



Michael Matros

A Tenuous State/Local Partnership

Water supply and water quality questions have become bigger than a single municipality can answer alone. Intergovernmental relationships are growing more complex, as are technical issues. Service demands are increasing while federal and state financial assistance is declining. Local officials are at a crossroads—in growth management, in financing new water and sewer projects, and in land use regulations. What kind of new state-local partnership can be forged for North Carolina?

by David H. Moreau

In 1968, a drought hit Chapel Hill. As fans poured into the university community from around the state for Saturday football games, alumni and guests alike had *to ask* for water at restaurants. No water was served routinely. Car washes were going out of business and lawns were turning brown.

On Saturday night, football fans traveled back to homes from Bryson City to Morehead City. While most were no doubt reflecting on a Carolina blue player streaking down the sidelines, a few prescient souls might have wondered if they would always be able to get water at a restaurant. Was this only an inconvenience in Chapel Hill or was it a sign for the future?

The now infamous Chapel Hill water shortages have continued to hit periodically. But 16 years later

University Lake Reservoir is still the primary water source for the area. This reservoir now meets only 50 percent of the area's needs. Chapel Hill residents depend on water purchased from neighboring Durham and Hillsborough. In February 1984, construction on the long-planned Cane Creek Reservoir finally began even though the project is still embroiled in litigation.

Why has Chapel Hill had so much trouble providing an adequate water supply for its citizens?

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And how does this *water-supply* question relate to issues of *water quality*? While a number of circumstances in the 16-year Chapel Hill saga appear unique, the tangle of bureaucracies and regulations that have complicated the Chapel Hill story now reach into municipalities throughout the state.¹ The Environmental Management Commission (EMC), the N.C. Department of Natural Resources and Community Development (NRCD), the U.S. Army Corps of Engineers, the N.C. Department of Human Resources, and other state and federal agencies have authority over various aspects of local water and sewer systems (see tables 1 and 2 on pages 68 and 69). Towns, cities, special water or sewer districts, and counties (which are now entering this business), have to cope with an array of regulations, from federal 401 and 404 permits to state EMC rulings.

How can local officials simultaneously cope with this labyrinth of intergovernmental passages, address the growing technical problems of water pollution, and deal with local land-use issues like zoning around water sources? Together, the problems of funding and maintaining high quality water supply and sewer treatment systems appear overwhelming. Unless tackled as a package, however—albeit, taken a piece at a time—these problems might one day cause Carolina alumni to forgo water altogether on a football weekend. After they get back to Bryson City and their other homes, things might not be much better.

The Partnership Is Formed

In North Carolina, over 500 municipal water systems now exist; 225 of these serve over 500 persons.² In addition, 340 waste discharge systems owned by municipalities hold discharge permits issued by the state. Many of these municipalities, as water suppliers and waste dischargers, are inherently linked to each other and to the surrounding counties through common hydrologic systems—river basins and groundwater systems.

As problems of water supply and quality have increased in recent years, so has the interrelationship among water suppliers and waste dischargers become more obvious. Meanwhile, federal and state requirements have become more stringent, forcing a new sophistication and resolve upon local government officials. Local governments have had to increase expenditures and enact more stringent land-use regulations. Both actions are politically unpopular, but not so unpopular as polluted water or emergency restrictions on use of water.

For its part, state government has borne a part of the financial burden through two clean water bond issues and bold leadership stances on land-use controls. But the partnership between the state and local governments now faces increasing challenges—

