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SPECIAL REPORT: *Water Resources Issues and New Initiatives in the Department of Natural Resources and Community Development* by John N. Morris, Director, Office of Water Resources . . . 8

STATE REPORTS ON NEUSE RIVER INVESTIGATION

Officials from the North Carolina Department of Natural Resources and Community Development recently made public the results of the 1979 Neuse River Investigation, the initial stage of an ongoing study of the Neuse system and its problems with declining water quality.

Dr. Neil S. Grigg, Assistant Secretary for Natural Resources, and members of the Division of Environmental Management (DEM) told 300 concerned New Bern citizens attending an April 24 public hearing that a gradual eutrophic trend is underway in sections of the Neuse, caused by pollutants from a variety of sources up and down the river. And if action is not taken to reverse that trend, Grigg said, the water quality of the Neuse, as well as that of other North Carolina coastal waters, will continue to decline.

Eutrophication takes place when too many nutrients enter a slow-moving body of water, enriching it to the point where algal blooms reach nuisance proportions. Algal blooms and other symptoms of eutrophication have begun to occur along sections of the Neuse.

Sources of nutrients to the Neuse include municipal and industrial discharges and agricultural runoff, which enter and accumulate in the river in the course of its 220-mile journey from Durham to New Bern, where it empties into the Pamlico Sound. The Neuse River Basin has a drainage area of some 6,200 square miles.

With nutrients from such diverse sources and so large an area entering the Neuse, the matter of regulating discharges to reduce nutrient input becomes very complex. Further studies are needed to determine more exactly the sources of the nutrients and the levels the river can tolerate before water quality suffers.

The Neuse Investigation is continuing, and monitoring efforts are being expanded in terms of both frequency and parameters examined, according to Steve Tedder, a biologist with DEM's monitoring management program. Among current and planned DEM study activities are an increase in the frequency of nutrient sampling from quarterly to monthly, the incorporation of monthly phytoplankton sampling (not normally a part of the monitoring network) and a continuation of studies into the effect on algal populations of dark-colored waters discharged from the Weyerhaeuser Corporation near New Bern. DEM is also initiating an inventory of the major dischargers in the river basin to determine what amount of the nutrients comes from point sources and what amount from non-point sources.

GOVERNOR HUNT SEEKS CHOWAN RIVER CLEAN-UP AID FROM EPA

Governor Hunt has asked for "the strong assistance of the Environmental Protection Agency" in efforts to clean up the Chowan River in eastern North Carolina.

Calling it one of the most scenic and productive rivers in North Carolina and the Southeast, the Governor said it runs through "one of the most beautiful areas of our State, including the historic town of Edenton." In recent years, the interstate stream (draining from Virginia to North Carolina and ending at the Albemarle Sound) has become eutrophic and plagued by algae blooms.

As a result, the fishing industry, he said, is down by as much as 80 percent.

"I have declared the clean-up of the Chowan the top environmental priority of my administration," he wrote to EPA Administrator Douglas M. Costle. "(And) although 75 percent of the basin is in Virginia, North Carolina has carried the brunt of this battle."

He said the clean-up project is under direction of Dr. Neil S. Grigg, assistant Secretary of Natural Resources and Community Development.

"We have no way, other than negotiations between the two states, to influence Virginia dischargers," Hunt continued. "Your Region IV has so far been only in a review and advisory role (but) as far as we can tell, Region III in Philadelphia has not been involved at all.

"A positive attack on the pollution problem will not result from a business-as-usual approach. We need to do more to clean up the Chowan. We need to have an approach to restoring this river that all of us can point to with pride. We need your help. The purpose of my letter today is to ask that you do everything possible to help us clean up the Chowan."

More specifically, the Governor requested:

(1) appointment of an audit team composed of Costle's best technical staff to review every detail of North Carolina's Chowan clean-up program; and have that team report to Virginia Governor John Dalton and to Hunt and Costle on how to improve that program;

(2) have EPA Region III begin immediately evaluation of Virginia's programs for reducing nutrients inflow into North Carolina; having that report made to all concerned by December 31st; and

(3) ask EPA Region IV to do everything possible to help, including technical assistance, approval of construction grants and enforcement activities; with Hunt being advised by June 30th of what help he can expect.

"I must tell you that the scientists who have looked into the problem of the Chowan have found that it is immensely complex," the Governor wrote. "Our efforts...have been hampered by those who say that we must wait until we fully understand the cause of the algae blooms before regulatory measures can be taken. Our position is that we understand enough to proceed; that is, we know that the river has an excess of nutrients and that it is only after these nutrients are reduced that it will return to health. There is no other way to proceed, in our opinion."

MEMORANDUM DETAILS DISPOSAL OPTIONS FOR GROUNDWATER USED IN HEAT PUMPS

The Division of Environmental Management in an April 24 memorandum by Dr. Neil S. Grigg, Director, clarified its position regarding the disposal of discharge water from a geothermal heat pump. The discharge of water from a geothermal heat pump normally occurs in a surface water body or a recharge well.

