

Legislation implements some recommendations of Water Allocation Study

by Jeri Gray

Background

In 2007, the N.C. General Assembly passed House Bill 820 which directed the legislative Environmental Review Commission (ERC) to study a large number of issues related to “the allocation of surface water resources and their availability and maintenance in the State.” The ERC contracted with the UNC School of Government to conduct significant portions of the study, with the Duke University Nicholas Institute for Environmental Policy Solutions as subcontractor. The Water Allocation Study was led by Richard Whisnant, Professor of Public Law and Government with the School of Government, and Bill Holman, Director of State Policy with the Nicholas Institute. Following a series of public meetings to receive comment on the scope of the study, the study team investigated laws and policies affecting water supply in the state, the status of knowledge of the state’s water resources, water demand across the state, the effectiveness of the state’s water supply planning program, the condition of local water supply infrastructure, water supply management programs in nearby states, and other topics. They delivered a final report to the ERC in 2008.

The 2008 Water Allocation Study found that population growth over the next few decades makes water short-

ages and conflict more likely in North Carolina but that lack of clear scientific knowledge of the state’s water resources makes it difficult to project where and when water demand might outstrip supply. The report concluded that the state should begin right away to lay the groundwork for projecting where water shortages will occur and for making sure those localities understand the limits of their resources and respond by increasing supply or reducing demand. The report made a number of recommendations to put North Carolina in a more secure water supply position.

The Water Resources Policy Act of 2009

In the 2009 session of the General Assembly, Senator Daniel Clod-

felter introduced S 907 The Water Resources Policy Act of 2009 which would have implemented the Water Allocation Study recommendations. It would have:

- established the waters of the state as a public trust resource to be managed efficiently and productively and protected groundwater levels and instream flows for ecological integrity;
 - established “reasonable use” as law, established the legality of water use on non-riparian lands, and provided legal certainty for permitted water withdrawals;
 - established a statewide water withdrawal permitting system;
 - directed the development, approval
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al and implementation of hydrologic models capable of supporting water use planning for each basin;

- provided for river basin planning organizations;
- provided a process for dealing with over-allocated basins;
- provided for expedited permitting for water supply reservoirs in certain circumstances; and
- provided for financial review of public water and wastewater systems in order to promote efficiency and sound operation.

The legislation proposed a new way of thinking about water as a resource and a dramatically new approach to water supply planning. Neither S 907 nor its companion bill H 1101 made it out of its chamber of origin.

Short session implements modified provisions of Water Resources Policy Act of 2009

During the short session of the 2009-2010 General Assembly, several bills were passed that will implement, with some modifications, some provisions of the comprehensive water policy bill resulting from the Water Allocation Study as well as related recommendations of the Legislative Study Committee on Water & Wastewater Infrastructure. Following are some highlights of those bills:

H 1743 (SL 2010-143) Improve River Basin Modeling. This law is directed at improving knowledge of the state's water resources. It directs the Department of Environment and Natural Resources to develop hydrologic models for all 17 major river basins. The models are to include surface and ground waters and be capable of simulating the flows of surface waters to predict the places, times, frequencies and intervals at which yield may be inad-

equate to meet all needs and all essential uses or at which ecological flows may be adversely affected.

Ecological flows are defined as those necessary to protect ecological integrity, defined as "the ability of an aquatic system to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to prevailing ecological conditions and, when subject to disruption, to recover and continue to provide the natural goods and services that normally accrue from the system." DENR is directed to characterize the ecology in the different river basins and identify the flow necessary to maintain ecological integrity and to create a Science Advisory Board to assist in characterizing the natural ecology and identifying the flow requirements.

Hydrologic models are to be developed first where basins or portions of basins are likely to experience water shortages or where ecological flows are likely to be threatened. Models are to be presented to the N.C. Environmental Management Commission, and the EMC must take public comment on the model before considering approval. A hydrologic model is NOT considered a rule. Models are not to be developed by DENR if existing models are found to meet the requirements of the law.
<http://www.ncleg.net/Sessions/2009/Bills/House/PDF/H1743v7.pdf>

H 1744 (SL 2010-151) Modify water funding priorities. This law is aimed at water efficiency and infrastructure maintenance and applies to state loan and grant water and wastewater infrastructure projects. It modifies the criteria by which applications for loans and grants are ranked to provide incentives for repairing leaking waterlines to accomplish water use efficiency and for an asset management program that maximizes the efficiency, reliability and value of the assets.

