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Water Current

March/April 1983

DIRECTOR'S REPORT

Karen Stork, administrative assistant with the Nebraska Water Resources Center, was honored recently for her twelve years of service with NWRC. During the meeting of the Center's executive committee held on April 6, 1983, Karen was greeted with a "surprise" agenda item when the committee presented her with an engraved certificate of appreciation. Karen's husband Ron, the Water Center staff, and many scientists she has worked with over the years shared in offering congratulations. During the award presentation, Dr. James Gilley spoke for the executive committee in praising Karen's dedication, noting that much of the Center's success can be attributed to her many years of hard work.

Karen joined the Water Center staff in 1971 as a secretary. In July of 1973 she was promoted to her present position as an administrative assistant. Included among her many responsibilities are managing the office, directing the administrative aspects of preparing grant proposals and project completion reports, and serving as editor of *Water Current*, the NWRC newsletter. Recently, she also has taken a major role in organizing the annual Nebraska Water Conference.

The Water Center staff joins Bill Powers in extending our thanks and congratulations to Karen for her twelve years of service, and offer our best wishes for many more.

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NEBRASKA WATER RESOURCES CENTER

1983 WATER CONFERENCE RECAP

The 1983 Nebraska Water Conference with the theme *Moving Forward With Water Management* was held March 8-9 in Lincoln, Nebraska. From all indications, this was one of the most successful conferences in recent years.

The keynote address was delivered by Dr. Garrey Carruthers, assistant secretary for land and water resources in the U.S. Department of Interior. Carruthers stressed that this administration does have a national water policy and it is: "states have the authority and responsibility to allocate and manage water within their borders." States rights generally should prevail in water development except in the case of boundary disputes. In these instances, he said, states should look at their own laws and engage in compact arrangements with other states to seek a solution. The alternative to compacts "and the last thing we need—is federal water law," Carruthers noted.

Another major conference speaker was Nebraska Governor Bob Kerrey who agreed that interstate compacts were "the preferred method in dealing with disputes... although they are difficult to put together." He cited some of the challenges and concerns facing Nebraska in maintaining and enhancing its leadership and in realizing benefits from water resources. These included: (1) the tendency to look at water development with too limited a scope and in the short term; (2) the danger of groups in Nebraska with differing values and needs fighting with each other and Nebraska fighting with other states; (3) a lack of intensive, long-range planning which leads to the risk of "management by crisis"; and (4) the threat of "far-off population centers extracting our water" for their use. Kerrey warned that Nebraska must "utilize our water resources or someone else will." The shift in funding for water development projects from federal to state sources will pose problems for Nebraska, he noted, because it has been difficult for users to pay the costs of irrigation projects.

A panel of state legislators continued the discussion of future financing for Nebraska's water development projects. The panel consisted of Senator Rex Haberman, chairman of the Unicameral's Agriculture and Environment Committee; Senator Loran Schmit, chairman of the Public Works Committee; and Senator Martin Kahle, member of the Appropriations Committee. Senator Schmit proposed one possible solution which is contained in his proposal now before the legislature for a 1 percent sales tax allocation for water project development within the state. Such a plan has the potential of creating an \$85 million development fund for Nebraska water projects. Schmit also suggested the possibility of selling some water from Lake McConaughy. Former Nebraska congressman John Cavanaugh chaired the panel and said that even with such a sales-tax based revenue fund, Nebraska will have strong competition for federal matching funds from neighboring states with larger population tax bases and broader resource export economies with accompanying severance tax incomes. He said a broader perspective on financing problems is needed because water economics are defined regionally, not by state lines. Senator Kahle concurred saying "we need more cooperation between states so we can use our monies for other things than fighting each other in court." Senator Haberman pointed out, however, that inequities between various states need to be recognized and treated accordingly in any interstate compacts or agreements.

The topic of interstate cooperation was a major theme in other conference sessions exploring the achievements of the Pick-Sloan program on the Missouri River. Brig. General Mark Sisinyak, Missouri River Division Engineer of the U.S. Army Corps of Engineers, emphasized there is a "crying need" for all Missouri Basin states to get together to plan and make joint decisions, because there are many water conservation, development and control issues within the Basin which still need to be resolved.

Other conference sessions featured presentations on water legislation, groundwater protection, water use and conservation, and a session on future water use efficiency and management. Although a conference proceedings was not published, details of some presentations are available in copies of news releases at the Nebraska Water Resources Center.

