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Water Current

Gary L. Lewis, Acting Director
Volume 12, Number 1

Karen E. Stork, Editor
January/February 1980

ANNUAL REPORT -

NEBRASKA WATER RESOURCES CENTER

The Nebraska Water Resources Center was established by the Water Resources Research Act passed by Congress in 1964. The Act designated 54 water centers at land grant universities. Funds authorized by the Act are appropriated each year by Congress and administered by the Office of Water Research and Technology in the U. S. Department of the Interior. The Water Research and Development Act of 1978 reorganized and expanded responsibilities of these centers. The primary purpose of the Center is to bring together water researchers, users and funding sources. It functions to integrate University water research and training programs with federal, state, and local needs. In carrying out this mission, the Center uses its resources to foster, coordinate and administer cooperative, interdisciplinary water-related activities in Nebraska's post-secondary schools.

Research

Five categories have evolved as focal points for the Center's water research program and are considered to be priorities in the present Nebraska water research program: (1) Water Quantity Management; (2) Water Use Efficiency and Conservation; (3) Water Quality; (4) Natural Disaster Prediction and Response; and (5) Legal, Institutional, Economic and Social Aspects. During fiscal year 1979 the Center sponsored, administered and conducted a research program of 25 projects whose total funding was approximately $1.2 million.

The Upper Big Blue Project, which the Center has been engaged in for the past five years, involved the study of alternative solutions to water supply problems in the Upper Big Blue NRD. The primary objective of this research was to develop computer planning tools to assist the NRD in formulating and evaluating various plans for the development and management of several proposed water projects in the region.

A four-year study, funded by the Old West Regional Commission, investigated the physical feasibility of artificially recharging groundwater aquifers and identified potential recharge locations. In addition, an initial assessment of legal and economic aspects of artificial recharge is being made; however, further study is needed in these areas.

The Center is now completing an EPA-funded project to develop a manual of alternative irrigation management practices for use in the Great Plains. The manual will supply technical guidance to help planners make decisions regarding non-point pollution from irrigation agriculture.

The Dee Creek project involves an on-going effort initiated in July 1974 to collect agricultural non-point runoff data. This project has received support from various agencies and is currently funded by EPA. An inventory of alternative water quality models and a non-modeling approach to data analysis are also part of this study.

Training and Education

The Center staff has been involved in many continuing education and training programs in water resources over the years. These include classes, conferences, seminars, workshops and summer institutes. For example, seven water resources seminar series have been sponsored annually since 1973 covering topics such as regional planning for natural resources and water resources policy, planning and management. The topic of the current seminar series is "Surface and Groundwater Quality." Students may receive academic credit for participation in these seminars which are also open to the public.

In 1979 the Center also sponsored a "Research Overview" (a brief review of some of the current water-related research being conducted by faculty participating in the Center's programs) in Lincoln, North Platte, and Scottsbluff.

Training of water scientists is also accomplished by active involvement of students and faculty on water research projects. In the past 15 years, several hundred students from 25 departments have received the benefit of training in some aspect of water resources.

Information Dissemination

The Center has engaged in many aspects of information dissemination including publication of reports, technical articles, press releases, a bimonthly newsletter and a newspaper clipping service.

Publications during 1979 included: (1) "Summary - Conference on Water Data Programs and Needs"; (2) "Water Resources Research in Nebraska - 5th Edition"; (3) "Hydrologic Implications of Nebraska Groundwater Management Act--A First Look"; (4) "Changing Fields: Agricultural Land Use Changes in Nebraska, 1925-1974"; (5) Proceedings of the Spring 1979 Water Seminar on "Current Water Resources Planning and Management Issues"; and (6) "Summary Report on Water Facts Computer Game" presented at the 1978 State Fair.