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It provides that projects that have high unit costs have priority over those that don't and provides that high-unit-cost project priority be set using a sliding scale based on the amount by which the projected water or water/sewer rate exceeds a certain percentage of median household income. It gives priority to projects that provide for regionalization—if feasible, aim to avoid a local supply conflict; or adopt conservation measures more stringent than state requirements.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1744v5.pdf>

H 1746 (SL-2010-144) Water infrastructure information needs. This law is aimed, first, at simplifying and integrating water and water funding information. It directs the Department of Environment and Natural Resources to establish a task force to decide what additional information is needed to assess the state's water and wastewater infrastructure needs and to plan how to integrate information from the U.S. EPA's needs survey into the state water supply plan. The law also takes a first step toward making state government more active in identifying and challenging public water and wastewater systems that are not adequately investing in their water infrastructure. It directs DENR and the Local Government Commission of the Department of State Treasurer to determine if there are benefits of monitoring the financial conditions of public water and wastewater systems.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1746v6.pdf>

H 1747 (SL 2010-150) Water Supply System Capacity Planning. This law is aimed at improving local water supply planning. It amends the requirements for local water supply plans to require that local governments and

Kelly Porter embarks on new life adventure

Kelly Porter, who has been WRRRI's Environmental Education and Communications Coordinator for nearly seven years, has left the institute to move with her new husband to Knoxville, TN. Kelly was married on August 28 to Dr. Thomas R. Terrell who is joining the faculty at the University of Tennessee College of Medicine.

A graduate of the forestry programs at State University of New York and N.C. State University, Kelly joined WRRRI in October 2003. Prior to joining WRRRI, she was Internet and Communications Specialist with Triangle Solutions, Inc. in Raleigh. From 1999-2000, she worked with the N.C. Division of Soil and Water Conservation (DSWC) as Environmental Specialist, assisting in implementing the Conservation Reserve Enhancement Program.

At WRRRI Kelly has handled a host of duties, including organizing the institute's Annual Conference, seminar series, erosion and sedimentation control workshops, workshops for the N.C. Division of Water Quality, and NCWRA luncheon forums. She has also coordinated the activities of the Urban Water Consortium and Stormwater Group and helped manage the institute's annual call for proposals and research project selection. She also managed the WRRRI list serv, website, and newsletter. During periods of transition between directors, Kelly steadied the institute with her dedication and composure. She will be sorely missed.

Kelly and Tom are very active church members and avid hikers. Tom is a former college basketball player and a sports medicine specialist who conducts research related to concussions in athletes. We wish them great joy in their new life.

large community water systems submit a revised water supply plan that specifies how the water system intends to address foreseeable future water needs when eighty percent (80%) of the water system's available water supply based on calendar year average daily demand has been allocated to current or prospective water users or the seasonal demand exceeds ninety percent (90%).

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1747v4.pdf>

H 1748 (SL 2010-149) Conserve and protect ag water resources. This law is aimed at developing practices (presumably storage) to meet peak demands for irrigation and livestock

watering when stream flows are low. It directs DENR and the Department of Agriculture and Consumer Services to work with the Farm Bureau Federation and other agricultural organizations as well as farmers to identify and report agricultural water infrastructure needs, to encourage water conservation and protection methods, and to design a cost-share program to help farmers and agricultural landowners who implement BMPs to conserve and protect agricultural water resources.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1748v5.pdf>

Environmental legislation passed in the 2010 Session of the N.C. General Assembly

In addition to legislation related to the Water Allocation Study, the following environment-related legislation was passed during the 2009-2010 Short Session of the N.C. General Assembly.

H 972 (SL 2010-176) AN ACT TO CREATE THE UWHARRIE REGIONAL RESOURCES COMMISSION AS A PERMANENT BODY CORPORATE OF THE STATE TO FOSTER ECONOMIC DEVELOPMENT AND PROTECT AND ENHANCE THE NATURAL RESOURCES OF THAT REGION. Creates the Uwaharrie Regional Resources Commission with the authority to (among other things) “pursue efforts directed at the equitable distribution of water for public purposes.” The commission is given powers and authorities that would enable it to hold the Federal Energy Regulatory Commission license for the Yadkin River hydropower facilities currently operated by Alcoa Power Generating Inc. and to hire subcontractors to operate the facilities.
<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H972v4.pdf>

H 1710 (SL 2010-15) AN ACT TO PROVIDE AN EXPEDITED PROCESS BY WHICH THE MARINE FISHERIES COMMISSION MAY SUPPLEMENT FISHERY MANAGEMENT PLANS.
<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1710v4.pdf>

H 1713 (SL 2010-13) AN ACT TO PROVIDE THAT EACH FISHERY MANAGEMENT PLAN MUST SPECIFY TIME PERIODS FOR ENDING OVERFISHING AND ACHIEVING A SUSTAINABLE HARVEST AND INCLUDE A STANDARD OF AT LEAST FIFTY PERCENT PROBABILITY OF ACHIEVING A SUSTAINABLE HARVEST.
<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1713v3.pdf>

