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Water Current

William L. Powers, Director
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FROM THE DESK OF THE DIRECTOR . . .

As most of you probably already know, the Office of Water Research and Technology (OWRT) in the U.S. Department of the Interior is scheduled for elimination on October 1, 1981. This is unfortunate because OWRT was a dependable funding base for research through the Nebraska Water Resources Center. Over the past 16 years, the Water Center has received over $3 million in support from OWRT. It is estimated that at least this same amount was provided in University support for these research projects, i.e., faculty salaries, etc. This base helped generate over $4.5 million from the state of Nebraska and grants and contracts from other funding agencies for water resources research.

What makes the elimination of OWRT even more serious is the fact that federal research funding agencies are also facing budget cuts. Such agencies as the Environmental Protection Agency and the National Science Foundation, which are expecting some budget reductions, have been potential sources for water research grants and contracts in the past. If you will pardon the pun, some of the funding sources are "drying up". With reduced funding sources, some important research will undoubtedly be delayed.

Although future funding for water resources research looks more uncertain than it has for several years, there are some hopeful signs beginning to emerge. First, none of the permanent Water Center staff depend on federal funds for their salary, and some state funds are available for a limited amount of research. Second, the state of Nebraska has traditionally taken intense interest in the water problems of the state and is expected to continue support of the Nebraska Water Resources Center. Third, there appear to be signs of a renewed interest in water resources research at the federal level. Subcommittees of both the House and Senate Budget Committees have discussed various alternatives for water research funding in the future.

Although somewhat discouraged by the sudden decrease in available research funds, the Water Center has not been crippled by these budget cuts on the federal level. The Center will continue to function much as it has in the past. However, renewed effort may have to be made in working with University faculty and staff to develop additional sources of funding as we move through what we hope is a temporary decrease in federal funds available for water resources research.

ON THE HOMEFRONT

MASSENGALE TO BECOME UNL CHANCELLOR

It was recently announced that Dr. Martin A. Massengale will become the new Chancellor of the University of Nebraska-Lincoln on June 1, 1981, pending approval by the Board of Regents. Dr. Massengale has been Vice Chancellor of the Institute of Agriculture and Natural Resources at the University of Nebraska since 1976 and has been a strong supporter of the Water Resources Center and of water research in general.

The close working relationship he established and his interest in water resources will be missed, but we are delighted that he will remain at Nebraska where he will be able to use his knowledge of the state and administrative capabilities for the benefit of the University as a whole.

As he assumes his new duties as Chancellor, we hope to maintain a close relationship and to continue working under Dr. Massengale's leadership on important water issues facing the state and the nation.

ARTIFICIAL RECHARGE SEMINAR

The Nebraska Water Resources Center has recently completed a four-year study of the technical feasibility of artificial recharge in Nebraska. The economics and legal aspects of artificial recharge were also investigated. A special seminar to discuss the results of these studies will be held on Wednesday, April 29, 1981 at 2:00 p.m. in the East Campus Union Building at UNL. The exact room location will be posted.

Seminar speakers and topics will be as follows:

-- William F. Lichtler, Hydrologist, U.S. Geological Survey, "Investigation of Artificial Recharge of Aquifers in Nebraska."

-- J. David Aiken, Water Law Specialist, Department of Agricultural Economics, University of Nebraska-Lincoln, "Legal Aspects of Ground Water Recharge."

-- Raymond J. Supalla, Associate Professor of Agricultural Economics, University of Nebraska-Lincoln, "The Economics of Ground Water Recharge: A Preliminary Assessment."

Although artificial recharge is not a new idea, growing public interest in this option has created a need to critically examine the technical, legal and economic feasibility of artificial recharge, especially in regions where the only significant groundwater use is irrigation. It is hoped that this seminar will provide useful information on this important topic. The public is invited to attend. For additional information, contact the Water Resources Center, 310 Ag. Hall, University of Nebraska-Lincoln. Telephone: (402) 472-3305.

ASSISTANT INSTRUCTOR/WATER RESOURCES COMMUNICATIONS

The Department of Agricultural Communications, in cooperation with the Water Resources Center at the University of Nebraska-Lincoln, has an opening for an Assistant Instructor in Water Resources Communications. This person will work with various agricultural communications specialists in developing and carrying out multi-media communications programs in water resources. The person will work closely with staff of the Water Resources Center as well as other University staff in gathering and preparing information for dissemination through print and electronic media, publications, newsletters, meetings and various water resources programs.

