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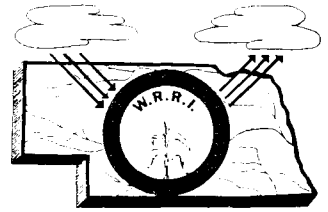
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WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA
LINCOLN, NEBRASKA 68503



Volume 6 Number 2

February 1974

FROM THE DESK OF THE DIRECTOR . . .

Since enactment of the Water Resources Planning Act of 1965, it has become increasingly clear that the traditional acceptance of and funding approach to extensive water resources development projects would change. The era of large public works projects for water development is over insofar as national participation is concerned. Not only is it unlikely that local interests will be able to generate enough external congressional support to see massive projects through to completion, but increases in discount rates have made the prospects for many projects dim when viewed in a national economic development sense.

States concerned about the use and development of their water resources will have to consider greater participation in the planning and construction processes and will have to carry a greater burden of the cost. Several states have long recognized the importance of this approach and have undertaken extensive projects primarily on the basis of their own funding. In Nebraska there is intensive interest in the extension of the agricultural base. To achieve future levels of development which are now anticipated, it will be necessary to provide additional facilities for the proper use and management of water.

To assure funding at levels required, a program such as that envisioned in pending legislation to establish a Nebraska Resources Development Fund will be needed. Such a program would provide the financial undergirding necessary to accommodate desired projects and permit sophisticated levels of planning and research to support final designs. Opportunities for intensive water resources development will be few unless the states accept a major share of fiscal responsibility. Nebraska needs such a program, and unless it is implemented, there is little likelihood of significant structural development in the foreseeable future.

Section I of the Bill (L.B. 975) is worth repeating: "It is hereby recognized that it is the public purpose of this state to properly develop the water and related land resources of the state and that it is in the public interest of this state to financially assist in programs and projects necessary to the development, preservation and maintenance of Nebraska's water and related land resources, including programs and projects for the abatement of pollution, potential reduction of flood damages, reservation of lands for resource development projects, provision of public irrigation facilities, preservation and development of fish and wildlife resources, protection and improvement of public lands, provision of public outdoor recreation lands and facilities, provision and preservation of the waters of this state for all beneficial uses, including domestic, agricultural and manufacturing uses, conservation of land resources, and protection of the health, safety and general welfare of the people of the state of Nebraska."

INSTITUTE ACTIVITIES

1974 Summer Institute

The Nebraska Water Resources Research Institute will once again sponsor a one-week Summer Institute July 21-26, 1974. This year's theme is "Quantitative Planning Techniques in Water Resources." The objective of the program is to provide training in the application of simulation and optimization techniques to the planning and analysis of water resources systems. Primary emphasis will be given to application. Approximately 50 percent of the program will be devoted to workshops providing participants an opportunity to manipulate operational models. A case-study approach will be used to relate lecture materials to workshop activities. Both surface water and groundwater systems will be discussed. The role of quantitative models as practical planning tools will be considered.

Speakers and topics for the Institute program are as follows:

Introduction to Water Resources Systems	Warren Viessman, Jr., Director Water Resources Research Institute University of Nebraska-Lincoln
Simulation Model Structuring - Surface Water Components	Gary L. Lewis, Ass't. Professor Dept. of Civil Engineering University of Nebraska-Lincoln
Simulation Model Structuring - Ground Water Systems	Peter W. Huntoon, Hydrogeologist Conservation & Survey Division University of Nebraska-Lincoln
The Big Blue River Basin Model - A Case Study	Peter W. Huntoon
Screening Models for Water Resources Planning	D. Peter Loucks, Chairman Department of Environmental Engr. Cornell University
The Elkhorn River Basin - A Case Study	Gary L. Lewis
Simulation and Optimization - Combined Tools for Flood Control Planning	Gary L. Lewis, D. Peter Loucks, Isaac Yomtovian, Research Associate Water Resources Research Institute

For further information on the Summer Institute program, contact:
Dr. Warren Viessman, Jr., Director, Water Resources Research Institute,
212 Agricultural Engineering Building, University of Nebraska, Lincoln,
Nebraska 68503. Telephone (402) 472-3307.

