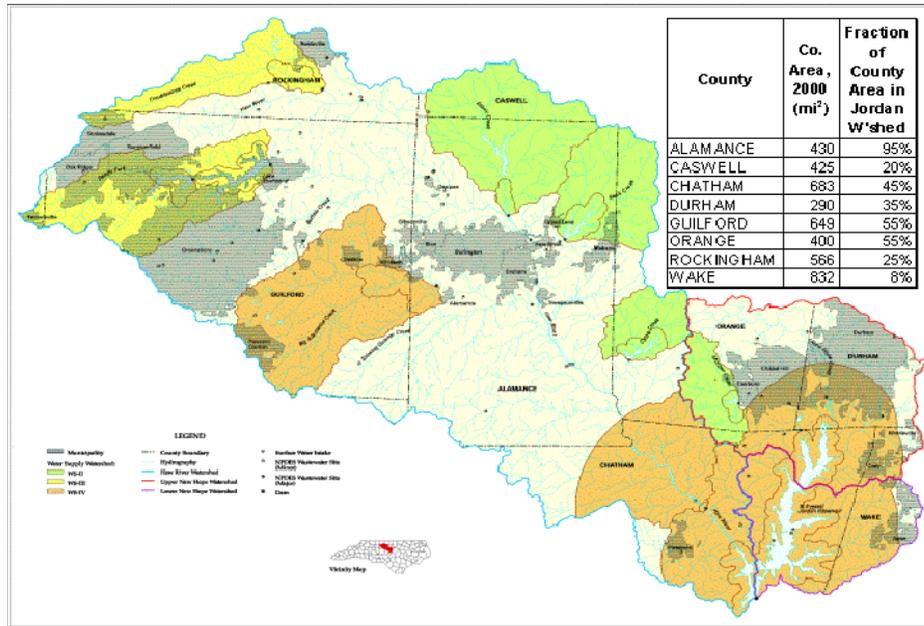


Report of Proceedings on Proposed Rules For the B. Everett Jordan Reservoir Water Supply Nutrient Strategy



**For the May 8, 2008 Meeting of the
NC Environmental Management Commission**

Public Hearings Held:

PUBLIC HEARING 1
 Location: Century Hall @ The Century Center
 100 N. Greensboro St.
 Carrboro, NC 27510
 Date: Thursday, July 12, 2007
 Time: 6:30 p.m.

<u>PUBLIC HEARING 2</u>	<u>PUBLIC HEARING 3</u>
Location: Koury Business Center, Room 101 Elon University 401 N. O'Kelly Ave. Elon, NC 27244 Date: Tuesday, July 17, 2007 Time: 1:30 – 4:00 p.m.	Location: Koury Business Center, Room Elon University 401 N. O'Kelly Ave. Elon, NC 27244 Date: Tuesday, July 17, 2007 Time: 6:30 p.m.

Prepared By:
N.C. Division of Water Quality, Planning Section & the Jordan Hearing Officers

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BACKGROUND

Jordan Reservoir Nutrient Enrichment Problem

Since its impoundment in 1983, the B. Everett Jordan Reservoir has consistently shown substantial nutrient over-enrichment, which leads to algal blooms and other water quality problems. The NC Environmental Management Commission (hereafter, the Commission) designated the reservoir a Nutrient Sensitive Water (NSW) that same year. In 2002, the Division of Water Quality determined that the Upper New Hope Creek Arm no longer met its designated uses due to excess nutrient inputs, based on exceedences of the chlorophyll a standard. The Division made the same determination for the rest of the lake in 2006, also finding exceedences of the pH standard as a eutrophication indicator in the Haw River Arm. As a result, the entire reservoir is now on North Carolina's list of impaired waters under Section 303(d) of the federal Clean Water Act.

Jordan Reservoir is a multi-use impoundment with an area of 13,940 acres, formed by damming the Haw River in the Cape Fear River Basin. The reservoir is operated for flood control, downstream low-flow augmentation for water quality, fish and wildlife conservation, recreation, and water supply. It currently provides drinking water to the growing cities of Cary, Apex, Morrisville, and Chatham County. It has three hydraulically distinct segments or arms – Haw River, Upper New Hope Creek, and Lower New Hope Creek, as seen in the graphic in Appendix B on page B-3 and on the cover sheet. The Haw River arm at the bottom of the lake has a very short average hydraulic retention time of five days, and accounts for 70 to 90 percent of the annual flow through the water body. The Upper New Hope Creek arm at the top has a comparatively very long retention time, 418 days.

The potential for excess nutrients was a concern when the reservoir was proposed in 1945. In the 1960s, two major streams in the watershed, Buffalo Creek in Guilford County and Bolin Creek in Orange County, did not support fish due to sewage pollution. Congress authorized the New Hope Dam in 1963 but water quality concerns continued to grow, and construction was delayed due to an inadequate Environmental Impact Statement and legal actions in the early 1970's. Although water quality standards were frequently exceeded at most sampling locations in the watershed in the 1970s, a Federal Court decision allowed completion of the lake in 1979. Algal blooms, including harmful blue-green blooms, have been documented consistently in both the Haw and New Hope Arms throughout the reservoir's history. Following its supplemental classification as NSW in 1983, total phosphorus (TP) limits of 2.0 mg/L were required for wastewater dischargers with permitted flows greater than 0.005 MGD. Such facilities in the more problematic Upper New Hope Arm received TP limits of 0.5 mg/L during the summer months, April to October. Despite these early controls, the lake remained hypereutrophic, reflecting a superabundance of nutrients. Nuisance blooms of blue-green algae were documented in both the Haw and New Hope arms through the 1980's. Despite the installation of biological nutrient removal by Orange Water and Sewer Authority (OWASA)'s Mason Farm wastewater treatment plant on Morgan Creek in 1991, water quality problems persisted and elevated nutrients led to periodic algal blooms in the early 1990s. In 1996 and again in 2003, the Town of Cary, which withdraws drinking water from Jordan Lake, received extensive complaints about the water's taste and odor. In March 2006, the Division documented a fish kill in the Upper New Hope Arm. In August 2006, the Division received a complaint from a recreational boater who had accidentally swum in what was later confirmed as a green algae bloom, and as a result had experienced unpleasant effects.

Watershed to Jordan Reservoir

Jordan Reservoir's watershed encompasses 1,686 square miles, just over 1 million acres, including all or portions of eight counties and twenty-six municipalities. It takes in both the west side of the rapidly

growing Triangle area, including Chapel Hill and parts of Durham, Cary and Apex, as well as most of the Piedmont Triad, another of the fastest growing areas in the state. While 51% of the watershed is nested with smaller Water Supply Watersheds (see cover sheet graphic) that impose development density limits and require stormwater controls, these restrictions do not ensure that nutrient loading from new development will be stemmed. In addition, existing developed areas, most of them lacking stormwater treatment, cover significant acreage in the watershed. The Upper New Hope subwatershed is heavily urbanized, while the Lower New Hope subwatershed is being rapidly developed at suburban residential densities.

Reflecting development, agriculture in the watershed is following the statewide trend of decreasing land area. Most agriculture falls in the Haw subwatershed, which comprises 80% of the entire Jordan watershed. While agriculture is generally decreasing, it appears that dry litter poultry operations are increasing in the Haw subwatershed. Numbers for these operations are difficult to obtain for security reasons and because the Division does not issue individual permits for them, however they may present additional management issues. Also, input from the agricultural community indicates that horse operations are increasing in Triangle bedroom communities. Unlike the Neuse and Tar-Pamlico River Basins, traditional agriculture in the watershed is dominated by grazing livestock and other pasture operations, estimated as occupying up to 90% of agricultural land.

Management Mandates

Chapter 143B-282 and other North Carolina statutes charge the Commission with the responsibility to protect and restore water quality throughout the state, and empower it to adopt regulations to that end. In 1989, the General Assembly enacted N.C. Gen. Stat. § 143-214.5 mandating that the Commission adopt rules to classify water supply watersheds and establish requirements to protect these watersheds. The statute gives the Commission authority to designate certain water supply watersheds as critical water supply watersheds and to adopt more stringent requirements to protect such watersheds.

More recently, the sweeping Clean Water Responsibility Act of 1997, S.L. 1997-458, included requirements to address water quality problems in NSW waters. Often referred to as House Bill 515, the act set total nitrogen (TN) and TP concentration limits of 5.5 and 2.0 mg/L respectively for wastewater facilities discharging greater than 0.5 MGD into NSW waters. It set a 5-year compliance window. House Bill 515 also directed the Commission to establish goals for reducing nutrient inputs to these waters and to ensure that point and nonpoint sources share proportionally in cleanup responsibility. The following year, SL 1998-212 amended the Act to allow the Commission to grant a compliance extension under conditions that a facility develop a calibrated nutrient response model for the water body and adhere to its results, optimize facility operation to reduce nutrient loading, and evaluate discharge alternatives for reducing nutrient loading to NSW waters.

In 1999, the Haw River municipalities of Greensboro, Mebane, Reidsville, Graham, Pittsboro, Burlington, and OWASA formed the Project Partners and sought a compliance extension as allowed by SL 1998-212. In April 1999, the Commission granted the request pursuant to N.C. Gen. Stat §143-215.1B. The Act did not set time limits on rule adoption by the Commission. Dischargers' optimization plans were presented at the July 2000 EMC Water Quality Committee meeting. The dischargers contracted the development of a reservoir nutrient response model pursuant to the requirements of HB 515. The Committee approved the combined hydrodynamic and water quality reservoir model in July 2002. The model resulted in slightly more stringent TN limits for Haw dischargers than imposed by HB515, about 5.1 mg/L, and significantly more stringent limits for Upper New Hope dischargers, about 3 mg/L TN.

In 2005, the General Assembly enacted SL 2005-190 that specifically identified excess nutrients as a major source of impairment to drinking water supplies and directed the Commission to adopt permanent rules to establish and implement nutrient management strategies to protect drinking water supply reservoirs.

In addition to state legislative requirements, the 2002 impairment determination on the Upper New Hope Arm precipitated federal Clean Water Act requirements to set and enforce nutrient load reduction limits, known as a total maximum daily load (TMDL). The Division contracted enhancements to the Project Partners' reservoir nutrient response model for TMDL development.

Strategy Development Process

To meet federal and state requirements, Division staff conducted a 1½-year collaborative evaluation process with stakeholders during 2003-2004, facilitated by TJCOG, to apply the reservoir model to seek consensus on establishment of lake nutrient loading goals, discharger allocation methods, and a conceptual Nonpoint source strategy. The reservoir model allows estimation of the magnitude of loading reductions needed to minimize exceedences of the water quality standard for chlorophyll-*a*, the primary standard on which nutrient impairment is based. After 22 formal meetings, the stakeholders issued a report in February 2005. The report contained a mix of consensus recommendations and majority/minority positions on goals, allocations and strategy concepts, and it included a conceptual nonpoint source proposal.

In April 2005, the Division followed with the *B. Everett Jordan Nutrient Management Strategy and Total Maximum Daily Load*. This combined TMDL/strategy document included percentage load reduction goals and mass load equivalents for the three arms, individual discharger TN and TP mass load allocations, and a conceptual Nonpoint source strategy. The Division provided a 60-day comment period and held two public meetings on May 5, 2005. In addition to public meeting comments, the Division received 2,278 written comments on the proposed strategy, the vast majority of which were postcards from lake users supporting regulatory actions. The Division considered the comments and drew heavily from the stakeholders' recommendations to expand the conceptual strategy into draft rules, which were presented to the Commission's Water Quality Committee. The Committee approved moving the rules to public comment in October 2005.