ON THE HOMEFRONT

WATER PLANNER HIRED

The Nebraska Water Resources Center's (NWRC) role in the State Water Planning and Review Process is to coordinate a great share of the University's participation in the overall effort. A portion of these duties includes active consultation with University faculty having expertise in water resources and related areas. In addition, the Center participates on various committees created through the planning and review process mechanism (including the Interagency Water Coordinating Committee). Since the responsibilities of the Water Resources Center relative to the planning and review process will be intensifying in the near future, Robert E. Burns, formerly with the Nebraska Policy Research Office, joined the NWRC staff in early January to help coordinate the Center's involvement in process-related activities.

Presently, the NWRC actively participates in four task forces addressing the following policy issues: instream flows, groundwater reservoir management, water quality, and surface and groundwater rights systems. The Center's involvement in these task forces ranges from review and comment on task force proposals to performing more vigorous work assignments. For example, the NWRC recently coordinated an examination of the various social, economic, environmental, legal and institutional factors affecting or affected by the rate of groundwater utilization. Later this year, the Center will convene and chair a task force which will examine alternatives for enhancing the efficient use of water resources.

The planning and review process is presently programmed to be operational for at least five years, and may extend beyond. In future issues of Water Current, we intend to report further on process activities, including relevant research and legislative or administrative actions arising from this multidisciplinary, multi-agency, and multi-year planning endeavor.

WATER RESOURCES SEMINAR SCHEDULE CHANGE

The schedule of topics for the Interdisciplinary Water Resources Seminar series announced in the last issue of "WATER CURRENT" has been revised. The seminar is being co-sponsored by the Water Resources Center and the Conservation and Survey Division with Dr. Roy F. Spalding as the seminar leader.

The general topic of the seminar series remains "Surface and Groundwater Quality," and the seminars will continue to be held on Tuesday afternoons from 3:00 to 5:00 p.m. in the East Campus Union Building. The series is open to all interested persons.

The revised schedule of seminar topics and speakers is as follows:

February 19 GUEST SPEAKER: WEATHER MODIFICATION
-- Dr. Stanley Changnon
Illinois Water Survey

February 26 LANDFILL LEACHATES
-- Mr. Clark Haberman
Dept. of Environmental Control

March 4	GEOLOGIC AND HYDROCHEMICAL ASPECTS OF STRIP MINE RECLAMATION IN WESTERN NORTH AMERICA -- Dr. Gerald Groenewold North Dakota Geological Survey
March 18	NON-POINT POLLUTION OF GROUND AND SURFACE WATERS -- Dr. James Schepers, USDA-SEA, Dept. of Agronomy -- Dr. Roy F. Spalding, Conservation & Survey Division
March 25	THE SALT BALANCE MODEL AND ITS APPLICATIONS -- Mr. Fred Otradovsky and Mr. Roger Andrews Water and Power Resources Service, Grand Island
April 8	MANAGEMENT OF POLLUTION FROM IRRIGATED AGRICULTURE -- Dr. M. L. Quinn, Nebraska Water Resources Center -- Dr. James Gilley, Dept. of Ag. Engineering -- Dr. Raymond Supalla, Dept. of Ag. Economics
April 15	WATER QUALITY IN LAKES AND GROUND AND SURFACE WATER INTERACTION -- Dr. Gary Hergenrader, School of Life Sciences -- Dr. Roy F. Spalding, Conservation & Survey Division
April 22	TBA
April 29	STUDENT PAPERS

SECOND WATER DATA CONFERENCE

On Friday, April 4, the Water Resources Center will host the second Water Data Conference at the Nebraska Center for Continuing Education. The conference is co-sponsored by the Governor's Water Data Coordination Committee and the U. S. Geological Survey.

The objective of this year's conference is to improve water data programs by providing an opportunity for water data and information users to express their needs. Water data users from education, government and public sectors will appear as panelists in the one-day program. Time will be reserved for interaction between the panelists and the audience. This conference is designed to complement the first Water Data Conference which utilized data collectors as panelists who focused on Nebraska's water data collection, storage and retrieval programs. Last year's audience will become this year's panelists when they identify their current data uses and needs as local, state, and federal agencies, and as public and private organizations and firms in Nebraska.