A Bachelor's degree in journalism is required for this position, preferably agricultural journalism, news-editorial. Master's degree would be desirable in communications, agriculture or natural resources. Minimum of three years of full-time relevant experience is required. Candidate must be an excellent writer and possess the ability to relate well with University staff members and the public. Candidate must also be creative in translating scientific information into terms and concepts for lay audience.

Salary will be commensurate with qualifications with $14,000 minimum. The closing date is May 1, 1981, or until a suitable candidate is found thereafter.

Interested applicants should send a resume, along with examples of work and the names of three references, to: Dr. Richard L. Fleming, Head, Department of Agricultural Communications, 108 ACB, University of Nebraska, Lincoln, Nebraska 68583. Telephone: (402) 472-2991.

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WATER RESOURCES IN NEBRASKA

CONSERVATION AND SURVEY DIVISION

Extreme northeastern Arthur County and northwestern McPherson County is the site for a new Sand Hills Lake research study. Initial work to be started this spring includes the installation of observation wells to monitor the water-levels at 100, 200 and 700 feet depths. Both maximum/minimum and continuous records will be used. Lake-level recorders and seepage meters will also be installed. Additionally, the site will be instrumented for weather observation. Data will be collected over a three-year period and used to model the ground-water/surface water flow system.

For information, contact: Marilyn Ginsberg, Research Hydrogeologist, Conservation and Survey Division, 113 Nebraska Hall, University of Nebraska, Lincoln, Nebraska 68588.

FEDERAL HIGHLIGHTS

FEDERAL WATER-RELATED BUDGET CUTS

In his recent appearance before the House Subcommittee on Appropriations for the Department of Interior and Related Agencies, Interior Secretary James Watt announced proposed budget cuts for fiscal year 1982 in water research and planning programs.

Watt has proposed to entirely eliminate funding for programs of the Office of Water Research and Technology (OWRT) and the Water Resources Council (WRC). This would include the annual cooperative and matching fund programs of OWRT which are administered through a network of state water resources institutes, as well as funding for river basin commissions and Title III state planning assistance. In his testimony, Watt noted that "neither organization properly focuses on national concerns for development of water policies and programs ... Many of the functions of the Office of Water Research and Technology should properly be the responsibility of states and private industry."

Watt indicated that the Administration would propose to establish a new Office of Water Policy reporting to the Assistant Secretary for Land and Water Resources. The purpose of this office would be to develop and coordinate national water policy by working with the states, interested citizens, Congress and other federal agencies.

The Administration has said that many of the functions of OWRT and WRC would go to the Water and Power Resources Service, while other functions would be given to the new Office of Water Policy. The Administration noted that the plan to disband OWRT is in line with a general pattern of withdrawing federal funding from universities.

Other federal water-related budget cuts include $65 million from the Water and Power Resources Service (with $35 million of this cut for construction). Eight projects would be delayed under this proposal. A reduction of $50 million has been proposed for the Army Corps of Engineers which is spread out in general construction cuts, with an additional $115 million in cuts in just a few projects.

The Fish and Wildlife Service will be reduced by $65.6 million with substantial cuts coming in research, endangered species grants, planning and construction projects. The Administration has recommended cuts of $37.7 million for the U.S. Geological Survey, with about $2.1 million of this reduction in water programs, including state water grants. The Land and Water Conservation Fund has also been cut. Only minor reductions were proposed for the Soil Conservation Service, with only $10 million cut for watershed and flood prevention and $2 million eliminated for watershed planning.

The Administration proposed a cut of $50.2 million for the Environmental Protection Agency's water quality program. This would include elimination of the Clean Lakes program, reduced study of the Great Lakes, termination of the 208 program, reduction in construction grants management, and increases in enforcement and ocean disposal funds.

EPA ESTABLISHES CENTER FOR WATER QUALITY MODELING

The U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD) recently established a Center for Water Quality Modeling at its Environmental Research Laboratory in Athens, Georgia. The Center will provide computer programs, instruction and assistance to EPA's regulatory and regional offices and to state pollution control agencies in selecting and using water quality models.

The protection and improvement of the quality of the Nation's freshwater resources is a fundamental responsibility of EPA. Mathematical modeling, an effective tool for the qualitative analysis of water quality, is increasingly being used by environmental planners and managers in making regulatory decisions. To encourage the wider application of these techniques, EPA's Office of Water Planning and Standards asked ORD to establish a central service center where users could obtain the models and instructions for their use.