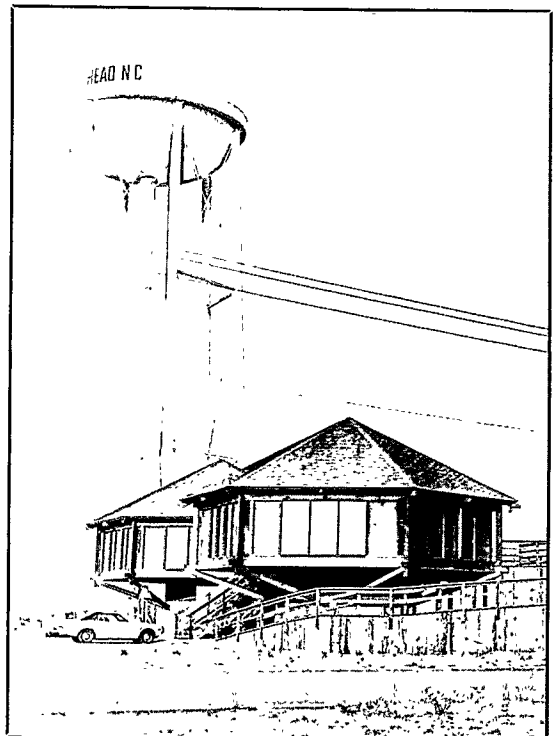
as funding needs rise, as service demands increase, and as federal dollars decline.

The partnership began early in this century when the state intervened in what was otherwise a local matter—the quality of a community's water. To protect the public, the State Board of Health began enforcing mandatory drinking water standards and regulating waste discharges upstream of public water supplies. After World War II, the state broadened its responsibilities in pollution control. With passage of the State Stream Sanitation Act in 1951, North Carolina initiated a comprehensive pollution control program aimed at municipal and industrial dischargers. That program, spanning nearly two decades:

- 1) collected data on water quality and sources of pollution in each river basin;
- 2) classified all streams according to their best use (drinking water, recreation, etc.);
- 3) developed water quality standards for each of the stream classifications;
- 4) formulated pollution control plans for all major water sources; and
- 5) required all municipalities and industries with wastewater treatment systems to submit detailed engineering plans that met pollution control requirements.

Federal initiatives in pollution control further increased state involvement. In 1956, the federal government began a program of technical and

Nags Head Municipal Building



Courtesy N.C. League of Municipalities

financial assistance to local governments. The states administered this assistance and determined priorities for local governments. In 1965, Congress upped the ante by establishing minimum criteria for *state water quality standards* and then went a step further, passing the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500).

The 1972 actions, together with 1977 amendments—which gave the law its current name, the

Clean Water Act—included an array of regulatory, financial, and management components. Perhaps the most important regulatory impact came from Sections 401 and 404 of the act. Section 401 requires each waste treatment facility to have a permit specifying limits on each pollutant that could be present in its discharges. Section 404 controls “dredge and fill” operations in wetlands. This “404” process requires a municipi-

Table 1. Water Supply: Major Governmental Responsibilities

Unit of Government	Responsibility	Source of Authority
<u>North Carolina</u>		
Dept. of Human Resources and Commission for Health Services	<ol style="list-style-type: none"> 1. Determines eligibility for grants-in-aid for construction 2. Approves plans and facilities 3. Enforces drinking water standards 	<p>Clean Water Bond Acts of 1971 and 1977</p> <p>Safe Drinking Water Act of 1979 (GS 130A-311 et seq.) and federal Safe Drinking Water Act (42 USC § 300f et seq.)</p>
Dept. of Natural Resources and Community Development and the Environmental Management Commission	<ol style="list-style-type: none"> 1. Water-use permits in designated “capacity use areas” (i.e., areas of extreme water shortage) 2. Dam safety permits 3. Well construction permits 4. Water quality certification permits 5. Stream reclassification 6. Powers of eminent domain in local water authorities 7. State environmental impact statements 	<p>Water Use Act of 1967 (GS 143-215.13)</p> <p>Dam Safety Law of 1967 (GS 143-215.23 et seq.)</p> <p>Well Construction Act (GS 87-83 et seq.)</p> <p>Section 401, Federal Clean Water Act (33 USC § 1341)</p> <p>15 NCAC 2B</p> <p>GS 162A-7(b)</p> <p>NC Environmental Policy Act of 1971 (GS 113A-1 et seq.)</p>
Dept. of Administration	<ol style="list-style-type: none"> 1. Conducts intergovernmental review process 	<p>Federal Office of Management and Budget, Exec. Order 12372</p>
<u>Federal</u>		
Army Corps of Engineers, Environmental Protection Agency, and Fish and Wildlife Service	<ol style="list-style-type: none"> 1. Issues “404” dredge and fill permits and related environmental impact statements. 	<p>Section 404, Federal Clean Water Act (33 USC § 1344)</p> <p>National Environmental Policy Act of 1969 (42 USC § 4321 et seq.)</p> <p>U.S. Fish and Wildlife Coordination Act (16 USC § 661 et seq.)</p>
Environmental Protection Agency	<ol style="list-style-type: none"> 1. Issues drinking water standards 	<p>Federal Safe Drinking Water Act (42 USC § 300f et seq.)</p>