The final conference program should be available shortly. For additional information, contact the Nebraska Water Resources Center, 310 Ag. Hall, University of Nebraska, Lincoln, Nebraska 68583.

ENGINEERING SHORT COURSE AT UNL

An Engineering Short Course on "Peak Flow from Small Urban Watersheds" will be held on April 2, 1980, at the Nebraska Engineering Center, University of Nebraska-Lincoln. The course is sponsored by the Nebraska Section of ASCE in cooperation with the University of Nebraksa, Department of Civil Engineering and the Water Resources Center, and the U. S. Soil Conservation Service and Federal Highway Administration.

Topics will include: (1) development of urban runoff techniques; (2) Omaha hydrograph method; (3) urban hydrology for small watersheds (SCS-TR 55-1975); and design of urban highway drainage (FHWA-TS-225-1979). The registration fee is $10. The course will be limited to 30 participants, so early registration is recommended.

Registration information can be obtained from: Professor Ralph R. Marlette, Department of Civil Engineering, 226 Bancroft Hall, University of Nebraska, Lincoln, Nebraska 68588. Telephone: (402) 472-2371.

NEW EDITION OF PUBLICATION NO. 7

The Water Resources Center announces the availability of the fourth edition of Publication No. 7, "Water Resources Publications Related to the State of Nebraska." This report is a bibliography of water-related publications available from the various federal, state and local agencies in the state as well as those from the University of Nebraska. It is hoped that the material provided will facilitate the exchange of information between the various organizations interested in Nebraska's water resources.

To obtain a copy of the publication, contact the Water Resources Center, 310 Ag. Hall, University of Nebraska, Lincoln, Nebraska 68583.

WATER RESOURCES IN NEBRASKA

NATION-WIDE CONSERVATION PROGRAM

A Nation-Wide Conservation Program prepared by the U. S. Department of Agriculture will be made public for a 60-day review period beginning January 28, according to USDA officials.

Under terms of the 1977 Soil and Water Resources Conservation Act (RCA), the five year plan includes an appraisal of soil, water and related natural resources' current status, future problems in meeting food production needs, and the establishment of feasible soil and water conservation goals.

Public input concerning the final RCA draft and proposed future conservation programs is a requirement of the RCA process, and citizens are requested to review the proposed conservation programs and make written comment.

One of 18 regional public meetings is planned for February 28, 1980, at the Grand Island Interstate Holiday Inn with 2:00 and 7:30 p.m. sessions. USDA representatives will be present for oral and written testimony concerning the final RCA draft. Following the public review period, all comments received will be considered in determining alternative program directions.

Copies of the draft documents are at Soil Conservation Service, Agricultural Stabilization and Conservation Service, and Natural Resources District Offices for public review. Written comments may be sent to Response Analysis Center, P.O. Box 888, Athens, GA 30603.

FEDERAL HIGHLIGHTS

UNIFIED NATIONAL PROGRAM FOR FLOODPLAIN MANAGEMENT

The U.S. Water Resources Council has revised its Unified National Program for Floodplain Management. The revisions reflect changes in approaches to floodplain and wetlands management and protection since 1976, when first adopted and published by the Council.

The report describes a unified, cooperative effort by all levels of government and the private sector to minimize loss of life, property and environmental values within floodplains. A conceptual framework is set out to guide local, state and federal decisionmakers toward balanced consideration of alternative goals, strategies, and tools. The Unified Program emphasizes the leadership of the federal executive agencies under the provisions of Executive Order 11988, which was issued as a part of the President's 1977 Environmental Message. The Order states that agencies will avoid locating activities in floodplains wherever practica and stresses mitigation if such activities are unavoidable. At the regional, state, and local levels, innovative floodplain management efforts encompassing a wide range of tools and stressing nonstructural approaches are empahsized. Improved comprehensive local floodplain management efforts under the National Flood Insurance Program, the Coastal Zone Management Program, the Clean Water Act, and other programs are also described.