According to the memorandum, " The discharge from a geothermal heat pump does not constitute the discharge of pollutants as defined by the statutes relating to issuance of discharge permits (GS 143-215.1). Therefore, no NPDES Permit will be required for such a discharge to the surface waters of the State. Should the discharge of these waters be via a storm sewer system, the agency responsible for the system may require authorization prior to initiation of the flow. Under unusual circumstances where no other option is available, the discharge may be directed into a sanitary sewer system, but only by written authorization from the agency responsible for the system prior to initiation of the flow. Under no circumstances should the discharge of these waters be into a septic tank system.

"The discharge of water from a geothermal heat pump into the groundwaters of the State requires the issuance of a Permit for the Construction and Use of a Well for Recharge. Applications for these permits are to be made to the Division of Environmental Management, Coordinator, Permits and Engineering, P. O. Box 27687, Raleigh, NC 27611.

GROUNDWATER POLLUTION STUDIED

The Environmental Protection Agency (EPA) granted the North Carolina Department of Natural Resources and Community Development $115,200 to inventory liquid waste impoundments in the State and to assess their potential for groundwater pollution. The Water Planning and Development Section is conducting the study, called the Surface Impoundment Assessment Project, and will complete it by early summer. The project will provide information to the EPA for evaluating the potential national impact of surface impoundments on groundwater.

Studies conducted recently by the EPA confirm that groundwater pollution can be caused by surface impoundments. These liquid waste impoundments are designed to store, treat, or dispose of liquid waste. The EPA estimates that 118 billion gallons of liquid waste are discharged into the nation's groundwater annually from surface impoundments.

Six hundred and fifty-seven North Carolina waste impoundment sites have been assessed for their groundwater pollution potential. Hydrogeologic data and impoundment waste characteristics were evaluated for each site to determine a rating of the sites' potential for groundwater contamination. The State will use the ratings to determine study priorities for other environmental programs mandated by federal legislation.

For more information call: Carl Bailey, North Carolina Department of Natural Resources and Community Development, Office of Water Resources, in Raleigh at (919) 733-7856.

GROUNDWATER SUPPLY STUDY NEARS COMPLETION

State groundwater hydrologists with the North Carolina Department of Natural Resources and Community Development are completing a three-year study of groundwater supplies in seven coastal counties of eastern North Carolina.

The $128,000 study was initiated in November 1977 through a Coastal Plains Regional Commission grant to determine long-range impacts of increased water use on the Cretaceous aquifer.

The study was begun after groundwater monitoring revealed water levels in the Cretaceous aquifer in parts of Lenoir and Craven Counties were declining two feet per year. The aquifer, a major source of water for much of Lenoir, Jones, Pitt, Greene, Duplin, Craven, and Onslow Counties, is tapped mainly by municipal and industrial wells. Domestic wells withdraw water from the Cretaceous aquifer along the western edge of the Coastal Plain.

In the first study year an inventory was taken of major water users from existing data and field surveys. The following year a series of test wells was drilled, determining water availability and water quality.

The study has divided the Cretaceous aquifer into an Upper and Lower sand unit. Water drawn from the Upper Sand Unit primarily comes from domestic wells, while industrial and municipal pumping accounts for the largest consumption from the Lower Sand Unit. Preliminary results indicate a cone-shaped lowering of water levels with little recharge near pumping centers, particularly those withdrawing from the Lower Sand Unit. The expansion of lower water levels has been significant enough to induce leakage from the Upper Sand Unit. Overall, water quality appears to be excellent. However, future drilling in the eastern section may be limited by higher concentrations of chlorides in deeper wells.

The study has suggested several possible alternatives:

1. Increase spacing of wells to eliminate drawdown interference.

2. Investigate drilling above Cretaceous aquifer into Castle Hayne and Yorktown aquifers.

3. Initiate steps to recycle water for industry.

4. Increased use of surface water.

Although there appears to be no immediate groundwater shortage, the study is expected to aid communities in prevention of long-range problems.

The groundwater study should be released later this year. For further information contact Jim Narkunas, Department of Natural Resources and Community Development, Division of Environmental Management in Raleigh at (919) 733-7856.

DRINKING WATER SUPPLY SYSTEMS IN SMALL COMMUNITIES HAVE PROBLEMS

Small community water systems are a major concern of the National Drinking Water Advisory Council. The Council heard testimony recently that many systems serving less than 2500 people are faced with meeting the Safe Drinking Water Act (SDWA) regulations by 1981/1983, but cannot or will not comply.

Approximately 87 percent of the nation's public water supply systems are considered "small" serving less than 2500 people but represent only 9 percent of the population of the country. In North Carolina, 94 percent of the public water supply systems serve fewer than 2500 people and represent 18 percent of the State's population.

Small community systems have formidable problems to overcome before meeting SDWA regulations. Many owners believe necessary improvements are beyond the small system's financial capabilities. Utilities do not want to raise rates to pay for technical improvements in the absence of an overwhelming health problem, especially for naturally occurring contaminants. Additionally, some available technologies which could solve compliance problems are not applicable to small systems.

