

I see the Institute's primary role in the future as providing the research support to fully meet the challenges of the water agenda. And research problems are present in abundance. They are described in the WRRRI five-year program document. My experience in State Government is that we urgently need this research, and we need to have it properly managed and focused to help in solving our most important problems.

I believe that it will be more important in the future to involve the University and scientific community in developing improved decision-making criteria for water. One of the toughest problems I encountered with State Government was the frequent lack of a good sound, scientific basis for water quality decision-making. The most vivid case was our Chowan River Restoration Project where we have encountered continuing difficulties with finding exactly the right level of regulation of nutrients. This is not a criticism of our scientific enterprise; this is a statement of fact relating to how little we really understand our ecological systems and human impacts on them. More funds for research are needed and more attention to this matter is required if we are to succeed. It constitutes an important agenda for North Carolina's scientists and State agencies for many years in the future.

I am especially pleased that North Carolina's Water Resources Research Institute is in such good shape and has such a fine reputation. I credit Dave Howells with the pioneering leadership that built our Institute into a national model, one which has delivered many dollars of public service for every dollar of investment. I hope that North Carolina will be able to maintain and enhance this Institute concept, not only in the field of water, but in other areas of government-university concern as well.

I really regret leaving North Carolina at this time, but I intend to stay in touch with you and to work to improve water management at every opportunity.

STATEMENT FROM THE CHAIRMAN OF THE INSTITUTE'S BOARD
OF DIRECTORS

By: Dean Larry K. Monteith, Chairman

The WRRRI Board of Directors regrets very much that Neil Grigg will be leaving. Although it took him away from the Institute for three years, his work with State Government has been a useful service to the State, and it has enabled the University to have even closer working relationships with State Government in the water field. We are trusting that these close working relationships will be maintained.

Since becoming Chairman of the Institute's Board of Directors, I have been pleased to learn about its excellent national and international reputation. We intend to find ways to continue to build this reputation and to maintain the Institute's excellent programs. With the change in the federal funding picture, we will have to find additional ways to finance these programs, but the Board of Directors is convinced that maintaining water research programs should be a high priority University activity.

We agree with the thrusts that Neil Grigg has outlined in this edition of the Newsletter. The Institute and the University must cooperate closely with State Government in finding ways to solve the water and environmental problems in the State. As Neil has pointed out, the involvement of the scientific community to support complex decision-making is absolutely essential. We agree with this basic role and mission, and commit ourselves to do the best possible job to carry it out.

The Institute represents the University of North Carolina system. We will maintain the involvement of several University faculties in its programs. I would like to especially pledge the support of the School of Engineering at N. C. State University in helping to find better scientific methods for solving water problems in the future. You will see more activity from us in this area. The other members of the Board have expressed similar commitments from their program areas.

The Board of Directors welcomes at any time ideas from readers of the NEWS about ways to improve the Institute's programs.

MANY RULES ON EPA
AGENDA DELAYED

A report by the Congressional Research Service of the Library of Congress shows that most of the 183 regulations on the Environmental Protection Agency's January 1981 agenda for action are in "various stages of delay, reconsideration or inaction." According to the report only 15 out of 59 water quality regulations have promulgation dates set for them and only three are on schedule. "As with all these reg-

ulations, internal and external review is a major factor in delay," the report said.

In the area of toxic waste, one out of 21 regulations is in effect and no dates set for the others. The Congressional Research Service report attributed the reason for much of the delay to the lag in confirmation of the assistant administrator for solid waste and emergency response.

CORPS REVIEWS 404 WETLANDS PROTECTION

The U. S. Army Corps of Engineers has announced that an intensive review of its

404 permit program under the Clean Water Act is underway.

The Section 404 program requires a Corps of Engineers permit before dredge or fill material may be deposited in waterways or wetlands.

The Corps said that the review is in concert with the Presidential Task Force on Regulatory Relief. It said that the permit program reviewers are looking for ways to shorten permit processing time, give the states more opportunities to issue permits, eliminate conflicting and overlapping policies, expand regional and nationwide general permits, and better define the objectives and jurisdictional extent of the permit program.

The Corps already anticipates that "a variety of administrative and legislative actions are needed to achieve a proper balance between the protection of our important environmental resources and economic development." That anticipation is an indication that the Corps and other development agencies may desire to pay more attention to the economics of their actions and give less attention to fish, wildlife and other resources that do not have a dollar and cents value attached because they are not marketed. Comments on the review may be sent to the Asst. Secretary of the Army, Washington, DC 20310.

