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10-1974

## Water Current, Volume 6, No. 10, October 1974

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"Water Current, Volume 6, No. 10, October 1974" (1974). *Water Current Newsletter*. 93.  
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# Water Current

Volume 6 Number 10

October 1974

## FROM THE DESK OF THE DIRECTOR

Water problems have been with us since the beginning of civilization. They have stemmed from: climatic factors, misuse, over-development and other causes. Often, those most directly concerned have taken little or no action until the emergence of a "crisis." When groundwater levels are close to the maximum economic pump lift; when citizens cannot obtain sufficient quantities of water for domestic uses; and, when water becomes so polluted that users no longer benefit -- action is demanded.

Too many times this has been manifest in the form of expanded development. In some cases, this may be necessary, but greater attention should be focused on regulation and management. By supplementing a local water supply, immediate shortages may be curtailed, but long-range solutions to water quantity problems may not be feasible by such action. Problem solving by providing more water, expanding treatment facilities or employment of other technical means may increase rather than decrease problems in the long-run. The wise use of resources seems to be a lesson learned with great difficulty. Many problems could be solved effectively by employing simple regulatory procedures or by implementing well-devised management programs. Shifting of governmental authority, revision of water laws and acceptance of control by citizens involved would be by-products. Intelligent development, tempered with effective management and regulation should be the norm of future water resources programs.

## ON THE HOMEFRONT

### THANKS DAN FOR A JOB WELL DONE

Dan S. Jones, Jr. graduated from the University of Colorado in 1921 and came to Nebraska in 1941 as Assistant Chief of the Board of Irrigation. He later became Chief of the Board and held this position until 1957 when he was appointed Director of the newly formed Department of Water Resources, a post he held until his recent retirement.

Dan has been the recipient of many awards including the Distinguished Service Award from NWTA in 1971 and a life-time membership in the National Water Resources Association. Upon his retirement he received an award from the Nebraska Association of Resources Districts.

Dan has served on the Nebraska Water Resources Research Institute Advisory Committee since its inception and has provided valuable input to the Institute's operation. We join all Dan's other friends in thanking him for his service to Nebraska and wish him well in his future activities.

### DEADLINE FOR RESEARCH PROPOSALS

The deadline for filing annual allotment proposals for fiscal year 1976 is December 15, 1974.

Prospective principal investigators should make an appointment to discuss their proposals with the Institute Director before they begin writing. For further information, contact: Dr. Warren Viessman, Jr., Director, Water Resources Research Institute, 212 Ag. Engineering Bldg.-East Campus, University of Nebraska, Lincoln, Nebraska 68503, (402) 472-3307.

### NWRRI HOSTS RESEARCH IN ACTION CONFERENCE

The Nebraska Water Resources Research Institute is conducting a two-day conference entitled "Research in Action - Technology for Implementing Water Research Results," to be held December 5-6, 1974 at the Nebraska Center for Continuing Education. The objective of the conference is to develop techniques for getting quick and effective action from water research results.

Warren A. Hall, Acting Director of the Office of Water Research and Technology, will give the keynote address, "Action from Research." Warren Fairchild, Director of the Water Resources Council, will also present one of the main addresses on "The Importance of Research in State and Federal Water Planning."

The following topics have been chosen for discussion: The Need for Effective Research Translation, The Importance of Research in State and Federal Water Planning, The University's Role in Research Implementation and Research Applied to National Needs.

For further information and registration form, please contact Dr. Warren Viessman, Jr., Director, Nebraska Water Resources Research Institute, 212 Ag. Engineering Building, East Campus, University of Nebraska, Lincoln, Nebraska 68503 or phone (402) 472-3307.

#### LEARN ABOUT NEBRASKA'S WATER QUALITY

The League of Women Voters of Nebraska in conjunction with the State Department of Environmental Control has produced a slide-sound show about Nebraska's water quality and what you can do about it. This 12-minute presentation is free to organizations, classrooms or businesses.

To schedule the slide show or for additional information, contact the League of Women Voters of Nebraska, 1614 "N" Street, Lincoln, Nebraska 68508 or phone (402) 423-9432.

#### NWRRI ADVISORY COMMITTEE MEETS

On October 23 the NWRRI Advisory Committee held its semi-annual fall meeting. Officers for the next two years were elected. Dayle Williamson, Executive Secretary of the Nebraska Natural Resources Commission, will serve as chairman with James Barr, State Office of Planning and Programming, as vice-chairman.

Subcommittees on Research Needs and Application and Research Coordination met during the morning session. These subcommittees advise the Institute on research priorities for the state and devise methods of information dissemination for research results.