The Environmental Protection Agency depends on the State, under the March 1980 assumption of primary enforcement of the SDWA, to monitor small systems and investigate all possible improvement measures.

STATE OF THE STATES: WATER RESOURCES PLANNING AND MANAGEMENT

Leo M. Eisel, Director of the Council, announced recently that the U. S. Water Resources Council has completed a preliminary report, The State of the States: Water Resources Planning and Management.

The report examines the range of agency structures represented by States and regions which enable them to administer their water resources programs. It looks into States' statutes, policies and regulations which provide the structure for water resources planning and management, which is the primary responsibility of the States.

Eisel indicated that the publication was a preliminary report which would be revised. "We plan an early revision to include additional information on river basin commissions, interstate compacts, interagency agreements and other regional organizations." Eisel noted that the Council felt it important to work with the States to assist them to plan for comprehensive water resources management to confront water problems which are growing more serious.

Copies of the report are available from the U. S. Water Resources Council, 2120 L Street, NW, Washington, DC 20037. The telephone number is (202) 254-8290.

WRC STATE PROGRAM BUDGET HALVED

According to Leo M. Eisel, Director of the U. S. Water Resources Council, budget cuts for FY 1980 and FY 1981 proposed by the President to Congress will halve the Council's State grant program budget. The reductions are part of President Carter's anti-inflation program.

The Council's grant program to the States for water resources planning was originally funded at $21 million for FY 1980. If the Congress approves the President's recession request, $9.6 million will be transferred to the States during FY 1980.

The budget submitted for the State grant program for FY 1981 will also be changed, Eisel said. Thirty million dollars had been requested, but this request will be reduced to $21 million. The Council has been informed it will only be able to transfer $16 million to the States during FY 1981.

Funding for the Council's State grant program was significantly increased for FY 1980 over previous years. Appropriations that averaged $3 million annually since FY 1967 were raised to $21 million for FY 1980. President Carter proposed the expanded funding as one aspect of his water policy reform message of 1978. The President also earlier requested the scope of State activities funded under the program to involve broad range water management and water conservation activities. While appropriations for the program were increased, the authorization for the expanded program is still pending in the Congress. Because of the need of many of the States for funds, the Council has granted awards under current authority and guidelines for water planning activities.

Applications for FY 1980 from all of the States, the District of Columbia, the Virgin Islands, Guam and the

Northern Mariana Islands totaled approximately $26 million. Grant award offers were made to 18 States prior to the proposed budget cut. Offers reflecting the halved funding are now being made to most States.

FLOODPLAIN MANAGEMENT TASK GROUP SET

North Carolina and South Carolina have created a joint floodplain management task group for the Yadkin-Pee Dee River Basin. The task group will formulate floodplain use recommendations for inclusion in the Level B study underway to determine limits on the Basin's water supply and to recommend measures to ensure continued development and environmental quality. The term "Level B" refers to one of three types of studies which may be funded under the Water Planning Act, PL 89-80.

The task group consists of federal and state agencies. Each agency is recognized to have responsibilities related to floodplain use. These agencies represent environmental, government, water related and cultural interests. The floodplain management task group will place major emphasis on investigating possibilities for reducing existing flood damages; analyzing existing programs for floodplain management and recommend improvements; recommending measures for floodplain management; and creating alternative recommendations for the conservation and wise use of fish and wildlife, recreation and related resources associated with the basin's wetlands (for inclusion in the overall floodplain recommendations).

Steve Reed, assistant task group coordinator with the North Carolina Department of Natural Resources and Community Development, said that "the task group has also studied ways of preserving natural and beneficial values of floodplains and wetlands." He added, "Potential solutions will be reviewed by citizens serving as task group advisors before being presented for comment at Citizen Advisory Committee meetings."

Public meetings have been used as a tool to gain citizen input on task group focus areas.

The potential solutions will become a part of the alternative Plan of the Study.

For additional information contact Steve Reed of the North Carolina Department of Natural Resources and Community Development in Raleigh at (919) 733-7856.

LEGISLATIVE STUDY COMMISSION REPORT ON WATER MANAGEMENT AVAILABLE

"Alternatives for Water Management, Report of the Legislative Study Commission to the North Carolina General Assembly" is available in the Legislative Library and at the WRRI. The report is the final result of the Commission, established in part to study the State's present organization for planning and management of water resources, and the present and future trends in North Carolina with regard to water use and management. Twelve Commission members, chaired by House Speaker Carl J. Stewart, heard testimonies from more than a dozen individuals between November 1979 and March 1, 1980.

The Commission's final recommendations included:

1. that a comprehensive study be conducted of the State's long-range water needs. This study should focus on (a) the supply, distribution and limitation of available water resources, (b) growth impacts of water, and (c) a water demand analysis;
2. that the General Assembly consider coordinating, consolidating and augmenting State services to those entities requesting information concerning water management problems;
3. that the 1981 General Assembly consider amending procedural aspects of the Capacity Use Areas Law and the Water Use Information Law; and
4. that the Commission, or a similar group, be appointed to receive and evaluate the studies recommended above, and to consider additional appropriate legislation.