In response, ORD established the Center for Water Quality Modeling at its Athens Laboratory, which has long been involved in the development and application of mathematical models of water contaminants. The Center, in addition to distributing selected models, offers workshops and seminars that provide both generalized training in the use of models and specific instruction in the application of individual techniques.

Modeling packages selected for the Center include:

(1) Stream Water Quality Model (QUAL-II) -- a steady-state model for streams and well-mixed lakes

(2) Urban Runoff Model (SWMM/RECEIV) -- an urban drainage quantity/quality modeling package

(3) Agricultural Runoff Management (ARM) and Generalized Nonpoint Source (NPS) Models -- techniques for assessing agricultural and urban nonpoint source pollutant loadings

(4) Hydrologic Simulation Program-FORTRAN (HSPF) -- a comprehensive package for simulating watershed hydrology and water quality.

Initial activities will focus on software distribution and technical assistance through workshops, seminars and direct training. Through special arrangements with individual EPA users, the Center will provide guidance on the use of models for specific applications, including tips to the modeler on calibration, parameter values, setup, etc.

Additional information on the services and activities of the Center is available by dialing (404) 546-3585 (FTS 250-3585), or writing the Center for Water Quality Modeling, Environmental Research Laboratory, US EPA, College Station Road, Athens, Georgia 30613.

WPRS COMMISSIONER APPOINTED

James G. Watt, Secretary of Interior, has announced the appointment of Robert N. Broadbent of Boulder City, Nevada as Commissioner of the Interior Department's Water and Power Resources Service (WPRS).

Broadbent received his B.S. degree from Idaho State College and has served on the Clarke County, Nevada Board of Commissioners since 1968. From 1959 to 1968, he was a member of the Boulder City, City Council. In his 12 years as County Commissioner, Broadbent served as a Director of the Las Vegas Valley Water District, as a trustee of the Clarke County Sanitation District, and as a member of the Regional Planning Council.

CONFERENCES

SHORT COURSE ON WATER QUALITY MONITORING NETWORKS

The Research Institute of Colorado in cooperation with Colorado State University is sponsoring a Short Course on "Design of Water Quality Monitoring Networks," June 15-19, 1981 at Colorado State University.

The Short Course will develop, in detail, a systematic procedure for designing a water quality monitoring network. Unlike the previous two short courses on network design, a greater emphasis will be given to groundwater quality monitoring. Following an overview of an entire water quality information system, the course will cover selection of water quality variables to measure, location of sampling stations and determination of sampling frequency.

The course fee is $475 which includes tuition, all class material, the course manual, refreshment breaks, the Monday evening social, Tuesday lunch and the Thursday evening banquet.

For additional information or registration forms, contact: Mrs. Kristine Schneider, Research Institute of Colorado, Drake Creekside Two, 2625 Redwing, Suite 200, Fort Collins, Colorado 80526.

SHORT COURSE ON URBAN STORM HYDROLOGY AND STORM SEWER MODELS

Preceding the Second International Conference on Urban Storm Drainage to be held June 14-19, 1981, the University of Illinois will offer two short courses: (1) Short Course on Storm Sewer Models; and (2) Short Course on Urban Storm Hydrology. Both of the short courses will be held June 8-12, 1981.

The short courses will emphasize the methods and procedures for solving urban storm drainage engineering problems. The Urban Storm Hydrology course covers rainfall input, frequency analysis, overland runoff and design hydrographs. The Storm Sewer Models course will discuss the basis and application of four selected computer-based models: the new British Working Party model, ILLUDAS, ILSD and SWMM. Each will be presented by the original model developers and the most up-to-date versions will be introduced.

In each course the participants are required to use computers to solve design problems which could be a participant's actual design project if extensive computer time is not required. In addition, participants will be provided hand-held calculator programs. The two courses are offered concurrently and separately. Nevertheless, those with some introductory background may enroll in both courses if they wish, as the courses are arranged such that important items are presented at different times. However, those who enroll in both courses will have to run the computer programs in the evenings and/or the weekend after the courses for their design problems.

Enrollment fee for the Urban Storm Hydrology course is $300 and for the Storm Sewer Models course $375, or $550 for both. The fee covers session costs, lecture notes, computer time for solving design problems, and break refreshments. Lodging and meals are not included.

For further information and enrollment, contact: Dr. C. B. Yen, Department of Civil Engineering, University of Illinois, Urbana, Illinois 61801. Telephone (217) 333-4934.

