Report of Proceedings
Proposed Rules for Falls Lake Reservoir
Water Supply Nutrient Strategy

Prepared For the November, 18th, 2010 Meeting of the NC Environmental Management Commission

Public Hearings (2)

Neal Middle School	Campbell Lodge, Durant Park
201 Baptist Road	3237 Spottswood Street
Durham, NC 27704	Raleigh, NC 27615
7:00-10:00 pm	7:00 – 10:00 pm
Wednesday, June 30th, 2010	Thursday, July 1st, 2010

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

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EXECUTIVE SUMMARY

Background

In 2005 the North Carolina General Assembly passed SL 2005-190 (S981), which includes a requirement for the Environmental Management Commission to adopt a nutrient strategy for Falls Lake. Subsequent legislation passed in 2009, Session Law 2009-486, directed the EMC to adopt a strategy for restoring nutrient related water quality standards in the lake by January 15, 2011. The EMC is further charged by this legislation to concurrently adopt the permanent rules as temporary rules. This will ensure requirements are in effect by the legislative deadline and allow implementation of the requirements to begin while the permanent rules advance through the Rules Review Commission and General Assembly. Based on these laws, the Division of Water Quality (DWQ), in consultation with a technical advisory committee, undertook a monitoring and modeling effort of the Lake that began in 2004 and was completed in 2009. Based on water quality data collected between 2002 and 2006, Falls Lake was listed as impaired for chlorophyll-a on the NC 2008 Clean Water Act Section 303(d) list. Chlorophyll-a is a measure of algal productivity, which reflects levels of nutrient inputs to the lake.

The Division held a series of ten stakeholder meetings and twelve subcommittee meetings from August 2008 to January 2010, in order to formulate a strategy to attain the nutrient-related chlorophyll-a water quality standard in Falls Lake. In March 2010, the Division received permission from the Environmental Management Commission to take the proposed strategy out for public comment. Following Office of State Budget and Management approval of a Fiscal Analysis on the proposed strategy, it was released for public comment from June 15 to August 16 2010. As part of the public comment process, two public hearings were held; one in Durham on June 30 and the other on July 1 in Raleigh. The Commission assigned three Hearing Officers to these hearings. There were 109 people in attendance at the public hearing in Durham and 39 people registered to speak. The Raleigh public hearing had 108 people in attendance and 37 people registered to speak.

During the hearings and comment period, the Division received 629 comments from individuals and organizations. The Hearing Officers have reviewed these comments and weighed input from the stakeholder teams, potentially affected parties, local governments, legislators, concerned citizens, interest groups, and DWQ staff to arrive at recommended revisions to the rules for Commission consideration to adopt.

Highlights of the Falls Nutrient Strategy

Key differences encountered in the Falls watershed from preceding strategies include the unprecedented degree of nutrient reduction needed to recover standards in the lake and the fact that the Neuse nutrient strategy and other regulations have achieved implementation of many measures that would otherwise be available to advance progress toward Falls Lake goals. As a result, reduction needs faced by most sources challenge the limits of current technology and impose potentially significant costs.

The proposed rules reflect these new challenges by invoking a staged and adaptive management process as set out in the Purpose and Scope rule. The strategy regulates New and Existing Development, Wastewater Discharges, Agriculture, and State/Federal Entities. Stage I, from 2011 through 2020 requires currently achievable controls throughout Falls watershed to meet the chlorophyll-a standard in at least the lower reservoir by 2021; Stage II requires reductions in portions of the watershed draining to the lake upstream of S.R. 50 of 40 percent nitrogen and 77 percent phosphorus to the maximum extent technically and economically feasible by 2036. The Division reports to the Commission every 5 years on progress not only in implementation, load reduction and lake response, but also on the state of scientific, technical and accounting advancement across a range of challenging issues. At the request of an affected party the Division also reports to the Commission in 2025 on "the effects of full implementation of Stage I and the implications for Stage II". The Division may make rule amendment recommendations at any of these points. Guidance is provided for parties interested at any point in developing alternative modeling of the lake.

Highlights of Hearing Officer Recommendations

The Hearing Officers' recommended revisions to the proposed rules balance the challenging magnitude of nutrient reductions needed to restore nutrient-related water quality standards throughout Falls Lake with the uncertainties over the achievability of that goal and the potential costs of implementation. In doing so, the Hearing Officers have made revisions affecting all regulated sources.

Scope and Purpose (15A NCAC 02B .0275): The Hearing Officers have enhanced adaptive management provisions in the Scope and Purpose rule to ensure that Stage II implementation efforts are not undertaken without a better understanding of the lake's response to Stage I implementation efforts, the level of effort needed and feasible in Stage II, and whether alternative regulatory action would be sufficient to protect existing uses of the lake. They incorporated these requirements into a 2025 report to the Commission.

Existing Development (15A NCAC 02B .0278): In keeping with the 2025 report, the Hearing Officers added provision to the Existing Development Stormwater rule for local governments' initial plans under Stage II to base rates of implementation on level of effort during Stage I, which could differ from rates needed to meet full reductions by 2036. These plans would be revisited in 2026 in light of the Division's 2025 report to the Commission. The Hearing Officers also revised the standard for subsequent 5-year Stage II plans from "maximum extent technically and economically feasible" to the standard included in Jordan session law, "reasonable and cost-effective".