Stakeholder concerns over the modeling basis for strategy goals, point source timelines and costs, existing development load reduction requirements and costs, and timeframe prompted an ad hoc session of the full Environmental Management Commission in January 2006. Further action on the strategy was postponed in favor of additional stakeholder discussions and development of cost estimates. Over the course of 2006, staff held a total of 27 technical meetings as listed in Table 1 below.

Table 1: Jordan Public Meetings During 2006

# Meetings	
2	All Parties Meetings – May 2 and Sept 29
	Subject Meetings
4	Existing Development (May – July)
3	Point Source (Jan - June)
5	Adaptive Management (June – Dec)
2	Agriculture (June – July)
3	DOT buffers (April – Sept)
4	DOT Stormwater (April – Dec)
4	Trading Grant – (April – Nov) held by COGs, CH2MHill

Strategy refinements resulting from these meetings included the following:

- Draft fiscal analysis and cost estimates for most rules.
- A list of alternative nutrient-reducing practices for existing developed lands.
- Revisions to most rules.
- A draft study plan for future remodeling of Jordan reservoir and its watershed.

Formal Rulemaking Process

At its March 2007 meeting, the Commission approved taking the rules to public hearings and a formal comment period. The Chairman appointed a subcommittee of five hearing officers, all members of the Commission, in May 2007. The appointment letter is attached as Appendix A. The Hearing Officers are as follows:

- Mr. Tom Ellis
- Mr. Kevin C. Martin
- Mr. Dickson Phillips III
- Mr. Stephen T. Smith
- Mr. Forrest R. Westall, Sr.

Three public hearings were held in July 2007 as listed in Table 2. All Hearing Officers attended the hearings and Mr. Stephen Smith presided. Oral and written comments were received from all interested parties at each hearing. The Hearings and Comment Period Announcement is provided as Appendix B.

Table 2: Public Hearings Held for Jordan Nutrient Strategy Rulemaking, 2007

Hearing	Location	Date & Time	Public Participants	
			Registered Attendees	Speakers
1	Century Center Carrboro, NC	July 12, 2007 6:30 pm	93	46
2	Koury Business Center, Elon Univ. Elon, NC	July 17, 2007 1:30–4:00 pm	187	58
3	Koury Business Center, Elon Univ. Elon, NC	July 17, 2007 6:30 pm	139	46
Totals			419	150

The Division provided a 60-day period for written comments from June 15 through August 15, 2007. The Hearing Officers later agreed to extend the comment period a month to September 15 at the request of local governments and the Department of Transportation. Table 3 characterizes the parties who submitted comments during the resulting 90-day comment period.

The Hearing Officers began deliberations over the rules in late August 2007. Due to the scope and complex subject addressed by the rules, a total of 14 meetings were held with associated preparation and follow-up to fully evaluate the comments and issues and to reach consensus on a set of recommended revisions. This process continued into April 2008. The Hearing Officers received input from Division staff in the Planning, Surface Water Protection, and Aquifer Protection Sections, as well as the Attorney General’s Office.

Table 3. Characterization of Written Comments Received During the Public Comment Period

Local Governments	59
Comments - 40	
Resolutions - 19	
State/Federal Entities	8
Business / Professional Organizations	37
Environmental / Private Non-Profit Organizations	19
Individual Comments	~7,000
Opposing postcards - ~600	
Opposing letters and emails - 15	
Supporting Postcards and identical emails ~4800	
Supporting letters and emails - 60	
Petition signatures, emails supporting 2011 WW N compliance ~ 1500	
Approximate Total	7,100

This report is being presented to the May 8, 2008 meeting of the Commission with a recommendation for adoption. Adopted rules would proceed to the Rules Review Commission for approval prior to the January 2009 Session of the General Assembly. Requested effective date is April 1, 2009; however, it is possible that legislative review could be required, which would delay the effective date into the summer of 2009.

Description of Strategy

The strategy is designed around nitrogen (N) and phosphorus (P) percentage reduction goals for each of the three arms of Jordan Reservoir as shown in Table 4 below. Separate goals were needed for each arm because of the hydrologically distinct behavior exhibited by each arm. These goals are relative to a baseline period of 1997 through 2001, dictated by the data time span used in the reservoir model. The baseline period becomes important for implementation because all subsequent load-changing activities in the watershed need to be quantified either for reduction credit or as additional load to be offset in reaching the goals.

Table 4. Percentage Reduction Goals from 1997-2001 Baseline, Jordan Nutrient Strategy

	Segment of Jordan Reservoir		
	Upper New Hope Arm	Lower New Hope Arm	Haw Arm
Nitrogen	35%	0%	8%
Phosphorus	5%	0%	5%

The Upper New Hope Arm faces the greatest reduction needs. Its watershed is heavily urbanized and includes a large portion of the rapidly growing Triangle area. The Lower New Hope Arm has the least reduction need. Its watershed is very small but is being rapidly developed at suburban residential densities. Finally, the Haw River arm, which comprises 80% of the entire Jordan watershed, contains the rapidly growing Piedmont Triad area.

The proposed set of rules reflect a comprehensive effort to address nutrient sources to Jordan Reservoir to meet the reduction goals established in the TMDL. The strategy includes reductions by point source discharges and in nutrient runoff from agriculture, existing development, and new development. In addition, riparian buffer protection rules would largely stem loading increases that would otherwise result from loss of those landscape features, while requirements to establish buffers during a change in land use would achieve some loading reduction. Lastly, a fertilizer management rule would result in training of fertilizer applicators in the watershed, potentially reducing nutrient inputs through education.

Timeframes for point source compliance are mandated by the statutes discussed above, SL 1997-458 and SL 1998-212, as a maximum of five years following the Commission’s adoption of this strategy. Compliance timeframes for nonpoint sources are less prescriptive. Within the Basinwide planning statute, Session Law 1997-458 calls for the Commission to develop 5-year plans for point and nonpoint sources to achieve reduction goals for Nutrient Sensitive Waters, and to require demonstration of incremental annual progress. The nonpoint source compliance timeframes in these rules are proposed as reasonable expectations specific to each source. For an overview of the compliance dates, see Figure 6 below.

Changes from previous nutrient strategies implemented in the Neuse and Tar-Pamlico River Basins include stormwater requirements for *all* local governments in the watershed, *local* implementation of buffer rules, a rule requiring local governments to achieve loading reductions from existing developed lands, a separate stormwater rule for State and Federal entities, and a separate rule outlining a trading framework to maximize options for cost-effective reductions. Table 5 lists the set of rules comprising the proposed strategy.

Table 5. List of Proposed Rules Comprising the Jordan Nutrient Strategy

15A NCAC 02B Rule Number	Rule Title
.0262	Watershed Nutrient Reduction Goals
.0263	Nutrient Management
.0264	Agriculture
.0265	Stormwater Management for New Development
.0266	Stormwater Management for Existing Development
.0267	Protection of Existing Riparian Buffers
.0268	Mitigation for Riparian Buffers
.0269	Options for Offsetting Nutrient Loads
.0270	Wastewater Discharge Requirements
.0271	Stormwater Requirements for State and Federal Entities
.0272	Riparian Buffer Mitigation Fees
.0311	Cape Fear River Basin (Schedule of Classifications)

Figure 6: Proposed Rule Compliance Timeframes Assuming Summer 2009 Effective Date

		Assumed Effective Date										
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 & Beyond	
0.0263-	Nutrient Mgmt.	Fully Implement Requirements				Applicators Renewing WW Residuals and Septage Application Permits Meet Requirements						
		New WW Rsdls. and Sptg. Aplctrs. Meet Rqmnts.										
0.0264-	Agriculture	Implement, Initial Accounting				Implement as Needed			Additional Implementation per EMC if Needed		Maintain Reductions	
0.0265-	Stormwater, New Development	DWQ Submits Model Program to EMC		LGs Submit Mgmt. Prgrm. to DWQ ¹	EMC Approves Mgmt. Program ¹	***	LGs [Adopt*** and] Implement Local Programs ¹					
0.0266-	Stormwater, Existing Development	*	**	*LGs Submit Optional Monitoring Program **DWQ Approves -If Approved, Submittal of Load Reduction Program Can be Delayed One Year								
		DWQ Submits Model Local Program to EMC		LGs Submit Admin. Prgrm. ¹	EMC Approves Admin. Prgrm. ¹	***	LGs [Adopt*** and] Implement Administrative Program ¹					
		LGs Submit Load Reduction Program ¹			EMC Approves Program. ¹	***	LGs [Adopt*** and] Implement Load-Reducing Programs ¹				2019	LGs Submit Revised Load-Redc'g. Prgrms
0.0267/ 0.0268-	Riparian Buffer Protection / Mitigation	LGs Implement Local Buffer Programs				DWQ Implements Programs for State, Local, Interlocal, Agriculture, Forestry, and Appeals						
0.0269-	Trading Options	Available Upon DWQ Approval										
0.0270-	Wastewater	Meet P Allocations	Optimize Nutrient Reduction, Maintain P Allocations				Meet N Allocations	Maintain N, P Allocations				
0.0271-	Stormwater State/ Federal	NCDOT	DOT Submits the Mgmt. Plan to DWQ			EMC Approves Plan	DWQ Permits New Development DOT Implements Load-Reducing Activities Toward Long Term Goals					
		Univ'ties	DWQ Permits New Development				Universities Implement Existing Development Load-Reduction Programs					
		Universities Conduct Exist. Dvlp. Technical Analysis			EMC approves							
0.0272-	Buffer Mitigation Fees	Available all the time, per-acre rate adjusted annually in January										
		Assumed Effective Date										
		¹ Timeframe for these actions are dependent on EMC model approval.										

SUMMARY OF PUBLIC COMMENTS

Public Hearings

A mix of development/real estate interests and local citizens and environmental groups attended the Carrboro hearing, and comments were relatively evenly split between support for and opposition to the rules. Local governments and developers dominated the Elon hearing, and Elon comments were heavily in opposition with a few themes repeated by a great many commenters. While a certain level of misunderstanding over proposed regulations characterizes any rulemaking process, the Hearing Officers were struck by the widespread misconceptions about these rules especially in light of the considerable level of staff involvement with stakeholders preceding the comment period.

Written and Public Hearing Comments

Supporters of the rules cited a longstanding need for restoring the lake, federal and state mandates, a steadily eroding quality of their lake use experience, the regional importance of the lake, and the collateral benefits to numerous degraded streams in the watershed from the proposed rules. They attached urgency to the lake's restoration need given the rapidly growing nature of watershed communities and problems with the current growth-related water quality regulations. They called for holding point source dischargers to the original 2011 compliance date from the statute given the key role of wastewater discharges and the ample notice already provided to the discharge community. They believed that waiting for Phase II stormwater controls to play out before considering the need for dealing with existing development ignored the fact that Phase II does not address existing development, that the lake is impaired now as a result of existing land uses, and thus that restoration requires addressing existing development in a meaningful way. They observed that Division cost estimates reflect only part of a full and fair cost/benefit assessment and an avoidable, worst-case representation of costs for the existing development requirements. They also observed that the Existing Development rule provides great latitude to use alternative nutrient-reducing practices, and projected that lower-cost options for existing development would emerge with implementation. One commenter applauded the trading elements of the rules but advocated for a greater role for private providers of nutrient reduction credits throughout.

