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Water Current

Deon Axthelm
Volume 12, Number 3

Karen E. Stork, Editor
May/June, 1980

FROM THE DESK OF THE DIRECTOR . . .

The last issue of WATER CURRENT carried an editorial written by me. The accompanying notation stated that I would be retiring later this year. That is still my intent, in spite of the recent announcement by Vice Chancellor Martin A. Massengale, Institute of Agriculture and Natural Resources:

> *Dr. Gary Lewis informed me that he wished to be relived of his responsibility as Acting Director of the Water Resources Center and return to his previous assignment.*
>
> *We are pleased to announce that Professor Deon Axthelm has agreed to serve as Acting Director. Professor Axthelm has many years of experience in Extension work related to water, and we are pleased that he has accepted this responbility until a new Virector is appointed for the Water Center.*

Candidates for the Director's position are currently being interviewed. It is hoped that the selection process will continue to move with deliberate speed. I believe the proper person will shortly be found.

I will do all I can to move the important water research projects forward and will do my best for the Water Center just as Dr. Lewis did. The door is open, and I welcome your calls and comments.

Deon D. Axthelm
Acting Director

ON THE HOMEFRONT

CHANGE OF ADDRESS

Due to the upcoming renovation of the Agricultural Engineering Building, the Water Center staff housed in that building will be moving to new offices for approximately two years. Effective June 9, 1980, the staff and their new office addresses will be as follows:

Dr. M.-L. Quinn 8H Room #7 Forage Insects Lab East Campus	Donn Rodekohr 8G Room 103 Insectary East Campus
Denis P. Gilbert 8G Room 103 Insectary East Campus	Dan Sobashinski 8G Room 103 Insectary East Campus

The mailing address for the Acting Director and other administrative staff and the main office of the Water Center will remain 310 Agriculture Hall.

STAFF MEMBERS RESIGN

The Water Resources Center is sorry to announce that two staff members have resigned their positions effective May 30, 1980, to move on to greener pastures. Dr. Marvin V. Damm, Research Associate and Associate Professor of Civil Engineering, will be joining the consulting firm of International Engineering Company, Inc. of San Francisco, California. Ms. Ruth Dickinson has received a full Rotary scholarship to study in Israel, and she has been accepted as a graduate student in Civil Engineering at the Technion.

We are sorry to lose Marvin and Ruth but wish them continued success in their new careers.

WATER RESOURCES IN NEBRASKA

MRBC ADOPTS REGIONAL WATER PLAN

The Missouri River Basin Commission (MRBC) has adopted a plan for water use in the ten-state region drained by the Missouri River and its tributaries. The adopted plan is an update of the first regional plan published by the agency in 1977. It includes an environmental impact statement summarizing the environmental effects of the projects and programs cited in the plan.

The plan will now be forwarded as adopted to the governors of the ten Missouri River Basin states and to the heads of federal agencies concerned with water and related resources planning, for an official 90-day review. Comments received during this time will be published as a part of the final document.

MRBC Chairman Millard W. Hall emphasized that adoption and publication of the report are steps in an ongoing planning and coordination process guided by the river basin commission. "The approved plan does not represent the single focus we usually associate with a 'plan,'" Hall said. "It has as many objectives as there are plan elements. Our goal at the Commission is to become aware of and reach consensus over activities related to water resources in the region."

NEBRASKA GAME AND PARKS COMMISSION

The Nebraska Game and Parks Commission is currently working on an interim project report which deals with assessing different methodological approaches which are appropriate to quantify instream flow requirements. This report will be finalized in September, 1980, and is a part of the Instream Flow Policy Issue Study being conducted at the state level of government.