NWRRI RESEARCH SEMINAR

On Thursday, March 14 the Nebraska Water Resources Research Institute will sponsor a "Research Overview" at the Nebraska Center for Continuing

Education. The purpose of the seminar is to present a brief review of the current research program of the Institute. Principal investigators will make presentations on present studies in progress, accomplishments to date and future research plans. The seminar is open to the general public, state and federal agency representatives, university faculty and students and other interested persons.

Four main areas of research will be presented: (1) water quality; (2) irrigation; (3) water resources modeling; and (4) basic research. Seventeen principal investigators will discuss their research projects in these areas with time allotted for questions and discussion.

For further information, contact: Nebraska Water Resources Research Institute, 212 Agricultural Engineering Building, University of Nebraska, Lincoln, Nebraska 68503. Telephone 472-3307.

WATER RESOURCES SEMINAR SERIES

Seminar topics and speakers for the coming month are as follows:

March 4

"Land-Water Planning With Emphasis on Shoreline Areas"

M. Wayne Hall, Director
Water Resources Center
University of Maine

March 11

"Assessing the Environmental Impact of Water Development Projects"

Roger S. Sharpe, Ass't Professor
Department of Biology
University of Nebraska-Omaha

Carl W. Wolfe, Section Chief
Research Division
Nebraska Game and Parks Commission

Both seminars will be held in Room 206 Agricultural Engineering Building, University of Nebraska-Lincoln, from 3:00-5:00 p.m.

REGIONAL NEWS

FUTURE WATER USE - COAL VS. IRRIGATION

At a recent Missouri River Basin Commission meeting in Kansas City, Governor Robert Docking of Kansas discussed the coal development issue.

Docking said future availability of water for irrigation is of concern to agricultural downstream states such as Kansas. He stated, "Coal deposits (in the Northern Great Plains) put new dimensions on water resource development as well as water resource management. New priorities are going to have to be considered and their impact must be given careful review as well as evaluation. This Commission can provide a forum for these important discussions and it can play a vital role in developing government policies which affect the Missouri River Basin."

YELLOWSTONE RIVER BASIN STUDY PROPOSED

A comprehensive study of the water and related land resources of the Yellowstone River Basin and nearby coal fields in Montana, Wyoming and North Dakota was given highest priority by the Missouri River Basin Commission at a recent Kansas City meeting.

The Commission will request funds from the Water Resources Council in Washington, D.C. to accomplish the project. If approved, the study would be funded for fiscal year 1976.

Other projects which the Commission ranks highly are studies of the James River Basin in North and South Dakota, and a flood plain management study on the Missouri River from Gavins Point Dam in South Dakota to the mouth of the River in Missouri.

Commission Chairman, John W. Neuberger, said "The purpose of the studies is to recommend programs and projects for preservation as well as development of water resources in those areas. The Yellowstone study is particularly timely because the nation is looking to western coal as one solution to the energy shortage. The effects of extensive coal development on water resources in the northern Great Plains must be evaluated."

William Brabham, Commission Vice-Chairman, said a joint state and federal study in the Yellowstone Basin would be a natural outgrowth of the Department of the Interior's Northern Great Plains Resource Program (NGPRP) that will be completed this year.

FEDERAL HIGHLIGHTS

EPA INCREASES TUITION FEES

Tuition charges for several of the Environmental Protection Agency's training courses have increased. Air, water, water hygiene, solid wastes, radiation and pesticides programs are included under the new fee. The charges range from \$15 to \$70 per training day for courses beginning after January 1, 1974 and will depend upon whether the courses offered are laboratory, lecture or survey. The fee, course and date for each program will be announced. State and local government employees will pay a maximum of \$25 per training day, regardless of the course, until July 1, 1974.