Source: Water Resources Research Institute

pality to get a *federal* permit from the U.S. Army Corps of Engineers for the construction of a dam that would create a water supply on a stream that drains more than five square miles of watershed. This covers practically any reservoir.

In addition, the Clean Water Act triggered a requirement for an environmental impact statement under the National Environmental Policy Act. At the same time, the act substantially increased grants for municipal waste treatment facilities up to a level of 75 percent of eligible costs. Finally, this federal pollution control statute recognized that water pollution occurs at both *point sources* (municipal and industrial waste treatment plants, for example) and at *non-point sources* (runoff from fields, barnyards, and construction sites, for example). To control pol-

lution from nonpoint sources, the Clean Water Act and related regulations called for land use controls and "best management practices," if necessary. Best management practices included a broad group of measures to control soil erosion and stormwater runoff.

In 1974, federal and state involvement increased with passage of the federal Safe Drinking Water Act, which established national drinking water standards. Both this act and the Clean Water Act are based on the principle of state primacy whereby the state, if it qualifies and chooses to do so, can take over the planning and permit processes. North Carolina has taken over most of these activities, the notable exception being the dredge and fill permits, still issued by the U.S. Corps of Engineers.

Table 2. Water Quality/Sedimentation: Major Governmental Responsibilities

Unit of Government	Responsibility	Source of Authority
<u>North Carolina</u>		
Dept. of Natural Resources and Community Development and the Environmental Management Commission	<ol style="list-style-type: none"> 1. Grants permits for pretreatment facilities and other facilities discharging to surface waters. 2. Establishes ambient stream standards and effluent standards 3. Prepares basin-wide water quality plans 4. Issues waste discharge permits 5. Provides grants for construction of wastewater treatment plants 6. Develops plans for sedimentation control in non-agricultural activity lands 7. Determines sediment concentration and load levels 	<p>GS 143-215.1</p> <p>GS 143-215.3</p> <p>GS 143-215.3</p> <p>GS 143-215.1</p> <p>Clean Water Bonds Act of 1971 and 1977</p> <p>Sedimentation Pollution Control Act (GS 113A-50 to 66)</p> <p>Sedimentation Pollution Control Act (GS 113A-50 to 66)</p>
Dept. of Human Resources and Commission for Health Services	<ol style="list-style-type: none"> 1. Regulates subsurface septic tanks and sewage disposal systems 	Sanitary Sewage Systems Act (GS 130A-333 et seq.)
<u>Federal</u>		
Environmental Protection Agency	<ol style="list-style-type: none"> 1. Establishes effluent guidelines 2. Develops water quality criteria 3. Approves state programs 4. Reviews selected waste treatment projects 	Federal Clean Water Act (33 USC § 1341)

Source: Water Resources Research Institute

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Local Officials at a Crossroads

As concerns about water pollution and the quality of drinking water have increased among citizens, state government has moved forcefully—sometimes pushed by federal legislation—to influence decisions of local officials regarding water supply and waste management. Meanwhile, federal and state financial assistance is being reduced. Consequently, local officials face a set of interrelated decisions regarding growth management, financing of water and sewer projects, and land use.

