

4-1-1972

## Water Resources News, Volume 4, No. 4, April 1972

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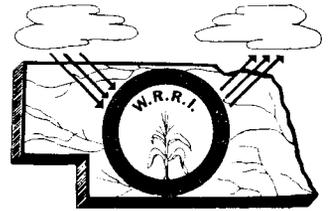
"Water Resources News, Volume 4, No. 4, April 1972" (1972). *Water Current Newsletter*. Paper 64.  
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# WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE  
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA  
LINCOLN, NEBRASKA 68503



Volume 4 Number 4  
April, 1972

## NEW PUBLICATION AVAILABLE FROM N.W.R.R.I.

The Nebraska Water Resources Research Institute has recently issued a new publication which is available to interested persons. The publication, entitled "A User-Oriented Water Research Plan for Nebraska," is by Dr. Warren Viessman, Jr. This publication may be obtained by writing: Dr. Warren Viessman, Jr., Director, Nebraska Water Resources Research Institute, 212 Agricultural Engineering Building, East Campus, University of Nebraska, Lincoln, Nebraska 68503.

## SUMMER SHORT COURSE PLANNED

The Pennsylvania State University, College of Agriculture, will sponsor a short course entitled "Symposium on Recycling Treated Municipal Wastewater and Sludge Through Forest and Cropland" August 21-24, 1972. The \$15 registration fee must accompany the advance registration form. This fee includes a notebook, instructional material, a reception, coffee breaks, and a copy of the published proceedings of the symposium.

The purpose of this symposium

is to review and discuss current knowledge related to the potential of using land areas for the disposal of treated municipal wastewater and sludge. Invited speakers will discuss the various parameters and constraints which must be considered in the design and operation of any land disposal system under varying environmental conditions.

For additional information, write: Dr. William E. Sopper or Dr. Louis T. Kardos, The Pennsylvania State University, Institute for Research on Land and Water Resources, 108 Research Unit A, University Park, Pennsylvania 16802.

## NRD'S TO BECOME A REALITY

The Natural Resources Districts will finally begin functioning as a governmental body on July 1, 1972, when Soil and Water Conservation Districts, Watershed Conservancy Districts, Watershed Districts, Advisory Watershed Improvement Boards and Watershed Planning Boards will be merged to form 24 Natural Resources Districts in the State of Nebraska. The original 1969 NRD Law had scheduled the consolidation to be effective January 1, 1972, but the 1972 Legislature felt that this should be delayed until July 1, 1972, to provide for consideration of amendments by the body in 1972.

Most of the NRD's have been functioning on an informal basis the past several months in anticipation of their legal consolidation on July 1. Although they have no legal status to conduct business, these groups have found it quite beneficial to acquaint themselves with regional activities outside of their immediate county areas and to give consideration to some of the organizational decisions that will be facing the new boards on July 1.

#### INTERIOR SECRETARY DECLARES NEW LEGISLATION NEEDS

Rogers C.B. Morton expressed his hopes for the enactment of Federal legislation important to the solution of tomorrow's problem when he spoke before the National Symposium on state environmental legislation in mid-March. He noted that the President has asked the Congress to enact a National Land Use Policy which would encourage States to establish land use planning agencies. Secondly, the Secretary said that he had asked the Congress to revise the laws which regulate mineral development on public lands. A power plant siting bill which would require long-range planning (and disclosure of same by utilities) was also extolled by the Secretary. Additionally, he championed the creation of a Federal Department of Natural Resources.

#### USGS TO STEP UP WATER RESOURCE INVESTIGATIONS

The water resources program of the U. S. Geological Survey,

Department of the Interior - largest water resources inventorying program in the Nation - will be expanded in fiscal 1973 to meet growing information needs of hardpressed water managers and planners.

E. L. Hendricks, chief hydrologist, USGS, Washington, D. C., noted that "water use in the United States has increased almost 20 percent in the last five years."

"It is estimated," Hendricks said, "that combined domestic and industrial water needs will triple in the next three decades."