UCOWR ANNUAL MEETING

The 1981 Annual Meeting of the Universities Council on Water Resources (UCOWR) will be held August 2-5, 1981 on St. Simons Island, Georgia, at the Sea Palm Resort Hotel. The theme of this year's meeting is "Implications of National Priority Reports for Water Resources Education and Research."

With the emphasis on controlling inflation and reduced government spending, federal research management is becoming increasingly structured. Currently, both the Executive and the Legislative branches of the federal government are actively evaluating and prioritizing water resources research. A predictable result will be for federal research funding to become more plentiful on certain topics and all but dry up on others. Tentative priorities, already formulated, will directly impact the research funding available to universities and indirectly alter the total university program of training students for eventual employment in the governmental agencies and private firms expediting water resources management programs. The 1981 UCOWR Annual Meeting provides an opportunity for university scientists and administrators to interact with the governmental officials involved in the national water research prioritization process.

For additional information and registration forms, contact: Office of the Executive Secretary, UCOWR, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583. Telephone: (402) 472-3305.

WATER FORUM '81

WATER FORUM '81, a specialty conference technical state-of-the-art exchange, will be held August 10-14, 1981 in San Francisco, California. The conference is sponsored jointly by the following technical divisions of the American Society of Civil Engineers: Environmental Engineering Division, Hydraulics Division, Irrigation and Drainage Division, Water Resources Planning and Management Division, and Waterway, Port, Coastal and Ocean Division.

Between 180 and 200 technical papers on the state-of-the-art in solving water problems will be presented, as well as exhibits from water-oriented agencies of the federal, state and municipal governments. Technical field trips are also planned.

For additional information and registration forms, contact: ASCE, 345 East 47th Street, New York, New York 10017. Telephone: (212) 644-3620.

PUBLICATIONS

WATER CONSERVATION INFORMATION AVAILABLE

The U.S. Water Resources Council has briefly surveyed the availability of consumer information on residential water conservation. A partial list of available material appears below.

-- "You Can Conserve Water" and "Water Conservation Begins at Home," 25-page pamphlet and poster, Connecticut Department of Environmental Protection, State Office Building, Hartford, Connecticut 06115.

-- "The ABC's of Water Conservation," 15 pages, Channing Bete Company, South Deerfield, Massachusetts 01373. Price varies depending on quantity of order.

--"Breaking the Habit," "It's Your Turn," and "Why Not Reuse," three pamphlets, Texas Water Resources Institute, Texas A&M University, College Station, Texas 77843.

-- "Water Conservation at Home," 16 pages, American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235. Price varies with quantity of order.

-- "Easy Ways to Save Water, Money and Energy at Home," 28 pages, Potomac River and Trails Council, 12 South Market Street, Frederick, Maryland 21701.

-- "Water Wheel - Your Guide to Home Water Conservation," U. S. Environmental Protection Agency, Public Information Center, (PM-215), Washington, D. C. 20460.

-- "Hints for Water Conservation," "Save Every Last Drop!", "Save Water," and "Water Conservation," Department of Water Resources, Box 388, Sacramento, California 95802.

The Water Resources Council has also developed a more detailed bibliography of publications dealing with water use, water conservation and water conservation planning. For a copy of this bibliography, contact Wanda Phelan, U. S. Water Resources Council, 2120 "L" Street, N.W., Washington, D. C. 20037. Telephone: (202) 254-8290.

POSITIONS AVAILABLE

WATER RESOURCES SPECIALIST

The Department of Agricultural Engineering at the University of Nebraska-Lincoln has an opening for a State Water Resources Specialist (60%) and Southeast District Irrigation Specialist (40%).

Responsibilities would include the development and conduct of statewide extension programs in water resources management, including ground water management, aquifer recharge and ground water hydrology, and the development and conduct of district programs in irrigation scheduling and energy conservation. The incumbent would be responsible to the head of the Department of Agricultural Engineering for day-to-day program administration and budgetary matters, for technical program coordination and for supervision of the state water resource program. He would be responsible to the Director of the Southeast District for coordination of programs in irrigation extension in that district.

Ph.D. in agricultural engineering is preferred but will consider Master's degree with experience. Salary is commensurate with experience and qualifications.

Interested candidates should submit an application to: Dr. W. E. Splinter, Head, Department of Agricultural Engineering, University of Nebraska, 2nd Floor, Ag. Engineering Annex, Lincoln, Nebraska 68583.