Those in opposition questioned the wisdom, historical consistency, and feasibility of the goal as well as the cost burden relative to degree of impairment. Equity concerns were numerous. Many felt that Haw communities would pay for the benefit of New Hope communities who withdraw water from the lake, or that the regional nature of benefits should compel the General Assembly to fund restoration actions. Many objected to the rules as an unfunded mandate and stated that the state was unfairly passing costs off on local governments. Several local governments commented that agriculture contributed most of the nutrient loading yet faced minimal requirements and minimal costs. Numerous commenters raised concerns that the strategy would undercut the Triad region's recovering economy, drive business elsewhere, and make home purchase unaffordable for many. They saw the imposition of these rules on only this watershed as inequitable and unnecessary. Many generally believe that Division cost estimates were greatly understated, and would result in increased taxes, utility rates, or home prices. A few offered estimates of exorbitant fees that would be passed on to homeowners or homebuyers. A few local governments expressed concern that past responsible and proactive planning would not be credited or was being punished by the rules. People frequently commented that adaptive management should mean implementing less costly measures first and evaluating the effects before contemplating costlier actions.

Commenters frequently objected to the technical foundation for the strategy, which many represented broadly as "bad science". They raised concerns with various aspects of the impairment determination, the reservoir and watershed models, the data used to develop them, and they pointed to other data and studies

indicating improvement. Commenters repeatedly expressed dismay that after all the costs and impacts there was no guarantee the strategy would work.

Several challenged the Commission's statutory authority to require local ordinances or to impose the existing development rule, and objected to the use of the Critical Water Supply Watershed concept for various reasons including that it would require density limitations, promote sprawl, and allow future additional land use restrictions.

Regarding individual rules, many in opposition proposed that adaptive management should allow evaluation of the effect of Phase II stormwater requirements before imposing additional stormwater mandates on communities. A number raised strong concern over the technical feasibility of stormwater retrofitting under the Existing Development rule, as well as the great costs, tax base losses, and great administrative and maintenance burden that would result. A few commenters claimed that the New Development rule would result in untenable levels of onsite structural controls, such as three BMPs per project.

HEARING OFFICERS' RECOMMENDATIONS

The Jordan Rules Hearing Officers have reviewed and weighed input from the stakeholder teams, potentially affected parties, local governments, legislators, concerned citizens, interest groups and organizations, and staff. It is the recommendation of the Hearing Officers that the rules proposed herein comprising the Jordan Reservoir Water Supply Nutrient Strategy/Sensitive Waters strategy be approved by the full Environmental Management Commission with changes noted, and be filed as permanent rules with the Rules Review Commission. The Hearing Officers request that the full Commission adopt the rules allowing sufficient time for review and approval by the Rules Review Commission prior to the January 2009 Session of the General Assembly. Proposed effective date is April 1, 2009. In making these recommendations, the Hearing Officers have considered the requirements pursuant to NC General Statutes 143-214.1, 143-214.7, 143-215.3(a)(1), 143-215.6, 143B-282, 150B-21.2, and Rule 15A NCAC 2B .0223 (Nutrient Sensitive Waters), as well as the verbal and written comments received.

In arriving at this recommendation, the Hearing Officers deliberated extensively over the public comments. During this process, which took place from August 2007 through March 2008, they formed positions on a number of key issues, and developed certain recommendations to accompany the rule changes. Those positions and recommendations are provided below and with the individual rule summaries that follow.

Strategy Foundation Issues

The Hearing Officers reviewed all of the public comments, they evaluated the concerns and reviewed and discussed with Division staff the processes that were used to establish impairment, to model restoration needs, and related data and study issues. Based on this review they reached several conclusions. The Hearing Officers:

- Accept the validity of the chlorophyll *a* data and the modeling conclusions reached based on that data. They recognize the uncertainty associated with all modeling, accept the results of the Jordan reservoir model as the best available analysis and fully in keeping with accepted norms of modeling practice, and find it to be a reliable and sound basis for the management strategy.
- Understand and accept the need to establish separate reduction requirements for each of the three arms of the lake, and accept the values proposed for the percentage reduction goals based on the reservoir modeling. They note that the reservoir model was presented to and approved by the Commission at its July 2002 meeting. They emphasize that the lake's segmented hydrology results in the reduction needs for each arm being essentially independent of each other and driven by the inputs from their own watersheds. This means, for instance, that the Haw Arm's impairment and reduction need results from the excess nutrient inputs from the Haw subwatershed and would exist as quantified even if the New Hope Arm had no problems.
- Find it important to recognize that the Clean Water Responsibility Act, SL 1997-458, established requirements for dischargers to Nutrient Sensitive Waters and that, if not for the reservoir model and the proposed rules, wastewater dischargers in the Haw subwatershed would have been subject to virtually the same nitrogen concentration limit proposed in these rules by 2003, much earlier than proposed under these rules. They recognize that the equivalent TN concentration established under these rules, 5.3 mg/l, is well within current limits of technology and significantly less stringent than the concentration required in the Upper New Hope of 3.0 mg/l. Finally, they note that the practical upshot of the nitrogen requirement in the Haw is that just two facilities must

make major improvements within the nitrogen compliance timeframe of the rule. These two facilities accounted for almost half of the point source nitrogen load in the baseline period and are the only major facilities actually required to reduce their mass nitrogen loads. The Hearing Officers consider the requirements and timeframes for upgrading these facilities wholly appropriate as revised.

- Affirm that the Commission is acting within its statutory powers, that it is taking actions necessary to execute its duties and responsibilities, and that the statutes from which this set of rules draws provide appropriate authority to enact the various proposed requirements.

Strategy Design Issues

The Hearing Officers:

- Agree that a comprehensive set of management actions across source types is needed to address the lake's nutrient-driven impairment and that rules are needed to effectively address existing developed lands and new development as well as agriculture and point sources. They believe that an ideal conceptual approach would allow credit for past nutrient-reducing actions regardless of when they occurred, and that such an approach is practically achievable with point sources through the use of single performance standards for given classes of dischargers in the form of equivalent concentrations. However, they also believe that this ideal conceptual approach is neither practically achievable with nonpoint sources nor easily applied to them.
- Support the nonpoint source design of requiring reductions equating to the percentage goals from each source relative to its baseline loading, which includes crediting of load-reducing practices implemented since the baseline and prior to implementation date of the rules.
- Consider the offset and trading options included in the rules to be valuable in providing the greatest possible latitude to achieve the most cost-effective reductions for both point and nonpoint sources. For this reason they have added or clarified the additional option throughout the rules to allow for market-based trading where it can be supported with the necessary infrastructure and accounting.
- Recommend that the Commission endorse a resolution to the General Assembly requesting funding for local governments and the Division to assist in the implementation of the new development stormwater, buffer protection and existing development stormwater programs required under these rules. The Hearing Officers:
 - Recognize the concerns over new costs potentially imposed on local governments by this set of rules, while they emphasize that the Division's original cost estimates are considered a very avoidable worst-case scenario.
 - Recognize the new challenges that local governments will face in implementing the requirements of the existing development rule, and the emerging nature of tools that may be used in this effort.
 - Are sympathetic to arguments that the benefits to individual local governments are not necessarily proportionate with the compliance costs they may face. They view the benefits provided by Jordan Reservoir as being regional in nature, extending beyond the bounds of the watershed.

- Recognize that some of the same aspects of these rules will place new demands on Division staff to provide local governments with the support services needed to carry them out successfully and efficiently.

FISCAL ANALYSIS REVISIONS

Original Fiscal Analysis

To meet rulemaking requirements and address stakeholder interest, Division staff estimated costs for the set of rules comprising the Jordan nutrient strategy in a Fiscal Analysis document, dated June 11, 2007, available at: <http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm>. This fiscal analysis was reviewed and approved by DENR's Division of Budget, Planning and Analysis and the Office of State Budget and Management. The Office of the Governor and the Fiscal Research Division of the General Assembly also reviewed it. Staff made numerous revisions as a result of reviewer input. The Commission also had opportunity to review the analysis before approving the rules for public comment.

Revisions

Staff has developed revisions to our cost estimates, which we provide in Appendix E. They address several issues. In general, the public comments reflected a high level of concern over anticipated cost impacts of the rules, particularly the Existing Development rule. More specific reasons are that:

- Some valid technical issues were raised with Division cost estimates.
- Rule revisions by the Hearing Officers have affected some cost projections.
- Costs for Existing Development in the Fiscal Analysis were developed as worst-case projections of the full cost of rule compliance based on the assumed use of structural stormwater retrofits only, as well as purchasing all the land required for them. This has led to the widespread impression that costs will in fact be at least this great. The rule, on the other hand, allows for and identifies a wide range of load-reducing practices. We believe many of these options are available to local governments now and we expect more to become available as accounting is developed. Given the long-term nature of compliance, we also recognize the potential for local governments to find significant numbers of willing landowners for the use of structural retrofits, placing practices on private property or in easements and avoiding purchase costs. Overall, we expect that the rule to be significantly less costly to implement than our fiscal estimate and others' projections would suggest.
- We recognize that in projecting beyond a handful of years the set of actions that will be taken to address Existing Development, the uncertainties become prohibitively large for several reasons. First, we expect to develop accounting tools during the first years that will allow credit for additional, more cost-effective alternative practices for which we cannot currently state the magnitude of reductions. Second, we recognize the extent to which other factors may play in to local decision-making. One factor that might not have been foreseen five years ago is how the current drought is driving real interest in technologies for capturing rainfall as a resource. Water-harvesting technologies also reduce nutrient loading, and will likely become more available and cost-effective with time. Third, several NOx emission air quality regulations currently in place are expected to result in reductions in nitrogen export from impervious surfaces over the next thirty years. The magnitude of this effect will be determined through monitoring of runoff.

INDIVIDUAL RULES AND RECOMMENDED CHANGES

Following is a brief summary of each rule as taken to public comment, followed by a listing of the changes recommended by the Hearing Officers. The full text of each rule is provided as Appendix C, and a full summary of comments received and staff replies is provided as Appendix D.

This report is also available at the Division website for Jordan Reservoir Nutrient Strategy, in addition to other information on the Strategy. <http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm>

□ ***Rule .0262, Watershed Nutrient Reduction Goals***

Provides an overarching framework for the entire set of rules. Specifically it: describes strategy objectives; reclassifies the remainder of Jordan watershed as WS-V; designates the entire watershed as a 'critical water supply watershed', which allows the Commission to require more stringent measures than minimum Water Supply Watershed requirements; defines geographically the three subwatersheds draining to Jordan Reservoir; identifies the baseline time period; establishes N and P percentage reduction goals and corresponding point and nonpoint source lake loading targets for each arm relative to the baseline; enumerates the set of rules designed to achieve the goals; establishes that all local governments—eight counties and 26 municipalities—are subject to certain rules; details where these rules supercede existing Water Supply rules; provides for adaptive management following a period of implementation; acknowledges control of atmospheric nitrogen sources as absent; and reserves an interest in atmospheric rulemaking pending advances in science. Each subsequent Rule references parameters set forth in this Rule.

Hearing Officers' Recommended Changes

- Added potential strategy progress analytical tools of watershed modeling and other source characterization work as options in adaptive management assessment.
- Added the ability for interlocal agreements that would allow one government entity to implement certain requirements for another pursuant to Division approval.

The Hearing Officers consider adaptive management to be an important concept given the combination of the long-term nature of any such restoration initiative and the potential cost associated with each management action, as well as uncertainties associated with potential changes to nutrient inputs not directly addressed by this strategy such as atmospheric deposition and the behavior of the lake itself. They believe this set of rules is necessary and prudent, and that the adaptive management clause of this rule establishes appropriate expectations for the Commission to consider when assessing the progress of the strategy over time.