. . . . Wildlife Management Institute

VIRGINIA TIDEWATER REGION SETTLES WATER DISPUTES

Virginia Beach, Norfolk, and Suffolk City councils have agreed

to ratify 10 year emergency water supply contracts, settling a yearlong dispute among the three cities over their water resources. The contracts represent a compromise among the three localities and postpone for at least another 10 years court cases between Norfolk and Suffolk over ownership of wells and groundwater.

The agreements ensure for Virginia Beach an emergency water supply in future droughts and provide a guarantee that Norfolk will treat and transport water from five wells drilled by Virginia Beach in western Tidewater. Norfolk agreed to allow Virginia Beach to introduce water into its own water lines, blending it with Norfolk-treated water. Norfolk will also limit the amount of water it pumps from its wells unless Virginia Beach requests and agrees to pay for the additional supplies.

In return, Virginia Beach will pay Suffolk for water pumped from both Norfolk and Virginia Beach wells and will assume financial responsibility for any damages that pumping might cause to private wells in Suffolk. Virginia Beach has also agreed to pay a percentage of the legal costs incurred by Norfolk, all costs for special treatment needed because of high concentrations of well water, and a pro-rated share of Norfolk's water system improvements. In addition to its concessions to Virginia Beach, Norfolk has agreed not to drill any new wells in Suffolk during the next 10 years or expand its water system in Suffolk. Virginia Beach has also agreed to grant Norfolk the permits necessary for

making improvements in its Lake Prince and Western Branch pumping stations in Suffolk and for repairing a leaky pipeline between its Suffolk reservoirs and its treatment plant in Norfolk.

The agreements set a national precedent for one locality's paying another for supplying drinking water, according to an area attorney. Although the contracts resolve many of the problems facing the water-short Tidewater area, at least temporarily, some officials are concerned that the complex legal issues relating to water rights in Southeast Virginia have not been resolved. The Virginia Supreme Court or the General Assembly must solve the problems existing among various jurisdictions as to the respective rights of each locality concerning water resources, one official is quoted as saying.

. . . . Water News Virginia Water Resources Research Center

SOIL EROSION PROBLEM GROWS

Soil erosion and flood damage are reaching proportions that could threaten our ability to

produce the agricultural products we need in the future, the Secretary of Agriculture said recently, announcing a new program, but no new funding to address the issues.

The program would feature a federal matching block grant to states, who would be encouraged to develop and implement their own conservation plans.

Funding for the program would come from the Soil Conservation Service, the Great Plains Conservation Program, the Agricultural Conservation Program, and other areas, Secretary John Block said.

The program would have to be passed by Congress, and it would not start until at least 1983. It is a response to the Soil and Water Resources Conservation Act of 1977, which requires that the Secretary of Agriculture develop a national soil and water conservation program to guide the Department's future conservation activities.

The Block program would be largely dependent upon state and local government to assume responsibility for controlling erosion and flood damage in critical upstream areas.

An agreement between the Secretary and Governors would be the basis for the new programs.

Other facets of the new program might include: expanded use of long-term agreements in providing conservation aid to farmers; a requirement that land owners have a conservation plan to be eligible for Farmers Home Administration loans; more emphasis on conservation tillage; targeting of funds to critical areas; conservation pilot projects; and re-evaluation of tax incentives for conservation (the Treasury Department has opposed this approach).

Observers caution that financially strapped state governments might have trouble meeting the requirements of the program.

"We will have a net loss of topsoil regardless of which program we adopt," Block acknowledged. "There are too many problems and needs, and the cost of solving them would be excessive for the present state of the economy," he said.

One of the most serious problems faced by agriculture, the overmining of groundwater, would not be addressed by the program.

Currently, one-fourth of groundwater withdrawals are not being recharged. The loss of productive cropland as a resulting of this overmining is estimated at \$2.5 billion, according to USDA.

More than 175 million acres of non-federal rural lands are also subject to flooding. Nearly 16 percent of the Nation's prime farmland is on flood plains.

For information, contact the Soil Conservation Service, Washington, D.C., 202/382-8059, in Raleigh N. C., 919/755-4690.

. . . . Water Information News Service

REPORT GIVES RESULTS OF SEPTIC SYSTEMS STUDIES IN N.C. COASTAL PLAIN

A recently completed report documents the movement and treatment of effluent and the

movement and fate of enteric viruses from septic tank systems in the lower Coastal Plain of North Carolina. These studies were supported by the Coastal Plains Regional Commission, and the Division of Health Services of the North Carolina Department of Human Resources. Ground-water quality around individual septic systems was monitored and ground-water tables and soil properties determined in the study.

The most important factor affecting movement and treatment of effluent was the location of the water table. Fifteen of the 17 systems studied were at least seasonally saturated. Those systems which were nearly continually saturated had the highest concentration of contaminants in the ground water, and the contaminants moved the farthest. System design and maintenance and soil texture were also contributing factors.