H1670 (SL 2010-87) SPEAKER’S APPOINTMENTS

Donnie Brewer of Pitt County appointed to the Environmental Management Commission for a term expiring June 30, 2012. **Charles E. Johnson** of Pitt County and **Karen Cragnolin** of Buncombe County appointed to the North Carolina Clean Water Management Trust Fund Board of Trustees for terms expiring July 1, 2014. **John Garrou** of Forsyth County and **Jerry Wright** of Currituck County appointed to the Clean Water Management Trust Fund Board of Trustees for terms expiring July 1, 2014. **Jerry O. Pearce** of Wake County appointed to the North Carolina On-site Wastewater Contractors and Inspections Certification Board for a term expiring July 1, 2013. **Robert L. Epting** of Orange County and **Ashley B. Futrell, Jr.**, of Beaufort County appointed to the North Carolina Parks and Recreation Authority for terms expiring July 1, 2013. **Constance Adams** of Burke County appointed to the North Carolina Board for Licensing of Soil Scientists for a term expiring June 30, 2013. **John Howard Boyette, Jr.**, of Wilson County and **Paul Weller** of Durham County appointed to the Well Contractors Certification Commission for terms expiring June 30, 2013. **Lois Winstead** of Person County appointed to the Natural Heritage Trust Fund Board of Trustees for a term expiring December 31, 2015. **William R. (Russ) Davis** of Wilson County appointed to the North Carolina On-Site Wastewater Contractors and Inspectors Certification Board for a term expiring July 1, 2012. **Glenn Hines** of Currituck County appointed to the North Carolina On-Site Wastewater Contractors and Inspectors Certification Board for a term expiring July 1, 2013. The **Honorable Loretta Clawson** of Watauga County appointed to the North Carolina Parks and Recreation Authority for a term expiring on June 30, 2013. **Kevin D. Davidson** of Wake County appointed to the North Carolina Board for Licensing of Soil Scientists for a term expiring June 30, 2011, to fill the unexpired term of Edward Hearn.
<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1670v6.pdf>

H 1765 (SL 2010-155) AN ACT TO AUTHORIZE COALITIONS OF LOCAL GOVERNMENTS TO JOINTLY IMPLEMENT WATER QUALITY PROTECTION PLANS FOR THE FALLS LAKE WATERSHED; TO PROVIDE THAT AN APPLICANT FOR AN INTERBASIN TRANSFER CERTIFICATE SHALL PAY THE COSTS ASSOCIATED WITH ALL REQUIRED PUBLIC HEARINGS; TO CREATE A TEMPORARY, STREAMLINED INTERBASIN TRANSFER CERTIFICATION PROCESS FOR INTERBASIN TRANSFERS IN THE CENTRAL COASTAL PLAIN CAPACITY USE AREA AND INTO ISOLATED RIVER BASINS; TO AUTHORIZE THE ENVIRONMENTAL REVIEW COMMISSION TO STUDY CERTAIN CONDITIONS ON INTERBASIN TRANSFERS; AND TO PROVIDE THAT BENEFICIAL REUSE OF WASTEWATER INCLUDES CERTAIN FACILITIES THAT REQUIRE RELOCATION OF A DISCHARGE FROM ONE RECEIVING STREAM TO ANOTHER.
<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1765v7.pdf>

H 1766 (SL 2010-180) AMEND ENVIRONMENTAL LAWS 2010

Among the provisions are: (1) Repeals the requirement that remedial action plans for groundwater contamination be recorded in the
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register of deeds office and modifies the requirement that remedial action plans be placed in each public library in the county. (2) Reestablishes the surface water identification training and certification program in the N.C. Division of Water Quality as a component of the riparian buffer protection program but provides no specific funding for the program. (3) Amends existing requirements for annual reporting to customers on performance of wastewater treatment systems to provide that the requirement applies only to systems having an average annual flow greater than 200,000 gallons per day. (4) Increases civil penalties under G.S. 143-215.112 (d) (1a) from \$10,000 to \$25,000 per day for continuing violations to conform with changes made in S.L. 2007-296. (5) Changes the name of the North Carolina National Park, Parkway and Forests Development Council to the Western North Carolina Public Lands Council and makes changes to council membership. (6) Provides that to be considered in compliance with local government water shortage response plans, car washes must have a program that results in a reduction of 20% or more in average water use per vehicle. (7) Amends enforcement procedures related to civil penalties assessed under the Drought Management Preparedness and Response Act and clarifies that the proceeds of such civil penalties go to the Civil Penalty and Forfeiture Fund. (8) Amends designation of the members of the Sedimentation Control Commission to provide that the designee for a North Carolina public utility company be a “representative” rather than president, vice-president or general counsel. (9) Amends the notice requirements for cities, counties, sanitary districts and water and sewer authorities when imposing or increasing certain fees or certain charges. (10) Provides that the prohibition by the Environmental Management Commission on any new or increased nutrient loading allocation to drinking water supply reservoirs applies to *impaired* drinking water supply reservoirs. (11) Directs certain state agencies to review their planning and regulatory programs and recommend whether those programs should include consideration of the impacts of global climate change. (12) Requires all public agencies to recycle all spent fluorescent lights and mercury thermostats, requires the removal of all fluorescent lights and mercury thermostats from buildings prior to demolition, and bans mercury-containing products from unlined landfills. (13) Authorizes the Environmental Review Commission to study the penalties applicable to violations of G.S. 130A-309.10 (Prohibited acts related to packaging; coded labeling of plastic containers required; disposal of certain solid wastes in landfills or by incineration prohibited.) (14) Provides that local governments and large community water systems shall require separate meters for new in-ground irrigation systems connected to their systems on lots platted and recorded in the office of the register of deeds in the county or counties in which the real property is located after July 1, 2009. (15) Prohibits the use of high content arsenic glass beads in paint used for pavement marking. (16) Provides that traditional country stores (in continuous operation for at least 75 years) may sell uncooked sandwiches that require minimal preparation. (17) Provides that the current statutory nutrient offset fee schedule expires September 1, 2011. (18) Makes a technical correction to the definition of “notebook computer” in SL 2010-67 on recycling of computer equipment. (29) Delays the effective date of the Clean Coastal Water and Vessel Act from July 1, 2010, to April 1, 2011, limits the act’s application to only those areas designated No Discharge Zones by the U.S. EPA. (20) Clarifies the scope of research for the Coastal Wave Energy Research and Prototype Project authorized in the 2010 budget act to include “ecosystem functions and health of the ocean including, but not limited to, carbon budget, acidification, mercury, and nutrient issues.”

