Framework for the
Cape Fear River Basin Water Supply Plan

Goals

1. To ensure that water supply users dependent on the Cape Fear River Basin have sufficient water supply available to meet their reasonable, projected needs through the Year 2050.
2. To ensure that Jordan Lake water supply storage allocations are made consistent with a long-term water supply plan for the Cape Fear River Basin.
3. To identify potential long-term water supply constraints and identify alternative approaches for meeting or managing long-term water needs in the study area.

Scope

- Water users projected to withdraw 100,000 gpd of water or more by the Year 2050 from the Cape Fear River Basin above Lock & Dam #1.
- Water users with a contract to purchase bulk water from a system withdrawing water from the Cape Fear River Basin above Lock & Dam #1.

Information Sources

- [Cape Fear River Basin Hydrologic Model](#)
    - Municipal, industrial and agricultural water use data developed for the model database.
- Local government water supply systems
    - Water supply systems included in the DWR Local Water Supply Plan database.
- Industrial self-supplied users
    - Additional industrial water users included in the DWR Water Withdrawal Registration database.
- Agricultural self-supplied users
    - Agricultural users included in the DWR Water Withdrawal Registration database.

Projection Method

- Total average daily demands will be projected through the year 2050.
- Local government systems involved in Jordan Lake Allocation Round 3
    - Demands will be based on their final Jordan Lake Allocation applications.
- Local government systems not involved in Jordan Lake Allocation Round 3
    - Demand projections will be based on linear extensions of their actual and projected service area populations, as well as actual usage rates in the DWR Local Water Supply Plan database.
- Industrial self-supplied systems
    - Demands will be projected based on available information.
- Agricultural self-supplied systems
    - Demands will be assumed to remain constant throughout the planning horizon. Agricultural water use is increasing on a per acre basis, but the number of acres in agricultural use is decreasing.

Projected Supplies

- Water supply sources will be identified for each system based on the information sources listed above.
- Reservoir sources will be used up to the limits of safe yield capacities.
- Stream sources will be used up to 20% of 7Q10.[1]
- Ground water sources will be used to the capacity of current facilities, except where expansions are already planned.
- Sources and withdrawals will be adjusted based on modeling results under various scenarios.

Modeling

- MIKE BASIN Cape Fear River Basin Hydrologic Model will be used for all scenarios.
- Base 1998 Scenario
  - The base model dataset will be used.
- 2050 Scenarios
  - Randleman Lake will be incorporated as described in the Randleman Lake EIS (June 1997 draft). Any systems identified during the analysis of the aforementioned information sources that are not represented in the base model dataset will be incorporated to the extent that information is available.
- Jordan Lake
  - Scenarios will include various allocation schemes.
- Cape Fear Regional Wastewater Facility
  - A regional WWTP discharging to the Cape Fear River will be incorporated as described in the *Final Environmental Impact Statement for RTP South and the Towns of Cary, Apex, and Morrisville in Wake County for the Increase in Interbasin Transfer from the Haw River Basin to the Neuse River Basin*.
- Basic Assumptions
  - Seasonal variations in withdrawal will remain the same for each system as in 1998 and the ratios of withdrawal to discharge will remain the same for each system. No new discharge points will be included beyond those presently existing or planned.
- Sensitivity Analyses
  - 2050 scenarios will include variations to determine the potential impacts of increased industrial withdrawals, increased agricultural withdrawals, and decreased ground water supplies.
- Impact Analyses
  - Model output will be evaluated to determine the impacts of various withdrawals on stream flows, the degree to which projected water supply demands are satisfied, and the reliability of various water supply sources under the various scenarios.

Refinement

- First Draft
  - We will present the results of our work, as described above, in September 2001.
- Initial Review
  - We will encourage stakeholders to review this draft and provide us with their feedback.

- Additional Development
    - Meanwhile, we will continue to develop new scenarios, incorporate any additional information, and consider any feedback from the stakeholders.
- "Final" Plan
    - Once the EMC's Water Allocation Committee is satisfied with our recommendations for Round Three of Jordan Lake water supply storage allocations, as well as the supporting Cape Fear River Basin Water Supply Plan, we will consider this iteration of the plan complete.
- Future Plans
    - We expect to revisit the Cape Fear River Basin Water Supply Plan at regular intervals, perhaps coordinated with the Cape Fear River Basinwide Water Quality Plan. We expect to expand the scope of the plan to include the entire Cape Fear River Basin and to develop additional, future scenarios. We hope to implement a more collaborative process with water users for developing the next iteration.

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[1] This assumption is based on 15A NCAC 01C.0504(3)(b)(ii), which requires environmental documentation for improvements to water treatment plants that involve 1,000,000 gallons per day or more added capacity, or design withdrawals equal to one-fifth or more of the 7Q10 of the contributing stream. Without an instream habitat study or environmental documentation, we will assume that a given withdrawal below the aforementioned threshold has an acceptable impact on a contributing stream. This rule of thumb is being used as a rough screening method only, and has no regulatory significance as a limit on water withdrawals. Greater withdrawals may certainly be possible from any given stream.

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