COUNTY OF DURHAM
ENGINEERING DEPARTMENT

May 15, 2007

Peter Caldwell
NCDENR – Water Quality Planning
1617 Mail Service Center
Raleigh, NC 27699-1617

Re: Comments on the April 2007 Draft "Phase 1 Total Maximum Daily Load for Nutrients in B. Everett Jordan Reservoir, North Carolina"

Dear Mr. Caldwell:

Durham County has reviewed the draft Jordan Reservoir Total Maximum Daily Load Draft of April 2007 (TMDL Draft). While we appreciate the efforts of the Division of Water Quality and the Environmental Management Commission to conserve this water-supply watershed and fully support that goal, the draft document's conclusions and strategies need to be revised in order to both achieve those goals, and conform to legal authority. Durham County is also concerned that the public comment period for the draft regulations in support of this initiative has not been specified, nor for the Nutrient Management Strategy (Strategy) to implement it. Even so, those regulations and implementing Strategy are intertwined with the TMDL Draft and occasionally demonstrate the unworkable natures of the TMDL Draft. As needed, those draft regulations are cited and addressed. Specific comments are as follows:

1. On page v, the note that "DWQ would protect existing riparian buffers" is inconsistent with the proposed regulations 15A NCAC 02B .0267 in which the local governments are responsible for protecting riparian buffers.
2. On page v, the note that "All local governments would meet NPDES Phase II stormwater requirements of S1210", is incorrect as all local governments, such as the County of Durham, are not covered by the Phase II requirements.
3. On page v, the note that "All local governments would achieve stormwater N and P export performance goals from all new and existing development" is incorrect. A performance goal has not been explicitly stated, although such an established load limit would be preferable. Instead a reduction percentage has been proposed with an indefinite time of compliance. The fundamental problem with this approach is explained more fully in comments number 14 and 15.

120 E. Parrish Street, Law Bldg., 1st Floor, Durham, N.C. 27701 (919) 560-0735 Fax (919) 560-0740
Equal Employment/Affirmative Action Employer

4. On page iv, the note that since both point and non-point sources in the Upper New Hope Arm must reduce nitrogen loads by 35% , this means "the burden for reductions ...is equally borne" fails to recognize and account for the difference in the ease, technologically and financially, in reducing loads from point sources, or the lack of hard data identifying the actual loads from nonpoint sources. Nor does it account for the differing loads from point sources located in rural and urban areas, as explained more fully in comment number 16.

5. Voluntary Measures Credit. The TMDL Draft and reduction Strategy does not include the statutorily mandated credit for voluntary measures to reduce point and non-point sources as is required by N.C.G.S. §143-215.8B(b)(2). Durham County has instituted voluntary non-point source measures including 50-foot undisturbed riparian buffers and 1-year 24-hour stormwater quantity controls in the Cape Fear River Basin.

6. Failure to Identify Best Management Practices, Financing, Necessary Time, Economic Impact, Social Impact and Environmental Impact. The Strategy generally fails to identify the "best management practices" (BMPs) which will achieve the stated NPS goals. Identification of these BMPs is required by 40 CFR 120.6(c)(4). The deficiency is particularly striking as 40 CFR Part 130.6(c)(6) requires the Plan to also identify measures associated with implementation of the Plan, including "financing, the time needed to carry out the plan, and the economic, social and environmental impacts of carrying out the plan."

7. Lack of Statutory Authority. The most significant legal deficiency in the Strategy concerns its proposals regarding new and existing developments. The Strategy will require Durham County to enact and enforce certain ordinances. There is no statutory authority for the Commission to impose such a requirement. Furthermore, such an act by an executive agency, as well as the Strategy's requirement that such ordinances be submitted to the Commission for review and approval, violates the separation of powers clause of our State's Constitution. The Commission would similarly be exceeding its authority in attempting to enforce any regulation adopted seeking to compel such action by the County for either new or existing developments.

8. Reductions at Existing Developments are dependent upon unconstitutional takings. As explained in the draft regulations, 15 NCAC 2B.0266 3(iv) the identified methods to achieve these reductions include retrofits at existing developments, removal of built upon areas, and treatment of runoff from existing developed areas. As there are no MS4s in these areas, these measures inherently depend upon the government taking private property in order to accomplish this goal. Such action is not within the authority to conduct takings provided to local governments in Chapter 40A of the North Carolina General Statutes.

9. Incomplete Nutrient Analysis. The TMDL Draft and Strategy were completed as a single media problem - water. This problem is also a problem of air quality. Air, with elevated levels of water soluble nutrients (nitrous oxides and ammonia), is washed during rain events. This polluted stormwater then falls directly into the lake and waterways, and onto the land producing nutrient enriched runoff. It must be noted that impervious surfaces, i.e. concrete, asphalt, etc., are not generating nutrients. The TMDL Draft and Strategy should have been completed including an atmospheric deposition evaluation, and considering the strategy of improved air quality.