For more information on tuition fees and schedules, write the Environmental Protection Agency's registration offices.

CHANGING ATTITUDES IN THE CORPS

Leaders in the Corps of Engineers have spoken of changing trends within the Corps' Civil Works Division. The changes include de-emphasizing large, new construction projects and stressing urban water supply problems, innovative research and projects helping to solve the energy crisis.

Corps' Civil Works Director, Major General John W. Morris said, "Urban needs, commercial navigation and power will get the first cut for the use of the limited funds available." Lt. General, W. C. Gribble, Chief of Engineers, said, "There will be an increase in what I call 'software' services of the Corps of Engineers." He added that 'software' includes such items as "flood plain studies, dam inspection and regulatory functions, including permits for work affecting navigable waters and wetlands."

Brig. General Harry A. Griffith was quoted as saying, "Our motto now is, 'if you can find someone who can benefit from federal investment, he should have to pay something for it.'"

SOCIAL EFFECTS OF PUBLIC WORKS PROJECTS

According to a study for the Corps of Engineers, more research is needed on the social effects of public works projects. Knowledge is needed on the nature of the effects and also techniques for measuring and forecasting these effects. Each public works agency should have a special unit staffed by social scientists to monitor a continuing program. Projects would be examined to determine what difference they made to the people and their communities.

The social research staff within the agencies would have four important functions: (1) direct a continuing program of research on the agency's projects to produce more and better knowledge of their social effects; (2) assemble and disseminate findings from research on social effects; (3) evaluate the effectiveness of the agency's projects in attaining social well-being objectives; and (4) develop improved methods of social research for planning purposes including efficient techniques for studying communities and identifying, measuring and forecasting social effects.

WATER PROGRAMS REORGANIZED, REPLACED AND REMOVED

The committee structure in the U.S. House of Representatives may undergo drastic changes. A draft report issued by the House Select Committee on Committees separates inland navigation from other multi-purpose water resources programs. Navigation would remain in the Public Works Committee, which will be replaced by the Public Works and Transportation Committee.

Transportation regulatory agencies, railroads and airways will be transferred from the Interstate and Foreign Commerce Committee and placed under the Public Works and Transportation Committee. Merchant Marine and Fisheries would be abolished.

All river and harbor programs except navigation would be transferred to the Interior Committee which will be renamed the Energy and Environment Committee. The reclamation program is already under EEC. The Agriculture and Natural Resources Committee replaces the Agriculture Committee.

Congressman Richard Bolling (Missouri) is now engaged in "mark-up" sessions leading to the adoption of a final proposal.

WRC'S 6-7/8% RATE MAY BE REDUCED

Congress may reduce the Water Resources Council's new 6-7/8 percent interest/discount rate. A House-Senate conference committee reached an agreement to reinstate the former 5-5/8 percent rate which would be in effect this year.

The provision requests the President to conduct a full investigation of project evaluation guidelines and the cost-sharing issue and report to Congress within a year. The Administration was asked to determine how the information can incorporate regional development and social well-being, as well as national income efficiency and environmental quality, as project objectives.

COST SHARING RECEIVES A BACK SEAT

Proposed cost sharing for navigation and other water resources programs has been pushed aside for the time being. The President's budget contained one sentence on the subject: "The recommendations of the National Water Commission are being reviewed for reforms which will broaden the responsibilities of state and local governments in water resources development." This is the first time in ten years that waterway user charges were not endorsed in the annual budget.

Reportedly, the Administration did not want to rile Congress. The Congress responded by including cost sharing in its requested Presidential study. Plans to levy user charges may be temporarily delayed.

CONFERENCES

PROCESSING AND MANAGEMENT OF AGRICULTURAL WASTES CONFERENCE

The New York State College of Agriculture and Life Sciences is sponsoring a conference entitled "Processing and Management of Agricultural Wastes." The conference will be held in Rochester, New York on March 25-27, 1974.