The Hearing Officers share some concern about the potential ability of small local governments to fully comply with the requirements of stormwater and buffer protection rules without assistance. In addition to recommending that new funding be sought from the General Assembly, they added explicit recognition in this rule of the ability for local governments to form interlocal agreements that may allow larger local governments to assist or provide certain services that would allow smaller ones to comply with these rules. As an example, a form of this arrangement already exists in Guilford County for stormwater.

□ ***Rule .0263, Nutrient Management***

Requires fertilizer applicators and consultants in the watershed to either complete nutrient management training offered by the Cooperative Extension Service or comply with a certified nutrient management

plan for the lands to which they apply within five years of effective date. Also requires property owners either to ensure that applicators to their lands have met these requirements, or to meet the requirements themselves. Homeowners and business owners applying fertilizer to their own lands would not be subject but applicators they hire who apply to a total of at least ten acres would be subject. Animal waste application with demonstrated compliance with a permitted waste utilization plan will be deemed compliant with this rule.

Hearing Officers' Recommended Changes

- Compliance deadline shifted from five years to three years.
- Focus of applicability shifted from persons to fertilizer application on types of lands.
- Reduced hired applicator threshold from 10 acres to 5 acres.
- Consultants removed from rule.
- Residential homeowners no longer required to verify compliance by hired applicator.
- Removed option for property owners who hire applicators to obtain plan themselves.
- Added clarification that wastewater residuals application in keeping with a permit under the 2T rules and septage application in keeping with a permit under 13B rules shall meet NRCS Standard requirements for both nitrogen and phosphorus.

The Hearing Officers are sympathetic to comments expressing concern over potential over-application of fertilizer by homeowners and business owners. In evaluating options to address these sources, which were excluded from the requirements of the Nutrient Management rule, they understood that the Division and Cooperative Extension Service would not have the resources to train or review nutrient management plans for these groups. They thus view the requirement under the Existing Development rule for local governments to educate citizens and businesses on fertilization practices as an important means for addressing this source. They also consider the option under the Existing Development rule for local governments to enact fertilizer ordinances as an effective and creditable tool for reducing loadings from existing developed areas.

In finding it appropriate for wastewater residuals and septage application to meet phosphorus control criteria in addition to those for nitrogen, the Hearing Officers drew in part from a recent, statistically sampled survey of farms in the watershed conducted by researchers at North Carolina State University¹. The survey found soil test phosphorus index values of “very high” on over half of biosolids application fields.

□ ***Rule 0264, Agriculture***

Establishes collective N and P reduction goals for all persons engaging in agricultural operations in the watershed. Includes numeric thresholds for livestock operations. Two years after effective date, an initial accounting by a Watershed Oversight Committee (formed by the Director) will determine the extent to which the nitrogen goal has been achieved relative to the baseline period. If the goal has not been achieved, Local Advisory Committees (LACs) must be formed and tasked with crafting implementation strategies. Five years after the effective date, the Commission will determine whether LACs have achieved subwatershed N and P goals based on collective implementation. If not, the Commission will require additional BMP implementation as deemed necessary to achieve the goals within eight years after effective date. P accounting is qualitative in nature. Pasture accounting is based on increases in BMP

¹ Osmond, D.L., 2007. *Delineating Agriculture in the Lake Jordan River Basin*. Final Report to the NC Division of Water Quality, Planning Section, Section 319 Grant Program. November 9, 2007. 71 pp.

implementation. The Rule includes an individual compliance option, and allows trading of reductions that exceed compliance reductions. Annual reports are required.

Hearing Officers' Recommended Changes

- Timeframe to achieve the goals extended from “five to eight years” to “six to nine years”, and parallel adjustments to all milestones.
- Swine threshold revised from 150 to “20 or more swine not kept in a feedlot, or 150 or more swine kept in a feedlot”.
- Clarified rule requirements for individual producers.
- Eliminated individual compliance “standard BMP” option. Revised tradable credit generation thresholds from individual compliance basis to subwatershed goal compliance basis. Added exception for pasture-based livestock operations installing buffered exclusion, allowing option for buffer restoration portion to be traded.
- In addition to the one environmental interest representative already on the Watershed Oversight Committee, two more were added for a total of three. An equine industry representative was also added to the Committee.
- Added to the role of the Watershed Oversight Committee:
 - If the nitrogen goal is not met after six years, evaluate and report to the Commission on practicability of a subwatershed achieving the goal within nine years.
 - Evaluate ability to establish nitrogen credit trading, and if appropriate establish accounting framework.

The Hearing Officers evaluated available information on the distribution of operation sizes for livestock types in the watershed and found that the rule’s size threshold for swine did not consider the presence of smaller, apparently unconfined operations. The Hearing Officers recognize that such operations have the potential for disproportionately high nutrient loading, and recommend that the swine threshold be adjusted on that basis.

The Hearing Officers considered the following factors in removing the Standard BMP option and requiring agriculture to achieve its collective goal in a subwatershed before a producer could generate tradable credit. They found a rational basis for comments expressing concern over the option for producers to credit practices installed prior to the baseline to comply with the rule individually or for use as marketable reduction credit. While the rule also requires agriculture to collectively meet the reduction goal, the Standard BMP design could potentially limit the ability to do so, and to a lesser extent could erroneously make trading credit available that was not generated after the baseline.

On the other hand, the Hearing Officers recognized a potential opportunity to benefit producers as well as other source types in the form of livestock-excluded buffers. Given that pasture-based livestock comprises the great majority of agricultural acres in this watershed, pasture improvement practices may prove key to achieving agriculture’s goals. While livestock exclusion alone can generate substantial reductions in nutrient loading, excluded buffers can yield markedly greater reductions. The Hearing Officers added a provision that would allow producers the option of using the buffer restoration aspect of a livestock-excluded buffer for tradable credit whether their subwatershed has met its goal or not. They determined that the incentive for increasing livestock-excluded buffer implementation would outweigh the loss of part of the credit to another source type.

□ ***Rule .0265, Stormwater Management for New Development***

Requires all local governments in the Jordan watershed to develop and implement programs to require stormwater controls on new development activities to meet subwatershed nutrient loading rate targets. Developers control nutrient export to certain levels onsite, and may meet remaining reduction needs through in-lieu fee payment to EEP or to local governments with a Division-approved local offset plan. Control of flows for stream protection is also required. Development in existing water supply watersheds shall also comply with the water supply watershed requirements where they are more stringent. Within one year of effective date, the Division must submit a model local program to the Commission for approval. Within another six months, local governments must submit programs for Division review and subsequent Commission approval. Within two and a half years after the effective date, local programs are implemented. Annual reports are required.

Hearing Officers' Recommended Changes

- Updated the offset option to the NC Ecosystem Enhancement Program to remove reference to rule 2B .0240, which was superseded by SL 2006-215 and SL 2007-438.
- Added options for developers to utilize private sellers for offsite reductions or their own offsite reduction activities, in addition to a local government-offered option.
- Tied all offset options to the requirements of trading rule .0269.
- Paralleling state/federal stormwater rule, local government public road projects that meet riparian buffer protection requirements are deemed compliant.
- Added 6 months to all implementation timeframes.

The Hearing Officers added the option to utilize private sellers of reduction credits and tied all offsets to the provisions of the trading rule based on their desire to provide all reasonable options for obtaining reductions including allowing for legitimate market-based options.

The Hearing Officers accepted the contention that public roads and other public linear infrastructure projects face unique constraints such that, at least until loading contributions from and management measures for them are better defined, it is reasonable to hold them to currently recognized practicable treatment expectations. In both this rule and the State & Federal Stormwater rule, they have revised the text to require that new public roads be held to the treatment requirements provided by the buffer rule. This allowance would not apply to roads within larger development projects, since such projects have available substantially greater design latitude for addressing road runoff.

□ ***Rule .0266, Stormwater Management for Existing Development***

Requires all local governments – eight counties and 26 municipalities – to implement loading reduction measures on existing developed lands toward long-term load reduction targets for those lands. Local governments conduct feasibility studies and submit program proposals for Division and Commission approval within three years after effective date. Programs propose implementation rate, nature and overall compliance timeframes. Local governments begin implementing load reduction activities four years after rule effective date. Programs for public education and illegal discharge elimination are implemented within two and a half years. Annual reports are required.

Hearing Officers' Recommended Changes

- Restructured the load reduction program element to require a plan to achieve half of each reduction goal within ten years after the effective date, with the option to propose an alternative timeframe if

supporting technical analysis is provided. Added the requirement to provide, at ten years after the effective date, a revised load reduction program to address remaining needs, along with supporting technical analysis. Added criteria for technical analysis. Eliminated feasibility study language.

- Added detail to the process for determining local load reduction needs.
- Added to the definition of existing development.
- Added a monitoring option to allow local governments to identify high-loading catchments and treat them for proportionally greater reduction credit.
- Added several load-reducing activities to non-inclusive list.
- Added option for local governments to use private sellers of reduction credit pursuant to requirements of trading rule .0269.
- For clarity, labeled the two required elements under the rule as the load reduction program and the administrative program.
- Revised implementation timeframes to net effect that local governments are given an additional six months to submit and implement programs - now three and one-half years and four and one-half years after effective date, respectively.
- Added latitude for adaptive management changes to local programs and load accounting methods.

Given the untested nature of a management mandate to achieve reductions in nutrient loading from existing developed lands, the potential costs of implementation, and the level of concern expressed by local governments on both these counts, the Hearing Officers gave considerable attention to the need for and design of this rule. They determined, based on estimates of the nutrient contributions from developed lands, that a rule addressing existing development is necessary to support realistic expectations of achieving the strategy reduction goals. They find that the rule provides an appropriately measured, balanced and flexible structure for local governments to work within. They share local concerns over the technical achievability of a purely structural retrofit approach in the Upper New Hope Arm, but believe that the broad range of potential load-reducing activities and the long-term compliance flexibility afforded by the rule are a sound framework for working with local governments to achieve meaningful progress from this source. They also recognize that local governments are not called on to begin obtaining reductions until the fifth year after effective date, a preparation timeframe they believe to be generous but also necessary to allow further development of accounting methods and local preparation.

The Hearing Officers are sympathetic to local concerns that feasibility studies should precede rule requirements. However, they also recognize the need for initiation of management actions within reasonable timeframes and the ability of local governments to both generate funding for stormwater activities and best evaluate the suite of potential options available to each of them individually. The Hearing Officers revised the rule to require plans for achieving half of each load reduction goal within ten years to clarify the basis for evaluating load reduction programs, but retained the flexibility for local governments to propose different timeframes based on technical analysis. In doing so, they also intend to resolve questions over the purpose of feasibility studies, which these provisions replaced.

The Hearing Officers expanded the list of potential load-reducing activities with several additions that either were requested, e.g. improvement of existing ponds, or that they believe merit consideration by local governments. One activity they did not add due to current, largely federal regulatory barriers was regional, instream impoundments. The Hearing Officers believe that in certain cases, such as highly modified, hardened urban conveyances, this activity should be an available option, especially given that it can be significantly more cost-effective than a collection of smaller-scale controls. They recommend that staff revisit this issue with federal officials in light of the contributions of existing development to impairments as exemplified by Jordan Lake. A related activity that the Hearing Officers added, stream restoration without impoundment, is not regulatorily prohibitive and can potentially reduce nutrient export.