New Development (.0277) and State Federal Entity (.0281): The Hearing Officers made two noteworthy revisions to stormwater requirements for new development, which appear in both the New Development rule and the State/Federal Entities Stormwater rule. First, in light of the magnitude of reduction needs across all sources they lowered disturbance thresholds requiring permits from one-half acre for commercial/industrial development and one acre for residential

development to one-quarter acre for both. Second, onsite treatment requirements for stormwater were broken into tiers to reflect the ability to install best management practices (BMPs) to treat runoff. Here, smaller sites between one-quarter and one acre need to treat at least 30 percent of both nitrogen (N) and phosphorus (P) loads onsite while sites larger than one acre are required to treat 50% of both N and P onsite. Both these changes reflect a compromise between the options originally published for public comment. The Hearing Officers, after weighing comments from local governments, felt these revisions captured a greater majority of new development while not over-burdening local governments.

Agriculture (.0280): The Agriculture rule calls for uniform individual implementation of riparian buffers and livestock exclusion on all waterbodies in Stage II if agriculture does not meet Stage I 20% and 40% N and P reduction objectives. The Hearing Officers added clarification to those requirements. They also scaled back expectations for biosolids application rates on farmland based on expert input that science on the dynamics of chemically bound phosphorus in biosolids is not yet sufficient to adequately inform application decisions.

Fertilizer Management. (.0283) Another revision to the rules is the removal of the Fertilizer Management Rule from the strategy. Although the Hearing Officers recognize the importance of nutrient management planning and education, they considered the existing nutrient management rule already implemented for the Neuse River Basin. They weighed the additional resources required to implement the proposed rule against expert input questioning its benefits, and determined it did not justify keeping this Rule. As a result there are eight rules remaining in the final rules package

Nutrient Offsets and Trading (.0281): The Hearing Officers clarified the requirements of this rule by ensuring that any nutrient offset programs implemented under this strategy complied with the requirements in the Nutrient Offset Rule 15A NCAC 02B .0240. A provision was also added requiring the Agricultural Watershed Oversight Committee to seek Division approval of any trading program they may develop.

Conclusions

It is the unanimous recommendation of the Hearing Officers that the rules proposed herein comprising the Falls Reservoir Water Supply Nutrient Strategy be approved by the full Commission with changes noted, and be filed as permanent rules with the Rules Review Commission.

Motion 1: The Hearing Officers move that the Commission adopt the proposed rule [15A NCAC 02B.0275; 0276; 0277; .0278; .0279; .0280; .0281; .0282; .0282 and the proposed rule amendments to .0235 and .0315] as presented in Appendix C of this package as permanent rules at its November 2010 meeting.

Motion 2: The Hearing Officers further move that the Commission concurrently adopt the rules as presented in Appendix C of this package as temporary rules, as mandated by Session Law 2009-486, with a proposed effective date of January 1, 2011.

FALLS LAKE NUTRIENT STRATEGY: AN OVERVIEW

In 2005 the NC General Assembly passed SL 2005-190 (S981), which includes a requirement for the Environmental Management Commission to adopt a nutrient strategy for Falls Lake. This report summarizes the development history of the proposed Falls Lake Nutrient Strategy rules, its public hearings, comments received, and the Commission's recommended changes to the proposed rules based on comments received during the public comment period that occurred from June 15, 2010 to August 16, 2010.

Falls Watershed

Falls of the Neuse Reservoir (a.k.a. Falls Lake) is a man-made reservoir filled in 1983. The 770 square-mile watershed to Falls Lake is located in the northeastern Piedmont of North Carolina and comprises the upper end of the Neuse River Basin. The watershed spans portions of six counties including parts of Durham and Raleigh (Figure 1). Over 90,000 people reside in the watershed with the population projected to double by the year 2025. The Raleigh-Cary area was the fastest growing metro area in the country between 2007 and 2008 with a 4.3 percent population increase (U.S. Census, 2009). Nine water supply reservoirs in the watershed, including Falls Lake, serve 450,000 people (NC DWQ, 2008). Land cover in the watershed is approximately 58 percent forest, 18 percent agriculture, and 11 percent developed.

