OWASA

ORANGE WATER & SEWER AUTHORITY

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July 10, 2007

Dr. David H. Moreau, Chair
North Carolina Environmental Management Commission
1617 Mail Service Center
Raleigh, NC 27699-1617

SUBJECT: COMMENTS ON PROPOSED WATER SUPPLY NUTRIENT STRATEGY FOR B. EVERETT JORDAN RESERVOIR

Dear Dr. Moreau:

The Orange Water and Sewer Authority (OWASA) Board of Directors appreciates the opportunity to comment on the proposed Jordan Lake Nutrient Strategy and Rules. As you know, we provide water supply and wastewater services to approximately 80,000 people in the Carrboro-Chapel Hill community, including the University of North Carolina at Chapel Hill, and our Mason Farm Wastewater Treatment Plant discharges to Jordan Lake's Upper New Hope Arm.

One of OWASA's core values is environmental stewardship. We are proud of our proactive record in source water protection, innovative wastewater treatment, water conservation and demand management. In late 2008 our new water reclamation system will go into operation when the University of North Carolina at Chapel Hill begins using more than 500,000 gallons of highly treated wastewater per day for non-potable heating and cooling purposes on the University campus. This will increase to nearly two million gallons per day in the future, significantly reducing demands for OWASA drinking water and also decreasing our wastewater discharge to Jordan Lake.

As in the past, OWASA will do our part to protect this valuable regional resource and will comply with the nutrient reduction requirements that the Environmental Management Commission (EMC) adopts; but we respectfully offer several significant concerns and constructive suggestions about the proposed Nutrient Strategy and Rules.

High Costs and Uncertain Benefits

The NC Division of Water Quality's (DWQ) carefully documented *Fiscal Analysis* estimates that the Nutrient Strategy and proposed Rules will cost more than $900 million to implement. There is, however, broad scientific and professional consensus that the predicted response of

400 Jones Ferry Road
PO Box 366
Carrboro, NC 27510-0366

Voice (919) 968-4421
FAX (919) 968-4464
www.owasa.org

Jordan Lake to implementation of the Strategy and Rules remains highly uncertain. We urge the Commission to adopt and implement rules that will accommodate the notable uncertainty that continues to characterize most expert predictions of the lake's response.

Need for Flexibility and Adaptive Management

We urge the Commission to actively apply the principles of adaptive management, as provided for in Rule .0262, Section (7) to help ensure that Jordan Lake water quality management decisions are based on the best and most up to date experience and information. It is essential that the nutrient reduction goals and implementation schedule be re-visited at regular intervals of not more than five years in order to fully apply new and additional data, including water quality trend analyses from Jordan Lake and its main tributaries, as well as the ongoing practical experiences of local entities trying to reduce nutrient loads from many different point and nonpoint sources.

An October 15, 2004 technical memorandum from the Modeling and TMDL Unit of DWQ's Water Quality Branch reported a statistically significant trend of decreasing total nitrogen concentrations of 0.17 mg/L per year in New Hope Creek, a principal tributary to the Upper New Hope Arm of Jordan Lake. The analysis included 13+ years (January 1990 – March 2004) of ambient water quality data that were statistically adjusted for seasonality and streamflow. The report did not offer an interpretation or explanation of this significant improvement in water quality. Until this and other such existing trends can be identified and understood, it will be extremely difficult, if not impossible, to evaluate the future effects – if any – of the Jordan Lake nutrient management strategy and rules. The flexible and thoughtful application of adaptive management practices will help ensure that well-informed decisions are made with the best knowledge available.

Inadequate Standards and Criteria for Nutrient-Related Water Quality Problems

We urge the Commission and DWQ to support and carry out as expeditiously as possible the *North Carolina Nutrient Criteria Implementation Plan*, which has been approved by Region IV of the United States Environmental Protection Agency (USEPA). This document provides an important blueprint for overhauling the State's one-size-fits-all 40 *u*g/L chlorophyll *a* water quality standard, which is unnecessarily stringent for Jordan Lake's Upper New Hope Arm and may provide little or no protection of the public water supply and recreational uses of the Lower New Hope Arm.

OWASA's own University Lake and Cane Creek water supply reservoirs, whose drainage areas may be the most stringently protected WS-II watersheds in North Carolina, periodically exceed the chlorophyll *a* standard during the summer months, but few of our 80,000 drinking water customers or low-impact recreational users would consider either of these lakes to be "impaired." With no point source wastewater dischargers, mandatory large-lot (5+ acres) residential zoning, agricultural operators complying with individual conservation plans, and

more than 1,500 acres of land acquired by OWASA in fee simple ownership or permanent conservation easements, few, if any, additional management options exist for further reducing nutrient inputs to these reservoirs. With no State or Federal regulatory mandate, we have essentially established total maximum daily loads (TMDLs) for both lakes and implemented the most appropriate nutrient management strategies; yet both lakes continue to exhibit periodically high chlorophyll *a* concentrations and cyanobacteria episodes. Are these water bodies "impaired?" We don't believe they are; but we do believe that North Carolina's nutrient criteria and related water quality standards are in urgent need of substantial revision. DWQ's EPA-approved *Nutrient Criteria Implementation Plan* deserves the Commission's full support.