Contamination was generally confined to within 25 feet of the systems, but more widespread movement was noted in several continuously saturated cases. Nitrogen was found primarily as ammonium around the more saturated systems and as nitrate around the better aerated ones. Phosphorus seldom moved more than 5 feet from the systems. Fecal coliform counts tended to be higher and more widespread around the wetter systems.

Pressure distribution of effluent was shown to improve treatment in coarse-textured, high water table soils, provided the system was not continuously saturated.

The seasonal high water table could be predicted reasonable well based on the appearance of low chroma (dull) colors in the soil profile. The only exceptions were in areas affected by large-scale agricultural drainage.

Researchers in the study included B. L. Carlile and C. G. Cogger, Department of Soil Science, NCSU, Raleigh, NC; Mark D. Sobsey and John Scandura, Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill; and Steve J. Steinbeck, Sanitation Branch, NC Division of Health Services, Raleigh, NC.

The report titled "Movement and Fate of Septic Tank Effluent in Soils of the North Carolina Coastal Plain" can be obtained from Steve J. Steinbeck, North Carolina Division of Health Services, 225 N. McDowell Street, Raleigh, NC 27602.

GUIDE REVISED FOR UNIVERSAL SOIL LOSS EQUATION

SCS has revised a handbook that can help decision-makers in soil and water conservation planning with

knowledge of the relations between the factors that cause soil erosion and those that help to reduce soil losses. This new handbook provides the specific guidelines needed for selecting the control practices best suited to the particular needs of each site. The guides include factor values for North Carolina.

Beginning in 1929 soil conservation scientists working in the field and at research stations have been collecting data and evaluating methods to predict rainfall-erosion losses. Since that time, scientists have assembled data on rainfall, runoff and soil loss, slope and other erosion-influencing factors to develop a soil-loss equation. Because of its applicability to local climatic conditions, a quantitative soil erodibility factor, a method of accounting for cropland management, crop sequence, productivity level, and residue management, it is called the "Universal" Soil Loss Equation (USLE).

The factor values specifically for North Carolina were first prepared by the Soil Conservation Service in 1961 and revised in 1976. The latest 1981 edition incorporates several supplements to former editions. Copies of the 92-page document, "The Universal Soil Loss Equation With Factor Values for North Carolina," are available from the USDA-SCS, PO Box 27307, Raleigh NC 27611.

GOVERNOR'S WASTE MANAGEMENT BOARD HOLDS FINAL MEETING

On December 9 the 15-member board which has important re-

sponsibilities with issues associated with safe management and disposal of hazardous wastes and low-level radioactive wastes, held its first meeting. Chairman of the Board is Buck O'Sheilds, a county commissioner from New Hanover County.

The Board has no regulatory authority but does have some of the following functions:

- Periodically evaluate and assess the volume, distribution, location, and physical and chemical characteristics of hazardous waste and low-level radioactive waste generated or disposed of in the State.
- Periodically review the State's comprehensive waste management system and make recommendations to the Governor, cognizant State agencies, and the General Assembly on ways to improve waste management; reduce the amount of waste generated; maximize resource recovery, reuse, and conservation; and minimize the amount of hazardous waste and low-level radioactive waste which must be disposed of.
- Study and make recommendations on policy issues including but not limited to liability and financial responsibilities within the waste management area. On or before January 1, 1983,

the Board shall prepare and present to the Governor and General Assembly a report concerning the desirability of establishing by statute a standard of strict liability for persons involved in storage, transportation, treatment, or disposal of hazardous or low-level radioactive waste in North Carolina.

- Promote research and development and disseminate information on state-of-the-art means of handling and disposing of hazardous waste and low-level radioactive waste. The board is authorized to establish a waste information exchange for the State.
- Promote public education and public involvement in the decision making process for the siting and permitting of proposed waste management facilities.
- Periodically evaluate and assess the type and number of hazardous waste facilities, hazardous waste landfill facilities, low-level radioactive waste facilities and low-level radioactive waste landfill facilities in existence, under construction or planned in the State and multi-State region and promote the development of additional facilities particularly retrievable above-ground storage facilities if existing or planned facilities are deemed inadequate or unavailable.
- Prepare and file jointly with the Governor and the General Assembly an annual report describing the board's activities and setting forth its recommendations for administrative or regulatory action required to improve the State's comprehensive waste management system or remedy noted defects in the system. A special report shall be filed in January of 1983 which shall include an evaluation on the possible need to organize State agencies more efficiently to improve overall performance of waste management functions. The report should give consideration to the advantages and disadvantages of consolidating or centralizing administration of programs that are now in separate agencies.
- Each year recommend to the Governor a recipient for a "Governor's Award of Excellence" which the Governor shall award for outstanding achievement by an industry or company in the area of hazardous waste or low-level radioactive waste management.