In evaluating potential avenues for more cost-effective reductions, the Hearing Officers found merit in the recommendation to allow instream monitoring to identify high-loading catchments that could be treated for more efficient reductions. This led them to add this concept as an option for local governments.

The Hearing Officers are sensitive to the potential costs that this rule in particular and the set of rules may impose on local governments. While agency rules cannot mandate legislative funding, the Hearing Officers include recommendations in this report for the Commission to deliver a resolution on the subject to the General Assembly. Also, for this rule to be effectively administered in a timely manner by the Division, the Hearing Officers believe that additional staff resources will be needed to avoid compromising coverage on other programs. They recommend that this need be included in the resolution.

□ ***Rule .0267 & .0268, Protection of and Mitigation for Existing Riparian Buffers***

Requires local governments to implement programs to protect existing vegetated riparian areas within 50 feet of and adjacent to intermittent and perennial streams, lakes, and ponds in the Jordan watershed. The first 30 feet adjacent to waters is largely undisturbed forest, while the outer 20 feet may be managed vegetation. Existing, ongoing activities within buffers may continue as long as these activities or uses meet the requirements of the rule, while a change in land use invokes the protections. These buffer requirements replace those under Water Supply rules, and provide local governments the option to require more stringent measures. The Division addresses activities of state and federal entities. Certain uses of land within the buffer are identified as exempt, allowable, or allowable with mitigation, while uses not listed are prohibited. The rule provides for mitigation where no practical alternatives exist, details variance requirements and forest-harvesting limitations, and requires local governments to ensure that new developments either avoid or mitigate buffer impacts. It requires local governments to make mitigation options available for certain activities based on avoidance and minimization criteria: 1) payment to the riparian buffer restoration fund administered by EEP, 2) donation of property, or 3) restoration or enhancement of a non-forested buffer.

Hearing Officers' Recommended Changes

.0267

- Shifted implementation responsibility from local governments to the Division for local and interlocal activities, forestry and agricultural activities, and activities in areas where there is no local program implementing NPDES stormwater, Water Supply Watershed requirements, or a voluntary local buffer initiative at the time of the activities. These are in addition to the Division implementing the rule on state and federal activities.
- Shifted review of appeals of local stream and buffer calls and variances from local governments to the Division.
- Clarified diffuse flow requirements.
- Numerous minor modifications to activities in the Table of Uses and to Forest Harvesting provisions.
- Added local development approval criteria, local program record-keeping requirements and oversight requirements for the Division.

.0268

- Added option of private mitigation banks approved by the Division to the EEP mitigation fee option.

The Hearing Officers found certain concerns expressed over local buffer implementation compelling and made a full evaluation of potential options. They considered placing full responsibility with the Division, with local governments, and various scenarios in between. Ultimately, in arriving at the division of

responsibilities between local governments and the Division described above, they found that each competing scenario has advantages and drawbacks, that among them there is no ideal solution, but that this recommendation resolves concerns the Hearing Officers found most compelling.

They also determined that an element in the Purpose statement meriting clarification in this report involves the option for more stringent local standards. The Hearing Officers' intent with this language is that the 2-zone, 50-foot buffer required under this rule would serve as a minimum in all cases, and that local programs could establish more protective standards, but that use of the 30-foot and 100-foot Water Supply setbacks instead would not be considered more stringent.

Applying the same beliefs described for nutrient offsets in the trading rule below, the Hearing Officers see value in allowing participation by private sellers of buffer mitigation credit under this rule. Accordingly they have added language to that effect in the mitigation rule.

The NC Ecosystem Enhancement Program provided important comments regarding the apparent lack of buffer restoration opportunities in this watershed, most acutely in the Upper and Lower New Hope subwatersheds. Based on their assessment, EEP recommended that the rules allow use of restoration sites in other subwatersheds as a contingency. They also made recommendations related to both buffers and nutrient offsets. Given the interrelated nature of these issues, the evaluation of these comments is provided under the trading rule, .0269, below.

□ ***Rule .0269, Options for Offsetting Nutrient Loads***

Provides parties subject to the various rules - new development, existing development, State and Federal stormwater entities, agriculture, and point sources –options for alternative, offsite sources of loading reduction in addition to the EEP option. It requires that minimum onsite standards be met before seeking credit elsewhere. It sets criteria for those seeking to sell excess reductions, and would require Division approval.

Hearing Officers' Recommended Changes

- Revised agricultural prerequisites to reflect agriculture rule changes.
- Minor clarifications and organizational improvements throughout.

As structured, the New Development Stormwater, Wastewater, and State and Federal Stormwater rules provided an offset option to the NC EEP, relying on the offset fee established in Rule 15A NCAC 2B .0240. That rule has been repealed and functionally replaced by Session Law SL 2007-438. The Session Law establishes temporary offset rates specific to the Neuse and Tar-Pamlico River Basins and requires the Department to transition the EEP nutrient offset program to an actual cost-based design by September 2009. The Hearing Officers recognized that such a program would likely be in place at least two years before any party subject to any of these rules would need to consider an offset option. They thus revised the EEP offset option in these rules to instead tie into the outcome of the process called for in the Session Law.

The Hearing Officers also felt strongly that parties subject to the rules in this strategy should, to the greatest extent feasible, be provided the flexibility of compliance options that rely on market forces to find the most cost-effective reductions in nutrient loading. They recognized the 2007 nutrient offset legislation SL 2007-438 as signaling the General Assembly's support of this concept. They agreed with several comments that advocated such an approach, and they added provisions to this effect to each of the above rules as well as to the Existing Development, Agriculture, and Buffer Mitigation rules.

They consider it important, however, to recognize that market-based trading is largely untested in this state and nationally, and that the design of a functional trading program that successfully enables more cost-effective reductions faces a number of challenges. Their intent is for the set of rules to provide for trading only to the extent that defensible accounting and administrative structures can be established to support it, and they believe that the rules include adequate qualifications to this effect. That notwithstanding, they find that Rule .0269 provides sound fundamental constraints and requirements for any such program, including minimum reasonable ‘on-site’ stewardship-based reduction expectations for individual rules.

The NC Ecosystem Enhancement Program provided important comments regarding the apparent lack of buffer restoration opportunities in this watershed, most acutely in the Upper and Lower New Hope subwatersheds. Based on their assessment, EEP recommended that the rules allow use of restoration sites in other subwatersheds as a contingency and that nutrient offset rates be based on the most expensive, “all-retrofit” scenario identified in a report developed by Research Triangle Institute² for the General Assembly during 2007 nutrient offset fee negotiations. The Hearing Officers recognize that the restoration needs of the individual lake arms are essentially independent of each other, and that it would be inappropriate to credit reductions made across subwatersheds. Nevertheless, they understand the limitations faced by EEP, and have revised all rules that offer the EEP offset option to make that offset contingent on availability and acceptance by EEP. They also appreciate EEP’s very real concern with establishing adequate offset rates to address restoration opportunities that actually exist. They believe their revisions to the offset language in all rules as described above address this concern.

□ ***Rule .0270, Wastewater Discharge Requirements***

Distributes the total point source annual N and P mass loading goals for each arm in the form of annual mass allocations to existing dischargers within each of the three subwatersheds. Discharge concentration equivalents at full flow range from 3.04 mg/L TN and 0.23 mg/L TP in the Upper New Hope Arm to 5.30 mg/L TN and 0.67 mg/L TP in the Haw River Arm. As in the Neuse strategy, includes provisions for new and expanding dischargers, an option for group compliance and in-lieu offset fees to EEP for cap exceedance, and an option for transfer of allocation among individual dischargers. It also requires optimization of existing facilities, and improves protections against localized water quality degradation. Phosphorus compliance date is the first full year after effective date, while the Nitrogen compliance date is 2016.

Hearing Officers’ Recommended Changes

- Revised the compliance date for nitrogen from 2016 to the fifth full calendar year after effective date, which would be 2014 assuming a 2009 effective date.
- Updated the offset option using the NC Ecosystem Enhancement Program to remove reference to rule 2B .0240, which was superseded by SL 2006-215 and SL 2007-438.
- Added option to utilize private sellers of offset credit.
- Added text to require dischargers to propose optimization measures within six months after the Division accepts the report detailing these measures.

The issue of greatest concern to stakeholders with regarding this rule was the compliance date for nitrogen allocations, which had been proposed in an early draft as 2011. That date was pushed back to 2016 in the public comment version, while the phosphorus compliance date was moved up to the first

² RTI International and Center for Watershed Protection, 2007. *A Study of the Costs Associated with Providing Nutrient Controls that are Adequate to Offset Point Source and Nonpoint Source Discharges of Nitrogen and Other Nutrients*. Final Report prepared for the Environmental Review Commission. June 2007.

year after effective date. The Division proposed these changes in consideration of the extent of infrastructure improvements and expense that will be required for each parameter. The Hearing Officers evaluated this issue closely and concluded that the 2016 date would not be consistent with Session Law 1998-212, which amended the Clean Water Responsibility Act. Their recommendation reflects the direct application of requirements of the Act to the Jordan Reservoir case. After weighing the various interests, they concluded that the maximum time allowed for compliance under the legislation is the fifth calendar year following Commission's adoption of these rules, which would equate to the year 2014.

Comments from Haw dischargers represented that the reduction goals actually amount to reductions of 67% to 70% at the source based on current and proposed concentration limits. The potential impact of these comments compelled the Hearing Officers to explore this issue. They concluded that the comments reflect a misunderstanding of the requirements and that no such reductions are required for this group of facilities or others. The reduction goals refer to annual mass loads reaching the lake. For a given class of dischargers, one equivalent discharge concentration is identified that will satisfy the mass load goal at the lake using full permitted flows. Thus, reduction requirements for a given facility are affected by baseline flow and level of treatment as well as permitted flow, and vary greatly by facility. This is true in the Haw, where only two major facilities – one each in Greensboro and Burlington - must reduce nitrogen load below their baseline, and only those and one other will need to reduce phosphorus. During the baseline, these facilities discharged at higher concentrations - 13 to 15 mg/l nitrogen – and higher flows than other facilities. Having accounted for a large proportion of the nitrogen load in the baseline period, they must now make greater improvements to reach the same level of treatment as other dischargers. To meet the equivalent concentration target of 5.3 mg/l, they will need to reduce their baseline mass loads by 50% and 38% respectively. The remaining facilities in the Haw discharged at sufficiently lower nitrogen concentration and fraction of permitted flow that they can actually increase their mass loads of nitrogen. Greensboro's and Burlington's second plants are allowed to increase nitrogen loads by 17% and 5% over baseline, respectively, yielding net overall reduction requirements for the two cities of 15% and 22%. The other major dischargers will be allowed a 70% increase. In sum, the wastewater requirements in the Haw are much smaller in magnitude than represented in the comments and almost wholly confined to two facilities with large flows that lack nutrient removal.

Because all facilities are operating at less than permitted flows, their nitrogen limits will initially allow higher concentrations than at full permitted flow. As their flows continue to increase, all major Haw facilities will eventually have to add nitrogen removal processes to meet mass limits, but only the two noted above must make improvements by the 2014 compliance date.

□ ***Rule .0271, Stormwater Requirements for State and Federal Entities***

Would establish parallel stormwater requirements for state and federal entities to those imposed on local governments for both new and existing development under rules .0265 and .0266. The NC DOT is separated from other state/federal entities based on the unique character of its activities. Annual reports would be required.