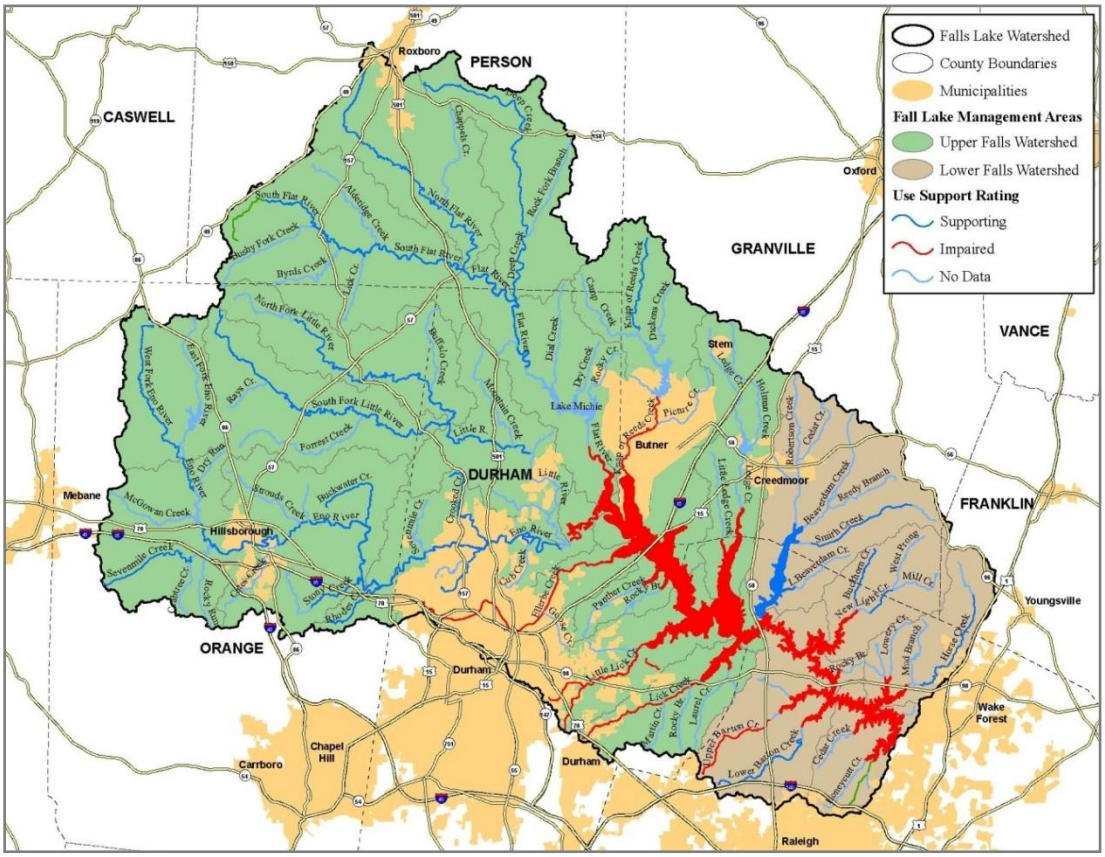

Figure 1. Falls Lake Watershed.

Falls Lake Water Quality

Following questions in 2004 over the condition of Falls Lake, DWQ began more intensive sampling to assess whether the lake was meeting water quality standards and to support development of lake and watershed models. A Falls Lake Technical Advisory Committee (TAC) was formed in July 2005 to assist DWQ with the review and modification of both the monitoring strategy and lake modeling activities. The monitoring study was completed in fall 2007. Based on water quality data collected between 2002 and 2006, Falls Lake was listed as impaired for chlorophyll-*a* on the NC 2008 303(d) list. Chlorophyll-*a* is a measure of algal productivity, which reflects levels of nutrient inputs to the Falls Lake, which remains on the 2010 303(d) list. The 303(d) list is a list of impaired waters that are not meeting water quality standards and require a Total Maximum Daily Load (TMDL), which is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The portion of the lake above interstate I-85 was also listed as impaired for turbidity.

Data collected by DWQ indicate that the North Carolina chlorophyll-*a* (chl-*a*) standard (not greater than 40 µg/L) has been frequently violated in Falls Lake, with higher standard violation rates observed at the upper part of the lake, above NC 50. Figure 2 illustrates high levels of algal production in the upper lake, which generally decreases moving down-lake toward the dam.

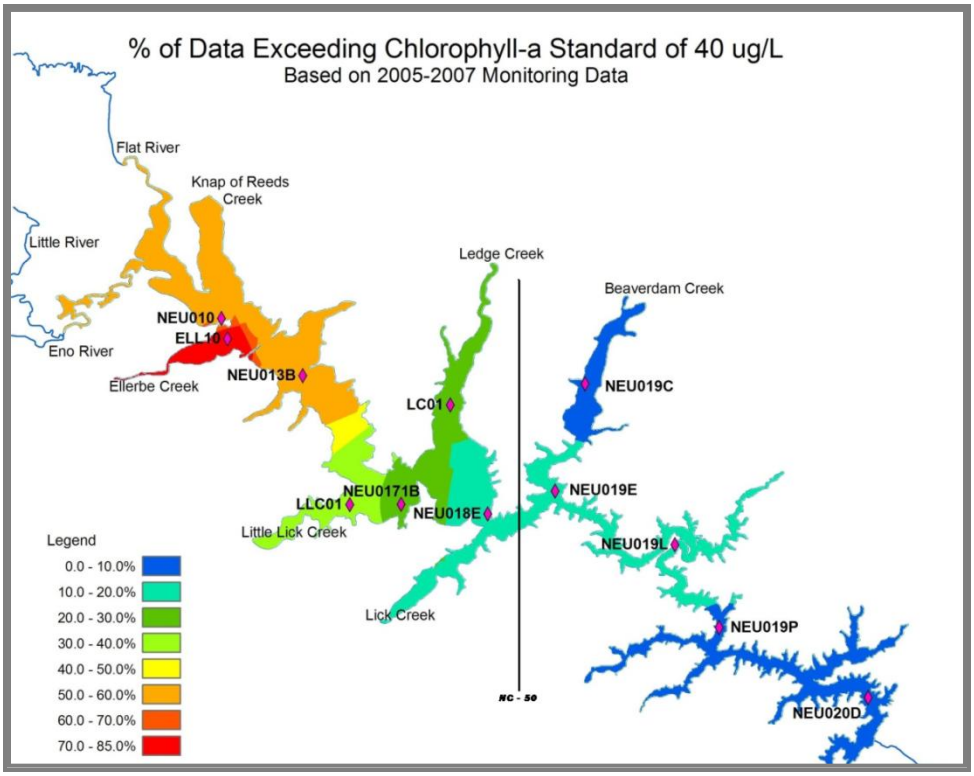

Figure 2. Distribution of Algal Production in Falls Lake as Measured by Chlorophyll-a Concentrations, 2005-2007

The technical implication of failing to meet the chl-a standard is that the lake is not fully supporting its fundamental designated uses, including aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation, and agriculture. Practical implications include that the lake supports a less diverse, less healthy biota, recreation becomes less attractive, and water treatment costs increase. The regulatory implications are that the Commission is required to develop a strategy to fully restore designated uses. These latter two issues are discussed further below.