FUNDING FOR WATER RESEARCH

The January/February issue of *Water Current* noted that Congress had approved an appropriations bill which included provisions for continuing the Water Research and Development Act of 1978. It has now been confirmed that funding in the amount of \$115,000 per state has been approved for 1983 State Water Research Institute Programs. The Water Resources Center issued a call for proposals under this program. The deadline for receipt of proposals has passed, and the proposals are being reviewed by the Water Center's Executive Committee. The guidelines for this program indicate that each state must develop a comprehensive program for \$115,000 which has been approved by state officials and also by a regional consortium of institute directors. Missouri River Basin institute directors will meet in late April to coordinate and review the state programs of the region.

FY 1983 funds are also available for the National Water Research and Development Program authorized by the Water Research and Development Act of 1978 to be administered by the Bureau of Reclamation. The Water Center has just received guidelines for the preparation and submittal of proposals under this program. Approximately \$6 million will be available for projects in the following subject areas: (1) saline water conversion; (2) water reuse; (3) water conservation and use efficiency; (4) brackish water utilization; and (5) groundwater management. Specific priorities have been established in each of these areas and are available at the Water Resources Center. Proposals may be submitted to the Bureau of Reclamation at any time, and selections will be made and announced throughout the fiscal year ending September 30, 1983. Application may be made by academic institutions, private foundations or other institutions, private firms and individuals, and local, state and federal agencies. The Bureau's support of a proposed project may provide either the entire cost of the project or a portion of the cost of the project. Detailed instructions for those desiring to submit proposals are available at the Water Resources Center.

Both of these programs are for FY 1983 funding only. It is hoped that legislation will be approved in Congress to continue funding for water resources research on a more permanent basis in the future. One such bill is S.684, the Water Resources Research Act of 1983, sponsored by Senator James Abdnor (R-SD) and Senator Patrick Moynihan (D-NY). This bill would authorize a five-year program of matching federal grants to public water research institutes in each state as well as a system of nationally competitive research grants. The total annual cost would be \$21 million. Hearings on the bill were recently held by the Senate Committee on Environment and Public Works, Subcommittee on Water Resources.

NEW SYSTEM TO SUMMARIZE NATION'S WATER RESOURCES

Interior Secretary James Watt recently announced immediate steps to implement a system to produce an annual National Water Summary that will make water resources information more readily available and useful to policy makers and managers at local, state and national levels.

"In keeping with administration policy that the responsibility for water resources management rests with the states, the Interior Department has an important role in providing state and local agencies with current, accurate evaluations of water conditions and critical water problems," Watt said. To accomplish this goal the Secretary directed Interior's U.S. Geological Survey (USGS) and the Office of Water Policy (OWP) to take the following steps:

First, the USGS will prepare annual National Water Summary reports targeted for initial publication in October 1983. The initial report will summarize national water conditions, and subsequent annual reports will also focus on selected water problems. OWP will coordinate with state and local decision makers to ensure that the information presented is responsive to users' needs.

Second, the USGS will develop a water resources information system containing summary data about the nation's water resources. This information system will be used in conjunction with existing water data bases to retrieve, analyze and display information about water resources conditions and track changes over time. OWP will coordinate responses and suggested improvements to the system from policy makers and managers.

Finally, using data supplied by USGS and other agencies in the public and private sector, OWP will work with state officials to identify critical water problems. The Interior Department will then respond to specific local needs and requests and develop programs to provide needed assistance.

Watt noted that the Office of Water Policy will seek comments from agencies and groups at national, state and local levels about the criteria, format and goals of subsequent annual reports. USGS will also begin working immediately with OWP to put together a demonstration of the potential of the new water resources information system. By midsummer Watt hopes to develop a test case and demonstration to show how the system can be applied to the analysis of water resources information.

"This new system should eventually have widespread application in the preparation of water assessments and studies by other agencies and will markedly enhance many of the hydrologic programs of the USGS, including the preparation of the annual National Water Summary," Watt said.

NEBRASKA IRRIGATION STATISTICS UP

Based on statistics from a national survey published in a recent issue of *IRRIGATION JOURNAL*, it appears that Nebraska moved ahead of Texas in 1982 to become the second most heavily irrigated state in the nation.

Nebraska's irrigated acreage increased slightly more than 1 percent, a total of about 109,000 acres. Because Texas adjusted its method of reporting, Nebraska moved ahead of the Lone Star State by a margin of 8.0 to 7.9 million acres. California continued to lead the nation with 9.9 million irrigated acres, a decrease of about 1 percent. These top three states in U.S. irrigation together account for 25.8 million acres or approximately 42 percent of the nation's total irrigated acreage.

As in the past several years, Nebraska again leads the nation in sprinkler irrigation, with a total of 3.5 million acres, an increase of 3 percent over 1981. Texas is second in this category with 2.2 million acres, and California is third with 2.1 million acres.