The Council first issued the Unified National Program for Floodplain Management in 1976. Changes since that time have prompted the revision. Those changes include:

- -- The President's 1977 Environmental Message
- -- Executive Order 11988 on Floodplain Management in 1977
- -- Executive Order 11990 on Protection of Wetlands in 1977
- -- The President's Water Policy Reform Message of 1978
- -- Experience gained through implementation of recommendations of the earlier report.

Unified National Program for Floodplain Management is available through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 052-045-00058-4 and the price is $4.00.

NSF RESEARCH PROGRAM IN "APPROPRIATE TECHNOLOGY"

The National Science Foundation (NSF) has announced an experimental research program in "Appropriate Technology." The NSF will award about $1.7 million for programs funded in 1980. The proposal deadline is February 29. Proposals received after this date will be considered for funding next year.

"Appropriate technologies" are defined as those which are decentralized, require low capital investment, are managed by their users, result in solutions that conserve natural resources and are in harmony with the environment. The program seeks to strengthen the science and engineering base needed to identify and develop promising appropriate technology. Topics of research that will receive support are:

-- Appropriate technology and urban innovation
-- Small-scale industrial technology
-- Recycling, resource recovery and conservation
-- Rural revitalization and the small farm
-- Food and nutrition
-- Roles and impacts of appropriate technology

For additional information on this program, contact: Dr. Edward Bryan, Program Manager,Appropriate Technology, Room 1108, National Science Foundation, Washington, D. C. 20550.

CONFERENCES

CONFERENCE ON IMPROVING ACCESS TO ONLINE WATER INFORMATION

The Cornell University Center for Environmental Research and the Upstate New York Chapter of the Special Libraries Association will hold a Conference at Cornell University, April 23-25, 1980, to explore the topic "Improving Access to Online Water Information." The objectives of this meeting are (1) to inform data base producers and vendors of the needs of the user communities; (2) to provide an update regarding online sources of water information and to discuss their scope, coverage, and access.

Included among the speakers will be representatives from the U.S. Geological Survey; Environmental Science Information Center; U.S. National Oceanographic and Atmospheric Administration; U.S. Environmental Protection Agency; Council of State Planning Agencies; Texas Natural Resources Information System (TNRIS); Syracuse University Graduate School of Information Studies; and Inland Water Directorate, Environment Canada. The Keynote speaker will be Dr. Warren Viessman, Senior Specialist in Engineering and Public Works, Congressional Research Service, Library of Congress.

This Conference will provide a unique learning and interacting opportunity for anyone producing or using water data. Registration should be prompt as attendance will be limited due to space constraints. Registrations will not be accepted after March 26, 1980.

Registrations forms may be obtained by contacting: Mrs. Margaret Neno, Center for Environmental Research, 468 Hollister Hall, Cornell University, Ithaca, New York 14853. Telephone (607) 256-7535.

SHORT COURSE ON ADVANCED WASTEWATER TREATMENT PROCESSES

A short course on HOW TO USE AND DESIGN ADVANCED WASTEWATER TREATMENT PROCESSES will be held at Lake Tahoe, Nevada, April, 1980. The objectives of this course are to present the current "State-of-the-art" of advanced wastewater treatment, to elucidate design criteria and procedures, and to demonstrate experience with existing facilities. The course is designed to aid managers who must make decisions concerning advanced waste treatment, engineers who must design and cost the facilities, and regulatory personnel who must implement adequate water quality standards. Principal lecturers will include: W. W. Eckenfelder, D. F. Ford, R. French, D. Jenkins, P. A. Krenkel, C. Lue-Hing, R. G. Orcutt, D. E. Parker, J. W. Patterson, and W. J. Weber.

For further information contact P. A. Krenkel, Executive Director, Water Resources Center, DRI, P.O. Box 60220, Reno, Nevada, 89506; telephone (702) 673-4750. (Continuing education credits are available, if desired).