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HYDROLOGY AND WATER RESOURCES POSITION

The Department of Environmental Sciences at the University of Virginia invites applications for a tenure-track faculty position in Hydrology and Water Resources. The department offers a broad-based interdisciplinary program at both undergraduate and graduate levels with particular strength in the areas of meteorology, ecology, geology and hydrology/water resources.

Candidates should have an earned doctorate and a strong commitment to research (including the ability to develop an externally-funded research program within the context of an interdisciplinary department). Preference will be given to applicants with a background in water resources management. Closing date is April 15, 1981.

Interested applicants should send resume, reprints and three references to: G.M. Hornberger, Department of Environmental Sciences, Clark Hall, University of Virginia, Charlottesville, Virginia 22903.

The University of Virginia is an Equal Opportunity/Affirmative Action Employer.

HYDRAULIC DESIGN/GROUNDWATER FACULTY POSITION

The Department of Civil Engineering, University of Houston, invites applications for a tenure-track faculty position for a versatile, research oriented person with a Ph.D. degree. The position will involve teaching graduate and undergraduate courses in several of the following areas: Hydraulics, Design of Water and Sewer Systems, Groundwater Hydrology, Open Channel Hydraulics, Hydrodynamics, Cardiovascular Flows, and Hydraulic Structures.

Four other faculty positions in environmental, geotechnical, steel structures, and graphics are also available, and the department faculty will consider a qualified, full professor candidate interested in departmental administrative duties.

Interested applicants should send a typed resume to: Chairman, Civil Engineering Department, University of Houston, Houston, Texas 77004. Telephone inquiries may be placed with Dr. Net Hwang at (713) 749-4489, or Dr. Jerry Rogers at (713) 749-4476.

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RESEARCH REVIEW

TITLE: Herbicide Loss in Water and Sediment Runoff as Affected by Center Pivot Irrigation System and Tillage Treatment

PRINCIPAL INVESTIGATORS: Lloyd N. Mielke, Assoc. Professor
J. R. Leavitt, Former Ass't Professor
Department of Agronomy
University of Nebraska-Lincoln

The purpose of this study was to measure the effects of tillage, water application methods and herbicide type on the amount of herbicide lost in runoff under center pivot irrigation. A highly water insoluble herbicide (atrazine) applied at planting was compared to a moderately water soluble herbicide (alachlor) applied at the time of "lay by" cultilation. The three tillage treatments used were till plant, disk and chisel. The water application methods used were high pressure impact nozzles, low pressure impact nozzles and low pressure spray nozzles.

The future in irrigation will most likely see an increase in the use of sprinkler nozzles and a decrease in nozzle pressure. These trends are expected because most of the irrigation development will be on lands not well

suited to surface systems and the desire to save energy with decreased pressure. However, when the nozzle pressure is decreased, there are some disadvantages in that the intensity of water application increases, and if it exceeds the infiltration rate, runoff occurs.

Samples of the runoff water were taken at six-minute intervals from various irrigation plots during runoff. The volume of water runoff from the 4.6 x 30.5 m plots was measured with flumes equipped with a strip chart recorder. Results of three irrigations producing runoff events with the spray nozzle for the till plant and disk tillage treatments showed that only 0.3% of the alachlor initially applied was removed by water and sediment. Only 0.22% of the atrazine applied was washed off in these runoff events.

The greatest amount of runoff came from the spray nozzle method of water application. Runoff was measured from the high pressure and low pressure impact nozzle irrigation systems after a repeat irrigation shortly after the scheduled irrigation. Disk and till plant tillage resulted in about ten times the amount of runoff as compared to the chisel treatment. The amount of herbicides in the runoff from disk and till plant plots was also about ten times that from the chisel plots. Generally, herbicides were found in the water with very little attached to the sediment.

The amount of atrazine removed with each of three consecutive runoff events was not significantly different when averaged across all three tillage and water application methods. However, significantly less alachlor was removed with each consecutive runoff event. The difference in runoff concentration is most likely due to the greater water solubility of alachlor compared to atrazine. The total amount in three runoff events was only slightly greater for the alachlor than for the atrazine.

Data from this research project should help the farmer make those tillage and irrigation technology decisions that can reduce losses of herbicide as well as cut doen on non-point sources of pollution.

NEWSLETTER ITEMS SOLICITED

The WATER CURRENT Newsletter will publish, without charge, announcements, programs for upcoming conferences, employment opportunities or other newsworthy items on hydrology, water resources or related topics.

QUESTIONS AND INQUIRIES

Newsletter items and inquiries should be sent to: Editor, Nebraska Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583. Telephone: (402) 472-3305.