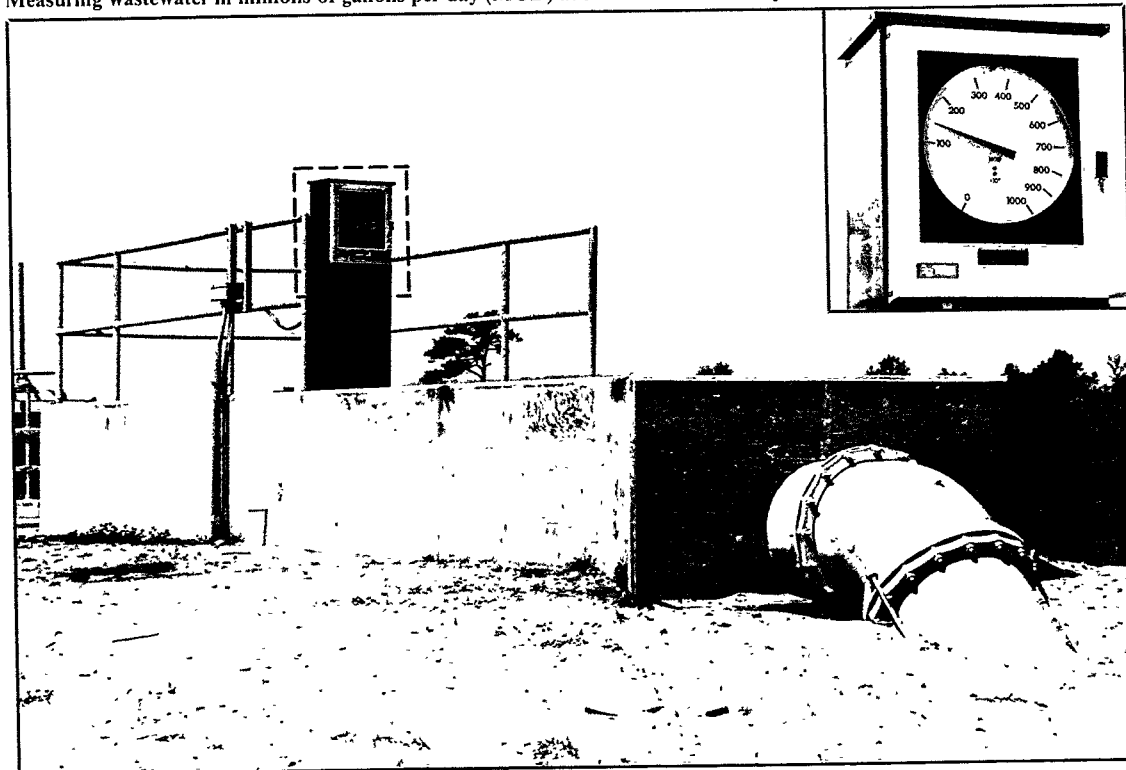
Growth Management. Determination of appropriate *size, timing, and location* of waste

treatment facilities is now a matter of negotiation among local, state, and federal administrators. Applications for planning grants, requests for plan approvals, and requests for construction funds—first at the state level, then through the regional office of the U.S. Environmental Protection Agency (EPA), and sometimes through EPA headquarters in Washington—have caused the construction of new facilities to take up to 10 years.

Municipalities can determine the size of their treatment plants, but financial incentives to comply with state and federal grant conditions have often altered local choices. For example, in the expansion of the Chapel Hill waste treatment facility, local officials projected a waste load of nine million gallons per day (MGD) in 20 years. State and federal officials would approve a design of only eight MGD. Similarly, Greensboro officials felt the city needed a larger plant than what federal and state officials initially approved. Greensboro then had to undertake an extensive analysis of alternative land use patterns to justify its choice of plants and their locations.

If a local government unit wants to expand its water supplies using surface water sources, it must get approval from the N.C. Department of Human Resources and, in most circumstances, from the U.S. Corps of Engineers. At least three cities in North Carolina—Asheboro, Chapel Hill,

Measuring wastewater in millions of gallons per day (MGD) at New Hanover County's Southside Treatment Plant.



Courtesy New Hanover County

and Durham—have been through this permit process. In each case, the process has taken from three to five years to complete. Conditions imposed by federal and state agencies added as much as five percent to the cost of these projects and contributed to delays that have resulted in significant reductions in service over the past several years.