More details are available in Senate Bill 443 "AN ACT TO PROVIDE FOR THE MANAGEMENT OF HAZARDOUS AND LOW-LEVEL RADIOACTIVE WASTE IN NORTH CAROLINA." Single copies of the legislation may be obtained by calling (919) 733-5648.

NCDA SURVEY SHOWS
AQUATIC WEED IN 13
WAKE COUNTY LAKES

An imported fast-growing aquatic weed discovered in lakes near Raleigh was the subject of a survey completed in September by the N. C. Department of Agriculture's Plant Industry Division.

The survey of 180 lakes in a 25-mile radius of Raleigh included three major drainage areas: the Neuse, the Cape Fear, and the Roanoke. The weed, hydrilla ventricillata, was found in 13 lakes, all in Wake County and west of Raleigh, representing a cross-section of uses: water supply, recreation, farm ponds and subdivision ponds.

Hydrilla, which has no natural enemies in the United States, is used in aquariums. It has caused major problems in Florida, covering lakes and clogging irrigation systems.

A document on hydrilla--its control and threats to water supply systems, recreation, and aquatic ecosystems--is scheduled for release by the Division in early January, 1982. The document, to be circulated among State officials, will point out that no agency now has complete authority to deal with the weed.

USGS HELPS COMMUNITIES
LOCATE GROUNDWATER

As part of a larger study on groundwater in the North Carolina Piedmont and mountains, the U. S. Geological Survey is involved in efforts to locate groundwater supplies in two Piedmont areas.

The studies are part of the USGS cooperative program whereby costs of work are shared 50-50 with a public agency. One is with the Town of Cary, which presently buys surface water from Raleigh but is interested in the conjunctive use of ground and surface water to supply its needs. The other is with the Cape Fear River Basin Comprehensive (Level B) Study; it is concerned with the area around the Cape Fear headwaters (Guilford, Alamance, Randolph Counties) where groundwater is being viewed as a future water source. The Cape Fear Study is sponsored by the Water Resources Council and the N. C. Department of Natural Resources and Community Development.

According to Dr. Charles Daniel of USGS, who heads the studies, both parties--the USGS and the cooperator--benefit from the cost-sharing ventures. USGS gains additional knowledge on factors controlling the occurrence of groundwater. And the town or community gets help in locating high-yield wells. In both Piedmont areas, USGS is looking at how various geologic, topographic, and geomorphic factors affect the location of groundwater. On the basis of these factors, sites will be picked and wells drilled.

In the upper Cape Fear area, work has included a preliminary assessment of known high-yield wells, those with records of over 50 gal/min and particularly over 100 gal/min. Plans are to begin drilling test wells by mid-1982.

In Cary, USGS has picked sites and begun drilling wells. Of the three sites picked to date, all have proven to be high-yield. The first was 125 gal/min and the last two were even larger. Efforts will also include groundwater modeling of flow to wells in Cary.

LANGFELDER--NEW ASSISTANT SECRETARY OF NRCDC

Effective January 1, 1981, Dr. Jay Langfelder, head of the North Carolina State

University Department of Marine, Earth and Atmospheric Sciences, will become Assistant Secretary of NRCDC succeeding Dr. Neil S. Grigg.

Dr. Langfelder, a Professor of Civil Engineering, is a native of Lynbrook, New York. He has BS and MS degrees from the University of Florida and a Ph.D. degree from the University of Illinois. Dr. Langfelder has an extensive background in teaching, research and consulting work. He is currently a member of numerous national and state committees including the National Advisory Committee on Oceans and the Atmosphere, North Carolina Marine Sciences Council, and the Coastal Resources Advisory Council.

WORKSHOPS ON HAZARDOUS WASTE MANAGEMENT UNDER RCRA

The Industrial Extension Service at North Carolina State University will conduct workshops on haz-

ardous waste management. These workshops have been developed with help from the N. C. Solid and Hazardous Waste Management Branch to assist hazardous waste generators and others concerned with hazardous wastes to meet the personnel training and emergency and contingency planning requirements of the Resource Conservation and Recovery Act (RCRA). Information will also be supplied on handling, storing, treating, incinerating, and shipping hazardous wastes. Each participant will receive a comprehensive manual. The workshops will be held at the following locations and dates: Raleigh--McKimmon Center, January 26-27, 1982; Wilmington--May 19-20, 1982; Hickory--May 24-25, 1982; and Charlotte--May 26-27, 1982.

