, professor of recreation/geography; Vincent G. Sindt, Wyoming Institute for the Development of Teaching director; and Peter C. Ellsworth and Elaine Sturges, Institute coordinators; \$21,202 in third-year funding.

Projects receiving USGS funding for fiscal 1992, in addition to

those directed by Thomas Wesche and Ari Michelsen as previously noted, are:

- **Development of a procedure for the remote, in-situ detection of organic contaminants in groundwater;** Keith T. Carron, assistant chemistry professor; \$19,568.

- **An assessment of the potential environmental fate and effects of oil field discharge waters containing radium;** Harold Bergman and Sheryl Hill; \$15,125.

Continued on page 4

The *Wyoming Hydrogram* is published bimonthly by the Wyoming Water Research Center with funds provided in part by the U.S. Geological Survey, Department of the Interior, as authorized by the Water Resources Research Act of 1984.

Director

Steven Gloss

Associate Directors

Donald Brosz, Special Projects

Victor Hasfurther, Research

Ari Michelsen, Information Transfer

Editor

Connie Nyberg, Co-Editor

Thanks to this issue's contributors:

John Bellamy, Catherine

Voigtsberger, Barry Lawrence

Note to Readers:

We welcome guest editorials and other articles of interest. Write or call the Editor for guidelines. Please keep us informed about address changes, and let us know about meetings and news items the *Wyoming Hydrogram* should cover.

Contents may be reprinted if properly credited. There is no charge for subscriptions. Address editorial material and correspondence c/o Editor, *Wyoming Hydrogram* to:

Wyoming Water Research Center
Box 3067
Laramie WY 82071-3067
or phone (307) 766-2143



Recycled Paper

WIT Is Twice the Fun!

For the first time, two Water Institutes for Teachers (WIT) were held this summer. WIT is a two week course where primary and secondary school teachers learn about Wyoming's water resources and about education materials and ideas that can be brought back to

their students. The course is a combination of lectures, field trips and hands-on activities. This year, a WIT was held in Laramie at the University of Wyoming and another WIT was held in Riverton at Central Wyoming College. The WIT is co-sponsored by the Wyo-

ming Water Research Center and the UW Institute for the Development of Teaching. For information about next year's Water Institute for Teachers read the *Wyoming Hydrogram* or contact the WWRC.



It doesn't rain on Water Institute trips!

"Driving" the water resources management simulator.

Demonstration of stream flow measurement on the Laramie River

Hands on activities are all wet.

Class members get a ride in a stream gauging carriage.

Conferencing (and teleconferencing) with legislators and decision makers.

Of Interest to the Water Community

Congratulations

William (Bill) Mixer received "Trainer of the Year" award from the National Environmental Training Association for his outstanding work in Wyoming. Bill has directed the Environmental Training and Resource Center at Casper College since 1982. During this time the College's water quality technology program has expanded from eight sessions to 24 sessions per year. Training and outreach classes range from lagoon microbiology to financial management of small water systems. Outreach programs are particu-



Farm Bill *continued*

Growers in the program will be eligible for incentive payments of \$3,500 annually for three to five year agreements. Approved management changes need to include soil testing, field scouting, erosion control, cover crops and rotations.

For growers implementing wetland or wildlife habitat improvements as part of their management plans, a one-time 50% cost-share payment of up to \$1,500 will be made available. Growers participating in the WQPP are also eligible for the IFMPO program and can receive benefits from both.

(Reprinted with permission from: Michigan State University Wa-

larly important for a state the size of Wyoming. Because of the outreach program, plant operators can now attain a two-year degree in water technology while continuing their jobs in local communities.

