



WRC NEWSLETTER

WATER RESOURCES CENTER, TEXAS TECH UNIVERSITY, LUBBOCK

VOL. 13 NO. 3

April 1998

Environmental Science Laboratory meets teaching, research, and service needs

The increase in the volume and diversity of contaminants to the environment has led to increased demand for environmental engineers. Environmental problems that existed fifty years ago, which consisted primarily of waterborne-disease control, have evolved into such diverse problems as soil and groundwater contamination, hazardous and solid wastes, and treatment of water and wastewater supplies.

Tony Mollhagen, Ph.D., assistant professor of civil engineering and laboratory director, said that with the increased complexity associated with the dynamics of environmental problems, a fundamental understanding of environmental chemistry, environmental biology, air pollution dynamics and control, limnology, environmental fate and transport, toxicology, and a range of other course subjects is requisite to solving these complex environmental problems. The mission of the Environmental Science Laboratory (ESL) is to advance fundamental environmental science, to increase our understanding of the problems of our industrial society, and to lead to their solutions.

"The ESL focuses on the modern quantitative techniques to address practical environmental problems in areas such as water quality, water and wastewater treatment, soil and groundwater contamination, the transport and fate of hazardous substances in soils and groundwaters and in situ remediation of contaminated soils," said Brad Thornhill, analytical instrumentation specialist and

laboratory manager.

Research and teaching facilities in the ESL are designed for standard water and wastewater analysis, including wet and dry laboratories equipped to study a range of physical, chemical, biological processes, and water resources research topics. Testing capabilities are physical measurements (e.g., solids, turbidity,

(See "Facilities," page 2)



Richard Claus, a graduate student in civil engineering, prepares a research experiment for his unit processes class.

Water Symposium addresses the value of water in the Texas High Plains region

The value of groundwater stored in the Ogallala Aquifer was the focus of the 1998 Great Plains Symposium, March 10-12, at the Holiday Inn Lubbock Plaza Hotel in Lubbock.

The symposium was the fourth in a series of symposia sponsored by the Great Plains Foundation, bringing together approximately 100 participants to focus on the theme "Determining the Value of Water" in the Texas High Plains Region. Participants represented city, state, academic, private, and commercial interests.

Texas Tech's Water Resources Center hosted the symposium and cosponsored the event along with the High Plains Underground Water Conservation District No. 1, the Nebraska Natural Resources Commission, the South Plains Underground Water Conservation District, and the Bureau of Reclamation, Kansas-Nebraska and Oklahoma-Texas Area Offices.

The Great Plains Symposium began with registration and an opening reception on the evening of March 10.

Speakers for the opening keynote session addressed state water planning, Senate Bill 1, water issues related to people, the environment, and economy, and market solutions to water allocation. The luncheon featured Kary Mathis, Ph.D., director of the International Center for Arid and Semiarid Land Studies, at Texas Tech. Dr. Mathis discussed the Texas Agritech Corridor partnership and how it may be used to create robust agri-

cultural/manufacturing sectors in a 67-county area stretching from Plainview to San Antonio.

Concurrent afternoon sessions were moderated and presented by experts in areas of agricultural, municipal, industrial, environmental, and policy/legal issues as they pertain to the value of water.

Water leaders representing the eight states underlain by the Ogallala Aquifer presented their states' positions on groundwater

management during the March 12 morning meeting. Agencies represented during this session included the Colorado Division of Water Resources, the Kansas Division of Water Resources, the Nebraska Natural Resources Commission, the New Mexico Interstate Stream Commission, the Oklahoma Water Resources Board, the South Dakota Natural Resource Department, the

(See "Eight-state panel," page 3)

Facilities have interdisciplinary appeal

(Cont. from page 1)

color) and chemical measurements (e.g., nutrients, metals, BOD, COD). The ESL also supports biological research on contaminant transport and site remediation, refuse decomposition, anaerobic microbiology, and water and wastewater treatment. The laboratories are equipped with gas chromatographs, a total organic carbon analyzer, atomic absorption spectrophotometers, an ion chromatograph, liquid chromatographs, an autoanalyzer, spectrophotometers, turbidimeters, microscopes, bioreactors, autoclaves, media preparation facilities, fume hoods, a constant temperature environmental chamber and many smaller analytical instruments. Space is available for research projects (treatability studies, soil/contaminant studies, various experiments, and bench scale studies).

Field monitoring and collection equipment for sampling of surface waters, groundwater, soils, and

sediments are also available. Primary uses of this facility are by students enrolled in environmental engineering laboratory courses and for graduate student research experiments.

Research facilities in the Department of Civil Engineering include over 3000 sq. ft. of laboratory space devoted to environmental chemistry/microbiology and hydraulics. Faculty, graduate students, and staff are drawn from a variety of disciplines. Engineers and scientists trained in hydrology, water and soil chemistry, atmospheric sciences, and biological sciences are needed to address critical environmental issues.

The ESL has a wide variety of commercial instruments for chemical analysis accessible to researchers in the environmental engineering program and, as time allows, all members of the university community.

Eight-state panel discussion rounds out symposium

(Cont. from page 2)

Texas Water Development Board, and the Wyoming State Engineer's Office. Presentations focused on water legislation and regulation, water use, economic issues, and perceptions regarding the value of water, the effect of climate change on the Ogallala, and water quality.