MANDATORY BEST MANAGEMENT PRACTICES FOR NEW FEDERAL IRRIGATION PROJECTS IN NEBRASKA

In a recently received report from the Water and Power Resources Service, they noted that two new federal irrigation projects are under construction in Nebraska, and the sponsoring reclamation and irrigation districts of both projects have agreed to implement certain mandatory best management practices (BMP's) to help protect the quality of the groundwater. Water and Power Resources Service (Water and Power), then known as the Bureau of Reclamation, supplemented the final environmental statement for the O'Neill Unit in 1978 and the North Loup Division in 1979. One of the major concerns that arose during the supplementing process of both statements was the possible future average nitrate-nitrogen levels in the groundwater. Even though the results of Water and Power's studies for both projects were that the future nitrate-nitrogen levels would be lower with the projects than without, the U.S. Environmental Protection Agency (EPA) in the case of the O'Neill Unit, and Nebraska Department of Environmental Control (DEC) and EPA in the case of the North Loup Division, requested immediate implementation of certain mandatory BMP's.

The process of developing the recommended management practices to be implemented began after Water and Power filed the O'Neill Unit Supplement in June 1978. Even though the studies showed the future nitrate-nitrogen concentrations in the groundwater without the project would be considerably higher than the concentrations with the project, EPA became very concerned because the studies showed that the future nitrate-nitrogen concentrations in the groundwater with the project would be about three times greater than the 1976 concentrations which already averaged slightly more than the maximum contaminent level for drinking water which is 10 mg/1 nitrate-nitrogen. As a result of a number of meetings on this matter, EPA requested mandatory implementation of certain best management practices through a contractual arrangement between Water and Power and the sponsoring irrigation and reclamation districts. The contractual agreement developed between the United States of America and the sponsoring districts was a Memorandum of Understanding (MOU) which was executed on February 15, 1979.

The MOU requires the districts to implement a program to advise the water users as to the proper timing and amounts of irrigation water application. As a condition to receive water, the districts must also require:

(a) Before a water user may receive project water, he has to satisfactorily attend a training course on reasonable best management practices for irrigation water and fertilizer practices.

(b) Each project water user will use soil moisture measuring equipment.

(c) Each project water user will institute and maintain an irrigation scheduling program.

(d) No water user receiving project water will apply nitrogen fertilizer to project lands during the fall and winter, except for minimum starter application.

Additionally, the districts must provide each user copies of current University of Nebraska fertilizer guide sheets, and Water and Power, in cooperation with the districts, will monitor and evaluate groundwater quantity and quality conditions related to the irrigable lands and facilities of the project. The MOU is limited to the project lands and does not pertain to the non-project irrigated lands even though they are intermingled in the same groundwater basin.

At the request of both DEC and EPA, an identical MOU was executed November 2, 1979, between the United States of America and the local districts sponsoring the North Loup Division in Central Nebraska. The North Loup area differs from the O'Neill area in that many of the North Loup soils are deep silt loams overlying an extensive unsaturated loess mantle, whereas O'Neill soils can be characterized as being thinner silts and fine sand overlying unconsolidated deposits of sand and gravel. Also, the North Loup area does not presently experience a nitrate problem in the aquifer. However, the officials of these districts, as did the officials of the O'Neill districts, recognized the desirability and the necessity of the adoption of the proper soil and water conservation practices.

The best management practices in the provisions of the MOU's are similar to some of the Voluntary Nonstructural Measures listed in the Nebraska Section 208 Statewide Water Quality Management plan. The main difference is that the best management practices in the MOU's are mandatory for the project water users, whereas the similar provisions in the Nebraska 208 plan are voluntary. These MOU's have received national attention as EPA cites them as examples of successes and, in letters of comment on other projects, refer to the O'Neill and North Loup MOU's as examples of best management programs that should be implemented.

CONSERVATION AND SURVEY DIVISION

Streamflow of the South Fork of the Little Nemaha River near Cook, Nebraska, is being monitored to determine what factors influence baseflow to the selected stream segment. Field work includes streamflow measurements, groundwater level measurements, some water quality measurements, and detailed geologic interpre-

tations of the area using the test-hole logs, drillers logs, and some geophysical methods. The study forms the basis for David Folkman's Master's thesis work in the Department of Geology with Darryll T. Pederson as his advisor. Field work will continue until late November.