Hearing Officers' Recommended Changes

- For non-DOT entities, parallel changes to those in new and existing development rules, including addition of the option to use private sellers of reduction credit, and revisions to implementation timeframes.
- Revised new DOT road development requirements to be deemed compliant if they meet buffer protection rule treatment criteria.
- Revised existing DOT roadway requirements to a minimum implementation rate of 500 lb nitrogen reduction per 5-year period and at least 50 lb N/yr, to be obtained through retrofits or other measures.

- Added one year to DOT implementation timeframes.
- Moved accounting methods to a separate section and expanded it.

The NC DOT voiced strong objections to these rule requirements for several reasons including that they were not included in the original stakeholder process, do not believe they are a significant nutrient source in the watershed, and face unique technical, logistical, process and budget constraints as the singular statewide public linear infrastructure provider, a status that already subjects their projects to an extensive and logistically cumbersome review process. Division staff held a great number of meetings with DOT staff over these rules and appeared before the Board of Transportation along with executive-level Departmental staff in several successive meetings. The Hearing Officers received staff's product of these interactions. They accept the contention that public roads and other public linear infrastructure projects face unique constraints such that, at least until loading contributions from and management measures for them are better defined, it is reasonable to hold new road projects to currently recognized practicable treatment expectations. In both this rule and the New Development Stormwater rule, they revised the text to recommend that new public roads be held to the treatment requirements provided in the buffer rule.

For existing roadways, the Hearing Officers accept recommendations to set a minimum annual implementation rate while, at the same time, maintaining the long-term objective of achieving the reduction goals. They recognize that currently enacted regulations on NOx emissions from both motor vehicles and point sources are projected to result in significant reductions in total NOx emissions within the next 30 years, which would translate to some degree to reduced atmospheric deposition of nitrogen. To the extent that this occurs, it would lower runoff nitrogen concentrations from impervious surfaces. The accounting provisions call for periodically updating the appropriate runoff factors in export methods and adjusting loading estimates to reflect such changes.

□ ***Rule .0272, Riparian Buffer Mitigation Fees***

Sets an offset payment rate of \$.96/ft² (\$41,818/ac) to the Riparian Buffer Restoration Fund for buffer impacts deemed 'allowable with mitigation' under Rule .0267. This rule would not be exclusive to the Jordan nutrient strategy, and would enable uniform future changes in buffer offset fees across watersheds.

Hearing Officers' Recommended Changes

- Revised the buffer mitigation fee rate from seventy to ninety-six cents per square foot.

The NC Ecosystem Enhancement Program requested the above change based on current actual costs of performing buffer mitigation. The Hearing Officers appreciated the Program's input and accept their recommendation.

□ ***Rule .0311, Cape Fear River Basin (Schedule of Classifications)***

Formalizes reclassification of the non-WSW half of Jordan watershed to WS-V.

Hearing Officers' Recommended Changes

- None.

The Division notes that reclassifying from Class C to Class WS-V does not preclude the need for Water Supply water quality parameter sampling in the event that a new WS intake is pursued in the future in any of the segments being reclassified to WS-V under this rule change.

Appendix A. Hearing Officers' Appointment Letter



ENVIRONMENTAL MANAGEMENT COMMISSION

NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

David H. Moreau
Chairman
Charles Peterson
Vice Chairman

Michael F. Easley, Governor
William G. Ross Jr., Secretary

Donnie Brewer	Kevin Martin
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John S. Curry	Dickson Phillips III
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Tom Ellis	Stephen Smith
John R. Gessaman	Kenny Waldroup
E. Leo Green, Jr.	Steven D. Weber
Freddie Harrill	Forrest R. Westall, Sr.
Ernest W. Larkin	

May 9, 2007

MEMORANDUM

FROM: David H. Moreau, Chairman (Approved by DHM via email June 4, 2007)

TO: Tom Ellis, Kevin C. Martin, J. Dickson Phillips III, Stephen T. Smith, Forrest R. Westall, Sr.

SUBJECT: Your Appointment as Hearing Officers for the Jordan Nutrient Strategy Rulemaking

At its March 2007 meeting, the Commission approved moving forward with the public hearing and comment process for the subject rule-making. In my capacity as Chairman, I am appointing you to serve as Hearing Officers to oversee this process.

Your role in the process will be two-fold. First, you will preside over public hearings in an impartial manner. Second, you will be asked to weigh the comments received in the hearings and during the public comment period. You will have the opportunity, working with your fellow hearing officers and staff, to develop recommended revisions to the rules to address the public's concerns. These revisions, along with summaries of input received during the public comment period, will be provided to the full Commission in a Report of Proceedings in preparation for a request that they adopt the rules.

The current rulemaking schedule is as follows:

2007	April-May	Obtain DENR, OSBM approval of fiscal analysis Presentation of costs to Board of Transportation
	June-Aug	Public hearings (3), 60-day public comment period

	Aug-Oct	Hearing Officers deliberate
	Nov or Jan	Request EMC adopt rules
2008	Dec-Apr	RRC
	May-Aug	General Assembly
	April-May	Effective date if < 10 objections
	Aug-Sept	Effective date if > 10 objections

Staff is presently working to schedule hearings in the late June – early July timeframe, and will contact you with specifics. Staff will also provide more information prior to the hearings on your roles and responsibilities as hearing officers. If you have questions in the meantime, please feel free to contact Rich Gannon at 919-733-5083 ext. 356 or Jason Robinson at the same number, ext. 537.

Thank you in advance for your willingness to represent the Commission in this important rule-making effort.

Cc: Alan Klimek
Coleen Sullins
Lois Thomas
Megan Benton

Appendix B. Announcement of Public Hearings and Comment Period

ANNOUNCEMENT

PUBLIC HEARINGS & PUBLIC COMMENT PERIOD FOR PROPOSED WATER SUPPLY NUTRIENT STRATEGY FOR B. EVERETT JORDAN RESERVOIR

The North Carolina Division of Water Quality, on behalf of the NC Environmental Management Commission is seeking public comment **through August 14, 2007** on a set of proposed rules to control nutrient inputs to B. Everett Jordan Reservoir. Dates and locations for three public hearings are as follows:

<u>PUBLIC HEARING 1</u>	
Location:	Century Hall @ The Century Center 100 N. Greensboro St. Carrboro, NC 27510
Date:	Thursday, July 12, 2007
Time:	6:30 p.m.

<u>PUBLIC HEARING 2</u>		<u>PUBLIC HEARING 3</u>	
Location:	Koury Business Center, Room 101 Elon University 401 N. O'Kelly Ave. Elon, NC 27244	Location:	Koury Business Center, Room 101 Elon University 401 N. O'Kelly Ave. Elon, NC 27244
Date:	Tuesday, July 17, 2007	Date:	Tuesday, July 17, 2007
Time:	1:30 – 4:00 p.m.	Time:	6:30 p.m.

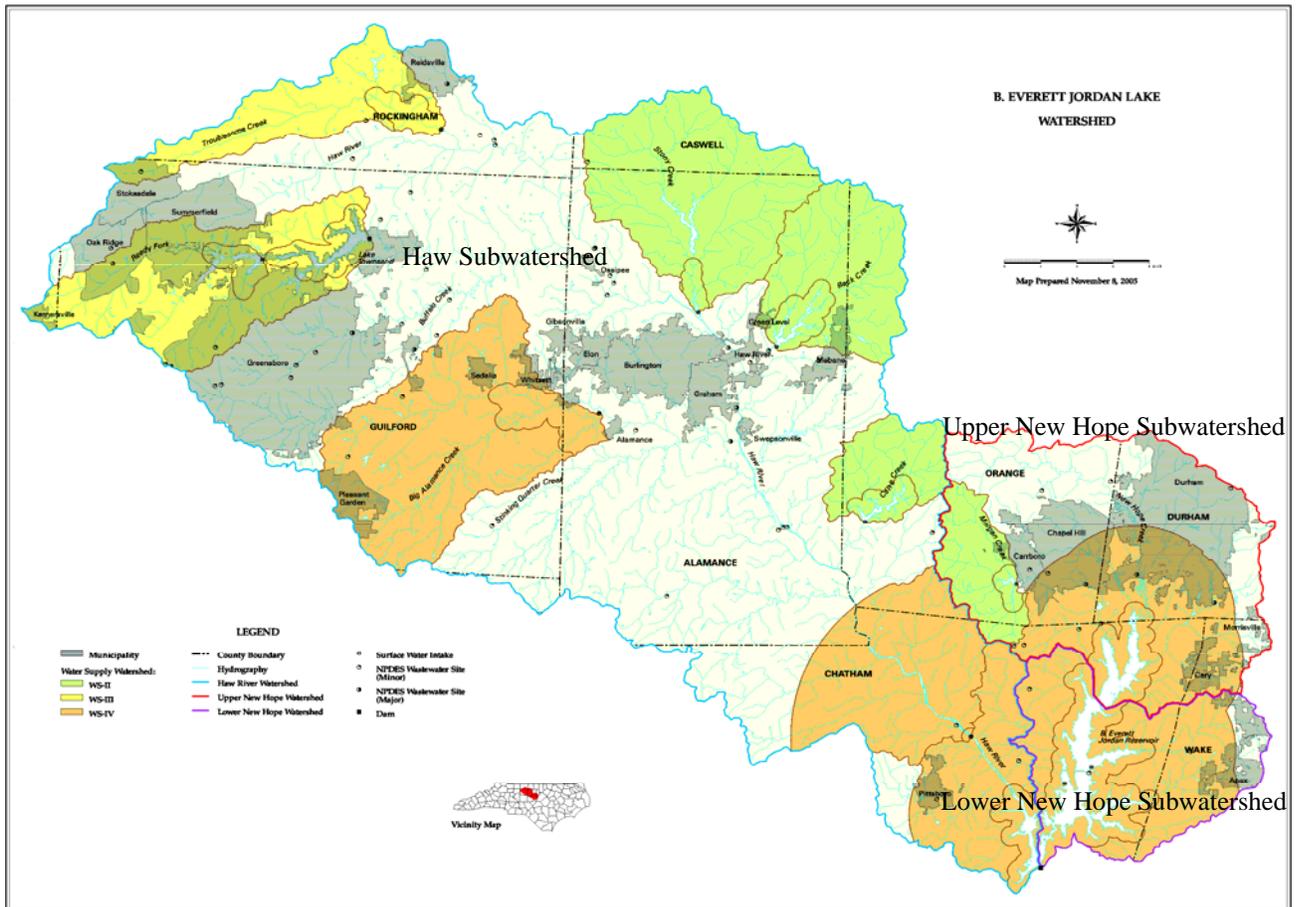
REASON FOR PROPOSED NUTRIENT RULES

B. Everett Jordan Reservoir in the upper Cape Fear River Basin serves as a drinking water source for the growing communities of Apex, Cary, Durham, Morrisville, RTP, and Chatham County. In addition, the reservoir is a popular recreational resource and supports a wide range of aquatic and water dependent wildlife. Since its impoundment in 1983, the reservoir has consistently shown substantial nutrient over-enrichment. The NC Environmental Management Commission, which is responsible for protecting and restoring water quality in North Carolina, designated it a 'Nutrient Sensitive Water' and required development of a nutrient control strategy. Initial requirements reduced phosphorus concentrations in wastewater discharges to streams in the reservoir watershed. Despite these measures, in 2002 the Upper New Hope Creek Arm of the reservoir was found by the Division to no longer meet its designated uses due to excess nutrient inputs. The Division made the same determination for the rest of the reservoir in 2006. The Commission has determined that additional nutrient management actions are needed to recover the uses of Jordan Reservoir. In addition, the Clean Water Responsibility Act of 1997, adopted by the NC General Assembly as S.L. 1997-458, includes requirements to address water quality problems in Nutrient Sensitive Waters including Jordan Reservoir. It mandates stricter nutrient concentration limits for point source discharges to these waters, and it directs the Commission to establish goals for reducing overall nutrient inputs. Point and nonpoint, or stormwater runoff, sources are to share proportionally in responsibility for reducing inputs. In addition, the reservoir's status as impaired waters invokes federal Clean Water Act requirements to develop and implement nutrient loading reduction goals for the reservoir in the form of a 'total maximum daily load' (TMDL).