For more information and a registration form contact: Linda Watkins, NCSU--IES, 919/737-2356, P. O. Box 5506, Raleigh, NC 27650.

POSITIONS AVAILABLE Two Environmental Engineering Faculty positions at the assistant, associate, or full professor level in the Environmental Engineering Program, Civil Engineering Department, University of Houston. Prefer candidates to have Ph.D. degrees in environmental, civil, or chemical engineering. Research and teaching areas of particular interest are biological treatment, hazardous wastes, computer modeling, and water-wastewater distribution and collection. Please send resume including names and addresses of three references to: Dr. Dennis Clifford, Environmental Engineering Program Director, Department of Civil Engineering, University of Houston, Houston, Texas 77004.

WATER RESOURCES CONDITIONS IN NORTH CAROLINA Streamflow was well below normal across the State during November and was deficient (in lower 25 percent of record) in the Mountain and Coastal Plain regions. Flows in the Mountains were deficient for the 5th consecutive month. The monthly mean flow in the French Broad River at Asheville was the lowest for November since 1932. Rainfall was also generally below normal with totals for the month ranging from less than one inch to about 3 inches. Flows receded throughout much of the month and on the 30th most were in the deficient range.

Because of the continuing drought, voluntary water-use restrictions remained in effect in Asheville, Canton, Woodfin, and Black Mountain.

Ground-water levels in shallow water-table wells declined slightly in the Mountains and rose elsewhere. As compared to long-term averages for the month, levels remained from about one half to 2 1/2 feet below normal.

. . . .U. S. Geological Survey

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.)

Water Resources Planning

"Impediments in the Process for Development of Federal Water Resources Projects," 9/81, by G. Galloway, Jr., avail. from U.S. Water Resources Council, 2120 L Street, NW, Washington, DC 20037. (06B)

"Planning for Urban Fishing and Waterfront Recreation," (FWS/OBS-80/35), 7/81, by R. Leedy, et al, for sale by Superintendent of Documents, USGPO, Washington, DC 20402. (06 Recreation)

"Strategies for Using Remotely Sensed Data in Hydrologic Models," (NASA-CR-66729), 7/81, by E. Peck, et al, for sale by the NTIS, Springfield, VA 22151. (10E)

"Analysis of Methodologies for Assessment of Wetlands Values," (Final Report), 9/81, by R. Lonard, et al, avail. from USWRC, Suite 800, 2120 L Street, NW, Washington, DC 20037. (02H-1 Wetlands)

"Virginia's Water Resources: Policy and Management Issues," 7/81, by W. Cox, et al, avail. from Dept. of Agricultural Economics and Civil Engr., Virginia Tech, Blacksburg, VA. 24061 (06B)

"Yadkin Pee-Dee River Basin Plan (Recommended Plan and Summary), 8/81, by States of NC & SC for US Water Resources Council, copies avail. on loan from all county libraries or limited copies are avail. from Office of Water Resources, NCNRCDC, P.O. Box 27687, Raleigh, NC 27611. (06A Yadkin Pee-Dee Plan)

Water Quality Management

- "Runoff and Pollution Abatement Characteristics of Concrete Grid Pavements," (Bul. 135), 10/81, by G. Day, et al, avail. from VWRRC, VPI & SU, Blacksburg, VA 24060. (05D Urban Runoff)
- "A Guide to Regulations and Guidance for the Utilization and Disposal of Municipal Sludge," (430/9-80-015), (MDC-72), 9/80, by USEPA, avail. from General Services Administration (8BRC), Centralized Mailing Lists Services, Bldg. 41, Denver Federal Center, Denver, CO 80225. (EPA)
- "Characterisation of Pollution in Urban Stormwater Runoff," (Tech. Paper #60), 1981, by G. Haskins, et al, avail. from Australian Government Publishing Service, Canberra, Australia. (05B Urban Runoff)
- "Treatment Technology to Meet the Drinking Water Standards for Trihalomethanes for Jackson, Mississippi, (Interim Report), 9/81, by A. Shindala, et al, WRRRI, MS SU, Mississippi State, MS 39762, price: \$3 (03)
- "Aquaculture Systems for Wastewater Treatment, An Engineering Assessment," (430/9-80-007), (MCD-68), 6/80, by S. Reed, et al, avail. from General Services Administration (8BRC), Centralized Mailing List Services, Bldg. 41, Denver Federal Center, Denver, CO 80225. (05D)
- "Energy Requirements for Small Flow Wastewater Treatment Systems, (MCD-60), 4/79, by E. Middlebrooks, et al, avail. from General Services Administration (3FFS), Centralized Mailing List Services, Bldg. 41, Denver Federal Center, Denver, CO 80225. (EPA)
- "Recommendations From Value Engineering Studies on Wastewater Treatment Works," (430/9-80-010), (MCD-69), 9/80, R. Williams, et al, avail. from General Services Administration (8FFS), Centralized Mailing List Services, Bldg. 41, Denver Federal Center, Denver, CO 80225. (EPA)