President Nixon has repeatedly emphasized the need for water conservation. "Conditioned by an expanding frontier," he said in his 1970 Environmental Message to Congress, "we came only late to a recognition of how precious and how vulnerable our resources of land, water and air really are."

Hendricks said that most of the program increase will be focused in four areas:

State and Local Investigations

Subsurface Waste Storage

Gulf Coast Hydrosience Center

National Water Data Exchange (NAWDEX)

#### LEAGUE OF CITIES ASKS FOR UNIFORM POLLUTION POLICY

A uniform national clean water goal to keep industry from being pirated to areas with looser standards is urged by the National

League of Cities in a new policy report.

The report, "National Municipal Policy," says the basic principle for dealing with water pollution is that nobody has a right to pollute--but that pollution continues because of technological limits. The mayors say the impracticality of instant non-pollution must be recognized.

The policy statement as it relates to water covers 7 points:

--The Federal Water Pollution Control Act needs revision to provide contract authority funding.

--The Act should be amended to put the money where the need is.

--The Basic federal share for local projects must be boosted to 75% regardless of state participation.

--The river basin should be the basic unit of water resources development.

--Government should encourage expanded desalting and recycling of waste water.

--User charges should be uniformly based on equitable allocation of local waste treatment construction and operation costs.

--Sedimentation and silting of lakes, creeks and other streams must be checked and avoided in future planning.

#### HOUSE PASSES WPC BILL

The House of Representatives passed its version of the 1972 amendments to the Federal Water Pollution Control Act by a vote of 380 to 14 on March 29. Last November 2 the Senate passed its proposed bill by a vote of 86 to

0, so representatives from each group now go to a conference proceeding from a base of strength for their respective views. A single version must be agreed on and adopted by both bodies.

In its action, the House defeated a long list of proposed amendments offered as changes to the bill (H.R. 11896) as reported by the Committee on Public Works. Major among these, and all different from the Senate's position, were efforts to broaden the rights of citizens and public interest groups to sue polluters, to set 1981 and 1985 as firm goals in the water pollution fight without study and further congressional action, to downgrade the states' role, and to allow EPA to reject state-issued industrial waste discharge permits.

H. R. 11896 does provide a \$24.6-billion program versus the Senate's \$20-billion plan; most of the difference is in construction grants for wastewater treatment plants.

Conference proceedings began in mid-April. With both the Senate and House having a bill with a strong mandate from their members, the conference may be lengthy and will be under time pressure for early congressional adjournment because of the election campaign.

#### EROSION BOOKLET RELEASED BY EPA

The U. S. Environmental Protection Agency has just released a booklet relating erosion and sediment to water quality. The publication, entitled "Control of Erosion and Sediment Deposition from

Construction of Highways and Land Development" can be obtained from the U. S. Government Printing Office, Washington, D. C. 20402, for \$.60.

Director, Box 3643, Azalea Station, Wilmington, North Carolina 28491,

#### RAINFALL ON LAKE ONTARIO TO BE GAUGED BY RADAR

A new radar network covering Lake Ontario will help U.S. and Canadian scientists deal with water supply management, pollution and erosion problems.

Announcement of the radar system was made by the U.S.-Canadian agency supervising the International Field Year for the Great Lakes, which is making a concentrated, one-year study of Lake Ontario and its basin to improve management of that body of water.

The radar system, which is located at Buffalo and Oswego, New York and tied in with a Canadian radar near Toronto, will measure the entire lake to record more accurately the lake's rainfall.

The two New York radars will measure rainfall at 10-minute intervals, in inches per hour. The radars will record rainfall rates at 16 levels of intensity, with the data stored on magnetic tape.