The major focus of this sixth national conference will be on technical and managerial aspects for the processing, stabilization, disposal and utilization of liquids and solids resulting from agricultural production. Emphasis will be on impacts of effluent guidelines on agricultural industries and the economy and non-point pollution source identification and control.

Conference registration will be \$25 and will include a copy of the proceedings which will be available shortly after the conference.

For additional information, contact: Professor R. C. Loehr, Program Chairman, Cornell University, 207 Riley Robb Hall, Ithaca, New York 14850.

CONFERENCE ON THERMAL POLLUTION ANALYSIS

Virginia Polytechnic Institute and State University has announced a Conference on Thermal Pollution Analysis to be held May 14-15, 1974 at the Donaldson Brown Center for Continuing Education, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

For further information, contact: Peter M. Ashton, Water Resources Research Center, Virginia Polytechnic Institute, Blacksburg, Virginia 24061.

INDUSTRIAL WASTEWATER CONTROL COURSE

A short course on engineering control of industrial wastewaters will be given at the Cornell University College of Engineering on June 24-28, 1974. Designed for engineers and others responsible for industrial wastewater control, the course is intended to make them aware of the severe limitations that regulatory agencies are imposing on all wastewaters discharged to natural waters and to improve their ability to produce effluents that meet the new standards.

Topics will include water pollution control legislation, regulations and standards, industrial wastewater disposal alternatives, effluent reclamation and recycle, biological and physical-chemical treatment process theory and application, solids disposal, synthesis and cost estimation of wastewater treatment systems. On the last day, the participants will use the presented material to develop a preliminary design for an industrial wastewater treatment plant.

For further information, contact: Byron W. Saunders, Director, Cornell University, Carpenter Hall, Ithaca, New York 14850.

CONFERENCE ON URBAN RUNOFF

A research conference entitled "Urban Runoff - Quantity and Quality" will be conducted by the Urban Water Resources Research Council, ASCE, through the Engineering Foundation. It is planned for August 11-16, 1974 at Franklin Pierce College, New Hampshire.

The conference is designed to review developments in analysis and technology of urban water resources within the last three years, and to outline both the opportunities for applying these findings to decision making and the remaining problems which should be the focus of additional research. There are three specific objectives: (1) technology transfer, the making available promptly and effectively of new technologies and analytical approaches, whether derived from research or otherwise; (2) consideration of the availability of data/information and the technology of data collection in the urban water resources field; and (3) highlight of remaining urban water problems requiring solutions and inferences to be drawn concerning research priorities.

Attendance will be by invitation only. Proceedings will be published shortly after the conference. Persons who wish to attend may contact either of the following: William Whipple, Jr., Chairman, UWRRC, 395 Mercer Road, Princeton, New Jersey 08540; or Scott Tucker, Secretary, UWRRC, Urban Drainage and Flood Control District, 181 East 56 Avenue, Denver, Colorado 80216.

UNIVERSITY OF MICHIGAN OFFERS SUMMER COURSE

The University of Michigan has announced a one-week summer institute course entitled "Industrial and Municipal Water Pollution Control -- Physicochemical Processes" to be held August 19-23, 1974 in Ann Arbor, Michigan.

The course includes an in-depth analysis of conventional and advanced physicochemical processes for treatment and reclamation of industrial and municipal wastewaters. Also included are process concepts, specific applications and economics.

For further information, contact: Professor Walter J. Weber, Jr., Department of Civil Engineering, The University of Michigan, Ann Arbor, Michigan 48104.

PUBLICATIONS

HYDROLOGY PUBLICATION

Modern Hydrology, by Raphael G. Kazmann, gives a new direction to the usual "scientific" approach to technical subjects such as hydrology. Professor Kazmann ties together the social, economic and political relationships that must be considered in any technical field. The book also illustrates situations which can occur in socio-economic-technical connections rather than the traditional mathematical formulas. The text would be useless to anyone looking for a "formula" workbook, but it would help the hydrologist who must plan for the "real" world.