Concurrent meetings of the Great Plains Advisory Council and the Texas High Plains Ogallala Area Regional Water Management Plan planning group (see related article, this page) closed out the symposium the afternoon of March 12.

For more information regarding the Great Plains Foundation or to order a copy of the symposium proceedings, contact Lori Triplett, The Great Plains Foundation, 9008 Hadley, Overland, KS 66212; phone: 913-385-7775.

Ogallala Management Plan recognizes accomplishments at final meeting

Substantial accomplishments were summarized for the High Plains Ogallala Area Regional Water Management Plan at its final meeting on March 12.

Since their first meeting in 1994, participants representing major water users in the area have contributed to the tasks outlined for the OMP: water demands; water supplies; supply allocation studies; institutional analyses, water policy and implementation recommendations; special studies; and management and coordination.

Significant among the accomplishments was the identification of all water resources available. Studies were conducted to quantify water resources available to the area, including precipitation, the Ogallala Aquifer, the Santa Rosa (Dockum Group), and surface water. The water quality of each



source was investigated, and a report is forthcoming from the Texas Water Development Board on the availability and quality of the water in the Dockum Group, information not previously available.

Additionally, Texas Tech University entered into a subcontract to develop a MODFLOW model of the Ogallala Aquifer (based on a previous model developed by the TWDB) to reflect the volume of water in storage and to provide a framework for predicting

(See "Senate Bill 1," page 4)

Applications being accepted for scholarship in water resources

Applications are now being accepted for the 1998 Dan M. Wells Memorial Endowed Scholarship. Scholarship application is open to seniors or graduate students in all majors who have maintained a GPA of 3.0 during the previous two college semesters. Applicants are required to demonstrate their interests in pursuing a career in water resources by writing a brief (one typewritten page) paper outlining goals, ambitions, and previous work, courses, or other involvement in water resources.

Previous recipients have been from the Departments of Biological Sciences, Chemical Engineering, Civil Engineering, and Range, Wildlife, and Fisheries Management.

Application forms are available from the Water Resources Center (806-742-3597) and are due June 12, 1998.

The Dan M. Wells Memorial Endowed Scholarship was established in memory of Dan M. Wells, Ph.D., P.E. Professor Wells served as director of the WRC from 1966 to 1977. During his tenure, Professor Wells was instrumental in establishing the WRC as a focal point for water resources research and related activities on the Texas Tech campus.



WRC
Newsletter
April 1998

The WRC Newsletter
is published quarterly by

Water Resources Center
Texas Tech University
Lubbock, TX 79409-1022

Editor and
Desktop Publishing:
Robin D. Lee
RLee@coe.ttu.edu

Contributing Editor:
Lloyd V. Urban
LUrban@coe2.coe.ttu.edu

Senate Bill 1 water plan to incorporate work accomplished as part of OMP

(Cont. from page 3)

probable future availability of groundwater under various scenarios, such as continued use at the rate of past use, reduced use as a result of full implementation of best water conservation practices over time, and the effects of long term droughts on pumpage.

Water use efficiency evaluations of various agricultural irrigation practices were also conducted. These included minimizing water use by reducing evaporation losses during irrigation application. From this evaluation, the best available technology was determined, and an inventory was then done on a county-by-county basis of the adoption of the best agricultural water conservation technology (i.e., center pivot irrigation systems) to determine the potential for additional water savings by further implementing these practices.

Other work included compilation of historic data on water use, projections for future water use,

projections of population for all major water users in the area, and on changes in annual water levels in recent years; evaluations of probable recharge to the Ogallala Aquifer, conjunctive use of ground and surface water by municipal supply districts, augmentation of the area's water supplies, water availability and projected life of the water supply, and the quality of the region's water supplies; and water sampling of runoff in and around livestock feedyards.

The OMP also led to opportunities to educate the general public about urban water conservation and water use efficiency. A publication containing explanations and recommendations for water accountability, leak detection methods, and possible city ordinances for enhancing water conservation was developed by the TWDB and distributed to area cities. The High Plains Underground Water Conservation District No. 1 began a pilot program called Water Wise in selected elementary schools within

the district. The program was designed to educate children in water-saving techniques and encourage immediate implementation in their homes through hands-on experiments.

Studies on the economic impact of the depletion of the aquifer and on why changes have occurred in the surface water flows in rivers and streams that drain into surface water reservoirs in the region were interrupted by termination of the state contract. These studies may be picked up with funding obtained for the regional water plan outlined under Senate Bill 1.

The work accomplished as part of the OMP will be incorporated into Senate Bill 1 regional water plans. A major portion of the 47-county area that participated in the OMP has been divided into two regions for the Senate Bill 1 effort.

For more information regarding the OMP or the Senate Bill 1 planning effort, please contact A. Wayne Wyatt, manager of the HPUWCD No. 1, at 806-762-0181, or Lloyd V. Urban, Ph.D., director of the Water Resources Center, at 806-742-3597.



WATER RESOURCES CENTER
TEXAS TECH UNIVERSITY
Box 41022
LUBBOCK, TX 79409-1022

Nonprofit Org.
U.S. Postage
PAID
Lubbock, TX
Permit No. 719