#### SEMINAR ON COASTAL ZONE

The Coastal Plains Center for Marine Development Services is sponsoring a Seminar on Planning and Engineering in the Coastal Zone at the Mills Hyatt House in Charleston, South Carolina, on June 8 and 9, 1972. Inquiries should be addressed to the Center

#### SENATE PASSES NATIONAL ENVIRONMENTAL LABORATORY LAW SYSTEM

Senate Bill S. 1113 passed only by the Senate, provides for the establishment of a national environmental research laboratory, up to six regional environmental research laboratories, and for environmental research laboratories or institutes in each of the land-grant colleges. No legislation has so far been introduced into the House.

#### AMERICAN WATER RESOURCES CONFERENCES - CALL FOR PAPERS

The American Water Resources Association has scheduled its Eighth Annual Water Resources Conference at the Sheraton Jefferson Hotel, St. Louis, on October 30 to November 3, 1972. The theme is concerned with engineering, social, environmental, and political interactions associated with large-scale water resource projects. Papers are invited. Inquiries should be directed to Dr. D. L. Warner, Technical Program Chairman, Geological Engineering Department, University of Missouri-Rolla, Rolla, Missouri 65401. Telephone: 314-341-4616.

#### WATER POLLUTION LAWS COULD SHUT MARGINAL PLANTS

According to a government economic report, anti-pollution laws could cause 200 or 300 industrial plants to close by 1980

but the overall effect on manufacturing will be minimal.

The report, which was prepared for 3 federal agencies--the Council on Environmental Quality, the Environmental Protection Agency and the Commerce Department--said a study of 12,000 plants showed some 200 or 300 were marginal and would probably close down by 1980 because of air and water pollution laws. However, the vast majority could be expected to shut their doors sometime later anyway.

The report estimated that the industries would invest nearly \$19 billion in pollution control from 1972 to 1976 and an additional \$7.3 billion from 1976 to 1980. Annual operating costs would amount to \$13.7 billion over the next 4 years.

#### COMMITTEE ASKS CUTBACK IN USE OF PHOSPHOROUS

The House Government Operations Committee recently said that the Environmental Protection Agency should follow the lead of Canada and urge a drastic reduction in phosphates in detergents.

The report, based on hearings held last year, said EPA should recommend a reduction of phosphorous in detergents to a maximum of 2.2% by December 31, 1972. It also recommended that phosphorous should be reduced immediately to 3.7 percent by weight.

The committee said that Canada has imposed a 2.2% phosphorous standard for laundry detergents, and failure of the

United States to act has delayed completion of U.S.-Canada negotiations on phosphorous reduction in the Great Lakes.

The Committee has blamed the delay on a statement made last September 15 by Surgeon General Jesse Steinfeld advising housewives to continue using phosphate detergents. The Committee said that the statement "drastically altered" U.S. policy which, until that time had urged a reduction of phosphates.

#### DEPARTMENT RECOMMENDS TWO NEBRASKA PROJECTS

The Administration recently sent to Congress favorable reports on legislation which authorizes construction in Nebraska of the O'Neill Unit and North Loup Division of the Pick-Sloan Missouri Basin Program.

"Construction of these two Reclamation developments would have a favorable economic and social impact in the areas which now experience periodic seasonal and annual droughts," said Secretary of the Interior Rogers C. B. Morton.

"These uncertain natural moisture conditions tend to limit dependable farm income and they have adversely affected the interdependent urban economy, resulting in substantial migration from the area, particularly by younger people."

Both of the projects were authorized many years ago under the Missouri River Basin Project, but a 1964 law provides that any units which were not already under construction at that time require

reexamination and reauthorization to proceed.

The principal works of the O'Neill project are the Norden Dam and Reservoir on the Niobrara River, 18 miles northwest of Ainsworth, which would provide multiple purpose benefits of irrigation, flood control, fish and wildlife conservation and outdoor recreation.

The proposed principal structures of the North Loup Division include Calamaus Dam and Reservoir on the Calamus River near Burwell, the off-channel Davis Creek Dam and Reservoir, and the Ken Diversion Works on the North Loup River. The plan provides that no natural flows of the Calamus and North Loup Rivers would be diverted for irrigation purposes during July and August, and in September some years, to minimize the adverse impact of water project withdrawals on water quality and the existing ecology.

