North Carolina Department of Environment and Natural Resources
Division of Water Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John N. Morris, Director

Status Report:

Jordan Lake Water Supply Storage Allocation, Round Three
&
Cape Fear River Basin Water Supply Plan

August 31, 2001

On July 13, 2000, the Environmental Management Commission (EMC) directed the Division of Water Resources to open Round Three of Jordan Lake water supply storage allocations, concurrent with the completion of Round Two. The EMC further directed the Division to complete a Cape Fear River Basin Water Supply Plan and provide recommended Jordan Lake allocations to the Water Allocation Committee by September 2001.

The EMC took final action on Round Two allocations on July 12, 2001. Round Two will be complete once the contracts with Cary, Apex, Morrisville, Wake County and Holly Springs are signed. The Division has given a high priority to the Cape Fear River Basin Water Supply Plan and has made substantial progress. However, because of the complexity of the task, competing responsibilities and inability to fill vacant positions, we will not be able to provide you with the completed Plan and allocation recommendations for Round Three until October 2001. The following sections describe our progress on these projects and items to be completed by October 2001.

Because of the limited time available, we have relied solely on information in the Local Water Supply Plan database, the Jordan Lake allocation applications and in environmental impact statements. We will make all of the data we have used to develop the allocation recommendations, the Basin Water Supply Plan and the model scenarios used to evaluate our recommendations available for review and comment. We welcome suggestions by the EMC and interested parties to improve the data we use and our methodology.

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Jordan Lake Allocation Process – Items Completed

1. Received letters of interest, draft applications and final applications from the following water systems.

Applicant	Interest Indicated	Draft Application Received	Final Application Received	Current Allocation	Total Requested Allocation
Towns of Cary & Apex	09/27/2000	12/29/2000	05/31/2001	21.0	44.0
Chatham County	09/28/2000		05/31/2001	6.0	10.5
City of Durham	09/28/2000	12/22/2000	04/30/2001	0	20.0
City of Fayetteville	10/25/2000	01/03/2001	05/31/2001	0	*TBD*
City of Greensboro	*09/29/2000*	*dropped out on 01/05/2001*			
Harnett County	10/02/2000	04/03/2001	05/31/2001	0	18.0
Town of Holly Springs	10/02/2000	12/29/2000	05/31/2001	2.0	16.0
Town of Morrisville	10/11/2000	12/29/2000	05/31/2001	2.5	5.0
Town of Mount Olive	*10/06/2000*	*dropped out on 01/11/2001*			
Orange County		01/03/2001	05/31/2001	1.0	1.0
OWASA		12/31/2000	05/31/2001	10.0	5.0
Town of Pittsboro	*10/09/2000*	*included in Chatham's application*			
City of Sanford	10/11/2000	01/03/2001	05/29/2001	0	28.0
Town of Siler City	*12/19/2000*	*included in Chatham's application*			
Wake County - RTP	10/02/2000	12/29/2000	05/31/2001	1.5	5.5
			Totals	44.0	153.0

2. Reviewed draft applications in depth and replied to those applicants with comments and questions to help resolve uncertainties and to make the assumptions and methods used in the applications more uniform.

3. Received final applications. Using that data in the Cape Fear River Basin Water Supply Plan and to develop the 2050 model scenario.

Cape Fear River Basin Water Supply Planning Process – Items Completed

1. Developed master list of water systems to include in the Plan.
   a. Began with the 1997 Local Water Supply Plan database.
   b. Selected all systems that withdrew water from the Cape Fear River Basin above Lock & Dam #1, discharged water into the Basin above Lock & Dam #1, had any part of their service area in the Basin above Lock & Dam #1, or purchased water from a system withdrawing water from the Basin above Lock & Dam #1.
   c. Added any system not already in the master list, but that had submitted an application for a Jordan Lake water supply allocation.
   d. The water supply systems included in the plan total 91 in Rockingham, Guilford, Randolph, Alamance, Orange, Durham, Wake, Chatham, Montgomery, Moore, Lee, Harnett, Johnston, Cumberland, Hoke, Bladen, New Hanover, Brunswick and Columbus Counties.