OWRT PUBLISHES TECHNOLOGY TRANSFER REPORT ON LAND TREATMENT

Copies of Alternative Wastewater Treatment: Aquatic and Land Systems, a water research capsule report, are available from the North Carolina Institute. The report highlights the activities and findings of the Institute of Water Research, Water Quality Management Facility (WQMF) at Michigan State University. The WQMF is a 500-acre wastewater recycling and research site designed to study aquatic and land treatment of municipal wastewater.

Resurgence of interest in alternative methods of wastewater treatment has developed from the realization that land application of wastewater can be an effective method of high-quality treatment and from the need to recycle wastewater and use the nutrients it contains. Many land treatment processes have been developed to meet a variety of needs and local conditions. The federal government has increased its share of the payment for land treatment systems.

A majority of the land treatment facilities in use today were designed to dispose of wastewater. However, renewed interest is being placed on land treatment as a method of water reuse and a valuable nutrient resource. Production of trees and other vegetation helps preserve green, open space while providing a high level of wastewater treatment. Some vegetation can also be harvested to offset the cost of operating the facility.

Aquatic and land treatment systems are viable alternatives that can help meet the goal of cleaning our waterways. This report offers a graphic explanation of the techniques and significance of various types of systems.

POSITIONS AVAILABLE

Research Assistant or Associate Professor of Civil and Environmental Engineering, Utah State University. This Research Assistant or Associate Professor of Civil and Environmental Engineering will be an environmental engineer, chemical engineer, or sanitary engineer. The position entails research and teaching environmental engineering courses at the graduate and undergraduate levels. The positions require initiation, solicitation, performance, and management of environmental research grants, contracts, and projects funded by university and non-university sources.

Send resume and names of three references by July 1, 1980, to: Dr. V. Dean Adams, Head, Division of Environmental Engineering, UMC 41, Utah State University, Logan, Utah 84322.

Hydrogeologist/Hydrologist. The Maryland Geological Survey is expecting to have a staff opening in its

Hydrogeology and Hydrology Program beginning July 1. Applicants should have an M.S. degree in Geology, Hydrology or closely allied field. Some training in computer applications and modeling of geohydrologic systems is desirable. Close association with USGS personnel involved in the National Water Use Data System can be anticipated.

Qualified applicants should send their resume to: Dr. Harry J. Hansen, Program Chief, Maryland Geological Survey, Merryman Hall, Johns Hopkins University Baltimore, MD 21218.

Research Assistant position available in the North Carolina State University Biological and Agricultural Engineering Department June 1, 1980, to expand existing program on areawide water quality management and management of agricultural non-point sources. Specific duties include field sampling, analyses of stream monitoring data and water quality evaluations of agricultural practices. B.S. minimum, M.S. preferred in Natural Resources, Environmental Sciences or Engineering. Applicants should write or call Dr. F. J. Humenik, Department of Biological and Agricultural Engineering, P. O. Box 5906, NCSU, Raleigh, NC 27650, Telephone (919) 737-2675.

CONFERENCES AND WORKSHOPS

The Twelfth Mid-Atlantic Industrial Waste Conference will be held July 13, 14, 15, 1980. Sessions include: Regulation of Hazardous Wastes, Areawide Hazardous Waste Management, Case Studies, Clean-Up of Toxic and Hazardous Wastes, Nitrification, Heavy Metals Containment, and Industrial Wastes Research.

For details write: Dr. Michael D. LaGrega, Civil Engineering Department, Bucknell University, Lewisburg, PA 17837, or Phone (717) 524-1492.

International Symposium on Inland Water and Lake Restoration. This event will be sponsored by the U. S. EPA, the Organization for Economic Cooperation and Development (OECD), the Maine Dept. of Environmental Protection, and the Center for Environmental Research Information in Portland, ME. The purpose of the program will be to provide for the exchange of scientific information on the most current lake water quality programs and worldwide investigative efforts. Presentations will be made by recognized world experts on a variety of subjects. Sessions are designed to foster discussions among water quality experts, planning personnel, regulators, lake restoration consulting engineers, and the general citizenry. This symposium is scheduled for September 8-12.

For more information, contact Dr. Ann N. Ware, Project Manager, AWARE, Inc., P. O. Box 40284, Nashville, TN 37204. For information on display space, call David Dominie, Maine EPA (207/289-2591).

International Symposium on Utilization and Disposal of Biological Sludges. This symposium is designed to present current technology on the utilization and disposal of biological sludges, to better define and where possible to resolve some of the important issues such as:

- Sludge Conditioning by Aerobic & Anaerobic digestion
- Thickening & Dewatering Alternatives
- Productive Utilization of Biological Sludges as a Fertilizer for the Growth of Crops
- Use as an animal feed supplement

Available technologies and economics associated with these technologies will be explored in this symposium. The session will be June 18-19 and held at Vanderbilt University, Nashville, TN. To register, phone (615) 322-2331.

Design of Water Quality Monitoring Networks. The Short Course will develop, in detail, a systematic procedure for designing a water quality monitoring network. Following an overview of an entire water quality information system, the course will cover selection of water quality variables to measure, location of sampling stations and determination of sampling frequency.