#### HEARING ON WRC PRINCIPLES AND STANDARDS

The Water Resources Council received oral testimony from several hundred witnesses speaking on the proposed Principles and Standards for planning the Nation's water and land resources during hearings held in San Francisco, St. Louis, and concluding in Washington March 22.

Carl Bronn, Executive Director who testified for the National Water Resources Association, voiced an opinion that the Principles, Standards and Procedures are so complex that their meaning will be clear only after use. He pointed out one

ommission which is contained in the Water Resources Planning Act, itself, "to provide for the optimum development of the nation's natural resources."

#### UNDERGROUND WASTE STORAGE NOT A PANACEA

A U. S. Geological Survey, Department of the Interior scientist has warned that storing wastes underground -- whether solid, liquid, or gaseous -- is not a pollution panacea.

Speaking before a recent ground water symposium sponsored by the American Institute of Chemical Engineers, Dallas, Texas, Dr. Raymond L. Nace, research hydrologist, USGS, Washington, D. C., said that "the properties of potential 'host' and adjacent rock formations and contained fluids, of their potential reactions must be thoroughly understood. Earthquakes and other geological events may affect the integrity of storage environments."

"Knowledge of the limitations of the host formation is essential, because lack of it may lead to undesirable or disastrous consequences," Nace said, citing possible consequences such as the escape of waste to the surface or near-surface environment; the contamination of soils, surface water, ground water, and other resources; and the denial of the use of other resources such as oil and mineral ores. "Evidently, effective underground waste management requires development of new technology," he said.

Nace said, "it is human nature to seize upon each

supposedly new alternative solution of a problem as though it were a cure-all; but subsurface waste disposal is not universal remedy."

He observed that if underground waste storage is to become predictably safe as well as technically feasible, new technology must be developed, including new kinds of appraisals of subsurface environments. Hydrologic, geochemical and geophysical parameters must be appraised and tested; methods, devices and procedures for testing and monitoring effects of underground emplacement must be developed. Legal and economic factors also must be included into studies of the problem.

#### FISHERMEN ASKED TO PAY MORE FOR CLEANING WATERS

A high Interior official says that fishermen and hunters must be willing to pay special taxes to help defray the costs of water cleanup and wildlife preservation.

Assistant Secretary Nathaniel P. Reed, in a statement that fishing and hunting licenses are the smallest part of overall sportsmen's costs, estimated that the cost of these licenses rose 70 percent from 1965 to 1970 -- from over \$4 billion to \$6.8 billion.

In reporting up-to-date census studies, Reed said "Sportsmen must be willing to pay as much for habitat through licenses and special taxes as they do for privilege fees and transportation. If not, they will find the rivers empty of fish, the skies empty of birds and the hills empty of game."

Reed said that fees to fish or hunt on private property increased from \$3.3 million in 1955 to \$164 million in 1970.

#### STUDY SHOWS LARGE UNDERGROUND WATER SUPPLY GULF

According to a special report, about 3 billion acre-feet of ground water is in storage in the fresh water section of the Pearl River basin in Mississippi and Louisiana.

The report was prepared after an investigation of the large artisan reservoirs in sand and gravel deposits in the watershed of 8,760 square miles.

The report, Geological Survey Water Supply Paper 1899M, is available for \$1 from the Government Printing Office, Washington, D. C. 20402.

#### RESEARCH REVIEW

Project Title: Mobility and Deactivation of Herbicides in Soil-Water Systems

Principal Investigator: Dr. Terry L. Lavy

Dates: November 1971 to June 1974

Samples of ground water taken from wells in different locations in Nebraska will be brought into the laboratory and treated with a herbicide. The stability of these herbicides in an aqueous media will be studied by placing the solutions in quart mason jars and subjecting them to different potential degradation situations. Aliquots will be removed and

analyzed at predetermined intervals. Carbon 14 labeled herbicides will be used in conjunction with a cucumber bioassay, TLC, GLC, or liquid scintillation counting to determine the extent of degradation occurring.