2. Developed population projections for each system for the period 2000-2050.
   a. Used data from the 2001 Jordan Lake water supply storage allocation applications for the 11 systems that submitted applications.
   b. Used 1997 LWSP data for the remaining systems, or 1992 LWSP data for the five systems without 1997 LWSPs. Populations projected linearly, based on reported populations for 1992, 1997, 2000, 2010 and 2020.

3. Developed water use rates for each system.
   a. Used data from the 2001 Jordan Lake water supply storage allocation applications for the 11 systems that submitted applications.
   b. Used 1997 water use rates for the remaining systems, or 1992 water use rates for the five systems without 1997 LWSPs.

4. Developed water demand projections for each system for the 2000-2050 period.
   a. Used data from the 2001 Jordan Lake water supply storage allocation applications for the 11 systems that submitted applications.
   b. Multiplied the projected populations by the total per capita usage rates for the remaining systems.

5. Determined water supply withdrawals and wastewater discharges for each system.
   a. Determined withdrawal and discharge locations and quantities for each system, based on LWSP data and Jordan Lake applications. Added four new discharge locations to the Cape Fear River Basin Hydrologic Model.
   b. Determined water supply purchase and sale amounts, as well as wastewater interconnections and amounts.

6. Grouped water systems based on shared water supply sources or interrelated water supply systems for analytical purposes.

7. Determined whether each group of systems has sufficient water supply to meet the total projected water demands within that group.
   a. Available water supply based on reported safe yields for reservoirs, 20% of the 7Q10 for instream intakes, 12-hour pumping amounts for ground water sources, and any planned future supplies reported by the water systems.
   b. Adjusted water withdrawals such that no safe yield is exceeded while projected water demands for every water system are satisfied.

Cape Fear River Basin Hydrologic Modeling Process – Items Completed

1. Developed discharge projections for 2050.
   a. Determined ratios of total withdrawals to total discharges for each system, based on either 1997 or 2000 data.
   b. Projected future discharges based on future withdrawals.

2. Developed two scenarios for model runs to evaluate water supply alternatives.
   a. Used the 1998 base scenario previously developed. This scenario applies 1998 conditions to the 1930-1998 flow record.
   b. Developed a 2050 scenario based on data in the Cape Fear River Basin Water Supply Plan. This scenario assumes that current patterns of water use continue into the future.

3. Assigned all 2050 withdrawals and discharges developed in the Cape Fear River Basin Water Supply Plan to specific model nodes. Note that the 2050 scenario does not limit interbasin transfers beyond those limitations already imposed by existing certificates.

4. Added four discharge nodes to the model to account for discharges that are projected to expand beyond the 100,000 gpd threshold established for the model.

5. Developed model inputs for the 2050 scenario based on the following assumptions.
   a. Assumed that self-supplied industrial and irrigation withdrawals would remain constant.
   b. Cape Fear River Basin Water Supply Plan projected 2050 withdrawals and discharges.

Items to Accomplish by October

1. Develop a 2030 scenario to analyze potential Jordan Lake allocations for Round Three.

2. Complete analysis of final Jordan Lake applications, incorporating information from the model scenarios.
   a. Check population projections.
   b. Check water use rates.
   c. Confirm available supplies.
   d. In depth analysis of those applications for which we did not previously receive complete drafts (e.g., Chatham and Orange Counties).

3. Complete the Cape Fear River Basin Water Supply Plan.

4. Analyze all model results to confirm that the recommended allocations and the Basin Water Supply Plan are consistent.

5. Finalize staff Jordan Lake allocation recommendations.

6. Develop reports for the Cape Fear River Basin Water Supply Plan and Jordan Lake Water Supply Storage Allocation Round Three recommendations.