Totals for the nation show that increases in irrigated acreages slowed down substantially last year. The number of irrigated acres for the U.S. was up less than 1 percent, or about 500,000 acres in a total of 62 million acres. It appears that above normal moisture, high energy costs and the depressing effect of the recession all combined to slow irrigation development.

PLATTE LECTURE SERIES

A lecture series entitled "Centennial on the Platte — Reflections on a Great River" is continuing through November. The lecture series is sponsored by Midland Lutheran College in Fremont, Nebraska. All lectures are held on the college campus and begin at 7:30 p.m.

Dates, speakers and topics for the remaining lectures are:

April 12 - "Poetry of a River," William Kloefkorn, Nebraska state poet, of Nebraska Wesleyan University.

Sept. 21 - "Songs and Lore of a River," Roger Welsch, folklore specialist from UNL.

Oct. 19 - "The Changing Life of a River," Michael Voorhies, paleontology curator at the UNL State Museum.

Nov. 9 - "A River Road," Merrill Mattes of Littleton, Colorado, retired National Park Service historian.

FARM AND RANCH REPORT SET FOR SECOND SEASON

The *FARM AND RANCH REPORT* will begin its second TV season on April 7 and will be airing weekly in a series of 30-minute programs through September. The program will be broadcast on Thursdays at 12:30 p.m. and repeat at 9:30 p.m., on all stations of the Nebraska ETV network.

Each weekly program will look at ways to deal with current issues and problems faced by those in production agriculture. Highlights will include market analysis, production tips and advice, weather impact, and a listing of events.

Jim Randall, UNL Ag. Communications Specialist, is the series host and producer. He will interview Institute of Agriculture and Natural Resources extension specialists in the field and in live studio appearances to focus on ways for farmers and ranchers to maintain profits in their enterprises.

MISSOURI RIVER ALLOCATION CONFERENCE

A conference on Planning for Allocation of Missouri River Water will be held May 24, 1983 at the University of Missouri-Kansas City campus. The conference is sponsored by the University of Missouri, and cooperating sponsors include universities in the Missouri River Basin region as well as federal and state agencies.

Technical proposals for allocation of Missouri River basin water will be discussed during the morning session. This will include a review of the Ogallala Aquifer-High Plains Regional Study and the proposed ETSI slurry pipeline diversion. Political aspects of the proposed reallocation of Missouri River water will be discussed in the afternoon. The registration fee is \$25.

For additional information contact J.T. O'Connor, Chairman, Department of Civil Engineering, University of Missouri, 1047 Engineering Bldg., Columbia, MO. 65211. Telephone: (314) 882-6269.

EXPERTISE DIRECTORY AVAILABLE

A directory of experts in the water resources field is now available on computer at the Nebraska Water Resources Center. This water resources Expertise Directory includes staff of the 80 universities which are members of the Universities Council on Water Resources (UCOWR). If you are a faculty member of a UCOWR member university and are available for either short-term or long-term consulting, you might want to add your name to the directory. The consulting can be with a private firm or government agency at either a domestic or a foreign location. The directory has already been used to assist the U.S. Bureau of Reclamation in assembling a list of scientists interested in evaluating research proposals.

For further information concerning the Expertise Directory, contact: William L. Powers, Executive Secretary, UCOWR, 310 Agricultural Hall, University of Nebraska, Lincoln, NE 68583.

CONFERENCES AND SHORT COURSES

- April 11-13 12th Annual Rocky Mountain Groundwater Conference in Boise, Idaho. \$40. Contact 12th Annual Rocky Mountain Groundwater Conference, I.A.P.G., P.O. Box 7584, Boise, ID 83707. Telephone: (208) 334-1750.
- May 9-13 12th annual one-week short course on Hierarchical-Multiobjective Approach in Water Resources Planning and Management. 1983 theme: "Increased Use of High Technology and Decision Support Systems in Water Resources Planning and Management." \$425. Contact M.A. Pelot, Center for Large-Scale Systems and Policy Analysis, Room 612C Crawford Bldg., Case Western Reserve Univ., Cleveland, OH 44106.
- May 25-27 National Symposium on Aquifer Restoration and Ground Water Monitoring, Columbus, Ohio. Contact National Water Well Assoc., 500 W. Wilson Bridge Road, Worthington, OH 43085.
- June 5-9 AWWA Annual Conference, Las Vegas, Nevada. Contact AWWA, 6666 West Quincy Avenue, Denver, CO 80235.
- June 13-15 International Symposium on Gas Transfer at Water Surfaces, Cornell University. Registration fee before May 15 is \$170. Contact the Center for Environmental Research, 468 Hollister Hall, Cornell Univ., Ithaca, NY 14853.
- June 27-
July 1 One-week short course on Flood Predictions, Estimations and Forecasting, Colorado State Univ. \$600. Contact Office of Conferences and Institutes, W4 Rockwell Hall, Colorado State Univ., Fort Collins, CO 80523.
- July 11-15 1983 Engineering Summer Conferences, #8312 Fluid Transients in Closed Conduit Systems, Univ. of Michigan. \$650. Contact Viola Miller, Continuing Engineering Education, 300 Chrysler Center, Univ. of Michigan, Ann Arbor, MI 48109.
- July 20-23 Advances in Irrigation and Drainage, Jackson, WY. Contact R. D. Burman, American Society of Civil Engineers, 345 East 47th Street, New York, NY 10017.