The course is to be held July 21-25 at the Colorado State University, Fort Collins, CO. For details, contact Mrs. Kristine L. Schneider, Research Institute of Colorado, Drake Creekside Two, 2625 Redwing, Suite 200, Fort Collins, CO 80526.

Quantitative Aspects of Groundwater Management. This short course, designed for individuals dealing with the management of groundwater systems, will cover the following areas:

Overview of aquifer properties and parameters
Theory of saturated flow and pollutant transport
Groundwater Management
Groundwater flow and pollution-computer programs
Modern field techniques of drilling, sampling, and instrument installation
Case studies of groundwater pollution

The course will be held July 14-18 at the University of Kansas, Lawrence, Kansas. For additional information contact Ms. Dale Grube, Kansas City Office of Conferences and Centers, The University of Kansas, 9900 Mission Road, Shawnee Mission, Kansas 66206, (913) 341-4554.

Institute on River Mechanics. The purpose of this course is:

1. To present knowledge on river morphology, flow systems, sediment transport, data collection techniques, channel stability and river behavior.

2. To present lectures by leading specialists on river models such as the six HEC computer models and Colorado State University models.

3. To illustrate river behavior by laboratory demonstrations.

The course is to be held at the Colorado State University, Fort Collins, CO, July 7-11, 1980. For details call the Course Director, H. W. Shen, at (303) 491-8552 or (303) 491-8450.

Pollutant Movement in Groundwater is a technical short course which will present the hydrogeologic and chemical principles applicable to the movement and reactions of contaminants and the techniques for monitoring and modeling these processes. Emphasis will be placed on developing an understanding of procedures which can be employed to predict or model the behavior of contaminants in subsurface zones. Both analytical and numerical models will be presented.

The course is scheduled for June 9-13 in Madison, Wisconsin.

For details contact Philip R. O'Leary, Department of Engineering and Applied Science, University of Wisconsin-Extension, 432 North Lake Street, Madison, WI 53706.

For program information phone (608) 262-0493. For enrollment phone (608) 262-1299.

WATER RESOURCES CONDITIONS IN NORTH CAROLINA

Heavy rains on April 8 caused minor flooding along many streams located in Wilkes, Surry, Stokes, and Rockingham Counties. Flood damages were limited primarily to young crops and to the erosion of topsoil of low-lying farm land. Rains on the 13th and 14th caused near bankful stages on most streams throughout the State but no flooding was reported.

Mean-monthly flows for April ranged from normal conditions in our Coastal Plain streams to about twice normal flow in the Piedmont and Mountain regions.

Ground-water levels generally rose in the Mountains and most of the Piedmont and declined in the Coastal Plain region. Except in areas of heavy withdrawals, levels were slightly above long-term averages across the State.

NEW PUBLICATIONS RECEIVED BY THE INSTITUTE

(Residents of North Carolina may borrow these from the Institute for a two-week period. Where individual copies are desired, readers are encouraged to request copies from the organization issuing the publication. The addresses are provided by the News for this purpose.)

Abbreviations used throughout as follows:

ARS - Agricultural Res. Service
ASCE - American Society of Civil Engineers
CEQ - Council on Environmental Quality
DEM - Division of Environmental Management
EDS - Environmental Data Service
EMC - Environmental Management Comm.
EPA - Environmental Protection Agency
ERC - Engineering Research Center
ERS - Economic Research Service
GAO - General Accounting Office
IWR - Institute for Water Resources
NAS - National Academy of Sciences
NCDNER - N. C. Dept. of Natural & Economic Resources
NERC - National Environmental Research Center
NOAA - National Oceanic & Atmospheric Adm.
NPS - National Park Service
NSF - National Science Foundation
NTIS - National Technical Information Service
NWC - National Water Commission
OWP - Office of Water Programs
OWRT - Office of Water Research & Technology
RTI - Research Triangle Institute
SCS - Soil Conservation Service
TVA - Tennessee Valley Authority
UNC-SG - University of N. C. Sea Grant
USDA - U. S. Department of Agriculture
USDC - U. S. Department of Commerce
USDI - U. S. Department of Interior
USGPO - U. S. Government Printing Office
USGS - U. S. Geological Survey
WPC - Water Pollution Control
WQS - Water Quality Standards
WRC - Water Resources Council
WRI - Water Resources Institute
WRRC - Water Resources Research center
WRRI - Water Resources Research Institute
WRSIC - Water Resources Scientific Information Center

WATER RESOURCES PLANNING

"A Process for Community Flood Plain Management," OWRT TT/799, 11/79, by OWRT USDI, avail from OWRT, USDI, Office of Water Research and Technology, Washington, DC (NTIS # PB 80-135296)

"Ground Water Mining and Western Water Rights Law: The Nebraska Experience," 1979, by J. David Aiken, et al, avail. from WRRC, U. of Nebraska, 310 Ag. Hall - East Campus, Lincoln, NB (06E)

"Feasibility Study for Seafood Industrial Parks for the Central and Southern Coastal Areas of North Carolina," 5/79, by Henry V. Oesen and Associates, Inc., Consulting Engineers and Planners, P. O. Drawer 2087, Wilmington, NC 28402.

