The Allocation, Availability and Maintenance of Water Resources in North Carolina

An Interim Report to the Environmental Review Commission
of the North Carolina General Assembly
addressing elements, issues, and methodology
to be included in the full study

By the Principal Investigators

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Reason for study

Section 1.(a) of S.L. 2007-518 directs the Environmental Review Commission (ERC), with the assistance of the Department of Environment and Natural Resources (DENR), and independent consultants to be retained by the ERC, to:

1. Study the allocation of surface water resources and their availability and maintenance in the State, including issues related to the transfer of water from one river basin to another, the withdrawal of water for consumptive use, and the accuracy and tolerance of equipment used to measure the flow of water transferred from one river basin to another river basin.
2. Evaluate the benefits of establishing formal and informal procedures for negotiating transfers of water from one river basin to another.
3. Study and recommend measures to: (i) ensure that the purposes of the Regional Water Supply Planning Act of 1971, as set out in G.S. 162A-21, are fulfilled; (ii) provide for a comprehensive system for regulating surface water withdrawals for consumptive and nonconsumptive uses; (iii) provide for the establishment of a statewide plan for water resources development projects; (iv) provide for adequate resources for the Department so that it may develop and implement a comprehensive approach to water resources management; (v) ensure that all State laws regulating water resources are consistent with and fully integrated into the comprehensive system for regulating surface water withdrawals and the statewide plan for water resources development projects; and (vi) ensure that potential interstate conflicts related to water resources are avoided or minimized.

The Principal Investigators (PIs) are, on behalf of their respective universities, entering into contracts to assist the ERC with this study, including a principal contract between the ERC and the UNC School of Government. As of the date of this interim report, the principal contract has been executed by the ERC and the Dean of the UNC School of Government, and is still being reviewed and processed by the sponsored research offices of UNC and Duke. The contract more fully explains the scope of work, including changes made as a result of the public hearing process in December 2007 and January 2008, such as more explicit direction to include groundwater and its allocation in the study. This Interim Report sets out the PIs' plans for carrying out their part of the study in 2008. The contracts contemplate a final report to the ERC by October 31, 2008. However, given the scope and importance of the study, and the scale of similar studies being conducted in other eastern states, it is almost certain that further work will be required beyond 2008. Any extensions or modifications in the scope or time frame of this study will be made by the ERC and its staff, for whom the study is principally intended.

Scope of study

The PIs will study all matters called for under their contracts, including:

a. Allocation of water resources (surface water and groundwater) and their availability and maintenance in North Carolina.

b. Issues related to the transfer of water from one river basin to another.

c. Withdrawal of water for consumptive and nonconsumptive use.

d. Whether the purposes of the Regional Water Supply Planning Act of 1971, as set out in G.S. 162A-21, are being fulfilled and, if not, how they can be fulfilled.

e. Options that provide for a comprehensive system for regulating surface water withdrawals for consumptive and nonconsumptive uses.

f. The governance, organization, operation, and funding of, and services provided by, publicly-owned and privately-owned public water systems.

This is a scoping study, designed to frame options for the General Assembly to consider—options both for changes in water law and for more detailed investigation. The PIs will make recommendations in October 2008 for areas of further, more detailed inquiry and likely resource needs for carrying out those further studies.

Input and methods

The PIs, in conjunction with ERC staff, have consulted widely with persons interested in the study. They participated in five public meetings attended by over four hundred people in December, 2007 and January, 2008, in Charlotte, Greenville, Asheville, Raleigh and Wilmington. These were meetings at which anyone interested in the study was allowed to speak. A record of the comments received and subsequent written communications was kept by legislative staff. In addition, the PIs have posted their notes of the meetings on a publicly-available website, http://sogweb.sog.unc.edu/Water/index.php/Current_events, which is part of the "water wiki" to be discussed below.[1]

Since those public meetings, the PIs have been actively engaged in discussions with stakeholders from public water systems, private water systems, water users including private citizens, agricultural users, food processors and food scientists, turfgrass producers and scientists, bottlers, electric utilities, environmental public interest organizations, cities and counties, state agency water managers and regulators from North Carolina, South Carolina, Georgia, Virginia, Tennessee and other states, Councils of Government, professional engineers, federal officials at the Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Department of the Interior, and scholars who study water resources from UNC and Duke, other United States universities and think tanks, and other countries including Australia, Austria, Canada, France, Germany, Great Britain, the Netherlands, Norway, and Sweden.

On the basis of their own knowledge and this input, the PIs propose to carry out the study in 2008 as follows. The methods and resources needed for future, more narrowly focused research will be discussed and explained in the 2008 final report.

Water supply and demand assessment

The PIs will summarize and evaluate past studies and current estimates of water supply and demand in North Carolina. Aspects of water supply include

- Precipitation
- Stream flows
- Infiltration/recharge
- Storage

[1] A note on formatting: some words and phrases in this Interim Report are underlined in the printed version. This underlining indicates a hyperlink that can be followed by clicking or control+clicking in the online version of the document.

    - Reservoirs
    - Distributed storage such as farm ponds and catchment systems
    - Aquifers (groundwater storage)
- Reuse and reclamation of water
- Cleanup/source protection
- Interconnects between public water supplies

Aspects of water demand include:

- Growth and demand
- Efficiency
- Conservation

The best available data integrating surface water supply and demand in North Carolina, for particular river basins, is probably contained in three hydrologic models used by the State: a model for the Catawba River system, developed by Duke Energy; a model for the Cape Fear River system, developed by DENR's Division of Water Resources (DWR) in conjunction with a group of interested persons; and two models for the Yadkin/Pee Dee, one developed by Alcoa for the Upper Yadkin and one by Progress Energy for the Pee Dee. DWR is working on extending river basin modeling efforts to other basins, starting with the Neuse. The PIs will generally familiarize themselves with and participate in debates and discussions about these models, and will provide comments to DWR on ways they believe, in light of this study, the modeling effort could be improved. But a detailed assessment and report on the results of these river basin models is outside the scope of the PIs' work on this study. It is part of the assistance DENR is providing to the ERC directly.