1980 SPRING SYMPOSIUM ON UNIFIED RIVER BASIN MANAGEMENT

The American Water Resources Association (AWRA) and the Universities Council on Water Resources, Inc. (UCOWR), in cooperation with the Tennessee Valley Authority, are co-sponsoring the 1980 Spring Symposium on UNIFIED RIVER BASIN MANGEMENT. The Symposium will be held May 4-7, 1980, at Gatlinburg, Tennessee.

The purpose of the symposium is to focus on the subject of Integrated River Basin Management as a fundamental premise that has influenced, even guided, water resources development and management in the past. The objectives of the symposium are: (a) To examine, in concept or through case histories, the goals, strategies, institutions, issues (technical, environmental, economic), informational requirements, accomplishments, capabilities, limitations, adaptability to change, and other aspects of integrated river basin management (including significant lakes, bays, estuaries);(b) to evaluate, in an historical perspective, the identified river basin management strategies which addressed the diverse goals sought by society from its rivers and related sources; (c) to definitively describe and develop existing and alternate river basin management strategies, institutions, technical criteria, data and information programs, and operations procedures to meet the Nation's expectations from its rivers in the next 20 years.

For further information contact: Technical Program Chairman Leonard Dworsky, 302 Hollister Hall, Cornell University, Ithaca, New York 14851, (607) 256-4898; or General Chairman Ronald M. North, Institute of Natural Resources, University of Georiga, Athens, Georgia 30602, (404) 542-1555; or the American Water Resources Association, St. Anthony Falls Hydraulic Laboratory, Mississippi River at Third Avenue S. E., Minneapolis, Minnesota 55414.

CASE WESTERN RESERVE SHORT COURSE

Case Institute of Technology of Case Western Reserve University is presenting the 9th Annual One-Week Short Course on "Hierarchial Approach in Water Resources Planning and Management". The 1980 theme is, Risk/Benefit Analysis in a

Multiobjective Framework. Co-sponsored by the International Water Resources Association, the Short Course will be held May 19-23, 1980, at Case Western Reserve University in Cleveland, Ohio.

The Course fee is $325 which includes course notes, a text book, and use of the laboratory.

For additional information contact: Short Course, c/o M. A. Pelot, Assistant to Dr. Haimes, Room 612C Crawford Building, Case Western Reserve University, Cleveland, Ohio 44106. Telephone (216) 368-4492 or 4493.

SUMMER FIELD COURSE IN HYDROLOGY, ARIZONA

The Department of Hydrology and Water Resources, University of Arizona, offers a 5-week summer field course to study hydrologic field measurement techniques. The course is open to both advanced undergraduate and graduate students with some background in hydrology and hydrogeology. Studies will include: rainfall-runoff, soil infiltration, floodplain mapping, limnological surveys, streamflow measurements, evaporation and evapotranspiration measurements, aquifer testing, and water quality surveys.

The field studies will be carried out in the Salt River Valley and in the White Mountains, which are at different elevations northeast of Phoenix. The last week will be spent on the University of Arizona campus analyzing data and writing reports.

The course extends from May 19 to June 20 with a $470 registration fee. For additional information contact: Dr. E. S. Simpson, Acting Head, Department of Hydrology and Water Resources, University of Arizona, Tucson, Arizona 85721. Telephone (602) 626-3131.

NATIONAL SPECIALTY CONFERENCE ON SURFACE WATER IMPOUNDMENTS

A National Specialty Conference on Surface Water Impoundments will be held June 2-4, 1980, in Minneapolis, Minnesota. The conference is sponsored by the Department of Conferences, University of Minnesota; American Geophysical Union; American Society of Civil Engineering, Hydraulics Division, Committee on Research; and American Water Resources Association.