"Water Conservation Needs and Implementing Strategies," July 9-13, 1979, by L. A. Herr, et al, ASCE, 345 East 47th St., NY, NY 10017, price: $14.00 (03D)

WATER QUALITY MANAGEMENT

"Agricultural Land Use: Effects on the Chemical Quality of Runoff," #125, 4/80, by M. D. Smolen, et al, avail from Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, Blacksburg, VA 24060 (05B)

"Public Policy on Ground-Water Quality Protection," April 13-16, 1977, W. R. Kerns, VWRRC, VPI & SU, Blacksburg, VA 24061, (04B)

"Investigations of Biodegradability and Toxicity of Organic Compounds," (EPA-600/2-79-163), 12/79, by J. R. Dojlido, avail. from NTIS, Springfield, VA. 22161. (EPA)

"Modeling the Performance of the Intermittent Sand Filter," (UWRL/Q-79/03), 11/79, by P. A. Cowan, et al, UWRL, UT State University, Logan, UT 84322. (05D)

"Computer-Aided Synthesis of Wastewater Treatment and Sludge Disposal Systems," (EPA-600/2-79-158), 12/79, by L. A. Rossman, avail. from NTIS, Springfield, VA 22161. (EPA)

"Random Differential Equations in Water Quality Modeling," (UWRL/Q-79/06), 12/79, by B. A. Finney, et al UWRL, UT State UT, Logan, UT 84322. (05G)

"Evaluation of In-Line Direct Filtration for Virus Removal," (UWRL/Q-79/04), 12/79, by B. S. Malek, et al, UT Water Res. Lab., College of Engr., UT St. U., Logan, UT 84322 (05F)

"Energy in Transition 1985-2010, (Final Report of the Comm. on Nuclear and Alternative Energy Systems)," by National Academy of Sciences, avail. from W. H. Freeman & Co., 660 Market St., San Francisco, CA 94104, price: $11.95.

"Use of Extreme Value Theory in Estimating Flood Peaks from Mixed Populations," (UWRL/H-80/01), 2/80, by R. V. Canfield, et al, UWRL, UT State U., Logan, UT 84322. (04A)

"Hydropower: A National Engergy Resource Proceedings," 3/79, by H. G. Robinson, et al, avail. from Superintendent of Documents, USGPO, Washington, DC 20402, price: $6.50, (W/E).

"Proceedings Stormwater Management Model (SWMM) Users Group Meeting January 10-11, 1980," EPA 600/9-80-017, 3/80, by Harry C. Torno, avail. from Office of Environmental Processes and Effects Research, Office of Research & Development, U. S. Environmental Protection Agency, Washington, DC 20460 (EPA)

MISCELLANEOUS

"EPA Publications Bibliography Quarterly Abstract Bulletin," (NTISUB/E/042-04), 10-12/79, by EPA, avail. from NTIS, Springfield, VA 22161. (EPA)

"A Handbook of Key Federal Regulations and Critieria for Multimedia Environmental Control," (EPA-600/7-79-175), 8/79, by D. R. Greenwood, et al, avail. from NTIS, Springfield, VA 22161. (EPA)

SPECIAL

Water Resources Issues and New Initiatives in the
Department of Natural Resources and Community Development

by
John N. Morris, Director
Office of Water Resources

The Department of Natural Resources and Community Development has four major units with water resources management responsibilities. The Division of Environmental Management has the major responsibility for water quality programs. The Soil and Water Conservation Division's mission is agricultural water management and soil conservation. The Land Resources Division carries out the State's sedimentation control and dam safety programs. The Office of Water Resources has programs for comprehensive river basin planning, raw water supply, flood damage reduction, and water development.

Assistant Secretary Neil Grigg asked me to gather information from all of these programs for our Department's report to you today. I appreciate the help of many persons in the Department in assembling this information. We have had to concentrate on selected new initiatives and current issues in the interest of time.

Water Quality

Many persons in different areas of the Department independently identified coastal pollution problems as the most serious water quality issue that we face today. The eutrophication of coastal waters and shellfish beds closed by pollution are also the problems where citizen interest is the highest. The Department has a number of activities underway to deal with these complex pollution problems.

The Chowan River Restoration Project is the Department's top priority. This project has been discussed with this group before and cannot be fully described within our time limits here. The project is a bi-state, multi-agency effort to reduce nutrient levels in the river and to prevent the disastrous algae blooms that have plagued the river. Assistant Secretary Neil Grigg directs this project with the assistance of departmental task forces and outside advisory groups. The project includes a full range of monitoring, research, planning, and implementation.

In Brunswick County, the great majority of shellfish beds are closed by pollution, with the result of severe economic losses to the County. In this case, the Department's Wilmington Regional Office has taken the lead to develop a plan for action. Here again, a number of agencies in two states must work together to solve the problem. The action plan gives attention to the full range of the problem, including point sources of pollution, septic tanks and other non-point sources, discharges from vessels, potential channel dredging to improve tidal flushing, research needs, and public education.

