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10-1971

## Water Resources News, Volume 3, No. 8, October 1971

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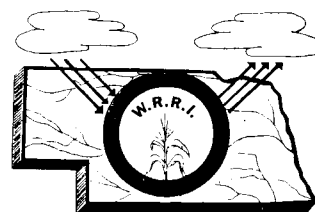
"Water Resources News, Volume 3, No. 8, October 1971" (1971). *Water Current Newsletter*. 59.  
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# WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE  
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA  
LINCOLN, NEBRASKA 68503



Volume 3 Number 8

October, 1971

## WRC REPORT ON SHARING FINANCIAL RESPONSIBILITY OF WATER DEVELOPMENT

A study performed for the U.S. Water Resources Council by Mr. Daniel H. Hoggan, Assistant Director, Utah Water Research Laboratory, entitled an analysis of State and Local Capability to Share Financial Responsibility of Water Development with the Federal Government has been published. The purpose of the study and report is to determine general state and local capability to raise finances, enter into repayment contracts, provide services or in appropriate ways share the cost of water development with the federal government.

The report contains a general discussion of state and local capability to raise finances for capital projects and is presented under three major headings:

(1) Long-term Debt, (2) Fiscal capacity and tax effort, and (3) Expenditures. The report describes specific problems and issues of water project financing and cost sharing, some of the financial arrangements and associated problems in California and Louisiana. Conclusions, drawn through the process of deduction are presented and pertinent selections are made from available literature.

Copies of this report are available in limited numbers as long as present stocks are available from WRC, Washington, D.C. 20037.

## GROUND-WATER QUALITY SIMULATOR

Battelle-Northwest is developing a ground-water simulation system for the Atlantic Richfield Hanford Company which will accept models of ground-water conditions, display the results of management changes, and forecast the effects of waste management practices on the movement and quality of water in the aquifer. The system will be used to assess any impact of nuclear operations on the Hanford ground-water regime which moves through ancient sand and gravel channels deep under the desert sand. The scientist nominates the problem for study which is then displayed on a cathode ray tube similar to a television set. The computer controlled picture changes to show what will happen as the scientist adds or subtracts events such as pollution, or a particular type of waste management plan.

## ENVIRONMENTAL IMPACT EVALUATION SYSTEM PROPOSED

According to a Department of the Interior announcement, a

proposed system for evaluating environmental impacts as essential factors in the planning, design and construction of water resources projects has been developed for the Bureau of Reclamation. Ellis L. Armstrong, Commissioner of Reclamation, said the proposed environmental evaluation system will be subjected to extensive field testing.

The Commissioner said that the evaluation system considers each project against a background of its effect on ecology, esthetics, environmental pollution and human interest. These four principal categories of environmental quality are divided into components and parameters to comprise an environmental weighting system for use by Reclamation planners.

The evaluation system was developed during the past year by a Battelle-Columbus project team that included research specialists in environmental planning, botany, ecology, environmental engineering, landscape architecture and sociology.

While conceding that the weighting of environmental parameters on a numerical basis is controversial, the report states, "The art of environmental evaluation is in its infancy and will surely develop in significant steps in the next decade. The system gives the Bureau of Reclamation a tool with which to apply this art as it exists today."

#### INDUSTRY-GOVERNMENT OIL SPILL CONFERENCE SLATED FOR 1973

The 1973 Joint Conference on Prevention and Control of Oil Spills will be held March 13-15 in the Sheraton-Park Hotel,

Washington, D.C.

Sponsors of the conference will be the American Petroleum Institute, the Environmental Protection Agency, and the U.S. Coast Guard.

The conference will be devoted to scientific and technical discussions of nearly every facet of oil spill prevention and control.

Sixty-two papers were presented or published at the June 1971 conference. Complete proceedings are available from Publications Management, Inc., National Press Building, 14th and F Streets, N.W., Washington, D.C. 20004.