FEDERAL HIGHLIGHTS

USGS FY 1981 BUDGET REQUEST CUT $6.3 MILLION

The U.S. Geological Survey, Department of the Interior, the nation's largest Earth science research agency, is proposing a cut of $6.3 million from its original budget request of $527,912,000, leaving a total amount of $521,612,000 requested to carry out its work in fiscal year 1981. The revision of the amounts contained in the President's original budget stems from the Administration's decision to propose a balanced budget in FY 1981 because of the current economic situation.

The requested amount represents a net decrease of $123,061,000 from the estimated USGS appropriation for fiscal year 1980.

Of the total revised FY 1981 appropriation request, $475,111,000 is being requested for Surveys, Investigations, and Research (SIR), an increase of $6,065,000; and $46,501,000 for exploration of the National Petroleum Reserve in Alaska (NPRA), a decrease of $129,126,000.

SIR funds support programs to provide Earth science data; new and updated topographic maps; information on the nation's lands, fuels, mineral, and water resources; and supervision of mineral leasing operations on federal lands, including the Outer Continental Shelf (OCS).

WRC COMPLETES FISCAL YEAR 1980 GRANTS TO STATES

Leo M. Eisel, Director of the U.S. Water Resources Council, recently announced the completion of grant awards of $9.63 million to states for water resources planning. The grant awards have been made to the 50 states, the District of Columbia, the Northern Mariana Islands, the Virgin Islands, Puerto Rico and Guam. Grant amounts range from $32,800 to $295,500 to each of the 55 eligible agencies.

The awards represent a three-fold increase over the awards made in fiscal year 1979. President Carter had requested $50 million for a broader program for fiscal year 1980, and Congress appropriated $21 million for that year, but did not authorize the broader program. In a recent rescission request now pending in Congress, President Carter requested that expenditures in fiscal year 1980 for the program be cut in half. The grants awarded reflect that request. The President has also amended his grant program budget request for fiscal year 1981 from $30 million to $21 million. The reductions are part of President Carter's anti-inflation program.

Eisel said that the Council was very pleased about the range of water resources issues addressed in the applications for 1980. The total requests by

the states amounted to $26 million for water resources planning activities. Since the grants are matched by the states on a 50/50 basis, the applications indicated states' ability to expend another $26 million for water resources planning.

"The applications clearly show increasing attention to water conservation, groundwater planning, and interface between planning for quality and quantity." Eisel said. "These are key areas of concern, and the states are addressing them in ways which did not seem likely a few years ago."

President Carter requested the Congress to authorize a broader grant program to the states for water management and water conservation technical assistance for fiscal year 1980. While appropriations were increased to $21 million for fiscal year 1980, new authorization for a broader program is still pending in the Congress. Because of the need of many of the states for funds, the Council granted awards under its current authority and guidelines which are for water planning activities only. Eisel said that the Administration has continued to urge the Congress to take early action to authorize the broader program.

NSF ANNOUNCES ANTI-INFLATION BUDGET FOR FY 1981

The National Science Foundation (NSF) has submitted to the Congress an amended proposed budget for FY 1981 of $1.074 billion, a reduction of $74 million or 6.9 percent from the budget proposed in January.

The new budget, which reflects reductions in all of NSF programs, is part of President Carter's anti-inflation budget amendment for the federal government for FY 1981. Additional Administration anti-inflation budget adjustments at NSF include rescission of $5 million in science education programs in FY 1980.

The rescission would eliminate the $3.4 million Instructional Scientific Equipment program. Development and Research in Science Education would be cut back about 8 percent and the Ethics and Human Values in Science and Technology program will be reduced by about 24 percent.

The deferral of a further $18 million from FY 1980 to future years affects applied research across the board at NSF. The Applied Science area of Engineering and Applied Sciences would have delays in $9.5 million or 16 percent of planned program activities. Deferral of the remaining $8.5 million in program activities is spread over most other budget activities.

Highlights of the proposed FY 1981 budget amendment include the following:

(1) Project Support by Research Discipline. Some downward adjustment is proposed in each research program, but the emphasis on increases in the physical sciences and engineering is retained. Most programs will have some reduction in the number of individual projects supported. Approximately $11.5 million in reductions in basic research project support will be made.