The Executive Secretary reported on the state workshop held June 10 to analyze state research needs. A list of ten priority research areas was presented. Each of these was designated as: (1) critical; (2) very important; or (3) important but not urgent. A tabulation of the responses follows:

Groundwater	1
Conservation and Water Use Efficiency	1
Sedimentation Stabilization	1
Water Quality	2
Environmental Quality	2
Planning-Management Technology	2
Transbasin Diversion	2
Flood Control	3
Socio-Political Issues	3
Energy-Water Relationships	3

The Water Resources Research Institute will use this prioritization in developing its 1976 research program. Proposals related to these topics will be given priority for funding.

#### DIRECTOR LECTURES AT MAINE

The Director of the Nebraska Water Resources Research Institute lectured at the University of Maine Seminar on Hydrology, October 3-4, 1974. Topics included: frequency analysis, unit hydrograph, rational method, snow hydrology and continuous simulation.

Thirty-two participants representing universities, state and federal agencies, municipalities and industries attended. Other speakers included Dr. Franklin E. Woodard and Dr. Willem F. Brutsaert of UMO's Civil Engineering Department. Dr. M. Wayne Hall, Director of the Land and Water Resources Center, coordinated the seminar which provided management, supervisory personnel and practicing engineers with information on current analytical methods in hydrology. The nature, generation and use of hydrologic data was discussed and illustrated.

#### HYDROLOGIST POSITION AVAILABLE

The Nebraska Water Resources Research Institute is seeking a Hydrologist at the Assistant or Associate Professor level. A Ph.D. is required, along with academic and professional training in the fields of hydrology and water resources systems. Special competence and interest in groundwater systems is a requisite. The applicant must be experienced in simulation of hydrologic systems and computer programming.

The person selected for this position will: (1) conduct and supervise regional groundwater modeling; (2) develop analytic techniques for simulation of regional groundwater systems (surface water linkages to be included); (3) propose special studies to aid in quantification of hydrologic components for water resources planning; and (4) teach courses in hydrology and water resources which may include Water Resources Engineering and Water Resources Development. He will also coordinate research efforts with related activities in the Conservation and Survey Division and other researchers involved in the analysis of water resources systems.

Salary and rank will be based on qualifications of the individual selected. University retirement, group life and health insurance plans are available along with sick leave and vacation. The University of Nebraska is an Equal Opportunity Employer.

Persons interested in this position should send a resume to: Dr. Warren Viessman, Jr., Director, Nebraska Water Resources Research Institute, 212 Ag. Engineering Building, University of Nebraska, Lincoln, Nebraska 68503.

### FORESTRY CHAIRMAN SOUGHT

The Department of Forestry at the University of Nebraska is conducting a search for a Chairman. The applicant must have a Ph.D. equivalent in forestry or a closely related field and a degree in forestry. Send applications by November 30 to Glenn W. Peterson, Search Committee Chairman, Forestry Science Laboratory, University of Nebraska, East Campus, Lincoln, Nebraska 68503.

### REGIONAL NEWS

#### WISE WATER USE ADVOCATED

In Lincoln recently for the 8th Annual Joint Conference of the Nebraska Water Pollution Control Association and the Nebraska Section of AWWA, Walter K. Morris of Harrisburg, Pennsylvania, president-elect of the American Water Works Association (AWWA), noted that Americans are going to have to learn to use water wisely if the nation is to avoid or reduce the impact of expected future water shortages.

Some sections of the nation are already experiencing water supply problems, Morris said, and experts are forecasting that water shortages in the near future will have greater impact than the energy supply shortages of recent months. Americans must learn not only conservation of water but also accept the fact that the cost of water will increase.

There is an adequate supply of water in the nation to meet needs, Morris noted. However, the supply is not always where the demand is. The competition for water supplies will increase in some areas because of anticipated future demands for such uses as those stemming from pollution control laws and efforts to develop new energy supplies such as oil shale and coal gasification. A national policy on priority of water use will have to be established at some time, Morris commented.

"If we can't convince people of the problem, then we'll end up reacting to the water supply crisis sometime down the road just like we're reacting to the oil crisis today," he said.

#### MRBC PLANNING DIRECTOR SEES ADEQUATE WATER FOR PLANNED DEVELOPMENT

The Director of Planning for the Missouri River Basin Commission (MRBC) told the Montana Water Development Association at a recent meeting that there is adequate water for planned development in Montana.

Nicholas L. Barbarossa cited this year as an example, saying, "Although drought conditions persisted in many areas of the Missouri Basin, the Corps of Engineers reported that an above normal snow pack in Montana provided enough water to fill the reservoirs on the Missouri River to normal levels. This year probably more than two-thirds of the water that will flow past Sioux City will originate in Montana--some 16 to 17 million acre-feet."

"Certainly this amount does not represent the total available for consumptive use, but it does indicate the tremendous volume to be managed and planned for in considering new and higher beneficial uses.

"Careful planning will be required by Montana and the Missouri River Basin Commission for agricultural and industrial expansion while maintaining the quality of life in Montana and throughout the basin," Barbarossa noted.