#### NATIONAL URBAN WATER RESOURCES RESEARCH PROGRAM REPORT PUBLISHED

Rogers C. B. Morton, Secretary of the Interior, has announced publication of the report A National Urban Water Resources Research Program, presenting a program of research designed to develop solutions to urgent existing and projected urban water problems and thus improve water resources management in the urban environment.

Dr. H. Garland Hershey, Director of the Office of Water Resources Research, noted that the report describes research needs in social, economic, institutional arrangements and processes, and ecological and water resource engineering problems believed to be of major significance in the urban and metropolitan regions of the nation.

Limited number of copies of the report are available from the Institute.

RIVER DEVELOPMENT TO AID  
RURAL AREAS SHOULD BE  
"NATIONAL GOAL"

According to former Vice President Hubert H. Humphrey, Minnesota, further development of the Nation's waterways as a means of promoting rural development and a better rural-urban population balance should be "one of our top national goals." Mr. Humphrey, who was re-elected to the U.S. Senate from Minnesota last year, said water programs are "uniquely suited" for rural revitalization:

"With the exception of urban water supply and flood control, most water resource projects are located in rural America. In fact, one noted political scientist, Prof. Lynton K. Caldwell of Indiana University, testified before the Senate Commerce Committee that water programs are the only major Federal undertaking which tend to disperse rather than concentrate the population.\*\*\* Water projects can be quite instrumental in helping produce the economic base for rural growth and development.\*\*\* Those of us who have grown up along the Mississippi River know what that river means to rural areas. It provides a transportation system that enables the Midwestern farmer to get his products to market cheaply so that he can compete in domestic and world markets."

WATER CIRCULATION IN  
SAN FRANCISCO BAY DESCRIBED

Recently announced by the U.S. Geological Survey, Department of the Interior, was a description of the seasonal changes in water

circulation within the San Francisco Bay system and the adjacent Pacific Ocean. The report describes the changes in the circulation patterns of surface and near-bottom water as determined by the movement of plastic devices that drift with the surface and bottom water.

Copies of the report may be inspected at U.S. Geological Survey offices in Washington, D.C.; at the Denver Federal Center, Denver, Colorado; at the Customs House in San Francisco; and the Federal Building in Los Angeles, California.

DISCOUNT RATE RAISED  
TO 5-3/8 PERCENT

Director of the Water Resources Council, W. Don Maughan, recently announced that the interest rate to be used by federal agencies in the formulation and evaluation of plans for water and related land resources is 5-3/8 percent for the period July 1, 1971, through and including June 30, 1972.

The rate has been computed in accordance with section 704.39 of the rules and regulations of the Water Resources Council, 18 CFR 704.39, and is to be used by all federal agencies in plan formulation and evaluation of water and related land resources projects for the purpose of discounting future benefits and computing costs, or otherwise converting benefits and costs to a common time basis.

The interest rate shall apply to all federal and federally assisted water and related land resources project evaluation reports submitted to the Congress, or approved administratively,

after the close of the 90th Congress, the subject, however, to the provisions of 18 CFR 704.39(d) regarding projects authorized prior to the close of the second session of the 90th Congress where state or local governmental agencies have given, prior to December 31, 1969, satisfactory assurances to pay the required non-federal share of project costs.

#### CORNELL AGRICULTURAL WASTE CONFERENCE

The focus of a national conference with its theme "Results of Waste Management Research" will be on research dealing with the management of agricultural wastes and the application of the results to practice. The following areas will be emphasized: legal and enforcement regulations, land disposal, treatment and disposal, nutrient control, and management principles.

The conference will be held at Syracuse, New York on January 31 and February 1 and 2, 1972. All correspondence should be addressed to: Professor Raymond C. Loehr, Program Chairman, 207 Riley Robb, Cornell University, Ithaca, New York 14850.