The complexity of the permit process has raised concerns among local officials over whether the state, the EPA, or the U.S. Corps can—or will—decide the appropriate levels of growth for their communities. Will these state and federal agencies decide where growth should occur? Will they decide the source and amount of water supply to be made available to local governments? Local government officials view increased federal and state authority as a threat to their autonomy.

Financing Water and Sewer Projects.³ While local governments have not welcomed this intrusion by state government, they have accepted it with a large dose of state and federal financial aid. The magnitude of that support has been persuasive. In the decade from 1973 to 1982, state clean water bonds generated \$380 million for local water and wastewater projects. During the same period, EPA made grants of \$495 million to cities in North Carolina for new wastewater management facilities. This infusion of nearly \$1 billion into local areas has significantly affected municipal property tax rates and fee structures. Approximately 20 percent of all local government expenditures for water and sewer services over the past five years has come from this aid, most of that for construction of waste treatment plants. Without state and federal assistance, sewer rates in Chapel Hill would be 30 to 40 percent higher than they are today.

Complying with pollution control requirements is obviously easier when those who are imposing regulations are also offering lucrative aid. Local officials have had to raise user charges only modestly to pay their share of the cost, and they have been able to defend those small increases by pointing to their success in attracting state and federal grants.

Naturally then, the recent reductions in these state and federal funds are causing great concern. By 1982 federal water and sewer funds had been reduced to *one-third* of their 1976 peak.⁴ Regulations that go into effect July 1, 1984, will reduce these federal funds even further. In addition, the 1983 General Assembly reduced state financial support by repealing the governor's authority to call for a new clean water bond referendum.⁵ The General Assembly did authorize local governments to levy a new, one-half cent sales tax, with a portion of the proceeds

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targeted for water and sewer needs. However, those funds will not offset the potential revenues from a new clean water bond⁶—much less the loss of federal funds.

To offset the loss of federal and state funds, locally generated revenues will have to increase at an average annual rate of 10 to 11 percent over the next five years. Local ratepayers may be expected to resist such increases, and two decades of progress in water pollution control could be threatened as these “carrots” are removed and only the “stick” is left.

Land Use. Controlling nonpoint sources of pollution leads directly or indirectly to land use controls, something local governments have jealously regarded as their sole domain. Nowhere has this issue been raised more clearly than in the watersheds of the Falls of the Neuse and Jordan Reservoirs in the Research Triangle area. These two reservoirs—in planning, appropriation, and construction for 50 years—are the largest reservoir projects that can be built under federal regulations in their respective river basins. They are keys to future development of a major urban area involving scores of counties and municipalities. Yet their usefulness as water supplies and recreational facilities is threatened by urban, industrial, and agricultural activities in their watersheds.

Under the leadership of former NRCD Secretary Joe Grimsley, the state took the position that unless local governments acted to limit discharges of pollutants, the state would impose very stringent and expensive standards on municipal waste discharges. To develop the details, Grimsley established a steering committee for each watershed; the membership consisted of elected local officials and NRCD staff. These

committees produced a "state/local action agenda" that spelled out what would be expected from NRCD and what would be expected from local governments. That agenda contains several bold initiatives, including:

- the designation of water quality critical areas to which strict land use regulations would apply;
- a broadening of local participation in the state sediment control program;
- a reduction of phosphorus levels at point sources; and
- improving information about, and control of, hazardous substances being discharged within, transported across, or stored on these watersheds.

Early responses to the recommendations of these committees are encouraging. Wake County recently adopted critical area designations in the Falls of the Neuse watershed. Durham City and Durham County are developing sediment control ordinances. Durham and the Orange [County] Water and Sewer Authority are preparing for the removal of phosphorus at their waste treatment plants. The new Secretary of NRCD, James A. Summers, has publicly supported statewide limits on the use of phosphate detergents, as has Gov. James B. Hunt Jr.