This is not the first recognition of Bill's work in Wyoming. He has received the Outstanding Achievement Award by the US Environmental Protection Agency, Region VIII (Denver) Office for his training and technical assistance in waste water; the American Water Works Association Distinguished Service Award for a series of safe drinking water workshops he developed and implemented in Wyoming; and the Wyoming Water Quality and Pollution Control Association's Distinguished Service Award. In addition to his other activities, Bill has also helped implement a state-wide landfill operation and management training program and several OSHA safety training programs.

ter Research Institute *Water Impacts*)

The booklet, *Farm Program Options Guide to Sustainable Agriculture, Conservation and Water Quality Incentive Programs in the 1990 Farm bill*, is available from Center for Rural Affairs, P.O. Box 405, Walthill, NE 68067. The cost is \$3.00 per booklet.

WWRC Grant Awards *continued*

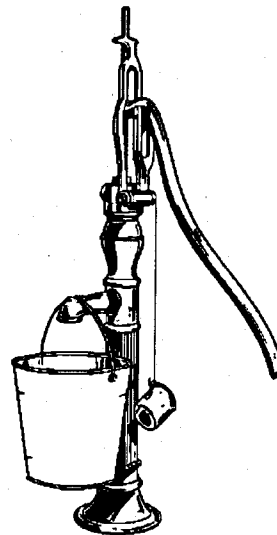
- Development of a plan to transfer to state agency and other users information pertaining to the practical applications of water resource management research results; Steven Gloss and Ari Michelsen; \$19,929.

Moving On

Jim Kircher, formerly the USGS Cheyenne District Chief Hydrologist, has moved to Lawrence, Kansas to become the USGS Midwest Programs Area Assistant Regional Hydrologist. Jennifer Gimbel, formerly with the Wyoming Attorney General's Office, has also changed positions. She will continue to work in water law, but now with the Colorado Attorney General's office in Denver. Elaine Sturges, Coordinator, Wyoming Conservation Connection where she was actively involved in the development of water resources education curriculum for Wyoming, is now working for the New York State Cooperative Extension Service.

Welcome Back

Don Brosz returned to the Wyoming Water Research Center in September after spending two years in Swaziland, South Africa. Drop by the WWRC and say hello to Don. He will share his experiences in a future newsletter.



Calendar

Joint WWDA- Upper Missouri Water Meeting

The Wyoming Water Development Association's (WWDA) 1991 Annual Meeting will be held in conjunction with a meeting of the Upper Missouri Water User's Association. The meeting will be held November 20 through 22, at the Cody, Wyoming Holiday Inn. This historic joint meeting will provide an opportunity for members of both groups to discuss regional, state and local water issues.

In the spirit of cooperation, Wyoming State Engineer, Jeff Fassett and state engineers from Montana, North Dakota and South Dakota will hold a panel on development and water administration issues in the Upper Missouri River Basin. Field trips scheduled for the meeting include tours of Buffalo Bill Dam, the new Shoshone Pipeline and Treatment Plant and the new wing of the Buffalo Bill Museum. For more information call Evan Green (WWDA) at (307) 777-7626 or 635-1936.

NPS Task Force Meeting

The Wyoming Task Force on Non Point Source (NPS) water pollution will meet at the Newcastle, Wyoming firehall on November 1 and 2, 1991. Tentative agenda items include discussion of urban and silviculture (logging) best management practices to reduce NPS pollution, guidelines for the request of 1992

grant proposals and a tour of the Pope and Talbott sawmill. A final agenda will be set in October. For further information contact Beth Pratt, Wyoming Department of Environmental Quality, Water Quality Division, Cheyenne, WY (307) 777-7781.

Wyoming-AWRA Meeting

The Wyoming State Section of the American Water Resources Association, in cooperation with the Wyoming Water Research Center, will hold its Fourth Annual Meeting at the University of Wyoming, Laramie, November 6-7, 1991. There will be technical presentations both days of the meeting, a social event Wednesday evening, and a field trip to the UW environmental simulation laboratory hosted by Dr. Quentin Skinner, Thursday Afternoon.



The deadline for abstracts of papers to be considered for technical presentations is October 1, 1991. This year, a \$100 cash scholarship will be awarded for both the best graduate and best undergraduate presentation. To submit an abstract or for further information contact Kirk Miller, USGS, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001 or call (307) 772-2153.