The book is available for \$14.95 from the Harper & Row Publishing Company.

BIBLIOGRAPHY ON WATER MANAGEMENT

The Agricultural and Irrigation Engineering Department at Utah State University has released a publication entitled "On-Farm Water Management Bibliography." The book contains 12,000 titles covering on-farm water management and interrelated subject areas including engineering, water law, irrigation, drainage and soils. The materials listed in the book may be obtained from Utah State University.

Please send all inquiries to: On-Farm Management Project, Agricultural and Irrigation Engineering Department, UMC41, Utah State University, Logan, Utah 84322.

ENVIRONMENTAL EFFECTS OF DRY COOLING TOWERS

According to a report prepared for the U.S. Atomic Energy Commission, dry cooling towers on power generating plants will receive more consideration in the future because of energy requirements and limited water resources. The study concentrated on the hot air plume behavior and possible effects on the environment of the waste heat rejected from 1000-MW(e) plants by dry cooling systems.

Several questions have been raised about the effects on the environment such as land usage requirements, noise levels, appearances, increased lightning strikes, ecological damages, dangers to light aircraft and weather modification.

The report, entitled "Plume Behavior and Potential Environmental Effects of Large Dry Cooling Towers," has been published by Gulf General Atomic Company, San Diego, California 92138.

INTERESTED IN GLACIERS?

A 24-page report, entitled "Recent Activity of Glaciers of Mount Rainier, Washington," by R. S. Sigafos and E. L. Hendricks is now available. Written primarily as a scientific investigation of recent glacier activity, the publication and maps should also prove useful to hikers and naturalists interested in the constantly changing scenic environment of Mount Rainier volcano. According to the report, tree-ring dating of past advances and retreats of the glaciers on Mount Rainier in west-central Washington is uncovering clues to past climates and may aid management of future water supplies.

Complete with 17 illustrations, tables and seven large maps, the report is published as USGS Professional Paper 387-B. Copies may be purchased for \$5.70 from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

ENVIRONMENTAL QUALITY TRADEOFFS

A new book on Representative Government and Environmental Management is now available. The author, Edwin T. Haefele, Director of the Regional and Urban Studies Program at Resources for the Future, expresses his opinions on future environmental quality decisions and their tradeoffs.

Haefele evaluates current, proposed and hypothesized institutions for environmental management and isolates specific problems; namely, physical interdependence of residuals, benefit estimation, equity effects of public goods decisions, interest representation, boundary considerations and weighted voting.

The book may be obtained from the Johns Hopkins University Press, Baltimore, Maryland 21218 for \$8.95.

PUBLIC VIEWS ON THE ENVIRONMENT

A new report, "The American People and Their Environment," evaluates a survey of public opinions on environmental quality, priorities for protection and personal liability for the costs of pollution control.

The survey was conducted by the J. M. Viladas Company of Greenwich, Connecticut. Metropolitan and rural residents were interviewed and asked to rate the seriousness of air, water, solid waste and hazardous pesticides pollution. Eighty-four percent rated air and water pollution as major problems. Seventy-five percent were concerned with solid wastes and 64 percent were interested in hazardous pesticides.

Participants ranked environmental issues in the following order: sewage treatment, industrial air pollution, solid waste management, manufacturing clean motor vehicle engines, finding safer pesticides, improving mass transit, making nuclear power plants safe, eliminating excessive noise and restoring strip-mined land. Respondents said they would pay 22 percent more for electricity, 20 percent more for sewage treatment and 15 percent more for solid-waste recycling if necessary to improve the environment.

Copies of the report can be inspected at EPA's Freedom of Information Center, 401 "M" Street, S.W., Washington, D. C. or the Atlanta Regional Office.