SCOPE OF RULES

The proposed strategy is designed to comprehensively reduce nitrogen and phosphorus loading to each of the three arms of Jordan Reservoir (shown in map below). The set of rules targets point and major nonpoint nutrient sources. The rules are designed to distribute reduction responsibility proportionally among all sources relative to a common starting point of 2001. The segmented hydrologic behavior of Jordan Reservoir requires three sets of loading goals corresponding to the three reservoir arms shown on the map: the Upper New Hope, Lower New Hope, and Haw. A total of 12 rules are proposed that require new management actions for agriculture runoff, new and existing development stormwater runoff, municipal and industrial wastewater, fertilizer applicators and protection of riparian buffers across all land uses.

JORDAN RESERVOIR WATERSHED



PARTIES AFFECTED

- A nutrient management rule would be administered by the Division and would affect **fertilizer applicators**, both agricultural and turf and landscape applicators
- An agriculture rule would be administered by the Division and would affect **all agricultural operations**.
- A stormwater management for new development rule would be administered by **all local governments** and would directly affect **developers**.
- A stormwater management for existing development rule would be administered by the Division and directly affect **local governments**.
- Riparian buffer rules would be administered primarily by **local governments** and would affect **property owners across all land uses**.

- A wastewater discharge rule would be administered by the Division and would affect **public and private wastewater dischargers**.
- A state and federal stormwater rule would be administered the Division and would primarily affect the **NC Department of Transportation** and the **five state universities** in the watershed.

The proposed effective date for the final rules pursuant to this public comment process is March 1, 2008.

HOW TO SUBMIT COMMENTS

The Commission is very interested in all comments pertaining to this proposed set of rules. The Division of Water Quality encourages those interested and potentially affected by this proposal to review the information below and make comments on the proposed strategy.

At the public hearings, participants will have the opportunity to make oral comments and submit written comments. The Hearing Officers will limit the length of time each speaker is allowed, if necessary, in order to allow all who wish to speak that opportunity.

Written comments may also be submitted to the address below **until August 14, 2007**. Written comments may be submitted to Rich Gannon or Jason Robinson of the Division's Planning Section at the postal address, e-mail address, or fax number listed below.

FOR ADDITIONAL INFORMATION

The following information related to the proposed rules is available on the Division website at: <http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm>

- This announcement (3 pp)
- Summary of the reservoir's history and the need for and nature of the rules (8 pp)
- Text of the 12 proposed rules (compiled (81 pp) and individual)
- Fiscal analysis of costs to affected parties (187 pp)
- Links to draft TMDL and related water quality modeling information
- Final Report of 2003-2004 stakeholder goal-setting/conceptual strategy process (38 pp)

Secondary supporting information is also available as follows:

- Related Division of Water Quality rules: http://www.ncwaterquality.org/admin/rules/codes_statutes.htm
- Full records of 2003-2004 stakeholder process that set strategy goals and developed a conceptual strategy can be found at the following website by following the path below: <http://www.tjcog.dst.nc.us/downloads.shtml> - jorlkstk
> REGIONAL PLANNING > WATER RESOURCES > Jordan Lake Stakeholder Project

You may also request hard copies of information from or direct questions to:

Rich Gannon or Jason Robinson
 DENR-Division of Water Quality, Planning Section
 1617 Mail Service Center, Raleigh, NC 27699-1617
 Phone (919) 733-5083, ext. 356 or 537, Fax (919) 715-5637
Rich.Gannon@ncmail.net or Jason.T.Robinson@ncmail.net

Appendix C. Text of Rules with Hearing Officers' Recommended Changes

Appendix D. Summary of Public Comments with Staff Replies

Appendix E. Fiscal Analysis Revisions

FISCAL ANALYSIS REVISIONS

Original Fiscal Analysis

To meet requirements of the rulemaking process and to address stakeholder interest, Division staff estimated costs for the set of rules comprising the Jordan nutrient strategy. The Fiscal Analysis document, dated June 11, 2007, is available on the Jordan Nutrient Strategy website at: <http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm>. This fiscal analysis was reviewed and approved by DENR's Division of Budget, Planning and Analysis and the Office of State Budget and Management. The Office of the Governor and the Fiscal Research Division of the General Assembly also reviewed it. Staff made numerous revisions as a result of reviewers' input. The Commission also had opportunity to review the analysis before approving the rules to be taken to public comment.

Purpose of Revisions

Staff has developed revisions to our cost estimates to address several issues. In general, the public comments reflected a high level of concern over anticipated cost impacts of the rules, particularly the Existing Development rule. More specific reasons are that:

- Some technical issues were raised with Division cost estimates.
- Rule revisions by the Hearing Officers have affected some cost projections.
- Costs for Existing Development in the Fiscal Analysis were developed as worst-case projections of the full cost of rule compliance based on the assumed use of structural stormwater retrofits only, as well as purchasing all the land required for them. This has led to the widespread impression that costs will in fact be at least this great. The rule, on the other hand, allows for and identifies a wide range of load-reducing practices. We believe many of these options are available to local governments now and we expect more to become available as accounting is developed. Given the long-term nature of compliance, we also recognize the potential for local governments to find significant numbers of willing landowners for the use of structural retrofits, placing practices on private property or in easements and avoiding purchase costs. Overall, we expect the rule to be significantly less costly to implement than our fiscal estimate and others' projections would suggest.
- We recognize that in projecting beyond a handful of years the set of actions that will be taken to address Existing Development, the uncertainties become prohibitively large for several reasons. First, we expect to develop accounting tools during the first years that will allow credit for additional, more cost-effective alternative practices for which we cannot currently state the magnitude of reductions. Second, we recognize the extent to which other factors may play in to local decision-making. One factor that might not have been foreseen five years ago is how the current drought is driving real interest in technologies for capturing rainfall as a resource. Water-harvesting technologies also reduce nutrient loading, and will likely become more available and cost-effective with time. Third, several NOx emission air quality regulations currently in place are expected to result in reductions in nitrogen export from impervious surfaces over the next thirty years. The magnitude of this effect will be determined through monitoring of runoff.

Revisions Made

Of the numerous comments regarding our original fiscal calculations, we found several that raised compelling issues. Those criticisms are reflected in the revisions provided here. The full set of cost

comments and staff replies can be found in the Comments/Replies section of this report. We revised costs for several rules as detailed below:

Rule .0265, Stormwater Management for New Development

Where we originally assumed smaller municipalities would hire contractors to draft ordinances, we increased the pay rate from \$36 per hour to \$100 per hour, resulting in a cost of \$128,000 to local governments.

Several local governments commented that implementation would require significant new staff resources and that we had not accounted for this. In fact, our fiscal analysis included local administration of new development stormwater programs together with buffer implementation staff costs, given their interrelated natures, and placed the costs in the buffer rule chapter. Based on the comments, we have increased those estimates, again under the Buffer Protection section.

Rule .0266, Stormwater Management for Existing Development

Considering the factors identified in the Purpose section above, we replace our original, 'full cost' estimate with an annual cost range, which includes a low-end estimate to accompany the worst-case value already given. We note that uncertainties around this annual range increase with each year of implementation.

The low-end estimate in Table E-1 is based on the cost of new staff that local governments may hire to implement non-structural solutions such as ordinances. We assumed that 6 of the 8 counties and the 9 largest municipalities might each require one new staff person. This would include all municipalities with watershed populations of 10,000 or greater. We assumed that smaller municipalities could enter into agreements with larger ones or counties. We assumed an annual salary of \$50,000 per person, which equates to a total annual rule cost of \$750,000.

We also revised the worst-case estimate based on comments. One comment identified retrofit construction cost multipliers that were not available at the time of our original fiscal analysis released in August 2007 from a nationally recognized source, the Center for Watershed Protection. Our revisions use a uniform multiplier of two on construction costs for retrofits. Based on the same report, we also raise the planning cost from 25% to 32% of construction costs.

We agree with the comment recognizing that the costs of feasibility studies should be added, even if they take the form of opportunity costs for existing staff. We have included those estimates under Planning costs in years 1 through 3. We based our estimate on a proposal for FY08 Section 319 funding for a project to conduct feasibility studies for eight municipalities. We determined the proposed acreage of detailed watershed assessment in the application to be 8-16 square miles. We then multiplied the associated full cost of the proposed work, including grant request and match, of \$135,000 by 20-40 to reflect the approximately 312 square miles of developed land in the watershed. This yielded a total cost of \$2.7 - \$5.4 million, which we distributed over years 1 through 3.

Lastly, we agree with the comment that it appears unlikely that phosphorus reductions will be in short supply for any source. We thus remove the phosphorus trading credit we originally included in the Existing Development rule calculations, which totaled approximately \$10.8 million, raising the total cost estimate for the rule by this amount. While a large sum, it amounts to less than 2% of the total projected worst-case estimate.

Rule .0267 & .0268, Protection of and Mitigation for Existing Riparian Buffers

Based in part on experience in the Neuse and Tar-Pamlico Basins, we originally reasoned that only five small but growing municipalities would require new staff to implement the buffer provisions, and

estimated those costs to total \$375,000/yr. For counties, the assumption of little development falling within ETJ's was one of two that we felt supported the assumption of no significant new costs to counties. The other was that all counties contain Water Supply Watersheds and implement stormwater and buffer programs for those purposes. In addition, at least Chatham County has undertaken a more stringent and involved buffer program than required by these rules.

However, given comments from several local governments and the fact that we were unable to survey all local governments on this issue during fiscal note development, we have increased our estimate of implementation staffing needs. We added three stormwater engineer positions for a total of eight, attributing these positions to the City of Durham, Alamance County, and Reidsville. With an estimated annual salary of \$75,000 per stormwater engineer, this equates to an annual cost of \$600,000 to local governments.

Based on comments from the NC Ecosystem Enhancement Program, we revised the buffer mitigation fee in Rule .0272 from \$0.70 per square foot to \$0.96 per square foot. Since we used this fee in our original calculation of mitigation costs to landowners, we revised our mitigation estimate under the buffer protection rule, which provides for the mitigation option. This raised total annual buffer-related costs from \$4.4 million to \$5.1 million.

Rule .0270, Wastewater Discharge Requirements

Advancing the nitrogen compliance date two years from 2016 to 2014 does not change the compliance cost but would result in earlier onset of the increased operation & maintenance costs associated with nitrogen removal. This is reflected in Table E-1.

Rule .0271, Stormwater Requirements for State and Federal Entities

Changes to DOT requirements in this rule resulted in substantially lower costs to that agency. The rule was revised to deem new DOT road projects compliant with the rule if they meet the requirements of the Buffer Protection Rule (.0267). The DOT's buffer protection costs are included in cost totals for the Buffer Protection Rule. Thus, we removed all additional DOT new road costs from this rule, which amounted to \$2.1 million per year.