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1766v8.pdf>

H 1814 (SL 2010-63) AN ACT EXEMPTING CATAWBA COUNTY FROM COMPETITIVE BIDDING REQUIREMENTS WHEN LETTING CONTRACTS AUTHORIZED BY ITS BOARD OF COMMISSIONERS TO INCREASE ENERGY EFFICIENCY, AND TO AUTHORIZE THAT COUNTY TO ENTER INTO LEASES FOR THE SITING AND OPERATION OF RENEWABLE ENERGY FACILITIES FOR TWENTY YEARS WITHOUT TREATING IT AS A SALE AND WITHOUT GIVING NOTICE BY PUBLICATION.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H1814v4.pdf>

S 388 (SL 2010-4) AN ACT TO REMOVE CERTAIN GRANTS MADE UNDER THE AMERICAN RECOVERY AND REINVESTMENT TAX ACT FROM THE DEFINITION OF PUBLIC FUNDS FOR WHICH A CREDIT FOR INVESTING IN RENEWABLE ENERGY PROPERTY IS NOT AVAILABLE.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S388v5.pdf>

S 778 (SL 2010-186) AN ACT TO PROVIDE THAT AN ENVIRONMENTAL DOCUMENT UNDER THE STATE ENVIRONMENTAL POLICY ACT IS NOT REQUIRED IN CONNECTION WITH PROJECTS THAT RECEIVE PUBLIC MONIES IN THE FORM OF CERTAIN ECONOMIC INCENTIVES PAYMENTS.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S778v6.pdf>

S 836 (SL 2010-179) AN ACT TO: (1) CLARIFY LIABILITY FOR DAMAGES CAUSED BY THE DISCHARGE OF NATURAL GAS, OIL, OR DRILLING WASTE INTO STATE COASTAL FISHING WATERS OR OFFSHORE WATERS; (2) PROVIDE FOR THE REVIEW OF INFORMATION REQUIRED FOR A PROPOSED OFFSHORE FOSSIL FUEL FACILITY IN ORDER TO DETERMINE

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CONSISTENCY WITH STATE GUIDELINES FOR THE COASTAL AREA; (3) DIRECT THE COASTAL RESOURCES COMMISSION TO REVIEW EXISTING LAWS AND REGULATIONS THAT PERTAIN TO OFFSHORE ENERGY EXPLORATION AND PRODUCTION IN LIGHT OF THE EXPLOSION, SINKING, AND SUBSEQUENT DISCHARGE OF OIL FROM THE BRITISH PETROLEUM DEEPWATER HORIZON OFFSHORE DRILLING RIG; (4) DIRECT THE DEPARTMENT OF CRIME CONTROL AND PUBLIC SAFETY TO IMMEDIATELY REVIEW AND UPDATE THE STATE OIL SPILL CONTINGENCY PLAN IN ORDER TO PREPARE THE STATE IN THE EVENT THAT OIL DISCHARGED FROM THE BRITISH PETROLEUM DEEPWATER HORIZON OFFSHORE DRILLING RIG IS TRANSPORTED BY CURRENTS OR OTHER MECHANISMS TO THE NORTH CAROLINA COAST; AND (5) DIRECT THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES TO REVIEW LIMITATIONS ON RECOVERY BY THE STATE FOR DAMAGE TO PUBLIC RESOURCES AND FOR THE COST OF OIL OR OTHER HAZARDOUS SUBSTANCE CLEANUP ESTABLISHED PURSUANT TO G.S. 143-215.89.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S836v7.pdf>