Falls Lake Nutrient Loading Sources

Nutrient loads are produced by various sources in the watershed, including both "point sources", such as wastewater discharges, and "nonpoint sources", which are diffuse inputs such as runoff from land uses and atmospheric deposition. The delivered total nitrogen (TN) and total phosphorus (TP) loading estimated by the watershed model from the upper five major watersheds in the Falls Lake watershed are shown in Figures 3 and 4, respectively. High nutrient loading leads to high chl-*a* concentrations, a measure of algal growth. The details of the delivered nutrient loading estimates from each of the five subwatersheds are given in the Falls Lake watershed model report (NC DWQ, 2009).

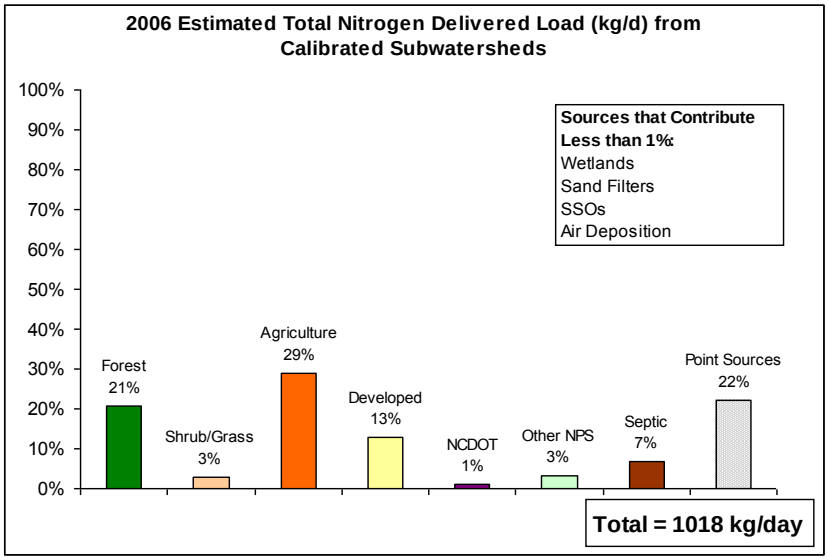

Figure 3. Nitrogen Sources to Falls Lake.

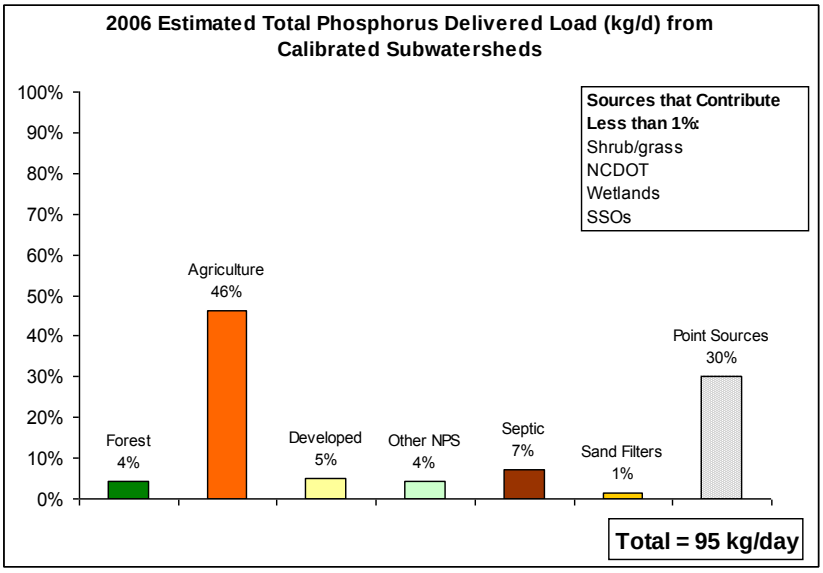

Figure 4. Phosphorus Sources to Falls Lake.

Falls Lake and Water Treatment Concerns

A report funded by the City of Raleigh helped define the relationship of degrading water quality conditions in Falls Lake and its impact on drinking water treatment (City of Raleigh Public Utilities Department, 2009). Raleigh's E.M. Johnson Water Treatment Plant (WTP), whose intake is in lower Falls Lake, has treatment capacity for up to 86 million gallons per day (MGD) and serves over 450,000 customers in Raleigh, Garner, Rolesville, Wake Forest, Knightdale, Wendell, and Zebulon. Some findings from Raleigh's report include:

- Turbidity and total organic carbon have increased in the five-year reporting periods from 2000-2004 to 2005-2009.
- Historical data for disinfection by-products (DBPs) indicates that maximum contaminant levels have approached or exceeded federal maximum contaminant level (MCL) standards for these parameters on an individual sample basis. While the plant remains in compliance, periodic high levels demonstrate that new technologies would be needed if (DBPs) concentrations continue to increase.
- Chemical use has increased at the plant for all chemicals related to contaminant removal and disinfection (i.e., Potassium permanganate, Ferric sulfate, Chlorine)

In addition to the current increased treatment costs, the E.M. Johnson WTP is in the planning stages of an expansion of its capacity to 100 MGD. The cost of this expansion will be related to future water quality conditions in the lake. Raleigh estimates that, beyond the baseline $243 million needed to expand the WTP using current treatment technologies, additional costs may be needed for enhanced treatment technology (i.e., granular activated carbon, ultra-violet disinfection radiation, or magnetic ion exchange). The projected costs for any one of these technologies range from $21 million to $115 million with their selection ultimately being based on pollutant levels and water quality trends in Falls Lake.