Water Marketing

The Sixth Annual Conference on the Marketing and Transfer of Western Water Rights will be held Friday October 11, 1991 at the University of Denver College of Law, Denver, Colorado. The title of this year's conference is Water Marketing in Colorado's future: Debate and Analysis. Topics to be discussed include: interstate marketing - should the sale of Colorado River water to lower basin states be allowed and encouraged?, rural impacts - is legislation needed to protect rural areas from water transfer impacts?, and environmental protection - should market transactions be used to enhance fisheries, and will wilderness areas constrain water transfer or supply alternatives? For additional information call (303) 871-6118.

Call for Papers

A call for technical papers has been issued for the 1992 Colorado Water Engineering and Management Conference to be held in conjunction with the Colorado State Section, American Water Resources Association Symposium and Annual Meeting. The conference will focus on two main problems in water management, complexity and conflict. Papers on other water resource topics will also be considered for presentation. Submission of abstracts are due by November 8, 1991. The conference will be held March 2-3, 1992 in Aurora, Colorado. For further information contact Janet Lee Montera at (303) 491-7425, Colorado State University, Fort Collins, CO.

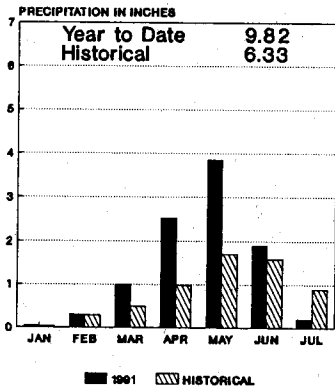
How Does This Year Compare?

Has this been a wetter or drier year than average? To help answer this question, we compared

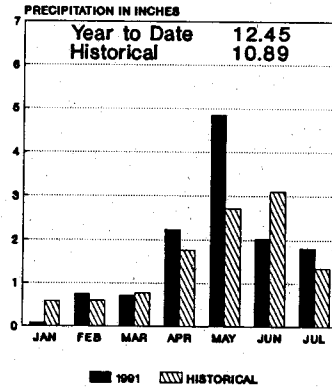
the monthly precipitation to date for 1991 with historical precipitation at four Wyoming towns around

the state -- Cody, Gillette, Kemmerer and Wheatland. Historical precipitation is based on the 1951 to 1980 period. All four towns showed cumulative year-to-date precipitation above the historical average. Through July of this year, Wheatland had received almost seventy percent more precipitation than the historical average, Cody had received over fifty percent more than average, while Gillette and Kemmerer had only received slightly above the average precipitation. However, precipitation amounts for individual months was highly variable and has been both well above and well below the historical average at each location. (Data provided by Catherine Voigtsberger, Water Resources Data System, WWRC.)

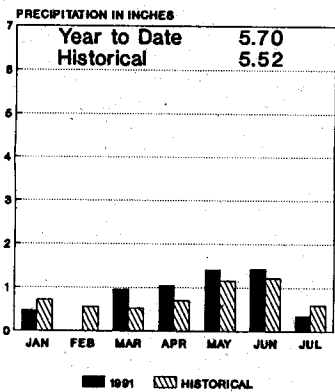
CODY



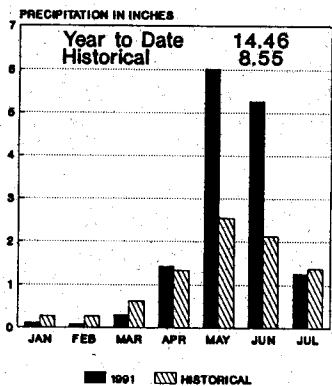
GILLETTE



KEMMERER



WHEATLAND



Wyoming Water Research Center
P.O. Box 3067
Laramie WY 82071-3067

Non-Profit Organization
U.S. Postage
Paid
Laramie, Wyoming 82071
Permit No. 1