RESEARCH REVIEW

Project Title: Digital Simulation of Conjunctive-Use Irrigation in Dawson County, Nebraska

Principal Investigators: Gary L. Lewis and Ralph R. Marlette
Department of Civil Engineering

The objective of the project is to develop a digital simulation model of the conjunctive use of surface and groundwater for irrigation in Dawson County, Nebraska. The model calibration for a two-year period of historical data will be followed by sensitivity studies and by studies of water table changes due to increased well irrigation, increased subirrigation, drought and decreased canal irrigation. By analyzing the effect of each change, recommendations for management and development policies can be formulated.

In addition to the possibilities listed above, various combinations of parameters, such as increased well irrigation, increased alfalfa production, decreased precipitation and/or canal irrigation, could be used to study the changes which would occur in the water levels. By carefully analyzing the effect of each of these changes, recommendations could be made for the optimum management of the groundwater resource. Mathematical optimization techniques are available which could also be incorporated in the simulation model to evaluate various schemes of development and management.

The completed steps in the development are: (1) creation of a data set which numerically describes the main hydrologic and physical characteristics of the entire study area, and (2) verification of the program by simulating the water table levels and operational records for the eastern one-third of the study area.

PUBLICATIONS RECEIVED BY THE INSTITUTE

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2. A Methodology Study to Develop Evaluation Criteria for Wild and Scenic Rivers, E.L. Michalson and Joel Hamilton, Department of Agricultural Economics, Water Resources Research Institute, University of Idaho, Moscow, Idaho, December 1973.
3. Vegetation of the Missouri River Floodplain in North Dakota, Robert L. Burgess, W. Carter Johnson, Warren R. Keammerer, Department of Botany, North Dakota State University, Fargo, North Dakota, June 1973.
4. Soil and Air Temperature Changes Induced by Subsurface Line Heat Sources, Special Report 402, Agricultural Experiment Station, Oregon State University, Corvallis, Oregon, December 1973.
5. Crop Response to Warming Soils Above Their Natural Temperatures, Special Report 385, Agricultural Experiment Station, Oregon State University, Corvallis, Oregon, January 1974.
6. Fabric Boom Concept for Containment and Collection of Floating Oil, Philip E. Bonz, Office of Research and Development, U.S Environmental Protection Agency, Washington, D. C., September 1973.
7. Treatment of Hazardous Material Spills with Floating Mass Transfer Media, Basil W. Mercer, Alan J. Schuckrow, Garynor W. Dawson, September 1973.
8. Recycling Treated Municipal Wastewater and Sludge Through Forest and Cropland (Proceedings), Edited by William E. Sopper and Louis T. Kardos, Symposium conducted by the College of Agriculture and the Institute for Research on Land and Water Resources, Pennsylvania State University, 1973.
9. The Delaware Estuary System, Environmental Impacts and Socio-Economic Effects, Delaware River Estuarine Marsh Survey, The Academy of Natural Sciences, The University of Delaware, Rutgers University, December 1973.

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14. National Water Commission Report, Hearings Before the Subcommittee on Interior and Insular Affairs, U.S. Senate, U.S. Government Printing Office, Washington, D. C., 1973.
15. Water Balance of a Small Lake in a Permafrost Region, Institute of Water Resources, University of Alaska, Fairbanks, Alaska, Charles W. Hartman and Robert F. Carlson, September 1973.
16. Proceedings: Ninth Biennial Conference on Groundwater, Francisco Torres Conference Center, Goleta, California, September 13-14, 1973. (copies may be obtained from: Water Resources Center, University of California, Davis, California), 1973.
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20. A Study of Water Institutions in Utah and their Influence on the Planning, Developing and Managing of Water Resources, Frank W. Haws, Utah Water Research Laboratory, College of Engineering, Utah State University, Logan, Utah, September 1973.

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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, University of Nebraska - East Campus, Lincoln, Nebraska 68503; or phone (402) 472-3307.