While Raleigh's ongoing compliance with requirements of the Safe Drinking Water Act is not threatened by Falls Lake's condition, its treatment costs could escalate as described here lacking a sound nutrient strategy to fully recover designated uses throughout the lake.

Management Mandates

Chapter 143B-282 and other North Carolina statutes charge the North Carolina Environmental Management Commission (referred to in this document as "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, session law (SL) 1997-458, included requirements to address water quality problems in nutrient sensitive waters (NSW) waters. Often referred to as House Bill 515, the act set total TN and TP concentration limits of 5.5 and 2.0 mg/L, respectively, for wastewater treatment facilities discharging greater than 0.5 MGD into nutrient sensitive waters (NSW. 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 2005 the NC General Assembly passed SL 2005-190 (S981), which includes a requirement for the Commission to adopt a nutrient strategy for Falls Lake. The 2009 regular legislative session produced Senate Bill 1020, a bill devoted to water quality improvements in Falls Lake. This bill revises the EMC adoption deadline to January 15, 2011 and added requirements aimed at water quality improvement in the watershed. It also stipulated that the rules go into effect as temporary rules after EMC adoption. The bill was ratified and signed into law on August 26, 2009.

Strategy Development Process

<u>Lake Monitoring & Modeling</u>

Lake monitoring from 2005 to 2007, conducted under the direction of a Technical Advisory Committee (TAC), was used to develop the watershed and lake models that helped characterize conditions and the nutrient reductions needed to achieve nutrient related water quality standards throughout the lake. The watershed and lake modeling were completed by DWQ staff, with review and input from the TAC, in November 2008 and February 2009, respectively.

Watershed Model

The Watershed Analysis Risk Management Framework (WARMF) model was applied to the Falls Lake watershed in order to determine total nitrogen (TN) and total phosphorus (TP) contributions from point and nonpoint sources. It is a decision support system that is designed to support a watershed approach, total maximum daily load (TMDL) calculations, and stakeholder processes. It was selected for the Falls Lake project because it is a physically-based model and has the capability to assess the impact of point and nonpoint sources in a large watershed with varying land cover and management conditions. WARMF simulates catchment and stream hydrology and water quality by tracking the flow paths of precipitation to the canopy, surface layer, through the soil layers and to downstream waterbodies (Systech Engineering, 2001). A detailed description of WARMF is included in this technical guide: http://www.epa.gov/athens/wwqtsc/html/warmf.html.

The delivered total nitrogen (TN) and total phosphorus (TP) loading estimated by the watershed model from the upper five major watersheds in the Falls Lake watershed are shown in Figures 3 and 4 in the previous section. High nutrient loading leads to high chl-*a* concentrations, a measure of algal growth. The details of the delivered nutrient loading estimates from each of the five subwatersheds are given in the Falls Lake watershed model report (NC DWQ, 2009).

Lake Model

The three-dimensional, coupled hydrodynamic and water quality model Environmental Fluid Dynamics Code (EFDC) was selected to simulate water quality variations in the Falls Lake. EFDC has been identified as an acceptable tool for the development of total maximum daily loads by the US Environmental Protection Agency (US EPA, 1997). It has been successfully applied in many waterbody types in previous studies, including estuaries, lakes, and coastal seas. A three-dimensional approach was recognized by the Falls Lake Technical Advisory Committee (TAC) as necessary to have a reasonable representation of the complicated bathymetry of Falls Lake. In addition, preliminary data showed multiple dominant algal groups were present in Falls Lake at different seasons; therefore, the TAC suggested that the model have the capability to represent different algal groups. EFDC was selected to meet these requirements.

EFDC was applied to Falls Lake in order to provide prediction of chlorophyll-*a* concentrations within the lake in response to nutrient loading reductions from the tributaries. The model was calibrated for lake level, temperature, TSS, TN, TKN, nitrate, ammonia, phosphate, TP, total organic carbon and dissolved oxygen (DWQ, 2009b).

In order to estimate the nutrient reductions needed to attain the chlorophyll-a standard in Falls lake, a baseline area and baseline time were selected. Considering rainfall, river inflow, lake level, and chl-a standard exceedance rate at the compliance area, 2006 was the most close-to-normal and representative year (as compared to 2005 and 2007).

In addition, more data are available for 2006, including discharge data at new USGS gages in Ellerbe and Knap of Reeds Creeks, chlorophyll-*a* data for the entire year, and benthic nutrient flux data collected in April. These extra data enable a better model representation of 2006 lake dynamics. Scenario model runs were made based on the calibrated 2006 model simulation.

As shown in Fig. 2, the chlorophyll-*a* standard exceedance rates based on observations from 2005-2007 were highest at the upper part of the Falls Lake. In the middle part of the lake, the observed exceedance rate became much lower and at the lower part of the lake near the dam area, the exceedance rates were generally below 10%.

Model results suggest that high chlorophyll-*a* concentrations in the middle to lower part of the lake were often found following high chlorophyll-*a* concentrations in the upper part of the lake, suggesting that the influence of nutrients delivered from the upper tributaries reaches the middle to lower part of the lake.

The model cell containing NEU013B (Figure 2) was selected as the baseline area for the calculation of model-simulated chlorophyll-*a* standard exceedance rate because:

- NEU013B is located in the upper region of the lake where high chlorophyll-*a* concentrations were observed (Figure 2).
- NEU013B is located just downstream of the conjunction of the five upper major tributaries. Chlorophyll-*a* concentrations at NEU013B are influenced by nutrient input from all of the five upper major tributaries (Little River, Eno River, Flat River, Ellerbe Creek, and Knap of Reeds Creek). Typically greater than 60% of the river discharge and greater than 70% of nutrient loading are from the five upper major tributaries to the lake.
- The model-predicted chlorophyll-*a* standard exceedance rate matched very well with what has been observed in measured data from NEU013B (DWQ, 2009b, Fig. VI-2). The model uncertainties related with the predictions of chlorophyll-*a* standard exceedance rate are relatively low at NEU013B.