#### LAWSUIT CHALLENGES TENNESSEE- TOMBIGBEE WATERWAY

An environmental coalition has filed suit in the U.S. District Court in Washington, D.C. to stop construction of the Tennessee-Tombigbee Waterway, an immense U.S. Army Corps of Engineers project. The coalition consists of the Environmental Defense Fund,

the Committee for Leaving the Environment of America Natural (CLEAN), and Dr. James D. Williams, a biologist in Columbus, Mississippi. The plaintiffs filed the suit on behalf of themselves, their members, and people who enjoy the Tombigbee River like it is. The \$386.6 million project would connect the Tennessee and Tombigbee Rivers by means of a 253-mile waterway across northern Alabama and Mississippi. It would link the Gulf of Mexico at Mobile, Alabama, with the Tennessee and Ohio Rivers to the north.

The plaintiffs allege that the Corps of Engineers is proceeding illegally and without authority; that the project is in clear violation of the National Environmental Policy Act. EDF contends the Corps has not adequately considered the environmental consequences of connecting two rivers with separate life systems. A case in point, says EDF, is the destruction of whitefish and trout fisheries in the Great Lakes by the introduction of the lamprey via the Saint Lawrence Seaway. The Environmental Defense Fund stressed the benefits to cost ratio does not include environmental damage caused by the project. Because this damage would exceed the benefits, the plaintiffs feel the U.S. Government is spending huge amounts of public funds at the expense of Southeastern residents and their environment.

A recent report issued by the Environmental Protection Agency has also raised strong objections to the project. The report declared that the waterway is of "questionable economic value" and would "irreversibly" damage an important scenic and natural area in northeast Mississippi. Last

January EDF obtained a court decision temporarily stopping further work on a similar project: The Cross-Florida Barge Canal. This injunction was granted on grounds that it too violated the National Environmental Policy Act. (Conservation News)

### CORPS OF ENGINEERS AND PUBLIC INVOLVEMENT

The Institute for Water Resources (IWR) of the U.S. Army Corps of Engineers is engaged in a continuing program of research, study and evaluation aimed at achieving effective public involvement in Corps of Engineers' water resources programs. The Institute is interested in establishing informal liaison with any college, university, agency, consulting firm or individual in the U.S. or Canada engaged in research or practice in this relatively new area of water resources concern to exchange information and insights regarding these activities which might be of mutual benefit. Anyone interested should contact Mr. Burnham H. Dodge, Director, Center for Advanced Planning, IWR, at 2461 Eisenhower Avenue, Alexandria, Virginia 22314, or at Area Code 202-325-0370.

### RESEARCH REVIEW

Project Title: Eutrophication of Small Reservoirs in the Great Plains

Principal Investigators: Dr. Mark J. Hammer, Dr. Gary L. Hergenrader

Dates: June, 1969 to June, 1972

Recently constructed reservoirs in the Great Plains are experiencing symptoms of advanced eutrophication, i.e., profuse aquatic weed growth, bluegreen algae blooms, and shifting fish populations. Thus the recreational benefits of these waters are being seriously impaired. The objectives of this research project are to:

(1) determine their present trophic condition; (2) estimate their rate of eutrophication; (3) identify sources of nutrients; and (4) evaluate preventive and remedial measures.

The five reservoirs under study near Lincoln, Nebraska are very eutrophic with the larger clear water impoundments showing the worst conditions. Rooted aquatics (Potamogeton, Polyonum) grow to depths of 4 to 5 meters, and bluegreen algae blooms (Anabeana, Aphanizomenon, Microcystis) occur from June through September. Water-based recreation is severely hindered from mid-summer through fall. The majority of nutrients appear to come from land runoff and other difficult-to-control sources, and thus fertilization is not easily controlled.

Although the eutrophication rate of these small man-made lakes has not been firmly established, trends indicate that the usable life span for recreation will be limited to about 10 years.

Eutrophication control in these reservoirs depends upon developing techniques to inhibit photosynthesis. The feasibility of methods for reducing light penetration are currently being evaluated on a laboratory scale.