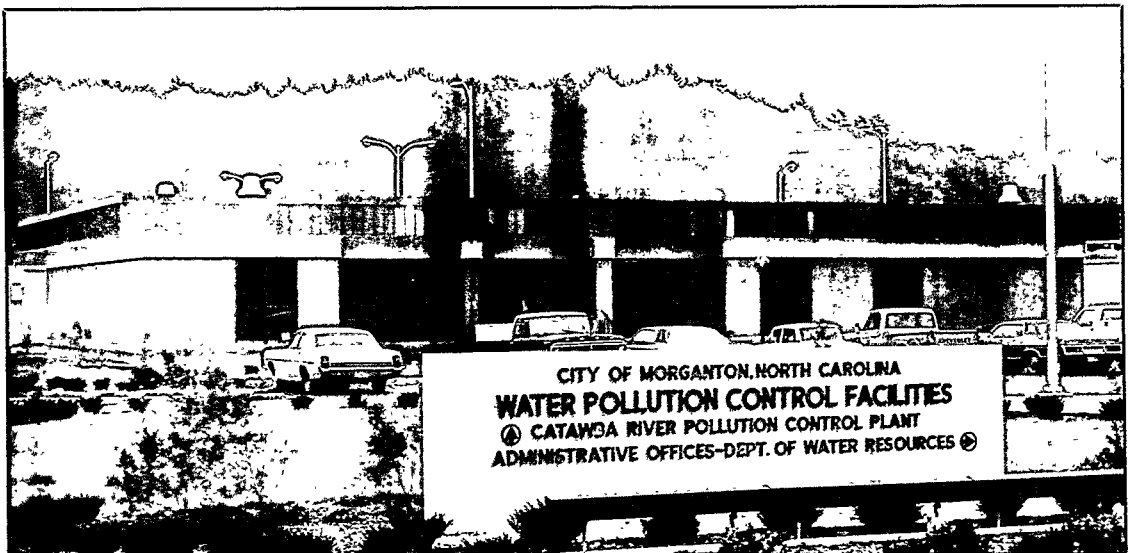
Despite such positive intergovernmental steps, this partnership remains an uneasy one. Local officials are quite aware that in 1985 there will be a new governor with a possible change in leadership at NRCD. Specific technical problems also trouble them. For example, debates continue over the extent to which phosphorus removal improves water quality. Yet state officials may nevertheless insist on expensive wastewater treatment methods to reduce phosphorus in discharges into these water basins.

What Can We Learn from Neighboring States?

Emerging water planning and regulatory models in other states may be useful to the discussion of what is best for North Carolina. Two other southeastern states, Georgia and Florida, represent significant contrasts.⁷ Georgia's program, a centralized structure, relies primarily on state regulation and secondarily on planning and management. Florida, on the other hand, has taken a two-tiered approach: strong regional management and a unified state regulatory program.

In Georgia, a single state agency regulates both quantity and quality of water. Georgia's water control law, initially passed in 1972 and amended in 1973 and 1977, requires permits for all ground and surface water withdrawals that exceed 100,000 gallons per day (agriculture is exempted). Despite a strong regulatory approach, Georgia's program does not emphasize management or involve much local input. The lack of progress in developing river basin plans in Georgia suggests that planning and management have taken a back seat to regulation.

In contrast, Florida has combined local and state inputs into a *regulatory and planning program*. Building upon prior experiences with the Central and Southern Florida Flood Control District created in 1949, the Florida Water Resources Act of 1972 established five water management districts (WMDs) that cover the state. These WMDs have broad powers, including planning, construction, and operation of facilities and regulation of water withdrawals. They also have the power to levy ad valorem taxes. The districts have strong professional staffs, making them effective—and powerful—



Courtesy N.C. League of Municipalities

participants in the water planning process.

In 1975, Florida combined water use and water quality functions in a single agency. Regional offices of the new state Department of Environmental Regulation (DER) were located with those of the WMDs. Water quality regulatory functions remain in DER—at the state level.