Lake Model Results

Scenario lake model runs were made for a combination of a series of N and P reductions at 25%, 50%, 75%, and 100% of their original loadings. The corresponding reduced tributary loadings were read into the model as model input. The model-predicted chlorophyll-*a* standard exceedance rates at NEU013B in response to different combinations of N and P reductions from the fiver upper major tributaries are summarized in Figure 5. The 10% chlorophyll standard exceedance line is highlighted with a thick blue curve.

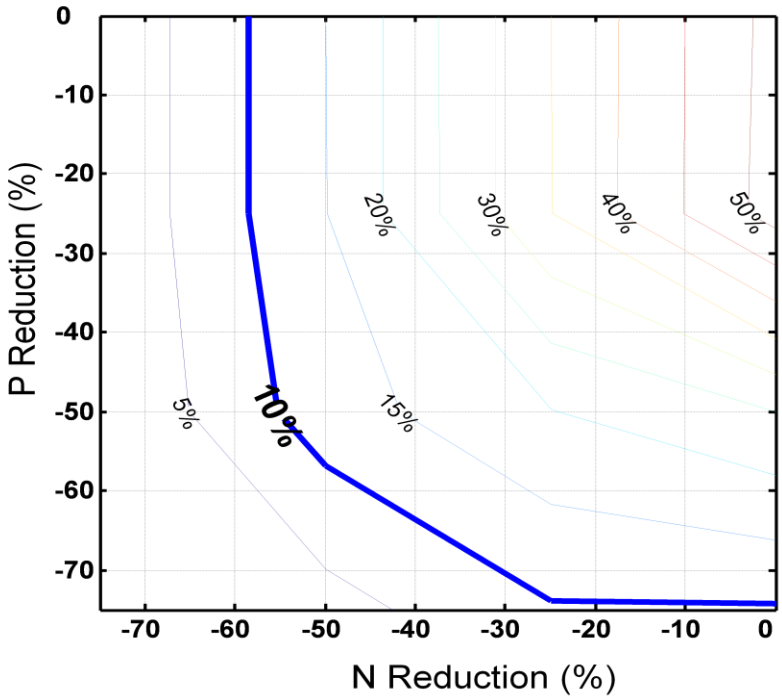

Figure 5. The model-simulated P&N reduction curve.

Staff consulted with researchers on the need for a balanced reduction and discussed with stakeholders the different reduction combinations possible per the reduction curve presented above. Ultimately the stakeholders favored a reduction combination with al larger portion of phosphorus reductions than nitrogen reductions and favored an approach calling that translated into a 40% reduction in nitrogen and 77% reduction in phosphorus loading from controllable sources. This approach recognizes that agriculture and point sources have already achieved significant reductions in nitrogen loading under the existing Neuse nutrient management strategy as well as the fact that reducing phosphorus loads is more cost effective for certain sources.

Evaluating of Nutrient Reductions under Stage I

In addition to using the Lake model to develop reduction scenarios for the overall reductions needed by the end of Stage II, DWQ's Modeling and TMDL Unit used the Lake model to run several iterative scenarios associated with development of Stage 1 of the Falls nutrient management strategy. Please note that neither the calibrated nutrient response model ("lake model") nor the calibrated watershed model was used to produce the Stage 1 goals. Rather, the models were used to test effects of nutrient reductions on chlorophyll-a concentrations in the lower part of the lake. The scenario associated with the proposed Stage 1 reductions is described below:

Stage I Reduction Scenarios:

- 20% N / 40% P from the three major point sources in the upper five subwatersheds (Eno River, Little River, Flat River, Ellerbe Creek, and Knap of Reeds Creek)

- 20% N / 40% P from agriculture in the upper five subwatersheds
- 10% N / 20% P delivered load from all other tributaries

(Note that this scenario does not reduce *overall* N and P inputs to the lake by 20% and 40%, respectively.)

The lake model requires delivered loads from all tributaries, as opposed to loads from specific sources; therefore, inputs to the lake model for reductions 1 and 2 in the scenario were estimated using watershed model output. Specifically, the proportion of delivered load from each source in each subwatershed was taken from the watershed model. Percent reductions for the scenario were then calculated from those watershed model estimates, and applied to inputs to the lake model.

The lake model was run for 2006 with reductions 1-3 above. The effect of the reductions on the area downstream of NC50 was estimated by applying the percent reduction in model-simulated chlorophyll-a from the cells containing monitoring stations NEU019E and NEU019L (Fig. 1) to the actual measured data from these stations in 2005-2007. Resulting percent exceedances of 40 µg/l chlorophyll-a were then calculated for each station.

Results of this scenario run suggest that the 40 µg/l chlorophyll-a concentration would be exceeded <10% of the time at these two locations under the proposed Stage 1 reductions (4.2% at NEU019E and 7.8% at NEU019L). The results of the Falls Lake Watershed and Lake Models were presented by DWQ staff at the May and June 2009 stakeholder meetings respectively.