Need for a Jordan Lake Use Attainability Analysis

What if the Nutrient Strategy and proposed Rules are adopted, but they don't work?

Proposed Rules .0265 and .0266 require all local governments in the Jordan Lake watershed to develop stormwater management programs that will achieve and sustain reduced nutrient loads from new and existing development. If the feasibility studies required under the Rules determine that nutrient reduction targets for new and existing development are not attainable due to technical, economic, or administrative constraints, then the Jordan Lake TMDL will not be met and the strategy will be deemed a failure. Given the likelihood that this will be the outcome of most, if not all, of the local feasibility studies, we urge the Commission and DWQ to proceed immediately with a Jordan Lake *Use Attainability Analysis,* as authorized by the Clean Water Act for situations where TMDLs cannot be achieved. In the meantime, we urge the Commission to adopt a rational, realistic, and phased approach to implementing the nutrient reduction requirements.

Point Source Nutrient Reduction

OWASA's Mason Farm Wastewater Treatment Plant has been meeting total phosphorus removal requirements for nearly 20 years. In 2002 we decided to construct multi-million dollar deep bed filters that could remove total nitrogen to the current limits of technology as part of our next facility upgrade – even though OWASA was under no requirement to do so. Those improvements have been completed, and our treatment plant can now remove total nitrogen to the proposed target levels – at least until the plant reaches its new capacity of 14.5 million gallons per day. Additional energy and chemicals needed to achieve the proposed 2016 mass load limit for TN will cost more than $500,000 per year at our current wastewater flow rates, and well over $1 million per year in today's dollars when the plant reaches full capacity in the next 15 to 20 years. Without significant advances in TN removal technology, OWASA will not be able to achieve the proposed annual mass load limit when average day wastewater flows exceed 14.5 million gallons per day, and we may need to restrict additional connections to our wastewater system at that time.

Wastewater Plant Optimization

We encourage the Commission to clarify the text and intent of proposed Rule .0270 (5)(a), that requires the operation of existing wastewater plants to be optimized. Much of the wording of this section is identical to previous State guidance that required wastewater plants to optimize operations before constructing expensive nutrient reduction facilities. We believe that the Rule should also define and specify optimization requirements for wastewater plants, such as OWASA's, that have completed all or most of the capital improvements needed to achieve the nutrient reduction targets. This specification should provide adequate time to establish the realistic ranges of treatment plant operating conditions and process configurations needed to reliably achieve different degrees of nutrient removal. For example, OWASA will require additional time to fully evaluate the relative cost effectiveness of different carbon sources, such as methanol, acetic acid, sugar water, etc., needed to achieve denitrification in our new filter system. One of our goals is to maximize OWASA's reliance on biological treatment, rather than chemical addition, to achieve water quality goals. We urge the Commission to adopt rules with enough flexibility to ensure our customers that the millions of dollars they have already invested in capital improvements to our wastewater plant – and the millions of additional dollars they will spend to operate those new facilities for nutrient removal – will have the greatest likelihood of achieving measurable downstream water quality benefits.

Nutrient Reduction Trading and Offsets

OWASA supports and applauds the flexibility of proposed Rule .0269 that would allow wastewater dischargers to enter into compliance groups and to participate in nutrient trading and offset arrangements with both point and nonpoint source entities, such as municipalities, universities, and state agencies.

Compliance Date for Point Source TN Reduction

OWASA supports the proposed 2016 compliance date for total nitrogen reduction from point source dischargers. We do not believe that an earlier date will provide sufficient time and flexibility for the Commission to apply the adaptive management principles of Rule .0262 (7), but there may be merit to phasing in or gradually "ramping up" the TN reduction requirements with 2016 as the target date for full implementation. We note that an early compliance date would substantially limit the opportunities for wastewater dischargers and other local entities to earn and trade TN reduction credits through flexible arrangements that may be more cost effective than independent compliance by each individual entity.

Between now and the eventual point source compliance date, OWASA will continue pursuing and implementing cost-effective methods to further reduce our wastewater contribution to the Upper New Hope nutrient load.

We commend the State's efforts to protect Jordan Lake and we pledge OWASA's willingness to do our part in this ambitious initiative. Once again, we thank you for the opportunity to comment.

Sincerely yours,

Michael A. Clarke, Chairman
Board of Directors

cc: Hon. Moses Carey, Jr., Chair, Orange County Board of Commissioners
Hon. Mark Chilton, Mayor, Town of Carrboro
Hon. Kevin Foy, Mayor, Town of Chapel Hill
Ms. Laura Blackmon, Orange County Manager
Mr. Roger Stancil, Chapel Hill Town Manager
Mr. Steven Stuart, Carrboro Town Manager
Ms. Coleen Sullins, Water Quality Section Chief, Division of Water Quality (DWQ)
Mr. Rich Gannon, Chief Water Quality Planning Section, DWQ Planning Section
OWASA Board of Directors
Ed Kerwin, OWASA Executive Director