(2) Other Basic Research Support. Funds ($1.7 million) for detailed design of a 25-millimeter wave telescope would be eliminated (though there would be some

small increases for astronomy research project support and support for the National Centers). Funding for a replacement oceanographic research ship may not be available if fuel costs continue to rise.

(3) Applied Science. The Integrated Basic Research Program ($4.5 million) would be eliminated and major reductions made elsewhere in Problem-Focused Research. The State Science and Engineering Technology program would be reduced $1.4 million.

(4) Science Education. The proposed amendment reduction of $10 million would result in an FY 1981 funding total below the current spending plan for FY 1980. Each science education subactivity would be reduced. The Graduate Fellowship and Minority Graduate Fellowship programs would have a 20 percent reduction in new awards to be made in FY 1981, for example. Two programs -- a new program of Minority Apprenticeships for 400 high school students ($1.0 million) and the Local Course Improvement Program ($3.5 million) -- would be eliminated.

(5) Special Facilities and Instrumentation. Upgrading of research facilities and instrumentation at university laboratories would have to be delayed. The $14.3 million budgeted for this effort in FY 1981 would be eliminated.

EPA SOLICITATION FOR PROPOSALS

The Environmental Protection Agency (EPA), in a publication entitled "EPA and the Academic Community--Partners in Research," is soliciting grant proposals in a number of areas. Fully developed applications received before June 30, 1980, will be considered for FY 1980 funding with support available as early as October 1, 1980. However, proposals will be accepted throughout the year.

Grant proposals cannot be discussed in advance nor can pre-proposals be accepted. Interested persons should contact Grants Administration Division (GAD), EPA, 401 "M" Street, S.W., Washington, D. C. 20460 for application procedures and forms. A completed grant application should be returned to GAD which will conduct a preliminary administrative and legal review before routing the proposal to EPA's Office of Research and Development for Peer Review.

Peer Review Panels will review each proposal and rank it in accordance with its scientific merit. Criteria for review and ranking are: (1) quality of research; (2) qualifications of principal investigator; (3) potential utility of results; (4) availability of suitable facilities and equipment; and (5) budget justification.

Research proposals are solicited in the following four areas: (1) Health Research; (2) Pollution Control Processes; (3) Environmental Chemistry and Physics; and (4) Environmental Biology.

For more detailed information on research areas, contact the Grants Administration Division, EPA, at the above address, or the Nebraska Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583.

CONFERENCES

CONFERENCE ON NEW DEVELOPMENTS IN RIVER BASIN MANAGEMENT

A Specialized Conference on New Developments in River Basin Management will be held June 29-July 3, 1980, in Cincinnati, Ohio. The conference is sponsored by the International Association on Water Pollution Research and the Ohio River Valley Water Sanitation Commission.

The conference will focus on new developments and practices in management and control of river basins. Professionals in river management will evaluate new policies and identify research needs.

Conference registration will be limited to 120 participants, and the registration fee is $140 (IAWPR member) or $160 (non-member). For additional information or to obtain a registration form, contact: Ohio River Valley Water Sanitation Commission, 414 Walnut Street, Suite 900, Cincinnati, Ohio 45202. Telephone: (513) 421-1151.

1980 UCOWR ANNUAL MEETING

The Universities Council on Water Resources, Inc. (UCOWR) will hold its 1980 Annual Meeting July 27-30, 1980, at the University of Idaho at Moscow. The theme of the conference is "Water Resources Planning in the '80's--University Involvement." The objective of the meeting is to focus on defining the role of universities and means of improving their direct and indirect participation in three developing areas of water resources assessment and planning; namely, (1) the Water Resources Council's Principals, Standards and Procedures for Federal Water and Related Land Resources Planning; (2) National Water Assessments; and (3) Federally-Assisted Non-Federal Water Planning.

It is hoped that the conference will further advance, encourage and focus university research and education in water resources through discussion and action by UCOWR's Board members and standing committees. Knowledgeable individuals involved in and affected by the three developing planning and assessment activities will outline the activities and address the issues in sufficient detail for participants to respond. Committee meetings during the conference will develop alternative means and methods by which the member universities can become involved in these planning activities and can begin to implement the plan through concerted and organized university action.