The Division of Environmental Management and the Environmental Protection Agency have carried out special monitoring and analysis to determine the sources of pollution in this area. The latest results indicate that some pollution does come from the grand strand area of South Carolina, but that local non-point sources in Brunswick County are a significant part of the problem.

We also have some urgent pollution problems in inland parts of the State. The one example I will mention here is our concern to protect water quality in the two Corps of Engineers lakes under construction in this area - Falls Lake and Jordan Lake. The Triangle J Council of Governments has taken the initiative to protect these lakes. TJCOG is well equipped for a leadership role, being a designated 208 water quality planning agency and also responsible for land use and growth planning. The TJCOG project, in which our Department is participating, has begun by dividing the 760 square mile Falls Lake watershed into about 120 small sub-basins. Land use data on each sub-basin is being used to estimate pollutant loadings for three critical pollutants - phosphorous, lead, and sediment. This information will then be used to locate critical pollution sources and to plan control programs. The project will later be extended to the Jordan Lake watershed.

The TJCOG project has several strong points. It brings in new resources for a type of detailed water quality planning that the state lacks the resources to do. TJCOG and member local governments can place water quality in the broader context of regional land use and growth management. Finally, the TJCOG project is supervised by a policy advisory group including elected officials which has the potential of assuring that planning is followed by implementation.

Toxic pollutants are an equally harmful problem which has been less visible to the public. The threat to human health posed by toxic pollutants now appears to be gaining more attention. In the last year, the Environmental Management Commission has adopted water quality standards for toxic substances and pretreatment regulations for industrial wastes going into municipal treatment plants. The Division of Environmental Management will begin putting the pretreatment program into effect soon. Pretreatment will keep many toxic materials out of our water courses.

Waste treatment or storage ponds and lagoons are a significant potential source of water pollution, including toxic pollutants. The Department has just completed a survey of 657 of these waste ponds and lagoons in the State, rating the potential of each for groundwater pollution. This information, not available before, will be used to plan control programs.

All of those concerned with toxic pollutants call attention to the need to provide safe and well-managed disposal sites for toxic and hazardous wastes in North Carolina.

The Department also places a high priority on the continuing year-by-year effort to clean up point sources of pollution. The EPA construction grant program is the key element in solving pollution from publicly-owned wastewater treatment plants, which are the major source of pollution on many stream segments. The Division of Environmental Management is now taking over from EPA the review of 201 plans for treatment plant construction. This delegation of authority began in January of this year and will be complete in two years. When the State's staff is in place, the Division will have responsibility for the review of plans and the management of construction grants instead of EPA's Atlanta office. The new system should speed up plan review, reduce the impact of inflation, and get plants on line sooner.

Sediment is a critical pollutant in North Carolina and efforts to control erosion and sedimentation are an integral part of the Department's water quality program.

The Land Quality Section of the Division of Land Resources carries out the State's Sedimentation Pollution Control Act. The Section is now assisting the Department of Transportation to develop an erosion control manual to provide field guidance for highway construction and maintenance. This manual will be complete soon and will help to control a major sediment source. The Section is also carrying out active training programs for both contractors and for local government sedimentation control officers in the latest control methods.

The Soil and Water Conservation Division supports the work of the Soil and Water Conservation Districts statewide, which are a key institution in controlling sedimentation from agriculture. This work is especially important since the Sedimentation Pollution Control Act does not cover agricultural and forestry activities. The Soil and Water Conservation Division has recently added three staff members in regional offices to assist the Districts in developing soil conservation plans.

Water Supply

The Regional Water Supply Planning Act of 1971 assigns the Department of Human Resources the primary responsibility for the health and safety aspects of water supply systems. The Department of Natural Resources and Community Development is responsible for assisting communities with sources of raw water supply. NRCD is now strengthening its programs in this area so that it can work as a more effective partner with the Department of Human Resources in helping communities to provide safe, economical, and adequate supplies of water. The Department is just completing a pilot project in which two small towns - Mount Olive and Fremont - were provided assistance in developing plans for raw water supply sources for future needs. Adequate sources of water are essential to the economic welfare of North Carolina communities.

The Office of Water Resources is following this pilot project up with the beginning of a statewide water supply assistance program. Two new staff members are on board and their work will be supported by other staff as needed. The program's activities will include:

- technical assistance to communities with high priority raw water needs
- evaluation of alternatives for water supply, including conservation, regionalization, and conjunctive use of ground and surface water
- planning assistance to insure the compatibility of water supply development projects in each river basin
- assistance in developing new water supplies

Flood Damages

North Carolina faces a potential for disastrous flood damages which will increase rapidly as our State grows unless corrective measures are taken. After a careful review of the flood problem, the Department has arrived at three principles to guide our attempt to reduce flood damages. First, a successful program to reduce flood damages must be based on a comprehensive application of all available methods, including land use controls, structural flood control, flood insurance, emergency evacuation, floodproofing, and others. Second, the resources and powers of the local, state, and federal levels of government are all essential in a successful program. The activities of these different agencies must be coordinated with each other to achieve timely results and the best use of resources. Finally, each flood hazard community should examine its own specific problems and develop its own plan to reduce flood damages with the assistance of state and federal agencies. Local government leadership is essential to putting flood damage reduction programs into action.