POSITIONS AVAILABLE

Director, Texas Water Resources Institute

The Director plans and manages state-wide water resources research and information programs, serves as coordinator of the water research program in the Texas Agricultural Experiment Station, and for water-related educational programs in the Extension Service. Qualifications include Ph.D. in discipline related to water research and established record of research in one or more water-related fields. Experience in research administration desirable. Nominations and applications with current curriculum vitae and names of at least three references should be sent to: Edward A. Hiller, Chairman, TWRI Director Search Committee, Department of Agricultural Engineering, Texas A&M Univ., College Station, TX 77843.

Water Resources Assistant

Assistant would be responsible to senior project leaders conducting field-laboratory research programs in water resources. Initial responsibilities will be allied with a water quality monitoring project on watershed which drains into a series of lakes. Contamination of groundwater is an important facet of the project. Qualifications include B.S. and nine months experience in water-related research or M.S. in a discipline which would aid senior project leaders. Training in instrumentation and computer science is necessary. Candidates should send curriculum vitae, copy of transcripts and letter of application to: John L. Wiersma, Director, Water Resources Institute, South Dakota Univ., Brookings, SD 57007.

Job Openings in Swaziland

Three positions available in Swaziland: Land Planning Officer in the Ministry of Agriculture, Land Use Planning Section; Agriculture/Civil Engineer in the Ministry of Agriculture and Cooperatives, Land Use Planning Section; and Hydrologist in the Ministry of Works, Power and Communication. Qualifications for Land Planning Officer include B.S. degree in civil or agricultural engineering, with registered engineer preferred. The Agriculture/Civil Engineer requires a M.S. degree or two B.S. degrees in agricultural or civil engineering with a minimum of five years of professional experience. Hydrologist position requires a B.S. degree in civil engineering or related field (M.S. degree in water resources engineering desired), and computer programming and operation experience.

For additional information on these positions, contact Sandra Callier, SAMDAP Recruitment, TransCentury Corp., 1789 Columbia Road, N.W., Washington D.C. 20009. Telephone: (202) 328-4427.

RESEARCH REVIEW

Project Title: *The Biological Regulation of Bloom-Causing Blue-Green Algae: A Feasible Alternative*

Principal Investigator: *Eugene L. Martin, Assoc. Professor, School of Life Sciences, UNL*

In the last 20 years the U.S. Army Corps of Engineers has constructed a group of flood control lakes in eastern Nebraska and throughout the Great Plains states. Frequently these lakes 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 continuous introduction of these nutrients results in a progressive increase in water productivity, exemplified by large blooms involving predominantly the blue-green algal strains *Oscillatoria*, *Microcystis*, *Anabaena*, and *Aphanizomenon*.

The basic objective of this project was to develop blue-green algal control procedures through the use of bacterial and/or viral regulatory 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. A secondary objective is further elucidation of how bacterial and viral regulatory agents selectively attack blue-green algal strains.

The initial focus of the project involved the isolation and characterization of the bloom-causing strains of blue-green algae. Closely related to this was the isolation and characterization of appropriate biological regulatory agents (bacteria and viruses). Laboratory microcosm studies were run in which the various biological control agents were able to rapidly lyse small "blooms" (e.g. 1 and 2 liters) of the respective blue-green algal strains. These experiments were then extended to field trials in selected lakes (Pawnee and Twin Lakes) in the Salt Valley Watershed. Enclosures containing about 20 gallons were erected in the water near the shore. Some success was attained by our biological control agents in lysing both real and simulated blue-green algal blooms. The next step would be to try the biological regulatory agents in some small farm ponds.