Soil leaching columns will be set up in the laboratory to measure the relative rate each of the herbicides will move in soil from varying portions of the soil profile. Herbicides containing tracer amounts of radioactivity will be added to the top of the soil column to aid in monitoring movement of the herbicide through the column. One inch segments of soil from the column will be analyzed to determine the extent of movement. Certain column effluents will be analyzed by thin-layer or gas chromatography for possible herbicide degradation products.

NEW PUBLICATIONS RECEIVED BY  
INSTITUTE - APRIL

1. "Further Studies of the Optimum Operation of Desalting Plants as a Supplemental Source of Firm Yield," C. G. Clyde, W. H. Blood, Utah State University, May 1971.
2. "Supplementary Aeration of Lagoons in Rigorous Climate Areas," for the Environmental Protection Agency, October 1971.
3. "Slime Growth Evaluation of Treated Pulp Mill Waste," for the Environmental Protection Agency, August 1971.
4. "Studies on Effects of Watershed Practices on Streams," for the Environmental Protection Agency, February 1971.
5. "Fluid Product Pipeline Leak Detection From Airborne Platforms," for the Environmental Protection Agency, December 1970.
6. "Water Resources Thesaurus - Second Edition," U. S. Department of the Interior, 1971.
7. "Phosphorous Removal By An Activated Sludge Plant," for the Environmental Protection Agency, August 1970.
8. "Ultrathin Membranes for Treating Metal Finishing Effluents by Reverse Osmosis," for the Environmental Protection Agency, November 1971.
9. "Reduction of Flow Friction With Polymer Additives," W. E. Castro, Clemson University, February 1972.
10. "Costs of Treating Textile Wastes in Industrial and Municipal Treatment Plants: Six Case Studies," H. B. Richardson and J. M. Stepp, Clemson University, March 1972.
11. "An Annotated Bibliography of the Masters Theses and Doctoral Dissertations on Water Resources and Their Uses, 1930-1970," J. A. McCann, G. G. Smith, University of Massachusetts at Amherst, 1971.
12. "Charles River: An Urban River in Its Changing Social Contexts," J. W. Sinton, University of Massachusetts at Amherst.
13. "Books, Publications, Project Completion Reports, M.S. and Ph.D. Theses," Iowa State University, June 1971.
14. "Phosphorus Removal by Ferrous Iron and Lime," for the Environmental Protection Agency, January 1971.

15. "Investigations Concerning Probable Impact of Nitrilotriacetic Acid on Ground Water," for the Environmental Protection Agency, November 1971.
16. "Eutrophication In Coastal Waters: Nitrogen As A Controlling Factor," for the Environmental Protection Agency, December 1971.
17. "Potential Pollution of Ogallala By Recharging Playa Lake Water -Pesticides-," D. M. Wells, E. W. Huddleston, A. G. Rekers, Texas Tech University, for the Environmental Protection Agency, October 1970.
18. "Temperature Prediction in Stratified Water: Mathematical Model-User's Manual," for the Environmental Protection Agency, April 1971.
19. "Oxygen Consumption In Continuous Biological Culture," for the Environmental Protection Agency, May 1971.
20. "Neutradesulfating Treatment Process for Acid Mine Drainage," for the Environmental Protection Agency, December 1971.
21. "Interaction of Nitrilotriacetic Acid With Suspended and Bottom Material," for the Environmental Protection Agency, July 1971.
22. "Annual Report 1971," Resources for the Future, Inc., 1972.
23. "Hydrologic Inventory of the Great Salt Lake Desert Area," G. L. Foote, R. W. Hill, D. H. Hoggan, Utah State University, November 1971.
24. "Water Resources Research in New England Universities - A Subject Index," R. W. Hardy, New England Council of Water Center Directors, January 1972.
25. "Identification of Urban Watershed Units Using Remote Multispectral Sensing," R. R. Root, L. D. Miller, Colorado State University, June 1971.
26. "Combined Cooling and Bio-Treatment of Beet-Sugar Factory Condenser Water Effluent," G. O. G. Lof, Colorado State University, June 1971.
27. "Geology and Water Resources of the Bitterroot Valley, Southwestern Montana," R. G. McMurtrey, R. L. Konizeski, H. V. Johnson J. H. Bartells, and H. A. Swenson, Geological Survey Water Supply Paper 1889, 1972.
28. "Eutrophication of Surface Waters-Lake Tahoe," for the Environmental Protection Agency, May 1971.
29. "Deep Tunnels in Hard Rock," University of Wisconsin, November 1970.
30. "Mine Spoil Potentials for Water Quality and Controlled Erosion," for the Environmental Protection Agency, December 1971.
31. "Feasibility Study of Regenerative Fibers for Water Pollution Control," for the Environmental Protection Agency, October 1970.
32. "Electrochemical Treatment of Acid Mine Waters," for the Environmental Protection Agency, February 1972.
33. "Water Budget for the City of Laramie, Wyoming," P. A. Rechard, University of Wyoming, for the Environmental Protection Agency, September 1971.
34. "Practical Methods for