Water Quantity Management

- "An Evaluation of Instream Flow Methods for Use in West Virginia," 9/81, by E. Joy, et al, avail. from Div. of Wildlife Resources, West Virginia Dept. of Natural Resources, Elkins, WV 26241. (02E)
- "State and Federal Water Supply Assistance Programs," 1981, avail. from Water Supply Assistance Branch, Office of Water Resources, NRCO, Box 27687, Raleigh, NC 27611. (06)

Miscellaneous

- "1981 Program Report and Environmental Impact Statement, Revised Draft," 11/81, prepared by USDA. For further information, contact the Soil Conservation Service, Washington, DC. (202)382-8059. (SCS)
- "Elicitation of Environmental Values in Multiple Objective Water Resource Decision Making," 5/81 by D. Moreau, et al, Dept. of City & Regional Planning, University of North Carolina at Chapel Hill, Chapel Hill, NC 27514. (06A)
- "The Universal Soil Loss Equation with Factor Values for North Carolina," (Technical Guide Section I-C), 5/81, avail. from USDA, SCS, PO Box 27307, Raleigh, NC 27611. (SCS)
- "Soil Survey of Vance County, North Carolina," 9/80, prepared by USDA-SCS, PO Box 27307, Raleigh, NC 27611. (SCS)
- "Regional Water Management Baseline of Completed, Ongoing, and Proposed Water-Related Project and Program Activities in the Tennessee River Basin," (TVA/ONR/WR-81/8), Vol. 2-8, 8/81, avail. from TVA, Office of Natural Resources, Div. of Water Resources, Knoxville, TN. (TVA)

SPECIAL

Water: Key to North Carolina's Future

*Remarks By Secretary Joseph W. Grimsley
Department of Natural Resources and Community Development
Water Resources Research Institute Luncheon
December 3, 1981*

I am very pleased to be invited to speak to you today about water resources in North Carolina. The Water Resources Research Institute has had exceptional success in bringing together the research community and those in State, local, and federal agencies who need to use the best scientific research in practical water management decisions. We value this opportunity to discuss our views on water management priorities with you and to ask for your help and suggestions in setting our Department's course for the future.

Since becoming Secretary of the Department of Natural Resources and Community Development, I have given a lot of thought to selecting a few areas for priority emphasis. We want to make sure that we are taking those actions today that will have a real influence on the quality of life that our children will experience in North Carolina in the future.

The first area that I identified for priority attention in the Department is Water. That is what I want to discuss with you today. There are two other major natural resources priorities. The second is Productive Resources. We are using this term to cover the best management, protection, and utilization of our fisheries, forests, soils, and minerals - the basis for our economy and prosperity. The third theme for my administration will be Outdoors North Carolina. This theme refers to our esthetic and recreational enjoyment of the environment in North Carolina. We are richly blessed with a diverse and beautiful State. Our citizens greatly value our forests, parks, beaches, lakes, and rivers for recreation that is truly satisfying and renewing. I wanted to mention these other two themes for my administration so you will see our goals for good water management in the context of these other related goals.

Why have I selected water as a primary theme for my term as Secretary?

First, good water management is absolutely critical for our economic health. A survey of industrial development professionals in North Carolina identified adequate water and sewer service as the number one necessity in locating high quality industry in North Carolina. Our State suffers from a low industrial wage level and from excessive unemployment and under-employment in many areas. These economic problems cause real human suffering and waste of human potential. We must make sure that we have the water and wastewater capacity needed to attract high wage jobs for our citizens.

Second, good water management is essential for the quality of life we value in North Carolina. Water quality is always at the top of the list of the environmental problems that citizens are concerned about. Many surveys have shown that our citizens want good water quality and are willing to support whatever it takes to achieve this goal.

Third, State government's responsibility for water management is great. All citizens have a right to use and benefit from our abundant water resources. By State law, State government has a major responsibility in assuring that water resources are managed for the greatest good. With the significant decline in federal resources devoted to water management, the burden upon the State becomes even more critical.

Finally, we are now at a critical point in our State's history. We have some serious water management challenges in several areas. There are some warning signs of more problems that are beginning to emerge. But we have not yet reached a crisis level where problems threaten to overwhelm us and where drastic and divisive remedies are needed. In North Carolina we have time to plan, to act, and to shape the kind of future that we want.