S 886 (SL 2010-195) AN ACT TO AUTHORIZE THE ESTABLISHMENT OF CLEANFIELDS RENEWABLE ENERGY DEMONSTRATION PARKS IN THE STATE.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S886v7.pdf>

S 887 (SL 2010-67) AN ACT TO: (1) MODIFY THE COMPUTER EQUIPMENT RECYCLING PLAN REQUIREMENTS AND ASSOCIATED FEE IMPOSED ON MANUFACTURERS; AND (2) MAKE FURTHER SUBSTANTIVE, CLARIFYING, TECHNICAL, AND CONFORMING AMENDMENTS TO THE LAWS GOVERNING THE MANAGEMENT OF DISCARDED COMPUTER EQUIPMENT AND DISCARDED TELEVISIONS.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S887v6.pdf>

S 897 (2010-31) AN ACT TO MODIFY THE CURRENT OPERATIONS AND CAPITAL IMPROVEMENTS APPROPRIATIONS ACT OF 2009 AND FOR OTHER PURPOSES The "Budget Bill" includes the following provisions: Consolidates the N.C. DENR Customer Service Center, Division of Pollution Prevention and Environmental Assistance and Small Business Ombudsman into the new Division of Environmental Assistance and Outreach. ** Consolidates the N.C. Office of Environmental Education and the DENR Office of Public Affairs into the new Office of Environmental Education and Public Affairs. ** Provides that a Dam Evaluation Fee of \$1,100 per dam unit shall be paid by electric utility companies to DENR to support a time-limited engineering position to perform evaluation and integration of regulated power plant dams into DENR's dam safety inventory program. ** Increases fees applicable to generators and transporters of hazardous waste and to hazardous waste storage, treatment and disposal facilities. ** Increases the administrative cap for the inactive hazardous waste sites program. ** Directs that the Division of Waste Management and the Division of Environmental Assistance and Outreach shall monitor plastic bag use reduction resulting from the law requiring plastic bags used by retailers to be recyclable and report to the Environmental Review Commission by Jan 15, 2012. [The goal of the law is to have 25% of plastic bags recycled.] ** Directs the Division of Parks and Recreation to reclassify 7 vacant positions and fill them to provide support for new or expanding parks in the State Parks System. ** Prohibits DENR from collecting new fees during 2010-11 for parking at State Parks. ** Requires the State Energy Office to report by December 1 of each year to the Joint Legislative Commission on Government Operations on the program to manage energy, water and other utility use for State agencies and institutions of higher learning. ** Directs that the coastal demonstration wind turbines project authorized in 2009 begin operations no later than December 31, 2011. **Directs the UNC Coastal Studies Institute to form a consortium with engineering schools at NCSU, NC A&T, and UNC-Charlotte to study the capture of energy from ocean waves and to "to conceptualize, design, construct, operate, and market new and innovative technologies designed to harness and maximize the energy of the ocean in order to provide substantial power generation for the State." According to SL2010-31, "It is the intent of the General Assembly that North Carolina become the focal point for marine-based ocean research collaborations involving the nation's public and private universities." Wave energy research funding is listed among the Legislative Budget Priorities and UNC System is allocated \$2 million specifically for the research.

S 900 (SL 2010-152) THE STUDIES ACT OF 2010.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S900v7.pdf>

Provides that the Legislative Research Commission may study, among other things, (1) Consolidation of State Agencies and Departments, (2) Fur-Bearer and Fox Management, (3) Ownerless Dogs and Cats, Commercial Dog Breeding, (4) Consolidation or elimination of State Boards and Commissions. ** Provides that the Environmental Review Commission may study (1) the Impact of Environmental Toxins on Human Health, (2) the costs and benefits of improving water quality in reservoirs, rivers, and other water resources shared by local governments, (3) Oil and Gas Exploration in the Triassic Basin, (4) Issues Related to the Use and Storage of Reclaimed Water, including

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Duke-UNC-WRRRI Water Allocation Research Seminar (WARS)

Seminar details Georgia's response to court ruling on Lake Lanier water allocation

In a WARS seminar in June, Katie Kirkpatrick, Vice President for Environmental Affairs with the Metro Atlanta Chamber of Commerce, described the State of Georgia's response to a potential water supply crisis brought on by a judge's ruling in an interstate dispute over water from Lake Lanier.

The potential crisis

Half of the population of Georgia dwells in the headwaters of two major interstate river systems: the Alabama-Coosa-Tallapoosa (ACT) system and the Apalachicola-Chattahoochee-Flint (ACF) system. The metropolitan Atlanta area relies 99% on surface water, with most of it coming from Lake Lanier—a multipurpose Corps of Engineers project fed by the Chattahoochee and other smaller rivers. For more than a decade, Georgia has been at war with Alabama and Florida over the water resources of the Chattahoochee. Alabama relies on the Chattahoochee to cool two reactors at the Farley Nuclear Plant which

provides more than 20% of the state's electric power. Florida relies on the Apalachicola River (with which the Chattahoochee joins before it flows into the Apalachicola Bay) for freshwater to support endangered species and its shellfishing industry.