#### MRBC COMMITTEE ON ENERGY AND ENVIRONMENT

Leonard Young of the Federal Power Commission and Jack Green of the Environmental Protection Agency have been appointed co-chairmen of the Missouri River Basin Commission's new Committee on Energy and the Environment. John W. Neuberger, MRBC Chairman, has also named to the committee William Rogers, Department of Interior; James Wilson, State of Missouri; and Floyd Bishop, Yellowstone Compact Commission. Don Ohnstad, MRBC River Basin Planner, was designated to serve as staff coordinator. A liaison officer from the Federal Energy Administration will also be asked to serve with the committee.

Neuberger noted that "the charge of the committee is to evolve the concepts, rationale and recommendations for energy and environmental impacts for the energy-related studies of the MRBC Framework Update Committee." Appropriate interagency technical work groups should be organized to "identify the relevant problem issues, to develop demand and supply relationships for various energy sources and conversion processes, to project energy transmission and transport requirements to include non-governmental plans and interregional exchange proposals; as well as the environmental impacts, quality standards and protection plans for water, air and land."

#### FEDERAL HIGHLIGHTS

##### ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION ESTABLISHED

A bill creating an Energy Research and Development Administration (ERDA) was recently signed by President Ford. The new Administration will include the research activities of the Atomic Energy Commission, coal research conducted by the Department of the Interior, the solar and geothermal energy functions of the National Science Foundation and certain areas of EPA.

An Administrator for ERDA has yet to be named, but the President has appointed Secretary of the Interior Rogers C. B. Morton to be Chairman of the Energy Research Council which the law establishes.

##### EPA REPORTS ON FUTURE WASTEWATER TREATMENT PLANT NEEDS

A preliminary report by the Environmental Protection Agency (EPA) entitled "State Cost Estimates for Construction of Publicly Owned Wastewater Treatment Facilities - 1974 Needs Survey" states that \$350 billion would be

required to meet the costs of constructing publicly owned waste treatment works for populations expected by 1990. A final report on the 1974 needs survey will be submitted to Congress by February 10, 1975.

According to EPA, the state estimates totalled \$114.6 billion for conveyance and treatment of domestic sewage and combined sewage flows, up more than \$54 billion from the 1973 needs survey. An additional \$235 billion was reported for treatment and/or control of separate stormwater flows. The overall estimate for the traditional water pollution control program of treatment plants and interceptors amounted to \$53 billion, compared with \$36 billion reported last year.

EPA Administrator Russell E. Train, in a letter accompanying the preliminary report, noted that totals reflected in the report "greatly overstate the cost of meeting the 1983 goals" of the 1972 Act. Train said a preliminary assessment indicates the criteria and methodology used when estimating facility requirements "varied greatly from state to state." Tables in the report showed "large differences" among states in reported per capita estimates. These considerations emphasize the "significant inaccuracies" of any reporting system in which total needs are to be determined and the results used to establish the magnitude of funds received, Train noted. EPA has "strong reservations" about using the results for allocation of construction grant funds among states, and Train suggested that Congress may want to reexamine the usefulness of this method.

Limited copies of this preliminary report are available from Municipal Construction Division, Needs Survey Task Force (WH 447), EPA, Waterside Mall, 401 "M" Street, S.W., Washington, D. C. 20460.

#### NEW CRITERIA FOR EPA GRANTS

In a recent survey of sewerage projects in 52 communities, Urban Systems Research and Engineering, Inc. found these projects were encouraging unsound community growth. The study indicated that, in apparent zeal to obtain federal subsidies, communities are building sewerage facilities on a scale calculated to handle their expected population increases for as much as the next 2000 years. In less extreme instances, communities are installing up to twice as much sewerage capacity per household as some experts estimate is needed.

To counteract these tendencies, the Environmental Protection Agency (EPA) is instituting new criteria for its grants, particularly in regard to analysis of their impacts on land use and community growth. This reorientation of federal policies was outlined by Russell W. Peterson, Chairman of the Council on Environmental Quality. Peterson said the findings were "not a criticism of EPA but a criticism of the way we have become accustomed to building sewers in this country." He said Russell E. Train, EPA Administrator, "is aware of the results of the study and has begun a process to modify the federal wastewater treatment grant program so as to offset those undesirable stimulants to undesirable land use development."



"The study shows that the pattern of interceptor sewer construction now supported by the grant program is encouraging low-density development in urban fringe areas and thereby exerting significant adverse impacts on land use patterns and efforts to conserve energy," Peterson noted.