The conference is designed to appeal on a national basis to persons and organizations who are planning, designing, managing, or researching man-made surface water reservoirs for any single or any combination of the following purposes: recreation, cooling, navigation, storm water detention and flood control, erosion control, wastewater management, water supply irrigation, tailings disposal, etc. Session topics will cover four major areas: (1) processes and problems; (2) planning and design; (3) management and use; and (4) regulatory overview.

Papers for the conference are being requested. For additional information, contact John S. Vollum, 222 Nolte Center, 315 Pillsbury Drive, S.E., University of Minnesota, Minneapolis, Minnesota 55455. Telephone (612) 373-3157.

DESIGN OF WATER QUALITY MONITORING NETWORKS SHORT COURSE

A Short Course on Design of Water Quality Monitoring Networks will be held July 21-25, 1980, at Colorado State University, Fort Collins, Colorado.

The Short Course will develop, in detail, a systematic procedure for designing a water quality monitoring network. 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 Short Course is directed to persons actively involved with the design, operation and/or management of a water quality monitoring network. The Short Course assumes that attendees have a brief introduction to statistics. Each attendee will be furnished with a manual that includes all of the material presented during the Short Course. Attendees should bring a calculator, as it will be needed during problem sessions.

The fee will be $460 which includes tuition, all class material, the course manual, refreshment breaks and the banquet Thursday evening.

For further information contact: Mrs. Kristine L. Schneider, Research Institute of Colorado, Drake Creekside Two, 2625 Redwing, Suite 200, Fort Collins, Colorado 80526. Telephone (303) 491-8450 or (303) 491-8652.

MEETING ANNOUNCEMENT

A specialized conference, "New Developments in River Basin Management," is scheduled for June 29-July 3, 1980, at Cincinnati, Ohio. The conference is being sponsored by the Ohio River Valley Water Sanitation Commission (ORSANCO) in conjunction with the International Association on Water Pollution Research (IAWPR) and follows the Tenth Biennial Conference of the association in Toronto, Canada (June 23-27). ORSANCO and the Miami Conservancy District will be hosting the event.

The conference will focus on international developments and practices in management and control of river basins. Professionals in river management will evaluate new policies and identify research needs. Three field trips will be included in the conference schedule--an excursion on the Ohio River, a trip to the Miami Conservancy District north of Cincinnati, and a choice of visits to the U. S. Environmental Research Center or a U. S. Corps of Engineers navigation dam.

The registration fee for the conference is $140 for IAWPR members and $160 for non-members. The fee covers all sessions, conference materials, preprints, excursions, social events, and some meals. Housing and other meals are not included. Rooms have been reserved for conference attendees at the Netherland Hilton Hotel, Cincinnati, and hotel reservations should be made independently, at least three weeks prior to the conference.

Conference reservations must be received by May 1, 1980, with checks made payable to the Ohio River Valley Water Sanitation Commission (414 Walnut Street, Cincinnati, Ohio 45202). Additional information about the conference is also available from the Commission.

1980 ENGINEERING SUMMER CONFERENCES

The University of Michigan, College of Engineering, Continuing Engineering Education announces the following summer conferences.

8003 - Advanced Groundwater Hydraulics

Chairman: Steven J. Wright; Principal Lecturer: Jacob Bear
Dates: June 9-13, 1980
Fee: $475.

Modern approach to water quality and quality aspects of regional groundwater flow. Basic concepts of aquifers and groundwater movement leading to a complete statement of any groundwater problems involved in the management of aquifers.

8005 - Soil Dynamics Using the Characteristics Method

Co-Chairman: F. E. Richart, Jr. and E. B Wylie
Dates: June 16-17, 1980
Fee: $250

Considers shear wave propagation in nonlinear layered soils. Emphasis will be on identification of important material properties and their determination, and on methods of analysis including the inelastic behavior that occurs in soils during major seismic events.

8017 - Fluid Transients in Clsoed Conduit Systems

Chairman: E. Benjamin Wylie
Dates: July 7-11, 1980
Fee: $475

Presents state-of-the-art in fluid transient computational techniques applied to practical examples. For those who are concerned with unsteady flow and who wish to acquire a capability in problem-solving with the digital computer.