Some of our sister states have moved ahead recently with new water management legislation, new methods for funding water management, and improved planning for water management. Unfortunately, some of these other states waited until water pollution, water shortages and conflicts over water use had reached crisis proportions. Solving problems at this point is much more expensive and requires more sacrifices and disruptions of established water uses.

North Carolina has been fortunate in having relatively abundant natural supplies of water. We also have a highly dispersed population which spreads our impacts on water over our entire State. We must not let ourselves be deceived by our good fortune. The growth of our population and economy are placing heavier demands on our water resources. We can clearly see some emerging problems. The challenge before North Carolina is this: can we be farsighted enough, can we be progressive enough to take action now for improved water management? With the right kind of planning, cooperative actions, and investments we can avoid many of the emerging problems that threaten us.

After selecting water as a top priority for my administration we began to identify the most important water management problems and the corrective steps that we need to take. Over the next few months we will be inviting ideas and suggestions from other state and federal agencies involved in water management, from local governments, and from the private sector. After further refinement, this water agenda will guide our Department's management decisions, our assignment of resources, and our proposals to the 1983 General Assembly.

Our water agenda is divided into five parts: water supply, water quality, ground water, coastal waters, and river basin management. Today I can only make a highly condensed summary of the agenda.

Water Supply

North Carolina has a relatively abundant supply of rainfall and highly productive rivers and ground water aquifers. With good planning and management, we can solve our water supply problems for the foreseeable future. Lack of proper planning and management could cause some severe economic and environmental damage.

In 1970 we used about 1.1 billion gallons of water a day in North Carolina for municipal, industrial, and domestic needs. We expect this rate of water use to double by the year 2000. To meet water supply needs for the future, local governments will need to make timely investments to develop additional supplies. Some of the areas that will need to develop additional supplies are the rapidly-growing Research Triangle area in the Upper Neuse Basin and the Piedmont Triad region in the Upper Cape Fear Basin. Individuals and communities can also achieve much better use of our existing supplies through water conservation methods. There are practical and proven water conservation measures that can save valuable investment dollars and energy.

To meet these challenges, we need to renew the Clean Water Bond Act, which helps communities make timely improvements in their water supply systems. We will target our State planning assistance programs on the parts of our State that have the most serious problems. Our water quality program will emphasize the protection of drinking water sources. Finally, we will increase our public information and technical assistance programs for water conservation.

Water Quality

For the most part, North Carolina has good water quality. Only about seven percent of our streams and rivers are degraded by discharges from inadequate wastewater treatment plants. North Carolina has made very substantial improvement in cleaning up organic waste which lowers dissolved oxygen in water and damages fish habitat. In the last 30 years, the amount of organic waste going into our waste treatment plants has more than doubled. But the amount of waste going into the streams has been cut in half by improvements in our waste treatment plants.

Looking toward the future, the anticipated reduction in federal funds for wastewater treatment plant construction is a major problem. These cuts will make it very difficult for North Carolina communities to continue the progress made so far.

We will also have to control other types of pollutants where we have not made such good progress. Sediment is a very serious water pollution problem in North Carolina. Sediment fills our reservoirs and destroys fish habitat. Nutrients wash into streams from urban areas and agricultural lands. Waste treatment plants also discharge nutrients. The result is the serious water quality problem in the Chowan River. These same problems are beginning to emerge in some other coastal waters and in some lakes. Solving these problems will require better management practices at construction sites and on agricultural lands. We also need innovative waste treatment methods for point sources of waste.

The increasingly large number of toxic chemicals used in industry, some of which get into our waters, is another serious challenge. We have a long way to go in understanding the effects of these many chemicals and in learning how to detect and control them. The Toxic Substances Project now underway in the Governor's Office is gathering basic information and developing a control strategy. This work will help our Department and the Department of Human Resources to manage this problem.

Our water quality goal will be to protect the quality of each stream for its best use and to assure wastewater treatment and pollution control measures to accommodate sound economic growth.

Renewal of the Clean Water Bond Act is essential to meet this goal. The severe cutback in federal assistance makes the State role even more essential. Our water quality program will emphasize effective operation of existing treatment plants and proper pre-treatment of industrial waste. We will promote agricultural best management practices to reduce the amount of sediment and nutrients going into streams.

To control toxic waste, we will emphasize better monitoring and the development of new standards for toxic pollutants where needed.

Ground Water

Ground water is a major asset in meeting North Carolina's water needs. Ground water is the direct source of domestic supply for about 60 percent of our population. Many municipalities and industries also use ground water. There are about 1.2 million wells in operation in North Carolina now with about 10,000 new wells drilled each year.