10. Division of Water Quality (DWQ), Division of Environmental Health (DEH) and Division of Waste Management (DWM) Program Improvements to Reduce Nutrient Loading into Jordan Lake. There are permitting programs within DWQ, DEH, and DWM which should be improved to minimize the nutrient loads to Jordan Lake and which were not properly evaluated for controls. Recommended program improvements include:

- The locations of biosolids, septage, and industrial waste disposal areas within the watershed were not considered in the Draft TMDL and nutrient management strategy. In other watersheds, the disposal of biosolids and industrial waste have been shown to have impacts on the watershed nutrient load, i.e. the large fertilizer facility (near Winton) on the Chowan River, and the Raleigh WWTP biosolids disposal site on the Neuse River. Local governments are being required to implement point and non-point controls; however, programs which may have greater impacts were not evaluated and are not proposed for any load reduction. Local governments and the public have minimal knowledge and comment on these permits as there is no public notice or comment period on these permits. Groundwater monitoring data is available for some of these sites, and it does not appear that any of this data was reviewed as part of the TMDL. We recommend that these permitted uses be evaluated for nutrient load within the watershed, and that public notice and comment periods be provided for these DWQ and DWM issued permits.
- Requiring certified wastewater treatment operators for all (including single family) spray and drip irrigation systems, and all surface discharge systems (including single family sandfilter discharge) systems. These systems are currently permitted by DWQ and have a greater potential for failure than similar subsurface systems which have certified operator requirements. DWQ should either implement a certified wastewater treatment system requirement for these systems or transfer these permitting programs to DEH.
- Requiring and enforcing operational controls on all spray irrigation and drip irrigation systems to ensure waste is not applied when the soils are saturated or during rain events.

11. Riparian Buffers. The NPS Strategy includes a 50-foot buffer to intermittent and perennial streams for new development to be implemented by State regulation. The proposed strategy includes a Zone 1 and Zone 2 area, with specific allowed uses in each area. Control of the outer zone for limited use, especially in subdivisions, is difficult to ensure after initial development. Durham County has already adopted a 50-foot no-disturbance buffer to intermittent and perennial streams in the Cape Fear Basin. The Strategy should be revised to adopt a 50-foot no-disturbance buffer and also protect headwater ponds (and their linear wetlands) that have become disconnected from their original streams. The buffers and ponds provide nutrient trapping and reduce downstream sedimentation.

12. Jordan Lake's Hydraulics. The modeling of Jordan Lake indicates the impoundment acts as three distinct bodies of water, primarily due to the design of road crossings. This results in extremely long detention periods for discharges into the Upper New Hope Arm, with an associated potential for greater algal concentrations. As more than $750,000,000 is estimated for the costs of the proposed nutrient management strategy, design changes for the road crossings should be considered, modeled and implemented accordingly.

13. Existing Development Stormwater 35% Reduction Proposal Constitutes An Inequity between Rural, Suburban and Urban Areas. Urban areas with loading rates in excess of 10 pounds of nitrogen per acre per year will only be reducing to a 6.5 pounds of nitrogen per acre per year. Unincorporated areas of Durham County subject to this TMDL have an existing rate in the range of 3.4 pounds of nitrogen per acre per year, and will be asked to reduce the loading by thirty-five percent. Stormwater BMP costs are not specifically related to the load of nitrogen, but are related to the peak flow rates. Treating the high density sites and the low density sites to the same percent reduction standard costs the same for the same flowrates; however, the load reductions are greatly different. It is neither environmentally effective nor fiscally responsible to implement a single reduction percentage goal for areas with vastly different impervious surface coverages.

14. Existing Development Stormwater 35% Nitrogen Reduction Requirement. A single reduction standard of 35% reduction from the pre-existing load is inappropriate as it may result in requiring existing development to have nitrogen loading rates lower than new development. Specifically, Durham County has limited development and based upon preliminary evaluations has a nitrogen loading rate of approximately 3.4 pounds of nitrogen per acre per year for areas under Durham County jurisdictional control and in the Jordan Lake watershed. With a 35% reduction requirement, this load would be reduced to 2.2 pounds of nitrogen per acre per year. New development, however, would be allowed to have loadings of 4 and 6 pounds of nitrogen per acre per year by payment of a

one-time nitrogen offset payment. It is unreasonable to require the reduction for existing low loading rates land areas while specifically providing by state regulation for higher loading rates. Using this flawed logic, an offset payment should be allowed for existing development. Instead, we recommend that the existing development stormwater reduction requirements be set at either 4 and 6 pounds of nitrogen per acre per year loading rate or 35% reduction of the existing load.

15. Nitrogen Treatability. The splitting of nitrogen load reductions between point and non-point sources does not consider the following factors:

- Efficiency. Wastewater has a high level of nutrients and proven technologies (95% removal) for treatment are available. These treatment systems are compact (use minimal land area), and the wastewater to be treated is in a central conveyance system. The wastewater is also treated at a centralized location and effluent quality measured. In contrast, stormwater has low and highly variable nutrient loads. The treatment systems are relatively unproven with low efficiencies (40% removal maximum). The treatment systems are expansive (use large amounts of land area) and the stormwater is not in a central conveyance system. Effluent from stormwater best management practices does not have to meet specific limits, and effluent quality is not measured.
- Feasibility. The feasibility for reductions of point source loadings was considered and extended timeframes for compliance were provided. The feasibility for stormwater reductions for existing developments was not evaluated, and compliance periods have not been provided.
- Cost/Efficiency/Feasibility/Risk Analysis. A summary table derived from the information above and the cost estimates of the fiscal analysis is provided below:

	Wastewater	**Stormwater**
Cost	~$200,000,000	~$650,000,000
Efficiency	Good	Poor
Feasibility	Good	Poor
Non-Performance Risk	Minimal	Significant

Based upon the Cost/Efficiency/Feasibility/Risk Analysis, it is apparent that investment in wastewater treatment and reuse has the best potential for a favorable outcome. Therefore, greater loading reductions from point sources should be implemented and lower reduction requirements for inefficient and expensive stormwater treatment should be implemented.

If any clarification of our comments is necessary, please feel free to contact us at (919)560-0735. Thank you for providing us the opportunity to comment on this very important decision-making document.

Sincerely,

Glen E. Whisler, P.E.
County Engineer

cc: Mike Ruffin, County Manager
Wendell Davis, Deputy County Manager
Chuck Kitchen, County Attorney
Curtis Massey, Assistant County Attorney
Joseph Pearce, P.E., Stormwater and Erosion Control Division Manager

GEW/jld