For additional information on the program and registration material, contact: UCOWR Executive Secretary's Office, Nebraska Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583. Telephone (402) 472-3305.

STATISTICAL COMPUTER TECHNIQUES IN HYDROLOGY AND WATER RESOURCES

A short course on the use of computers and statistics in hydrology and water resources will be held July 28-August 1, 1980, at Colorado State University, Fort Collins, Colorado. The major objective of the course is to provide participants

with statistical techniques and a tape of computer programs designed for the analysis and synthesis of hydrologic data and to demonstrate the application of such techniques in water resources decisions. The course is intended for hydrologists, hydraulic engineers, water resources specialists, engineers and scientists interested in using computer and statistical techniques in hydrology and water resources.

Lecturers are Vujica Yevjevich, Jack W. Delleur, William L. Lane, Jose D. Salas, Jose M. Mergia, Jaime Millan, Daniel P. Sheer and Duane C. Boes.

For more information, contact the course director: Dr. Jose D. Salas, Engineering Research Center, Colorado State University, Fort Collins, Colorado 80523. Telephone (303) 491-8460 or (303) 491-8450.

INLAND WATERS '80

The American Society of Civil Engineers (ASCE) Water Resources Planning and Management Division is sponsoring a Division Specialty Conference on "Inland Waters '80" to be held July 29-August 1, 1980, at Green Bay, Wisconsin.

Topics to be discussed at the conference include the following:

(1) Great Lakes Regional Policy and Management--New Initiatives;
(2) The Great Lakes in 2000;
(3) Great Lakes Levels and Flows--Management and Issues;
(4) Water Quality Issues in Boundary and Transboundary Waters;
(5) The Future of Coastal Zone Management in the Great Lakes; and
(6) U. S. Water Policy

A number of concurrent sessions will also be held on such subjects as water conservation, water quality modeling, water resources planning, impact analysis, water law and the civil engineer, and optimality in urban water systems design and operation.

Complete program and registration material can be obtained by writing to: Mr. Harry Tuvel, ASCE, 345 East 47th Street, New York, New York 10017.

ICWP ANNUAL CONFERENCE

The Interstate Conference on Water Problems (ICWP) will hold its 1980 Annual Meeting in Cincinnati, Ohio, September 21-25. This year's theme is "State Water Policies for the 1980's." The conference will include panel discussions on future water issues, changing directions of state water agencies, research and its role, EPA's groundwater program, water legislation, and other topics.

For additional information, contact: L. Bennett Coy, 1980 Program Chairman, Interstate Conference on Water Problems, 38 East Monument Avenue, Dayton, Ohio 45402. Telephone (513) 223-1271.

PUBLICATIONS

ALL VOLUMES OF SECOND NATIONAL WATER ASSESSMENT NOW AVAILABLE

The Water Resources Council (WRC), recently announced that the final report of the Second National Water Assessment is available. The Nation's Water Resources, 1975-2000 provides basic data on 1975, 1985 and 2000 water use and supply for the entire United States. Used in conjunction with local, state and regional viewpoints, the information is useful for many ranges of considerations, including establishing water resources policy.

The publication consists of four basic volumes totaling 29 separate books. The volumes are briefly described below.

Assessment Volume 1, Summary -- overview of U.S. water supply, water use and critical water problems for 1975, 1985 and 2000.

Stock number: 052-045-00051-7 Price: $5.00

Volume 2, Water Quantity, Quality and Related Land Consideration --

Part I outlines the origin and conduct of the assessment.
Part II identifies 10 general water-problem issues, implications and potential consequences.
Part III focuses on national perspectives regarding 1975 and projected water requirements to meet offstream, instream and flow-management needs. Compares state/regional and federal perspectives.
Part IV analyzes adequacy of fresh water supplies to meet present and future requirements. It quantifies supplies, storage and transfers, describing regional requirements against supplies, evaluates quality conditions and discusses legal and institutional aspects of water allocation.
Part V gives synopses of the 21 water resources regional reports.