Ecologically, it is important that inexpensive, reliable and safe algal control procedures be developed. Existing methods of control involve the exclusion of essential nutrients from the lakes, or the addition of copper sulfate or other chemicals to lakes. Often these control measures are not economically feasible or have serious side effects. This research proposes development of an alternative control mechanism for algal blooms which takes advantage of natural processes.

PUBLICATIONS RECEIVED BY NWRC

The following publications have been received by the Water Resources Center during March and April. They have been forwarded to C.Y. Thompson Library on UNL's East Campus for cataloging. Persons on campus may obtain the publications through UNL's library system. Others are encouraged to request copies from the organization issuing the publication.

- (1) *Variations in Groundwater Quality with Drought*, D.O. Whittemore, G.A. Marotz, K.M. McGregor, Project Completion Report, Kansas Water Resources Research Inst., Univ. of Kansas, Lawrence, KS 66044
- (2) *The Declining Role of the U.S. Army Corps of Engineers in the Development of the Nation's Water Resources*, C. Yoe, August 1981, Colorado Water Resources Research Inst., Colorado State Univ., Fort Collins, CO 80523.
- (3) *Biological Treatment of Acid Mine Drainage*, Research Report #173, E. E. Herricks, October 1982, Water Resources Center, 2525 Hydrosystems Laboratory, Univ. of Illinois, Urbana IL 61801.
- (4) *Dredged Sediment for Agriculture: Lake Paradise*, Research Report #175, W.D. Lembke, et al., January 1983, Water Resources Center, Univ. of Illinois, Urbana, IL 61801.
- (5) *Alternative Structures for Water Rights Markets: Overview and Hypothetical Case Study*, Research Report #174, J. W. Eheart, January 1983, Water Resources Center, Univ. of Illinois, Urbana, IL 61801.
- (6) *1981 Annual Report, the Hydrologic Engineering Center*, U.S. Army Corps of Engineers, Water Resources Support Center, HEC, 609 Second St., Davis, CA 95616.
- (7) *Floc Property Effects on Sludge Dewatering Characteristics*, Bulletin 133, W.R. Knocke and D.L. Wakeland, December 1982, Virginia Water Resources Research Center, VPI&SU, Blacksburg, VA 24060-3397.
- (8) *A Statistical Analysis of the Daily Streamflow Hydrograph and a Probability Distribution of the Interarrival Times of Peak Flows Applicable to Indiana*, M.L. Kavvas and J.W. Delleur, January 1983, Water Resources Research Center, Purdue Univ., West Lafayette, IN 47904.
- (9) *Design Flood Estimation for Small Catchments in New South Wales*, Technical Paper #73, G.E. McDermott and D.H. Pilgrim, 1982, Dept. of National Development & Energy, Australian Water Resources Council, Australian Gov't Publishing Service, Canberra, Australia.
- (10) *Assessment of Saline Water Use in Coal Transport and Multipurpose Systems*, Final Report, D. P. Maynard and R. Caputo, December 1982, U.S. Bureau of Reclamation, Denver Federal Center, Denver, CO 80225.
- (11) *Erosion of Banks Along Piedmont Urban Streams*, M.P. Wilson, February 1983, Water Resources Research Inst., 124 Riddick Bldg., North Carolina State Univ., Raleigh, NC 27650.

- (12) *Use of Geologic and Water Yield Data from Ground Water Based Community Water Systems as a Guide for Ground Water Planning and Management*, C.W. Welby and T.M. Wilson, Dept. of Marine, Earth and Atmospheric Sciences, August 1982, Water Resources Research Inst., North Carolina State Univ., Raleigh, NC 27650.
- (13) *Alternative Methods of Estimating Pollutant Loads in Flowing Water*, Technical Bulletin No. 133, Wisconsin Dept. of Natural Resources, P. O. Box 7921, Madison, WI 53707.
- (14) *Mean Monthly, Seasonal and Annual Pan Evaporation for the U.S.*, NOAA Technical Report NWS 34, December 1982, Office of Hydrology, National Weather Service, Washington, D.C.
- (15) *Institutional Issues Affecting Water Supply Development: Illustrations from Southeastern Virginia*, Bulletin 138, March 1983, Virginia Water Resources Research Center, VPI&SU, Blacksburg, VA 24060-3397.
- (16) *The Southwestern Review of Management and Economics*, Vol. 2, No. 2, Spring 1982, Bureau of Business and Economic Research, Institute for Applied Research Services, Univ. of New Mexico, Albuquerque, NM 87131.
- (17) *Colorado River Water Quality Improvement Program*, January 1983, U.S. Bureau of Reclamation, Colorado River Water Quality Office, Denver Federal Center, Denver, CO 80225.

WATER CURRENT

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