Disagreements among the three states and the Corps of Engineers over operation of Lake Lanier came to a head in 2007 when legal challenges were consolidated into one case and assigned to U.S. District Judge Paul Mangunson. In July 2009, Mangunson ruled that water supply was not one of the original purposes of Lake Lanier and that water supply withdrawals approved by the Corps exceed its authority. Judge Mangunson ruled that if a solution cannot be found by 2012, then water supply withdrawals must decrease to where they were in the mid-1970's. According to Kirkpatrick, that would mean withdrawals for water supply from Lanier would drop by 95% and the economic output of the Metro Atlanta region would decrease by \$25 to \$39 billion, with attendant

decrease in investment and growth, property value and quality of life.

The response

Georgia Governor Sonny Purdue's strategy for dealing with crisis was to (1) appeal the ruling, (2) negotiate with Alabama and Florida, (3) ask the U.S. Congress to approve the existing withdrawals, and (4) prepare a time-driven action plan prioritizing specific options for conservation, supply enhancement, and water policy in case the first three failed. Governor appointed a Water Contingency Task Force to prepare the contingency plan. With participation of the Georgia Water Alliance—representing 40 industry, business and agricultural organizations, water authorities and the conservation community; with more than \$2 million in pro bono legal work; and with staff support from state agencies, the Metro Atlanta Chamber and other chambers, the task force—in 90 days—assessed the situation and options for meeting water supply needs under the potential

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aquifer storage of reclaimed water, (5) Gas Leases in the Central Shale Belt, (6) Carbon Sequestration Potential of Natural and Working Landscapes and Other Carbon Offset Opportunities. ** Provides that the Joint Legislative Program Evaluation Oversight Committee may study the number of decisions rendered by administrative law judges that are overturned as a final agency decision. ** Provides that the Joint Legislative Administrative Procedure Oversight Committee may study the impact of exempting the Wildlife Resources Commission and the Marine Fisheries Commission from the legislative disapproval process under the Administrative Procedure Act. ** Directs the Division of Marine Fisheries to study the Fishery Management Plan development process. ** Establishes the Wood and Biomass Strategic Working Group (see H 2009 - <http://www.ncga.state.nc.us/Sessions/2009/Bills/House/PDF/H2009v1.pdf>)

S 1259 (SL-157) AN ACT TO DELAY THE EFFECTIVE DATE OF THE RULE TO CHANGE THE WATER QUALITY CLASSIFICATION OF BOYLSTON CREEK AND TO PROVIDE FOR ADDITIONAL OPPORTUNITIES FOR PUBLIC DISCUSSION OF THE RULE.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S1259v4.pdf>

S 1337 (SL 2010-154) AN ACT TO REQUIRE TRAINING OF OPERATORS OF UNDERGROUND STORAGE TANKS IN ORDER TO COMPLY WITH A REQUIREMENT OF THE FEDERAL ENERGY POLICY ACT OF 2005.

<http://www.ncga.state.nc.us/Sessions/2009/Bills/Senate/PDF/S1337v7.pdf>

Study investigates user perception and expert judgment of water quality in North Carolina lakes

Is a lake or river classified by the state for “primary recreation” actually suitable for swimming, water skiing or canoeing? Is a reservoir designated for water supply actually suitable for use as drinking water? That is, does the water body support its “designated use”?

The N.C. Division of Water Quality (DWQ) determines “use attainment” by comparing the results of sampling to water quality standards—quantitative measures of parameters such as dissolved oxygen, clarity, etc. However, some water quality standards—chlorophyll a, for instance—are imperfect in that there is not good agreement about what measure actually indicates use attainment. Disagreement about water quality standards between those who manage water resources and those who use them can lead to conflict. Therefore determining which water quality parameters are the best predictors of designated uses is important, as is understanding user perception of water quality.

The study

To investigate user perception of water quality, researchers at Duke University and the University of Toronto collected information from a sample of people using a particular lake. Once during the summer of 2005, they conducted user surveys at Jordan Lake, Lake Phelps, High Rock Lake, Kings Mountain Lake and Santeetlah Lake. They conducted multiple surveys at Falls Lake. They timed their surveys to coincide with sampling of most of the water bodies by DWQ. (The survey at High Rock Lake was not usable).

Pretesting of their survey had revealed that recreational users of lakes were, in general, not able to link non-recreational uses—such as drinking water supply—to the lakes. Therefore the investigators confined their survey to recreational uses and focused it on water clarity since that is one of the most important eutrophication symptoms affecting recreational lake users. They asked a number of questions includ-

ing: What are you using the lake for today? How clear is the water? What is the color of the water? What is the condition of the lake in regard to algae? and, What is the condition of the lake in regard to sedimentation.