The University also has a complete summer course schedule available. For more information on any of the above courses contact: Engineering Summer Conferences, 800 Chrysler Center, North Campus, the Universtiy of Michigan, Ann Arbor, Michigan 48109. Telephone (313) 764-8490.

SECOND INTERNATIONAL CONFERENCE ON URBAN STORM DRAINAGE

The International Conference on Urban Storm Drainage convenes every three years in different countries under the auspices of the International Liaison in Urban Storm Drainage. The First Conference was held at Southampton, England, April 11-15, 1978. The Second Conference will be held at the University of Illinois, Urbana, Illinois on June 14-19, 1981, under the co-sponsorship of the International Association for Hydraulic Research, International Association on Water Pollution Research, American Society of Civil Engineers, and supported by U.S. National Science Foundation. The Conference provides a forum for

engineers, scientists, and researchers to express and exchange their findings and experiences, and to enhance communication and understanding between different disciplines.

Papers on the following subjects are solicited: (1) Stormwater Quantity--precipitation input and abstractions, surface runoff, sewer flow, simulation models and design methods, physical models, detention and retention storages, measurement and data; (2) Stormwater Quality--sediment and other pollutant transport, biological aspects, chemical aspects, data; (3) Planning and Management--economical, social, legal, aesthetic, systems.

Deadline of extended abstract (500-700 words): September 1, 1980.

Notice of tentative acceptance: October 1, 1980.

Deadline of paper: January 15, 1981.

Conference language: English.

Pre-conference short courses and one- or two-day post-conference study tours are also being planned.

For more information, please contact Dr. Ben Chie Yen, Department of Civil Engineering, University of Illinois, Urbana, Illinois, 61801, USA.

INTERNATIONAL GROUNDWATER DEVELOPMENT

The deadline for abstracts for the session on "International Groundwater Development" has been changed from January 1, 1980, to May 30, 1980. The session is sponsored by the Ground Water Committee, Irrigation and Drainage Division of the American Society of Civil Engineers and will be held in New York City, April 6-10, 1981.

Approximately 300-word abstracts should be sent to A. Ivan Johnson, Water Resources Consultant, Woodward-Clyde Consultants, 2909 West 7th Ave., Denver, Colorado 80204, USA.

POSITIONS AVAILABLE

RESEARCH OPENING

The Coastal Ecology Laboratory at Louisiana State University has an opening for an Associate/Assistant Professor to conduct research on the hydraulics of coastal basins and the effects of hydrologic modification on ecosystems. Applicants must have the capability to handle hydraulic-hydrodynamics modeling and also have some background in ecological problems. Some experience in field investigations and model verification is desirable. The successful candidate will be expected to assume major responsibility for research contracts in this area, to supervise one or more research associates and graduate assistants, and to interact well with ecologists, physical oceanographers and engineers.

A Ph.D. in hydrology, engineering, groundwater geology or ecology is required. The position is presently open and is untenured. Salary is dependent upon experience ranging from $20,000 to $28,000. Applications should be received on or before March 15, 1980.

Interested applicants should send a comprehensive resume with the names and addresses of three references to: Dr. S. E. Bayley, Director, Coastal Ecology Laboratory, Center for Wetland Resources, Louisiana State Unviersity, Baton Rouge, Louisiana 70803.

Louisiana is an Equal Opportunity/Affirmative Action University.

HYDROGEOLOGISTS AND ENGINEERS NEEDED

The Environemental Protection Agency, Atlanta, Athens, Georgia, invites applications for Hydrologeologist and Pollution Engineers.

Hydrologists are needed with experience in groundwater contamination, dewatering, water supply, test well drilling/design/construction. Salary range $17,035 to $24-26,000 plus per annum.

Pollution Engineers with bachelor or higher degrees are needed for various environmental positions. $14,000-$24,700.