Stock number: 052-045-00082-7 Price: $11.00

Volume 3 Analytical Data Summary -- describes the methods and procedures used to collect, analyze and describe data used in the assessment. Includes national summary data, supplemented by five appendixes, published separately.

Stock number: 052-045-00052-5 Price: $4.00

Appendix I, Social, Economic, and Environmental Data

Stock number: 052-045-00053-3 Price: $4.75

Appendix II, Annual Water Supply and Use Analysis

Stock number: 052-045-00054-1 Price: $5.00

Appendix III, Monthly Water Supply and Use Analysis

Stock number: 052-045-00055-0 Price: $7.00

Appendix IV, Dry Conditions Water Supply and Use Analysis

Stock number: 052-045-00056-8 Price: $7.00

Appendix V, Streamflow Conditions

Stock number: 052-045-00057-6 Price: $6.00

Volume 4, Water Resources Regional Reports, consists of separately published reports for each of the 21 water resources regions:

Region 1, New England	052-045-00059-2	$4.25
Region 2, Mid-Atlantic	052-045-00060-6	$4.00
Region 3, South Atlantic-Gulf	052-045-00061-4	$3.75
Region 4, Great Lakes	052-045-00062-2	$3.75
Region 5, Ohio	052-045-00063-1	$2.75
Region 6, Tennessee	052-045-00064-9	$2.50
Region 7, Upper Mississippi	052-045-00065-7	$4.75
Region 8, Lower Mississippi	052-045-00066-5	$4.25
Region 9, Souris-Red/Rainy	052-045-00067-3	$4.00
Region 10, Missouri	052-045-00068-1	$2.75
Region 11, Arkansas-White-Red	052-045-00069-0	$2.75
Region 12, Texas-Gulf	052-045-00070-3	$3.75
Region 13, Rio Grande	052-045-00071-1	$3.75
Region 14, Upper Colorado	052-045-00072-0	$2.50
Region 15, Lower Colorado	052-045-00073-8	$2.75
Region 16, Great Basin	052-045-00074-6	$3.75
Region 17, Pacific Northwest	052-045-00075-4	$3.75
Region 18, California	052-045-00076-2	$3.75
Region 19, Alaska	052-045-00077-1	$3.75
Region 20, Hawaii	052-045-00078-9	$3.50
Region 21, Caribbean	052-045-00080-1	$3.50

Copies of the report may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

When ordering, please use the stock number indicated and include payment.

STATE OF THE STATES: WATER RESOURCES PLANNING AND MANAGEMENT

The U.S. Water Resources Council (WRC) recently completed a preliminary report entitled, The State of the States: Water Resources Planning and Management.

The report examines the range of agency structures represented by states and regions which enable them to administer their water resources programs. It looks into states' statutes, policies and regulations which provide the structures for water resources planning and management, which is the primary responsibility of the states.

Leo Eisel, Director of WRC, indicated that the publication was a preliminary report which would be revised. "We plan an early revision to include additional information on river basin commissions, interstate compacts, interagency agreements and other regional organizations." Eisel noted that the Council felt it important to work with the states to assist them to plan for comprehensive water resources management to confront water problems which are growing more serious.

Copies of the report are available from the U.S. Water Resources Council, 2120 L Street, NW., Washington, DC 20037. The telephone number is (202) 254-8290.

REPORT ON DROUGHT IN THE GREAT PLAINS

A publication is now available entitled "Drought in the Great Plains--Research on Impacts and Strategies." This is a proceedings of a workshop held in Lincoln, Nebraska, on March 26-28, 1979, and sponsored by the U.S. National Science Foundation. The report is edited by Dr. Norman J. Rosenberg and contains articles by Dr. Donald Wilhite and Dr. M.-L. Quinn, all of the University of Nebraska-Lincoln.

The primary objective of this workshop was to assess the current state of knowledge concerning drought in the Great Plains of North America and to identify and prioritize research needed to provide the basis of information required in preparation of a regional drought strategy.