NEW PUBLICATIONS RECEIVED  
BY INSTITUTE - OCTOBER

1. "Technology and Management of the Environment," Oregon State University, Spring Quarter 1971, July 1971.
2. "A Compilation of the Names Lakes in Oregon with Bibliography," D.W. Larson, J. R. Donaldson, Oregon State University, August 1971.
3. "Prediction of Seasonal-Low Streamflow Quantities," J. C. Campbell, Oregon State University, September 1971.
4. "The Quality of Oregon's Water Resources," Oregon State University, August 1971.
5. "An Automatic Runoff Sampler," O. E. Cross, University of Nebraska, for presentation at the 1971 Annual Meeting, ASAE, Washington State University, June 27-30, 1971.
6. "Animal Waste Utilization for Pollution Abatement," O. E. Cross, A. P. Mazurak, L. Chesnin, University of Nebraska, for presentation at the 1971 Winter Meeting ASAE, December 7-10, 1971.
7. "Studies of the Atmospheric Water Balance," J. L. Rasmussen, Colorado State University, August 1971.
8. "Optimization of Irrigation and Drainage Systems," A.S.C.E. Irrigation and Drainage Speciality Conference Abstracts, October 6-8, 1971.
9. "Who Gets the Water," C. B. Lewis, and A. W. Epp, University of Nebraska.
10. "Arsenic and Lead in Water - A Bibliography," U.S. Department of the Interior, Water Resources Scientific Information Center, September 1971.
11. "Eutrophication of Small Reservoirs in the Great Plains - Abstract," G. L. Hergenrader, M. J. Hammer, University of Nebraska.
12. "A Systematic Treatment of the Problem of Infiltration," H. J. Morel-Seytoux, Colorado State University, June 1971.
13. "Eutrophication of Small Reservoirs in the Great Plains," published in the Nebraska Engineer, June 1971, Dr. M. J. Hammer, G. L. Hergenrader, University of Nebraska.
14. "Qualitative and Quantitative Analysis of the Macro-Benthic Fauna of Five Great Plains Reservoirs," D. C. Lessig, Thesis, University of Nebraska, August 1971.
15. "Ground Water Levels in New Mexico, 1969," J. D. Hudson, U.S. Geological Survey, 1971.
16. "Advanced Nonthermally Polluting Gas Turbines in Utility Applications," for the Environmental Protection Agency, Water Quality Office, March 1971.
17. "Potential Environmental Effects of an Offshore Submerged Nuclear Power Plant, Volume I," for the Environmental Protection Agency, Water Quality Office, June 1971.
18. "Potential Environmental Effects of an Offshore Submerged Nuclear Power Plant, Volume II," for the Environmental Protection Agency, Water Quality Office, June 1971.
19. "A Survey of Alternate Methods for Cooling Condenser Discharge Water -- Large-Scale Heat Rejection Equipment," for the Water Quality Office, Environmental Protection Agency, July 1969.
20. "Environmental Impact of Highway Deicing," for the Water Quality Office, Environmental Protection Agency, June 1971.
21. "Reduction of Salt Content of Food Processing Liquid Waste Effluent," for the Environmental

Protection Agency, Water Quality Office, January 1971.

22. "Oxygen Regeneration of Polluted Rivers: The Passaic River," for the Water Quality Office, Environmental Protection Agency, March 1971.

23. "Study of Sulfur Recovery from Coal Refuse," for the Environmental Protection Agency, Water Quality Office, September 1971.

24. "A Citizen Panel for Atlanta Area Studies: Field Experimentation and Methodological Substudies," C. M. York, G. D. Baskett, Project Completion Report, Georgia

Institute of Technology, June 1971.

25. "Turbidity Instrumentation - A Fiber-Optic System for Measuring Sediment Concentration by Optical Fourier Transformation," A. McSweeney, Georgia Institute of Technology, July 1971.

26. "Annual Report Fiscal Year 1970-1971," Rutgers - The State University, August 1971.

27. "Process Control Model for Oxygen Regeneration of Polluted Rivers, Phase II," Dr. B. Davidson, Rutgers - The State University, April 1971.

28. "Designing an Environmental Study to Meet the Needs of Plan Formulation and Evaluation," W. Whipple, Jr., Rutgers University, June 1971.

29. "Annual Report of the Arkansas Water Resources Research Center for FY 1971," University of Arkansas, July 1971.