Applicants may file resumes with Val. Beaty, Personnel Management Branch, Environmental Protection Agency, 345 Courtland St., NE, Atlanta, Georgia 30308. Telephone (404) 881-3486. Appropriate Federal application forms and information will be furnished applicants.

RESEARCH REVIEW

PROJECT TITLE: The Biological Regulation of Bloom-Causing Blue-Green Algae: A Feasible Alternative

PRINCIPAL INVESTIGATOR: Eugene L. Martin, Associate Professor
School of Life Sciences

Within the last twenty years the Army Corps of Engineers has constructed a large number of flood control lakes throughout the Great Plains States. Frequently these lakes (e.g., those within the Salt Valley Watershed) receive large amounts of organic and inorganic nutrients (especially nitrates and phosphates) from runoff waters containing agricultural materials such as fertilizers and animal wastes. The continous introduction of these nutrients into these lakes results in a progressive increase in water productivity, exemplified by tremendous algal proliferation. Blue-gree algae are major causative agents of blooms. These blooms destroy the beauty of these lakes, impair their recreational value and greatly accelerate the lake eutrophication process.

The basic objective of this project is the development of blue-green algal control procedures through the use of bacterial and/or viral control agents. Because it is practically impossible to prevent the summer growth of certain blue-green algal types in many of the eastern Nebraska lakes, these procedures would involve the careful regulation of algal growth, rather than the eradication of algal growth.

From August to October of 1978 water samples were collected in liter quantities from the surface water of both Pawnee and Branched Oak Lake. These lakes were undergoing blue-green algal blooms and the predominant type of bloom-causing blue-green algae found were two filamentous forms, Aphanizomenon flos-aquae and Anabaena flos-aquae, and a unicellular Microcystis aeruginosa. These are the same types that have been found in the past.

During the "bloom" season (June-October) of 1979, an occurrence of an actual blue-green algal bloom was anxiously anticipated. The main Salt Valley Watershed Lake that was most carefully monitored was Pawnee. Much to our disappointment, for the first time in several years no major blue-green algal blooms involving species of Aphanizomenon, Anabaena and Microcystis occurred. However, a bloom of much smaller magnitude involving an Oscillatoria sp was observed. One possible explanation for having this type of bloom is that the lower water temperatures of the 1979 summer and fall were more conducive to the growth of Oscillatoria.

One virus and two bacteria that selectively attack the above strains of bloom-causing blue-green algae have been isolated and characterized in previous work (Technical Completion Report A-033-NEB, 1976).

Additional screening for biological control agents has resulted in the isolation of five additional bacterial strains. Two of these strains have been well characterized and are able to lyse strains of Anabaena, Microcystis, and Synechococcus but give indefinite results when tried against Aphanizomenon. Further work is being continued with the three additional strains.

Studies on the effects of the various lytic agents on simulated blue-green algal blooms are now in progress using laboratory microcosms (1 liter and 10 gal tanks). These experiments are utilizing controlled conditions of nutrients, light, temperature, oxygen and pH in order to duplicate as much as possible the conditions which exist during the bloom season in the actual lakes. Other experiments employ actual water taken from Pawnee Lake. This lake water is then used untreated, or in some cases it is filtered or autoclaved prior to use. Depending on its chemical composition, sometimes additional inorganic and organic nutrients are also included. These experiments further involve the addition of bloom-causing blue-green algae and microbial regulatory agents at approprite levels and times. At this point in the experimentation, data has been collected on how to simulate an actual bloom on a small scale in the laboratory.

The focus of our work this coming summer and fall will be actual field trials of our biological regulatory agents. An enclosure has been designed, constructed and tested for its feasibility at Pawnee Lake. It is placed in the water at the edge of the lake. Hopefully, during 1980 an actual bloom

will occur. Upon this eventuality, our biological regulatory agents will be added to enclosures containing lake water with the bloom-causing blue-green algae. It is then hoped our agents will be able to regulate the bloom within the enclosure.

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 68583; or phone (402) 472-3305.