The Florida Water Resources Act mandated the development of a state plan to guide the regulation of water withdrawals. This plan was derived from regional plans prepared by the WMDs within a framework supplied by DER. Although WMDs do not have regulatory authority for water quality, that dimension was considered in formulating regional plans. DER then had the task of integrating the regional plans into a statewide plan while meeting its responsibilities to regulate water quality.

The Florida Water Management Districts are unique organizations. A nine-member board of district residents appointed by the governor runs each WMD. With a board appointed by the governor, they are linked to a statewide constituency and are somewhat insulated from local politics. Yet, with resident boards and a local tax base, they are responsive to local interests. The WMDs occupy a middle ground in state-local relations.

What State-Local Partnership for North Carolina?

North Carolina has a water planning and regulatory program similar to that of Georgia, except that in North Carolina withdrawal permits are required only in designated "capacity use" areas. Regional management is not widespread in the state, but it is increasing. There are now 2 water and sewer authorities, at least 4 local utility commissions (which regulate primarily water and sewer) serving several communities, at least 10 inter-local contracts involving municipalities serving over 500 persons, and numerous water districts within a single county.

A Legislative Study Commission in 1980, chaired by then Speaker of the House Carl Stewart, focused on the need for improved water management coordination through either a state water authority or river basin commissions. The Stewart Commission also pointed out that many communities need technical and financial assistance, but that much of the available assistance is scattered among several state agencies. Finally, the commission noted that the clean water bond acts did not encourage adequate comprehensive water use planning by local or regional authorities.

The Stewart Commission found strong opposition to the creation of a state water authority and to considering interbasin transfers as a means of solving the state's water problems. The

commission eventually dissolved, noting in its final report that time and funds were insufficient to address water management issues adequately.⁸ The commission never made recommendations for action. Four years later, the issue of statewide water resource management has yet to be met head-on.

As the availability and quality of water resources in North Carolina declines—and as the cost for new facilities increases—state and local officials must strengthen existing partnerships and work towards new arrangements. Perhaps lessons from the experiences of Georgia, Florida, and other states can help. As various legislative committees, executive branch officials, state-local ad hoc groups, and university researchers proceed, they should consider at least the two recommendations discussed below.

1. State and local officials, working together, should produce a water resources management plan. The state has a long history of cooperative planning for *water pollution control*. But no such overall effort has taken place in the area of *water supply*.⁹ The state regulates water quality and participates in federal river-basin studies. Yet state advice and aid to local governments in water supply occurs only on a case-by-case basis. No water-supply plan exists to which state and local governments are committed as a basis for making future decisions. The state completed its last comprehensive waste disposal plan in 1975. The Stewart Commission pointed out the necessity of centralizing state technical and financial assistance to smaller communities to ensure compliance with federal and state environmental regulations.

Such a plan need not be overly detailed or require large expenditures of funds for preparation. But it should cover all water suppliers and waste dischargers in the state that serve over some minimum number of persons, say 2,500, or process more than some minimum amount of water, say two million gallons per day. As many as 250 local governments and industries fall into this category. Each of these should be required periodically, perhaps every five years, to submit a standard form containing the following information:

- projections of needs for water and wastewater service over the next five to ten years;
- identification of how they intend to meet these needs;
- a description of current actions being taken to ensure that those needs are to be met; and
- a statement of financial plans for implementation, including a description of financial hardships and legal impediments to raising the necessary funds.

Wherever local cooperation is necessary, these plans should be regional in scope. Regions should be defined along either hydrological boundaries such as river basins or watersheds, or along political boundaries of contiguous demand centers.

Several related actions are needed *at the state level*. The state should:

- establish a program for reviewing, evaluating, and approving local plans in a timely manner;
- provide guidance and technical assistance to affected units;
- define appropriate planning areas and establish a process to resolve conflicts when they occur;
- develop a program to meet the needs of economically distressed cities; and
- authorize and encourage the formation of new kinds of organizational arrangements to promote regional cooperation in areas where demands are approaching the limits of supply.

2. The state should set minimum standards for water and sewer rates. Just as state intervention was necessary to encourage local governments to build adequate pollution control facilities and to regulate land uses, state action may be necessary to ensure adequate funds for the provision of the basic water and sewer service.