Our most serious ground water management problems are a decline in water levels in some areas due to heavy withdrawals and a potential for ground water pollution. In northeastern North Carolina, water levels in the cretaceous aquifer system are declining several feet per year due to heavy withdrawals in Virginia. Phosphate mining has reduced ground water levels over a wide area in the central coastal region. Landfills, chemical and waste storage facilities, septic tanks, and spills of toxic materials have the potential for ground water pollution.

To assure good protection and management for ground water, we need to develop a management strategy. We need a management plan for our major aquifers. To prevent pollution, we will work to inventory and control pollution sources and to classify ground waters.

Coastal Waters

North Carolina's coastal waters have a unique value to the State and also face unique threats. Our sounds and estuaries are the basis for our valuable fishery industry and also for a large portion of our tourist industry. We estimate that yearly tourist expenditures in coastal counties total \$347 million. The dockside value of the seafood catch is \$70 million, plus the large multiplier effect on the economy. We cannot afford to lose the recreational and economic value of our coastal waters.

These productive coastal waters receive pollutants that originate all the way to the headwaters of our river basins. In the slower-moving and warmer water of our sounds, nutrients that would otherwise be harmless can cause damaging growths of algae and drastic reduction in dissolved oxygen and in the quality of the fishery. In the Chowan River and Albemarle Sound, we are already experiencing severe problems of this type. There are warning signs of this problem in the lower Neuse and Pamlico Rivers.

Bacterial pollution has closed some shellfish waters. This problem can result from faulty septic tanks, inadequate waste treatment plants, or agricultural runoff. Finally, pure fresh water drained from agricultural and forest lands can be a pollutant when it changes the salinity of shellfish nursery areas.

Many of our coastal water pollution problems are particularly difficult to solve because the pollutant sources are land runoff over wide areas. Solving these problems will take corrective action by local governments and the agricultural community throughout our watersheds.

To maintain the productivity of our coastal waters, we must continue our ongoing Chowan River Restoration Project. We must complete the work of the Coastal Water Management Task Force, which represents the fishing, agricultural, and forestry industries. This group is developing water management policies to allow these three vital economic sectors to coexist. We also need to strengthen our efforts to control bacterial contamination of shellfish waters.

River Basin Management

Each of our major river basins is a natural ecological unit. We make many demands on these river basins for water supply, wastewater dilution, hydroelectric power, navigation and recreation. Each of these uses of water can affect the others. Within each river basin, we need to consider how upstream uses can affect downstream uses. When our demands on a river basin reach a certain level, the different uses of water within the basin need to be coordinated. Otherwise, we run the risk of damaging conflicts in water use that can harm the environment and limit our economic development potential.

Our Department is working on a number of special studies in basins or areas of the State where complex water resources problems require a comprehensive solution. We may also need to strengthen the State's laws and policies for dealing with water use conflicts. The policies that we now use may not be adequate to cope with the heavier demands on our water resources that are coming in the future.

We will emphasize our major problem-solving studies in the Cape Fear Basin, the upper and lower Neuse Basin, Currituck Sound, and the White Oak River. I particularly call your attention to our joint study with Virginia on interstate water issues. We are trying to reach agreement with our neighbor state on some major water pollution, water supply, and groundwater problems.

We may conclude that new legislation will be needed to give us a framework for good river basin management as we approach the year 2000.

I have outlined for you the water agenda for the State as we now see it in our Department. We need a lot of help from local governments, other State departments, and citizen groups in refining this water agenda. We are planning to hold a statewide conference on "Water Management for the 1980's" in April of 1982 to get this broader participation. We are planning to sponsor this conference jointly with the Water Resources Research Institute and possibly with other interested groups. The purpose of the conference will be to bring together the best thinking in the State on what we need to do now to assure sound water management for the 1980's and beyond.

The results of the conference will help us establish our legislative program for the 1983 General Assembly. We also think that the conference will have a valuable role in informing the public on the water management issues that face North Carolina.

In concluding, I want to stress to you the importance of the Clean Water Bond referendum that we anticipate coming before the voters in 1982. I believe that a new Clean Water Bond issue is absolutely essential to help our communities meet their water supply and wastewater treatment goals in the face of the severe cut-back in federal assistance. We are revising the policies for the bond program to take into account the reduced level of federal support. We believe that it offers a flexible and effective way to help meet our water management goals.

Water management is a broadly shared responsibility. State agencies, federal agencies, local governments, citizen groups and private individuals all have an important role to play. We must develop a strong partnership and shared commitment to reach our goals. Together, I am confident that we can move ahead progressively with a water management program fit for the challenges of the 1980's.

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