The requirements for existing DOT roadways were revised in the rule to a minimum implementation rate equating to 100 lb nitrogen reduction per year. The original state/federal cost estimate included a range of full costs based on three scenarios for existing DOT roads: offset payment to the EEP, a co-mingled drainage option, and DOT's worst-case, treatment-at-every-outfall scenario. To address the rule change, for the same reasons given in the Purpose discussion above, we revised the DOT full costs to an annual range to achieve the 100 lb N/yr reduction. Using two worst-case scenarios involving only structural retrofits, costs equated to \$576,000 - \$711,000 per year, beginning in year three.

Cost changes to universities and other state and federal entities other than the DOT directly reflect existing development cost revisions made to local governments because a more accurate method of estimating these entities' costs was unavailable. As in the original estimate, these costs were estimated using a fraction of all existing development costs based on proportional land cover acreage, which is 3.9%. The new cost range for universities and others is \$205,000 - \$1.3 million per year, replacing the original estimate of \$725,000.

Table E-1 below is the summary cost table used in the original Fiscal Analysis with the revisions described here shaded in gray. Revised costs are struck-through.

Table E-1: Revised Cost Estimates for the Jordan Rules

			Regulated Parties					Implementing Agencies				
			Total	Capital (Incl'g Land)	Operation / Maint.	Planning	Regul'y Transax'n	Other	Total	Regul'y Developm't	Monitor'g/ Rec-kpg	Permit-ting
.0263	Nutrient Management		Regulated Party: Fertilizer Applicators. "Other" = Applicator's lost wages to attend NM Training					Implementing Agency: DWQ - \$0 new costs				
		2009	\$0	\$0	\$0	\$0	\$0	\$0				
		2010	\$0	\$0	\$0	\$0	\$0	\$0				
		2011	\$31,500	\$0	\$0	\$0	\$0	\$31,500				
		2012	\$31,500	\$0	\$0	\$0	\$0	\$31,500				
		2013	\$0	\$0	\$0	\$0	\$0	\$0				
	5-Yr Total:	\$63,000	\$0	\$0	\$0	\$0	\$63,000					
.0264	Agriculture		Regulated Party: Agricultural Community. "Other" = opportunity cost of converting crop acres to conserved cover. Cap costs shown assume full cost-share (full cap cost = x4).					Implementing Agency: DWQ - \$0 new costs				
		2009	\$298,000	\$190,000	\$57,100	\$0	\$0	\$50,500				
		2010	\$406,000	\$190,000	\$114,000	\$0	\$0	\$101,000				
		2011	\$513,000	\$190,000	\$171,000	\$0	\$0	\$151,000				
		2012	\$621,000	\$190,000	\$229,000	\$0	\$0	\$202,000				
		2013	\$728,000	\$190,000	\$286,000	\$0	\$0	\$252,000				
	5-Yr Total:	\$2,570,000	\$952,000	\$857,000	\$0	\$0	\$757,000					
.0265	Stormwater, New Dev.		Regulated Parties: Developers (Capital, Regulatory, Planning) & Property Owners (O&M)					Implementing Agency: DWQ - \$0 new costs				
		2009	\$0	\$0	\$0	\$0	\$0	\$0				
		2010	\$0	\$0	\$0	\$0	\$0	\$0				
		2011	\$203,000	\$167,000	\$19,800	\$16,300	\$0	\$0				
		2012	\$431,000	\$338,000	\$60,000	\$33,200	\$0	\$0				
		2013	\$479,000	\$344,000	\$100,800	\$33,700	\$0	\$0				
	5-Yr Total:	\$1,113,000	\$849,000	\$181,000	\$83,200	\$0	\$0					
		Regulated Party: Local Governments- \$0 (negligible regul'y trans'x'n).					Implem. Agency: LG's - \$48,000 \$128,000, 2010, rule dvlp't. Other costs incorp'd in buffer rule imp.					
.0266	Stormwater, Existing Dev.		Regulated Party: Local Gov'ts - Feasibility Study Years 1-3 - Implementation begins yr. 5					Implementing Agency: DWQ - \$0 new costs				
		2009	\$900k - \$1.8m	\$0	\$0	\$900k - \$1.8m	\$0	\$0				
		2010	\$900k - \$1.8m	\$0	\$0	\$900k - \$1.8m	\$0	\$0				
		2011	\$900k - \$1.8m	\$0	\$0	\$900k - \$1.8m	\$0	\$0				
		2012	\$0	\$0	\$0	\$0	\$0	\$0				
		2013	\$750k-\$26m	\$750k - \$21.4m	\$0-\$140k	\$0-\$4.4m	\$0-\$54k	\$0				
	5-Yr Total:	\$16,400,000	\$14,500,000	\$108,000	\$1,720,000	\$54,300	-\$23,200					
	Full Cost:	\$3.5m-\$31.4m	\$750k - \$21.4m	\$0-\$140k	\$2.7m-\$5.4m	\$0-\$54k	\$0					
		\$528,000,000	\$436,000,000	\$50,000,000	\$51,500,000	\$1,629,000	-\$10,800,000					
.0267	Riparian Buffer Protection		Regulated Party: Local Governments - \$0 (negligible o&m public land)					Implementing Agency: DWQ - \$0 new costs				
			Regulated Party: Property Owners - "Other" =opportunity cost of unharvested timber. Capital costs include mitigation (developers and DOT).					Implementing Agency: Local Governments - net net costs st-water & buffer permitting & compliance.				
		2009	\$1,004,000	\$955,000	\$3,910	\$45,500	\$0	\$0	\$48,000	\$ - 48,000	\$0	
			\$993,000	\$955,000	\$3,910	\$34,100			\$128,000	\$ 128,000		
		2010	\$4,400,000	\$3,260,000	\$34,000	\$108,000	\$0	\$1,000,000	\$375,000	\$ -	\$375,000	
			\$5,080,000	\$3,950,000	\$34,000	\$96,000			\$600,000		\$600,000	
		2011	\$4,430,000	\$3,260,000	\$64,100	\$108,000	\$0	\$1,000,000	\$375,000	\$ -	\$375,000	
			\$5,110,000	\$3,950,000	\$64,100	\$96,000			\$600,000		\$600,000	
		2012	\$4,460,000	\$3,260,000	\$94,200	\$108,000	\$0	\$1,000,000	\$375,000	\$ -	\$375,000	
			\$5,140,000	\$3,260,000	\$94,200	\$108,000			\$600,000		\$600,000	
		2013	\$4,490,000	\$3,260,000	\$124,000	\$108,000	\$0	\$1,000,000	\$375,000	\$ -	\$375,000	
			\$5,170,000	\$3,950,000	\$124,000	\$96,000			\$600,000		\$600,000	
			5-Yr Total:	\$18,800,000	\$14,000,000	\$320,000	\$478,000	\$0	\$4,000,000	\$1,550,000	\$48,000	\$1,500,000
		\$21,500,000	\$16,760,000	\$320,000	\$418,000			\$2,528,000	\$128,000	\$2,400,000		

Table E-1: Revised Cost Estimates for the Jordan Rules (continued)

		Regulated Parties					Implementing Agencies						
		Total	Capital (Incl'g Land)	Operation / Maint.	Planning	Regul'y Transax'n	Other	Total	Regul'y Developm't	Monitor'g/ Rec-kpg	Permit-ting	Inspect/ Enforce	
.0270	Wastewater Dischargers	Regulated Party: Local Governments. Annual O&M starting Yr. 8 6 = \$12.1 m. Net costs post-HB515: 5-Yr Total = \$17.4 m, 7-Yr Total = \$65 m. \$62m					Implementing Agency: DWQ - \$0 new costs						
		2009	\$25,800,000	\$0	\$1,260,000	\$24,500,000	\$0	\$0					
		2010	\$25,800,000	\$0	\$1,260,000	\$24,500,000	\$0	\$0					
		2011	\$1,260,000	\$0	\$1,260,000	\$0	\$0	\$0					
		2012	\$1,260,000	\$0	\$1,260,000	\$0	\$0	\$0					
		2013	\$1,260,000	\$0	\$1,260,000	\$0	\$0	\$0					
		5-Yr Total	\$100,242,000	\$98,987,000	\$6,300,000	\$49,000,000	\$0	\$0					
		7-Yr Total	\$253,000,000	\$198,000,000	\$6,300,000	\$49,000,000	\$0	\$0					
		Regulated Party: Private (Domestic & Indust). Annual O&M starting Yr.8 6 = \$552k. Net costs post-HB515: 5-Yr Total = \$1.2m, 7-Yr Total = \$4.9m \$4.8m											
		2009	\$868,000	\$0	\$58,000	\$810,000	\$0	\$0					
		2010	\$868,000	\$0	\$58,000	\$810,000	\$0	\$0					
		2011	\$58,000	\$0	\$58,000	\$0	\$0	\$0					
		2012	\$58,000	\$0	\$58,000	\$0	\$0	\$0					
		2013	\$58,000	\$0	\$58,000	\$0	\$0	\$0					
5-Yr Total	\$3,336,000	\$3,278,000	\$290,000	\$1,620,000	\$0	\$0							
7-Yr Total	\$8,466,000	\$6,556,000	\$406,000	\$1,620,000	\$0	\$0							
.0271	State & Fed Stormwater	Regulated Party: State Entities - DOT and Universities. Includes new dev (Univ's begin Yr 1, DOT begins Yr 2.5) and existing dev (begins Yr 3 for DOT, Yr 5 for Univ's) costs.					Implementing Agency: DWQ - \$0 new costs						
		2009	\$16,000	\$13,000	\$2,000	\$1,000	\$0	\$0					
		2010	\$51k-\$86k	\$12.6k	\$2.2k	\$36.4k-\$71.5k	\$0	\$0					
		2011	\$16,000	\$13,000	\$2,000	\$1,000	\$0	\$0					
		2012	\$51k-\$86k	\$12.7k	\$2.3k	\$36.4k-\$71.5k	\$0	\$0					
		2013	\$1.9m-\$17m	\$1.9m-\$13m	\$2.3k-\$215k	\$1.2k-\$3.3m	\$0	\$0					
		5-Yr Total	\$628k-\$798k	\$533k-590k	\$2.3k-\$65.9k	\$36.4k-\$199k	\$0	\$0					
		Full Cost	\$1.9m-\$17m	\$1.9m-\$13m	\$2.3k-\$428k	\$1.2k-\$3.3m	\$0	\$0					
			\$593k-\$728k	\$533k-590k	\$2.3k-\$65.9k	\$1.3k-\$129k	\$0	\$0					
			\$2.6m-\$18m	\$2.5m-\$14m	\$8.1k-\$647k	\$68k-\$3.4m	\$0	\$0					
	\$611k-\$1.8m	\$606k-\$1.4m	\$3.9k-\$73k	\$1.3k-\$340k	\$0	\$0							
	\$6.5m-\$52m	\$6.4m-\$40m	\$17k-\$1.3m	\$73k-\$10m	\$2.2k	\$0							
	\$1.9m-\$3.5m	\$1.8m-\$2.5m	\$13k-\$209k	\$112k-\$811k	\$0	\$0							
	\$78m-\$616m	\$75m-\$413m	\$2.0m-\$100m	\$2.0m-\$102m	\$4.3k	\$0							

.0268 Mitigation for Riparian Buffers - We report mitigation costs under the buffer protection rule since it sets the requirement to mitigate. Goals (.0262), Offset Options (.0269), Buffer Mitigation Fee (.0272): These rules do not impose new requirements, and thus have no costs.
 .0311 Cape Fear River Basin (Reclassification) - no new costs to dischargers to meet water quality standards.