Municipalities in North Carolina cover through fees only 76 percent of their expenses in maintaining and expanding their present stock of water and sewer facilities. Other types of utility providers (e.g., electric, natural gas, telephone) are constantly attempting to *raise rates*, and public concern hence focuses on excessive rates. This has affected the public perspective of water and sewer rates as well, even though water and sewer providers are constantly containing rates *below their costs*. The public concern, in the long run, will have to move towards an acceptance of increased water and sewer rates. Without these increased *user fees*, these costs will eventually be met through increased property taxes.

North Carolina's Local Government Commission is a unique institution for controlling the fiscal integrity of our cities and counties. Should it also ensure that water and sewer rates are sufficient to pay for necessary services?

Even if North Carolina does not opt for a statewide authority or a regional management system, there is a need for a collectively formulated state-local water management strategy. Special emphasis should be placed on the formulation and evaluation of economically efficient water and sewer systems, related financial strategies, and the delivery of services to small

municipalities and private developments. Incentives should be created to promote regional management organizations where they are needed.

While state dominance of the planning process may doom it to failure, state leadership and incentives are essential. Without such a strategy, local governments—especially small and moderately sized municipalities—may find themselves unable to provide these basic services to accommodate economic development and achieve environmental quality objectives. □

FOOTNOTES

¹For more detail on the Chapel Hill saga, see David H. Moreau, "Urban Water Supplies in North Carolina," *Popular Government*, spring 1982, p. 8.

²In North Carolina, there are about 12,500 public water supply systems which have at least 15 connections or serve more than 25 people. Of these 12,500, about 10,000 are "non-community" systems, which serve anything other than residential areas. About 2,500 are "community" public water systems, which serve residential areas. Among these 2,500 are the 500 municipal systems noted in the text.

³Financial information for this article came from David H. Moreau, *Financing Water Supply and Wastewater Services in North Carolina in the 1980s*, Report No. 212, Water Resources Research Institute, February 1984.

⁴Federal construction grants for water treatment plants in North Carolina declined from \$66.4 million in FY 81 to \$49.8 million in FY 82, a \$16.6 million or 25 percent decline. Water and sewer construction grants ranked as the fifth largest cut in federal aid to North Carolina. Jim Bryan et al., *Federal Budget Cuts in North Carolina*, N.C. Center for Public Policy Research, April 1982, pp. 90 and 9 respectively.

⁵Chapter 908 of the 1983 Session Laws (HB 426), Part II.

⁶If all counties adopt the new tax, cities would get some \$40 million a year, estimates the N.C. League of Municipalities. The 1971 and 1977 Clean Water Bond Acts provided about \$50 million a year for water and sewer projects. In addition to the \$10 million gap, note three other important differences: 1) all counties have not yet adopted the tax; 2) only a portion of the \$40 million must be spent on water and sewer projects (40 percent the first five years and 30 percent the next five years); and 3) the sales tax revenues are not distributed according to water-and-sewer needs, as were the clean water bond revenues.

⁷Material on the programs in Georgia and Florida came from Terry D. Edgmon, *Water Resources Management in a Federal System: A Comparative Analysis*, Report No. 203, Water Resources Research Institute, September 1983.

⁸*Alternatives for Water Management*, Report of Legislative Study Commission to the North Carolina General Assembly, March 1980.

⁹John Morris, director of the Office of Water Resources, N.C. Department of Natural Resources and Community Development (NRCD), points out that there have been some important steps taken by the state to, as he puts it, "improve our ability to solve water supply problems." Morris lists the following state efforts: 1) a Water Supply Assistance Program, begun in 1980 by NRCD, to assist local governments in planning and to explore options for regional water supply cooperation; 2) studies of the Yadkin and Cape Fear river basins, initiated by NRCD; 3) a special NRCD study of the Upper Cape Fear River Basin (Guilford County and northern Randolph County), "the major urban area in North Carolina without a long-range assured water supply," says Morris; and 4) in 1983, a new water-use data collection program, "one of the foundations of good water resources planning," says Morris.