30. "A Study of the Limnetic Zooplankton of Five Flood Control Reservoirs," G. R. Helzer, Thesis, August 1971.

31. "Primary Productivity in Five Salt Valley Reservoirs," J. L. Andersen, Dissertation, August 1971.

32. "Bio-Regenerated Activated Carbon Treatment of Textile Dye

Wastewater," for the Environmental Protection Agency, Water Quality Office, January 1971.

33. "Summary of Ground Water Data for Tennessee, Through May 1971," J. M. Wilson, J. M. Kernodle, State of Tennessee, 1971.

34. "Annual Report - F.Y. 1971," Montana State University.

35. "Shielding Precipitation Gages From Adverse Wind Effects with Snow Fences," L. W. Larson, University of Wyoming, August 1971.

36. "Synthetic Streamflows," M. B. Fiering, B. B. Jackson, American Geophysical Union, 1971.

37. "Institutional Aspects of Water Resources Development - A Bibliography," U.S. Department of the Interior, Water Resources Scientific Information Center, September 1971.

38. "Linfield College," Bulletin, 1970-1971, McMinnville, Oregon, May 1970.

39. "Annual Cycle of Leaf Water Potential in Picea Engelmannii and Abies Lasocarpa at Timberline in Wyoming," H. J. Lindsay, University of Wyoming, May 1970.

40. "The Feasibility of Centralized Management of Water Recreation Facilities in Mississippi," D. C. Williams, Jr., C. P. Cartee, M. H. Malchow, Mississippi State University, August 1971.

41. "Selected Urban Storm Water Runoff Abstracts," The Franklin Institute Research Laboratories, July 1971.

42. "Applications of Climatology and Meteorology to Hydrologic Simulation," R. A. Clar, G. E. O'Connor, Texas A & M University, June 1971.

43. "Annual Report 1971," Texas A & M University, July 1971.

44. "Water for Texas - 15th Annual Conference," Texas A & M University, November 1970.



45. "Effect of Geographical Location on Cooling Pond Requirements and Performance," for the Environmental Protection Agency, Water Quality Office, March 1971.

46. "Water Quality Control Through Flow Augmentation," for the Environmental Protection Agency, Water Quality Office, January 1971.

47. "Annual Report of the Iowa State Water Resources Research Institute for FY 1971," Iowa State University, July 1971.

48. "Economics of Wastewater Collection Networks," J. S. Dajani, R. S. Gemmell, Northwestern University, July 1971.

49. "Base-Flow Recession in Illinois," R. N. Garvolden, University of Illinois at Urbana-Champaign, August 1971.

50. "Oil Pollution Incident Platform Charlie, Main Pass Block 41 Field, Louisiana," for the Environmental Protection Agency, Water Quality Office, May 1971.

51. "Feasibility of Computer Control of Wastewater Treatment," for the Environmental Protection Agency, Water Quality Office, December 1970.

52. "A Survey of Alternate Methods for Cooling Condenser Discharge Water - Operating Characteristics and Design Criteria," for the Environmental Protection Agency, Water Quality Office, August 1970.

53. Reprinted from the Rocky Mountain Social Science Journal, "Gully Formation in the Loesses of Central Nebraska," N. Bariss, University of Nebraska at Omaha, October 1971.

54. "Management Problems in Metropolitan Water Resources Operations," M. B. McPherson, American Society of Civil Engineers, September 1971.

55. "Development of a Chemical

Denitrification Process," for the Water Quality Office, October 1970.

56. "Methodology to Evaluate Socio-Economic Benefits of Urban Water Resources," Louis Berger, Incorporated, June 1971.

57. "Methodology to Evaluate Socio-Economic Benefits of Urban Water Resources - Appendices," Louis Berger, Incorporated, June 1971.

58. "Seventh Annual Report - Fiscal Year 1971," Auburn University, 1971.

#### NEWSLETTER ITEMS

Newsletter items and inquiries should be sent to: Dr. Warren Viessman, Jr., Director, N.W.R.R.I., 212 Agricultural Engineering Building, University of Nebraska - East Campus, Lincoln, Nebraska 68503.