To meet the objective of determining which water quality parameter or parameters best predict designated use attainment, the investigators conducted “expert elicitation”—a systematic procedure for extracting subjective judgments from experts. Water quality experts from the coast to the mountains volunteered their time to participate in the elicitation. The investigators provided the experts water quality data from the lakes in a particular region and asked them for their judgment on the extent of eutrophication and designated use attainment. They then used a combination of water quality data and expert elicitation data to parameterize structural equation models to find better predictors of use attainment.

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reduction of Lake Lanier supply.

The conclusion was that with the proposed reduction in Lake Lanier withdrawals, the region would be short 280 million gallons per day and that the gap in water supply could not be filled by 2012. With a \$3 billion investment, the gap might be closed by 2015 with extensive indirect potable reuse. An extension of the judge’s stay to 2020 would provide Georgia a more realistic timeframe to meet its water supply needs, but it would still be expensive (\$2.3 billion). Under any scenario, in five years Atlanta would have the highest water rates in the United States.

Kirkpatrick said that all scenarios included aggressive conservation measures but that analysis of the

potential for conservation showed that conservation alone could not fill the gap, as some had claimed it could. She said that Atlanta already has lower per capita water use than many large metro regions. Kirkpatrick’s Powerpoint presentation is at:

http://sogweb.sog.unc.edu/Water/images/c/c2/KirkpatrickNC_WARS_062210.pdf

Editor’s Note: According to a recent analysis by the Congressional Research Service, there are 44 Corps reservoirs not originally authorized for water supply at which the Corps has reallocated water from original reservoir purposes to water supply. Congress has given the Corps the discretion to reallocate up to 15% (or 50,000 acre feet) of a reservoir’s storage

for water supply without its approval. Judge Mangunson found that the Corps has reallocated 21% of Lake Lanier’s usable storage without Congressional approval. (Kerr Lake on the NC-VA line is a Corps project not originally authorized for water supply. There the Corps has used its discretion to reallocate less than 1% of the storage for water supply.)

*The CRS report describes a situation in which the Corps reallocated more than 50,000 acre feet of storage space at Lake Texoma (TX/OK) from hydropower to water supply without Congressional approval after stakeholders worked out a compensation arrangement for lost hydropower. **Using Army Corps of Engineers Reservoirs for Municipal and Industrial Water Supply: Current Issues Jan 2010** <http://www.fas.org/sgp/crs/misc/R41002.pdf>*

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Results of user surveys

- At Falls Lake, surveys revealed that most users planned to be immersed in the water in some way during their visit. Most agreed or were neutral when presented with the statement “The conditions of the lake are perfect for my use today.” Few users (less than 10%) felt that the condition of the lake was hindering their use or enjoyment of the lake. In response to a question about the condition of the lake regarding algae, most gave answers that indicated they would have called the lake mesotrophic while a large number would have rated it eutrophic. Less than 5% would have called it hypereutrophic or worse. When users were asked to assess clarity most were neutral or disagreed that “The water of the lake is crystal clear today.”
- At Jordan Lake more than half the users surveyed thought the water quality was acceptable. Less than 10% thought the water quality was fair or poor. Most agreed or were neutral when asked if conditions were perfect for their use. They assessed the trophic status to be either mesotrophic or eutrophic, and largely disagreed that the water was crystal clear.
- At Kings Mountain Reservoir, the majority of users rated lake conditions acceptable or very good, with some rating it excellent. Users largely agreed that the condition of the lake was perfect for their use. More than half the users thought the lake was mesotrophic. The majority responded that they were neutral regarding the statement “The water of the lake is crystal clear today.”
- At Phelps Lake, the vast majority of users believed the water quality was excellent or very good. Users overwhelmingly agreed that the conditions of the lake were perfect for their use. They assessed the lake to be mesotrophic or oligotrophic and more than half responded that they agreed or agreed completely

that the lake was crystal clear.

- At Santeetlah Lake, users largely believed that the water quality was either excellent or very good. The majority agreed or agreed completely that the conditions of the lake were perfect for their uses. More than half assessed the trophic status as oligotrophic, with decreasing numbers assessing it as mesotrophic or eutrophic. A little over half agreed or completely agreed that the lake was crystal clear.

Results of expert elicitation and modeling

The investigators created multiple structural equation models that linked water quality data to expert judgment on eutrophication and designated uses. They created separate models for primary contact recreation and secondary contact recreation for different ecoregions and for the entire state. In all they created more than 350 models to evaluate which parameters are most predictive of designated use. The total phosphorous model performed consistently well across ecoregions and the entire state. The researchers note that, although a response variable, such as Secchi depth or chlorophyll a, may be closer to the designed use in terms of the effects of eutrophication impairments, the performance of the response variable models was not as strong as the causal variables. They also note that North Carolina lakes are phosphorous limited and that there are no collection and analysis problems with total phosphorous. They, therefore, recommend that the state consider a statewide total phosphorous criterion for use attainment determination.