Based on this analysis, the Department of Natural Resources and Community Development has initiated the formation of a North Carolina Flood Damage Reduction Task Force made up of some twenty State and federal agencies which operate flood damage related programs. The purpose of the Task Force is to coordinate our programs and to deliver a timely and workable package of services to local governments.

The Task Force has adopted a first pilot project at the request of Surry County and the Town of Mount Airy to assist in the development and implementation of a comprehensive flood damage reduction plan. This project has shown in only a few months of operation that the three levels of government working closely together can speed up the resolution of issues and the selection of alternatives for detailed planning. The Department hopes to initiate a second pilot project in the near future.

The Community Assistance Division assists communities to enroll in the National Flood Insurance Program and to administer the program through its seven regional offices. The Office of Coastal Management enforces special development standards in the coastal area that help prevent an increase in flooding and storm damage. Both of these agencies are key participants in the Flood Damage Reduction Task Force. The Office of Water Resources and the Division of Community Assistance are now jointly preparing an application for a new grant program from the Federal Emergency Management Agency that will strengthen the State's flood damage reduction program.

The dam safety program in the Land Resources Division is a strong element in the total effort to reduce flood losses. This program is now computerizing its dam inventory and inspection schedules for better and faster access. The Division is now carrying out special inspections of 200 high hazard dams with assistance from the Corps of Engineers.

In the extensive floods of the fall of 1977, the dam safety program proved its ability to carry out emergency inspections of threatened dams and order the draining of impoundments or evacuations as needed to protect life and property.

The Soil and Water Conservation Division is an active participant in the small watershed project program of the U. S. Soil Conservation Service. The Division provides a planning party to plan and evaluate projects and administers State financial assistance for projects under a new State law enacted in 1978. Small watershed projects are primarily directed toward erosion control, flood prevention, and drainage improvements, but can also include water supply and recreation features.

Water Allocation

Water allocation might be defined as the management of water resources to serve the highest social needs, including in-stream uses such as fishing and recreation. North Carolina State government has not been particularly active in water allocation. In general, there has not been enough competition among water uses in North Carolina to warrant comprehensive legislation for water allocation. Here and there, however, we do see some potentially serious conflicts.

To cite one example, the City of Durham developed a proposal to withdraw water from the Eno River to supplement the supply from Lake Michie. The original proposal would have allowed withdrawals down to a flow rate of 4 cubic feet per second. The Eno is a high quality stream which passes through a State Park. The State's Mountains-to-Sea Trail Corridor follows the Eno from the State Park to the Falls Lake project. The Department of Natural Resources and Community Development and the Wildlife Resources Commission carried out a joint study which concluded that a minimum flow of 30 cfs in the spawning season and 10 cfs otherwise is needed to protect fish in the stream. Recommendations for this higher flow have been made to the city of Durham. Developing better protection for in-stream flow needs statewide is a major challenge facing us.

Comprehensive Water Resources Planning

The Department carries out a number of special studies and plans on single-purpose aspects of water resources management, such as water quality, flooding, and water-based recreation. In addition, we have some planning projects which cover all water uses in a river basin and which attempt to show the interactions among all of our social needs for water. This type of comprehensive planning becomes more and more urgent as our State grows and places heavier demands of all types on our water resources.

The Yadkin Pee-Dee River Basin Study is now well underway as a joint effort between the states of North and South Carolina and the U. S. Water Resources Council. The study will develop a plan for meeting water needs in the basin over the near and mid-range future - about thirty years. One useful product of this study will be a basin-wide hydrologic model that will allow the effects of any proposed projects to be evaluated. The study is also putting an emphasis on the determination of in-stream flow needs.

A second state-federal study of this type is scheduled to start soon for the Cape Fear River Basin.

The North Carolina Water Resources Framework Study, first published by the Department in 1977, provides a one-volume summary of state policies, programs, and issues for water resources management statewide. The study also provides a ready reference on many proposed water resources projects in each river basin. The first edition of the study has been extensively reviewed by local governments and by the public statewide, in preparation for a revised version scheduled for this year.

To close, I would again like to thank the many staff members who assisted with this report and to repeat that it covers only selected issues and new initiatives, not a balanced or complete review of all of the Department's water management activities. We appreciate the opportunity to make this report to you today and invite your ideas and participation in the improvement of our water management programs at any time.

Editor's Note: Presentation made at State Water Resources Conference at NCSU Faculty Club, April 30, 1980.

ITEMS OF INTEREST:

State Reports on Neuse River Investigation, page 1

Governor Hunt Seeks Chowan River Clean-Up Aid, page 1

Groundwater Supply Study Nears Completion, page 2

New OWRT Capsule Report - Alternative Wastewater Treatment: Aquatic and Land Systems, page 4

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