To obtain a copy of this report send $16.50 for the hardbound book to Water Resources Publications, P.O. Box 2841, Littleton, Colorado 80161.

PROCEEDINGS AVAILABLE

The proceedings from the 1979 Engineering Foundation Conference "Hydropower: A National Energy Resource," held March 11-16, 1979, are now available.

The principal objectives of the conference were to discuss and to exchange ideas on the role of hydropower in meeting national energy needs, and, as a consequence of these discussions, to provide information for the National Hydroelectric Power Resources Study. These objectives were accomplished by bringing to bear the diverse talents and insights of conference participants from federal and state agencies, architect-engineering and consulting firms, power production and marketing groups, the hydroelectric power industry, public and private utilities and the academic, environmental, legal communities.

Copies of the proceedings are available from: The Superintendant of Documents, U.S. Goverment Printing Office, Washington, D. C. 20402. The cost is $6.50 each.

POSITIONS AVAILABLE

RESEARCH ASSISTANT OR ASSOCIATE PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING

This research Assistant or Associate Professor of Civil and Environmental Engineering will be an environmental engineer, chemical engineer, or sanitary engineer. The position entails research and teaching environmental engineering courses at the graduate and undergraduate levels. The positions require initiation, solicitation, performance, and management of environmental research grants, contracts, and projects funded by university and non-university sources. Teaching responsibilities include courses in physico-chemical, biological, and industrial unit operations and processes, water quality management, and water treatment, along with recruitment and advising masters and Ph.D. candidates. This will be a joint appointment between the Utah Water Research Laboratory and the Division of Environmental Engineering. Thus, the individual will report to the Director of the Utah Water Research Laboratory and the Head of the Division of Environmental Engineering. Two separate positions are available and each may be converted to a tenurable position (depending on administrative approval and resource availability) prior to selection of the successful candidate. One position requires demonstrated research and/or design expertise in physico-chemical processes. Teaching responsibilities involve water and wastewater treatment using the systems approach. The other position requires research and teaching experience in biological wastewater treatment. Practical experience in tertiary treatment is desirable but not required.

Qualifications include: (1) Ph.D. degree in Environmental, Chemical, Sanitary, or Civil Engineering; (2) demonstrated ability to develop, solicit, manage, and maintain a viable research program in the applicant's area of expertise; (3) demonstrated ability to effectively teach, motivate, and communicate with, counsel, and direct undergraduate and graduate students; (4) demonstrated ability to communicate effectively both verbally and in writing; and (5) active in professional societies. Previous teaching and research experience in an Environmental Engineering program is highly desirable. Licensed Professional Engineer (P.E.) with design or industrial experience is also highly desirable.

Salary is negotiable depending on qualifications, approximately $24,000 to $32,000. This is a full-time, 12-month position beginning September 1, 1980.

Interested applicants should send resume and names of three references by July 1, 1980, to Dr. V. Dean Adams, Head; Division of Environmental Engineering, UMC 41; Utah State University, Logan, Utah 84322.

Utah State University is an Affirmative Action/Equal Opportunity Employer.

FACULTY POSITION

Southern Illinois University at Carbondale has an opening for an Assistant or Associate Professor tenure track position beginning August 16, 1980, or

January 1, 1981. Research and teaching specialty in hydrology and water resources planning is sought. Major attention will be devoted to the graduate program and research. The teaching load will be dependent on the research commitment.

A Ph.D. in geography, engineering or interdisciplinary water resources program is desired. Related resource areas (e.g., environmental impact assessment, energy planning) as a second area of interest will be viewed favorably. Demonstrated excellence in research and teaching is required. Salary will be dependent on qualifications.

Interested applicants should send resume and names of references to David M. Sharpe, Chairman, Department of Geography, Southern Illinois University at Carbondale, Carbondale, Illinois 62901. Telephone: (618) 536-3375.

Southern Illinois University at Carbondale is an Equal Opportunity, Affirmative Action Employer.

QUESTIONS AND INQUIRIES

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 Ag. Hall - East Campus, University of Nebraska, Lincoln, Nebraska 68683; or phone (402) 472-3305.