- purification of Anionic Dyes as Their Sodium, Potassium and Lithium Salts," D. H. Hall, W. S. Perkins, Auburn University, November 1971.
35. "Seventh Annual Report of the Water Resources Research Institute of the State of New York," O.W.R.R., U.S. Department of the Interior, July 1971.
36. "A Computer Simulation Model for Flood Plain Development - Part 1: Land Use Planning and Benefit Evaluation," Institute for Water Resources, Department of the Army, February 1972.
37. "Color Removal From Kraft Pulping Effluent by Lime Addition," for the Environmental Protection Agency, December 1971.
38. "Induced Aeration of Small Mountain Lakes," for the Environmental Protection Agency, November 1970.
39. "Design Guides for Biological Wastewater Treatment Processes," for the Environmental Protection Agency, August 1971.
40. "Growth and Movement Into White River at Petersburg, Indiana," H. A. Proffitt, Indiana State University, Indiana University, R. S. Benda, Aquinas College, December 1971.
41. "Improving Granular Carbon Treatment," for the Environmental Protection Agency, July 1971.
42. "Brass Wire Mill Process Changes and Waste Abatement, Recovery and Reuse," for the Environmental Protection Agency, November 1971.
43. "Biological Survey of Stream of Coles County, Illinois 1967-1970," for the Environmental Protection Agency, July 1970,
45. "Soluble Phosphorus in the Activated Sludge Process - Part 1 - Chemical-Biological Process Performance," for the Environmental Protection Agency, May 1971.
46. "Chippewa Flowage Investigations Term," S. M. Born, University of Wisconsin, February 1972.
47. "Sediment Transport and Turbidity in the Eel River Basin, California," W. M. Brown, III, J. R. Ritter, Geological Survey, U.S. Department of the Interior, 1971.
48. "Water for Cranberry Culture in the Cranmoor Area of Central Wisconsin," L. J. Hamilton, Geological Survey, U.S. Department of the Interior, 1971.
49. "Floods of May 1968 in South Arkansas," Geological Survey, R. C. Gilstrap, 1972.
50. "Geohydrologic Summary of the Pearl River Basin, Mississippi and Louisiana," J. W. Lang, Geological Survey, 1972.
51. "Hydrologic Studies in the Rocky Mountain Region," July 1970 - June 1971, U. S. Department of the Interior, Geological Survey, September 1971.
52. "The Relationship Between Housing and Water Resources Planning and Management," U.S. Department of the Interior, March 1972.
53. "Reports of Water Resources Research - July 1, 1970 - June 30, 1971," Department of the Interior, Geological Survey, January 1972.
54. "Global Atlas of Relative Cloud Cover 1967-70," D. B. Miller, R. G. Feddes, USAF Environmental Technical

Applications Center,  
September 1971.

NEWSLETTER ITEMS

Newsletter items and  
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