Evaluating Eutrophication-Related Water Quality Parameters in North Carolina Lakes and Reservoirs. Melissa A. Kenney, Kenneth H. Reckhow and George B. Arhonditsis. Report Number 385 of the Water Resources Research Institute of the University of North Carolina. January 2007. <http://repository.lib.ncsu.edu/dt/bitstream/1840.4/4115/1/NC-WRRRI-385.pdf>

Digest

N.C. counties to face high risk of water shortages. According to a new analysis, performed by consulting firm Tetra Tech for the Natural Resources Defense Council (NRDC), one-third of all counties in the lower 48 states will face higher risks of water shortages by mid-century as the result of global warming. More than 400 of these counties will face extremely high risks of water shortages. In North Carolina, counties thought to face high risk of water shortages due to climate change are Mecklenburg, Martin, New Hanover, Robeson, Iredell, Catawba, Lincoln, Cabarrus, Davidson, Randolph, Forsyth, Johnston, Harnett, and Pitt. Other North Carolina counties are said to face moderate risks. A fact sheet about the study and a link to the Google Earth overview of counties are at <http://www.nrdc.org/globalWarming/watersustainability/>

Texas’s approach to nutrient criteria. In June the Texas Commission on Environmental Quality (TCEQ) adopted numeric nutrient criteria for 75 reservoirs in Texas. According to a TCEQ news release, Texas is one of the leading states in evaluating water quality standards for individual water bodies. For the most recent revision, TCEQ devoted extensive effort to establish 119 tailored site-specific standards for aquatic life, dissolved oxygen, toxic criteria, and aquatic recreation. Other adopted changes provide expanded categories of recreational uses and provide more detail on assigning recreational uses. New criteria for nutrients were adopted to protect numerous reservoirs from potential excessive growth of aquatic

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vegetation and to address federal requirements. Revisions were also adopted to provide clarity on how water quality standards apply under different stream flow conditions and on how attainment of water quality standards is assessed using instream monitoring data. The changes were part of the state's Triennial Review of Water Quality Classifications and Standards. An executive summary of the changes is at: http://www.tceq.state.tx.us/assets/public/permitting/waterquality/standards/docs/WQS_Executive_Summary.pdf

A study report with recommendations for the Texas approach to setting nutrient criteria for use attainment can be read at:

<http://www.tceq.state.tx.us/assets/public/permitting/waterquality/attachments/stakeholders/pdf0104hand.pdf>

Kerr Lake 216 Study. *Operating Policies and Administrative Discretion at the John H. Kerr Project*, a report on a component of the study required for reallocating water storage at Kerr Lake, is available on the UNC Water Wiki. The study was conducted by a team at UNC-Chapel Hill. It "identifies, reviews and summarizes current operating and administrative procedures at the Kerr Project as well as approaches and constraints to changing these procedures. This part of the 216 study will be used, along with information gathered for the other identified areas of interest, to evaluate the impacts and feasibility of implementation of any recommended changes to the operation or structure of John H. Kerr Dam."

<http://sogweb.sog.unc.edu/Water/images/a/ae/>

[FinalReportKerr216DiscretionaryAnalysis.pdf](#)

Events

North Carolina Water Resources Association Forum

Monday, September 13, 2010

Incorporating the Value of Ecosystem Services and Uncertainty into Water Supply Planning

Speaker: Douglas J. MacNair, PhD, Vice President, ENTRIX

Information and registration form at:
<http://www.ncsu.edu/wrri/events/ncwra/index.html>

Upcoming NCWRA forums:

Monday, December 6, 2010- Ecological Flow

February 7, 2011 – NPDES MS4 Permit Guidance

March 22, 2011 Symposium – Falls Lake Nutrient Management

Water Allocation Research Seminars

September 10, 2010. Place and time TBD

Christophe Tulou, DC Director of the Environment, on Greening DC and Capturing and Reusing Stormwater

October 29, 2010. Place and time TBD

David Welch, Director Division of Laboratory Services St. Johns River Water Management District, on "Water Management Districts in Florida, Ambient Monitoring Programs, Past Present and Future."

For updated information check:

[http://sogweb.sog.unc.edu/Water/index.php/Water_allocation_research_seminars_\(WARS\)](http://sogweb.sog.unc.edu/Water/index.php/Water_allocation_research_seminars_(WARS))

2011 WRRRI Annual Conference and NCWRA Symposium

March 22-23, 2011

Jane S. McKimmon Center, Raleigh, NC

More information will be available this fall at:
<http://www.ncsu.edu/wrri/conference/index.html>