#### "SECOND AMERICA" NEEDS DISCUSSED BY USGS

A key discussion at a recent dedication symposium for the National Center of the U.S. Geological Survey in Reston, Virginia centered around the topic of building a "Second America"--duplicating in the next 25 years the growth and development of the previous 200 years. The symposium covered a wide range of earth resource problems from reducing the effects of natural hazards such as earthquakes and floods, to methods of developing adequate energy resources with a minimum of environmental damage. If adequate water supplies are to be provided to meet this "Second America" requirement, long-range planning for resource development, treatment technologies and distribution systems will have to be undertaken.

### CONFERENCES

#### WATER TECHNOLOGY CONFERENCE

The second annual AWWA Water Quality Technology Conference, sponsored by the AWWA Water Quality Division, will be held December 1-4, 1974 in Dallas, Texas. The conference will include two full days of technical sessions on laboratory quality control plus two evenings of workshops and two lab tours. It will offer the opportunity for intensive discussion to promote "ACTION NOW in the Water Laboratory" and will be particularly valuable to water laboratory personnel and others concerned with controlling water quality.

The cost of registration for the full program is \$50, not including hotel accommodations. For further information contact the AWWA, 6666 West Quincy Avenue, Denver, Colorado 80235.

### PUBLICATIONS

#### WATER FOR ENERGY

A report entitled "Water for Energy in the Upper Colorado River Basin" has been released by the Denver Management Team of the Department of Interior's Water for Energy Committee. The function of this committee is to study water requirements and availability for development of coal and oil shale deposits in Colorado, Utah, Wyoming, New Mexico and Arizona.

The report includes discussion on the following topics:

- the water supply situation;
- chemical augmentation of water supply through weather modification;

- increased use of air cooling in lieu of water cooling for energy production;
- the purchase of agricultural water rights by energy interests;
- demands for water for other uses (municipal, industrial, agricultural and environmental);
- Indian water rights; and
- water requirements for federal lands in relation to other water needs in the area.

Copies of the report are available through the Bureau of Reclamation's Office of Public Affairs, U.S. Department of Interior, Washington, D. C. 20240 and the Engineering and Research Center, Denver, Colorado.

#### RESEARCH REVIEW

Project Title: "Disposal of Cattle Feedlot Runoff on Agricultural Land"

Principal Investigator: Howard D. Wittmuss, Associate Professor  
Dept. of Agricultural Engineering

The objectives of this project are: (1) to determine the maximum sustained level of cattle feedlot runoff which can be applied to cropped land without pollution of soil, surface water or groundwater; (2) to determine the magnitudes of pollution of soil, surface water and groundwater which can result from high application rates of cattle feedlot runoff on cropped land; and (3) to determine changes in the physical and chemical properties of the soil resulting from high rates of cattle feedlot runoff on cropped land.

Results to date indicate beef cattle effluent can be disposed of on corn fields by sprinklers at the rate of 20 inches per year and derive maximum benefit from the effluent as fertilizer. At that application level, all the needed crop nutrients are supplied and there does not appear to be any serious production, runoff, intake or groundwater contamination problem. Corn yields were highest on the water irrigated and fertilized plots indicating some yield suppression by effluent on the plant leaves or unfavorable nutrient balance in the soil as a result of effluent application.

Corn was planted in grass sod both fertilized and unfertilized for the last two years. Ten applications ranging from 0 to 30 inches of water or effluent were applied to the different plots. Soil moisture, soil density, soil chemical analysis, effluent analysis, deep percolate analysis, grain and forage yields, and crop chemical analysis data were collected.

An automatically controlled sprinkler effluent application system has been designed for installation in connection with the feedlot system at the Mead Field Laboratory. The system will be demonstrated to farmers and feeders as a low cost and low labor requirement system for disposing of effluent.

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9. Annual Report 1973, Agassiz Centre for Water Studies, University of Manitoba.
10. Powers of the State of Kentucky in Implementing an Effluent Tax as a Part of an Interstate Ohio River Basin Water Pollution Control Program, Anita L. Morse, Edward Zeigler, University of Kentucky, Water Resources Research Institute, Lexington, Kentucky, September 1974.
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24. Summary of Abstracts, Outlines and Time Schedules for the Nebraska Water Plan Current as of October 1969, Nebraska Soil and Water Conservation Commission.
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C. Y. THOMPSON LIBRARY

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#### QUESTIONS AND INQUIRIES

Newsletter items and inquiries should be sent to: Jeanne Enevoldsen, Editor, Nebraska Water Resources Research Institute, 212 Ag. Engineering Building-East Campus 7R, University of Nebraska, Lincoln, Nebraska 68503; or phone (402) 472-3307.

#### NEWSLETTER ITEMS SOLICITED

The Water Current Newsletter will publish, without charge, announcements, programs for up-coming conferences, employment opportunities or other newsworthy items on hydrology, water resources or related topics. To insure timely publication, submit items before the 25th of every month.

Nebraska Water Resources Research Institute  
212 Ag. Engineering Building - 7R  
East Campus  
University of Nebraska  
Lincoln, Nebraska 68504