Stakeholder Process

A stakeholder process, conducted through a joint effort between the Triangle J Council of Governments (TJCOG) and DWQ, began meeting in August 2008 to provide stakeholders an opportunity for input on development of the Falls Lake Nutrient Strategy. The stakeholder group completed a series of nine meetings throughout 2008, 2009, and 2010. The group gained an understanding of the lake's conditions, modeling basics, and results, and grappled with strategy design. Presentations and meeting summaries are posted to a Falls Lake stakeholder website hosted by TJCOG[1]. An online discussion forum, known as a "wiki", was also created to provide stakeholders an open forum to raise questions and exchange information between meetings[2].

The stakeholder group broke into four smaller subcommittees that held a total of twelve meetings between September 17 and December 7, 2009, to work on detailed nutrient reduction rule ideas by source type. In late November and early December, draft rules addressing new development stormwater, existing development, agriculture, and point sources were provided to stakeholders for their review with comments due back to the Division by December 23, 2009. DWQ made further revisions to the draft rules based on these comments and provided revised rules to stakeholders on January 14, 2010. The full stakeholder group reconvened on January 21, 2010 to review the revised rule language and provide further input. After the meeting, stakeholders

[1] For website, see http://www.fallslakestakeholder.org/
[2] For website, see http://fallslakestakeholder.wikispaces.com/

had the opportunity to provide additional written comments to DWQ by January 29, 2010. Additional revisions were made to the rules based on that round of stakeholder comments and were reflected in the draft rules submitted to the March 2010 meeting of the Commission for approval to go out to public hearings.

Nutrient Management Strategy Design

The strategy is designed to achieve an overall 30 percent reduction in nitrogen loading and 70percent reduction in phosphorus loading to Falls Lake, which is to be accomplished by requiring regulated sources to reduce their nitrogen loadings to the lake by 40% and phosphorus loadings by 77percent. Given the unprecedented load reduction needs and recognizing the significant cost to implement the necessary reductions, the strategy developed calls for implementation in stages and incorporates implementation and adaptive management approach.

The first stage (Stage I) of implementation calls for reductions based on readily achievable controls that are possible with currently available technology to ensure the chlorophyll-a standard is met in the lower lake by 2021. Stage II calls for more substantial reductions in the upper watershed (area above NC 50) by 2036, in order to ultimately achieve the chl-a standard lake-wide to the maximum extent technically and economically feasible by 2041.

The adaptive management aspect of the strategy allows for ongoing evaluation during implementation to inform possible revisions to the strategy and implementation. The rules allow for supplemental data and modeling information to be submitted by affected parties, and incorporate requirements to ensure that Stage II implementation efforts are not undertaken without a better understanding of the lake's response to Stage I implementation efforts, the level of effort needed and feasible in Stage II, and whether alternative regulatory action would be sufficient to protect existing uses of the lake.

The rules differ from previous nutrient strategies in that the footprint of the Falls Watershed is within an area already covered under nutrient reduction requirements to restore nutrient-related water quality standards in the Neuse River Estuary (i.e., Neuse Rules). Goals for the Falls Rules, however, are more stringent than those of the Neuse Rules. Accordingly, the Falls strategy continues Neuse requirements and departs from them mainly to achieve greater nutrient controls from regulated sources and in the case of existing development, to require reductions from a source not previously regulated.

The strategy targets the major nutrient contributors throughout the watershed. As presented by the Hearing Officers, there are 8 new rules in all and two Neuse rule amendments (see Table 1). The new rules include a Purpose and Scope (i.e., Goals) rules, a Definitions rule, rules for each major source type, and a trading rule. In terms of individual sources, the Wastewater Discharge Rule sets annual mass allocations for existing wastewater dischargers in the watershed. Several rules require stormwater controls to reduce nutrient load coming from new and existing developed lands, including state and federally owned lands. The Agriculture Rule establishes collective nutrient reduction goals for all persons engaging in agricultural operations in the watershed. For an overview of the compliance dates, please see Figure 6.

Table 1. Proposed Falls Lake Nutrient Strategy Rules.

15A NCAC 02B Rule Number	Rule Title
.0275	Purpose and Scope
.0276	Definitions
.0277	Stormwater Management for New Development
.0278	Stormwater Management for Existing Development
.0279	Wastewater Discharge Requirements
.0280	Agriculture
.0281	Stormwater Requirements for State and Federal Entities
.0282	Options for Offsetting Nutrient Loads
Draft Amended Neuse Rules	
.0235	Neuse River Basin Stormwater Requirements
.0315	Neuse River Basin Rules