Critical governance processes

Water allocation in North Carolina is a complex, un-integrated system. Its foundations are court decisions establishing riparian rights and reasonable use limits. On these un-integrated foundations the State has built a handful of regulatory programs. Alongside this State law are several important federal laws and the rules and operating policies of three federal agencies: the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, and the Tennessee Valley Authority. Poised atop these State and federal elements are the rules and operating policies of public water suppliers (both public and private sector suppliers), which are themselves constrained by local governing boards and, in the case of privately-owned water suppliers, the N.C. Utilities Commission. Looming around all these elements are the claims of adjoining states to parts of the water supply and the possibility of international trade agreement limitations on state regulation of water. Further, water allocation is a social-ecological system, in the sense that there is a practically finite supply of water that varies

independently of action by the State, and demands on this supply are the result of the decisions of many individual users and firms. There are also environmental needs for water (such as for fish and other aquatic organisms). Finally, there are economic features of this system that are critical parts of the allocation puzzle: how water is priced and how water systems are funded.

The study will explain these elements. It will focus on several key laws and policies that are at its core and are within the control of the General Assembly, with the aim of helping legislators understand how the system might be made more efficient, more equitable, and more sustainable for the long term.

- Key laws and policies
    - Registration and monitoring network
    - Drought response
    - Capacity use area regulation
    - Interbasin transfer regulation
    - Flow regimes

In addition, the PIs are following and will report on other states' status and reform efforts, because many other states, particularly in the southeast, are actively reconsidering their historical approach to water allocation and management at this time.

The Water Wiki

The PIs have set up a unique website, called the "water wiki," where they compile their findings. The unique thing about the website is that anyone can quickly see, comment on and even change the information on the website. However, the site keeps track of changes, and alerts anyone who is interested when anything on a given web page within the site is changed. Changes are easily reverted. So the water wiki can serve as a collaborative space for discussion, debate and hopefully consensus on the many controversial aspects of water allocation and management. The portal for the water wiki is:

http://water.unc.edu

and the links embedded in this document point to particular wiki pages. As of April 17, 2008, twelve weeks after its inception, the water wiki had 1,543 edits of 285 pages in 86 articles and 103 registered users. Seven of its 285 pages had been viewed over 10,000 times.

Policy possibilities

The point of this study, in 2008, is to frame policy possibilities for discussion and debate by the ERC. The study team has been capturing the suggestions made in the extensive stakeholder meetings thus far. They are posted on the water wiki, at http://sogweb.sog.unc.edu/Water/index.php/Policy_suggestions. We will continue to refine this list through the course of the study. One general set of possibilities to be presented and analyzed in the final 2008 report will be drawn from this list, and could be thought of as "Refinements to the existing water allocation system."

Another important policy option to be evaluated is creation of a water withdrawal permit for North Carolina. Many states in the United States require that major withdrawals of water have some regulatory review and control. We have been and will continue to discuss the arguments for and against such a requirement, and if it were passed, how it might be implemented, and will include this analysis in the final report.

Goals and aspirations for study

As noted, the goal for this study, in 2008, is to frame options for the ERC to help inform the debate about how and whether North Carolina's water allocation and management system could be made more efficient, more equitable, and more sustainable. Beyond this goal, given the scrutiny that states all along the eastern seaboard are currently giving to water resources, it is possible to imagine—to aspire to—improvements in North Carolina's approach to water resources that might make water allocation in the southeast better and more compatible for the region as a whole. The physiographic region, stretching from New Jersey (which was North Carolina's model for its 1967 Capacity Use Area law) south to Florida, and west to the Appalachian mountains, has similar physical water resources. It is, in a global sense, a water-rich region. Nearly all experts, worldwide, agree that global water supplies will come under increasing stress in the next century, and that many regions will experience severe water shortages in this time frame, producing great conflict and suffering. In this context, perhaps the southeastern United States could, along with the Great Lakes region and the Pacific northwest, emerge as a globally desirable region for its water. Whether that happens appears to the PIs to be mainly a question of how wisely North Carolina and the other southeastern states maintain their water resources.

The study team

UNC-Chapel Hill and Duke University have assembled an expert team to provide this scoping analysis. The team includes:

- Bill Holman, State Policy Director, Nicholas Institute for Environmental Policy Solutions, Duke University
- Richard Whisnant, Professor of Public Law and Government, UNC School of Government
- Dr. Greg Characklis, Assoc. Prof. Environmental Sciences and Engineering, UNC-CH
- Jeff Hughes, Director, Environmental Finance Center, UNC-CH
- Leslie Kleczek, Masters in Environmental Science, Nicholas School, Duke University
- Jennifer Platt, M. S., Environmental Science and Engineering, UNC-CH. Formerly Conservation Coordinator (Water), Town of Cary
- Andrew Westbrook, M.S., Environmental Science and Engineering, UNC-CH; B.S. Civil and Environmental Engineering, U. Illinois.
- Joseph LoBuglio, Ph.D student, Dept. of Environmental Sciences and Engineering, UNC-CH
- Shadi Eskaf, Ph.D. student, Dept. of Environmental Sciences and Engineering, UNC-CH
- Sybil Tate, Masters student, Public Administration, UNC School of Government