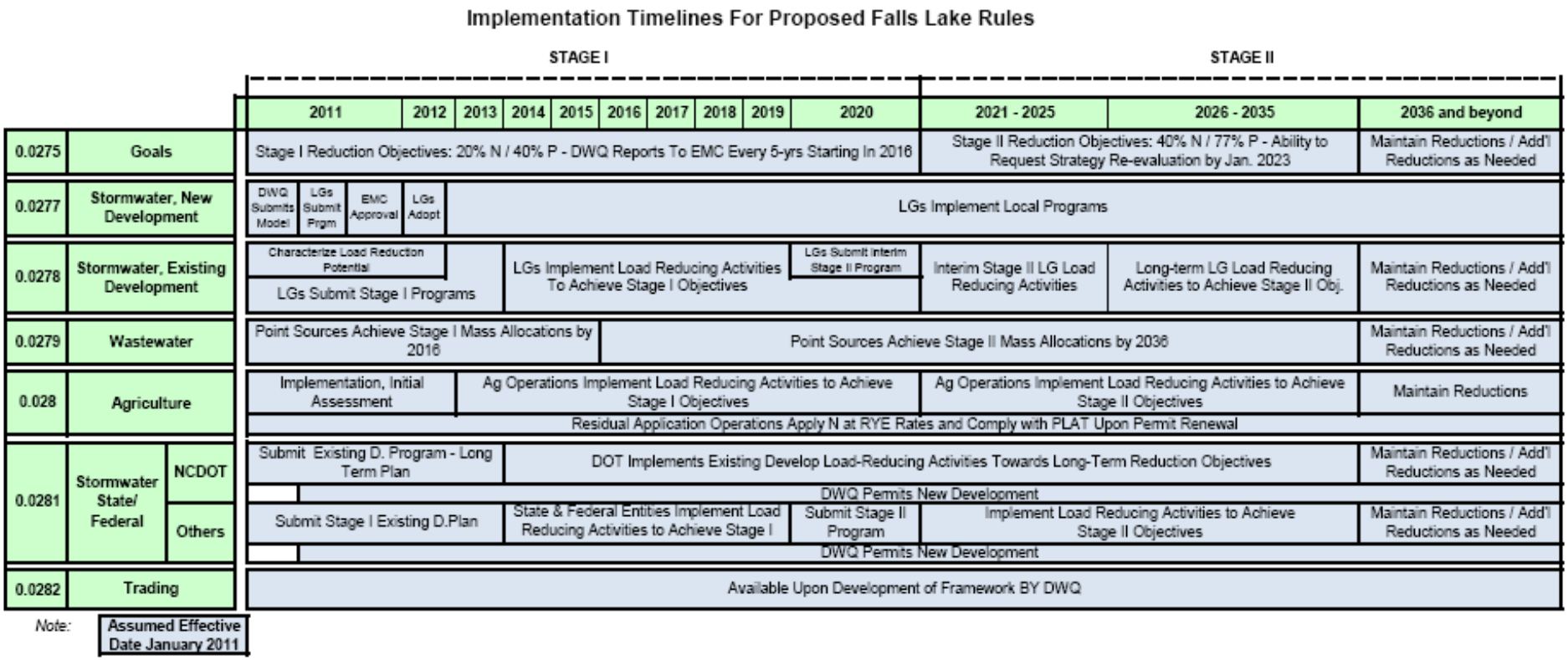

Figure 6. Implementation Timelines For Falls Lake Rules.

FISCAL ANALYSIS SUMMARY

Planning staff developed a Fiscal Analysis based on draft rules in early 2010. The analysis was approved by the Office of State Budget and Management in June 2010[1]. This analysis presented DWQ's best estimate of implementation costs based on current technologies. The Fiscal Report's findings are summarized in this section. They do not, however, reflect revisions to the rules that have been made as a result of public comments received on the rule (e.g., removal of the Fertilizer Management rule).

Summary of Costs

Costs are provided below for all ten years of Stage I. Stage I is expected to begin in early 2011 following EMC adoption of the temporary rules, and to run through 2020. In addition, total net present value costs for each of Stage I, Stage II, and Stages I + II are provided below. Stage II costs would be incurred through 2035. Where possible for any cost element, we provide a low-to-high cost range.

Costs were calculated for all affected parties. Table 2 summarizes costs across all rules for each of the following parties: private, state, federal, and local government. In addition, individual chapters discuss the impacts of each rule on small businesses. We found that two rules will have significant impact on small businesses, the Agriculture and New Development Stormwater Rules. In both cases, most or all private costs are to small businesses.

Given the long-term nature of these rules, cost projections for Stages I and II are presented using Net Present Values (NPV), which is a process that takes into account the time value of money and discounts future cost amounts to the value they would have in the present. Future costs are based on current costs grown at the rate of inflation. In general, the long-term nature of these rules and the rapidly evolving field of watershed restoration combine to make projection of costs more than a few years into the future increasingly speculative. The costs as estimated in this document represent conservative high-end estimates based on current available information and technology.

Table 2 provides a summary of estimated compliance costs by affected party. Detailed costs are provided in the individual chapters. While the most current information and accounting methods were used to generate these estimates, cost projections ten years and further into the future involve a considerable amount of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below. An overview of uncertainties associated with cost estimates is provided at the end of this chapter. Each individual rule chapter also contains a more detailed discussion of uncertainties associated with that rule's costs.

[1] The complete Falls Nutrient Strategy Fiscal Analysis can be found online at http://portal.ncdenr.org/c/document_library/get_file?uuid=2a29f5a4-3db1-4c63-bd63-cad51a5ac385&groupId=38364

Table 2. Aggregated Summary of Costs to Affected Parties for All Rules

Year	Private	Local Gov't (Actual)	Local Gov't (Opportunity)	State Gov't (Actual)	State Gov't (Opportunity)	Fed Gov't	Fed Gov't (Opportunity)	Total
2011	<$ -	<$ 29m	<$ 20k	<$ -	<$ 700k	<$ -	<$ 60k	<$ 29.8m
2012	<$ 15.2m	<$ 34.2m	<$ 20k	<$ 500k	<$ 100k	<$ 10k	<$ 60k	<$ 50.1m
2013	<$ 15.8m	<$ 35.1m	<$ 20k	<$ 900k	<$ 300k	<$ 10k	<$ 70k	<$ 52.2m
2014	<$ 17.9m	<$ 46.5m	<$ 430k	<$ 3.0m	<$ 400k	<$ 30k	<$ 620k	<$ 68.9m
2015	< $ 18.6m	< $ 47.6	<$ 440k	<$ 3.2m	<$ 400k	<$ 30k	<$ 630k	<$ 71.0m
2016	<$17.8m	<$ 35.3m	<$ 440k	<$ 2.4m	<$ 400k	<$ 30k	<$ 610k	<$ 57.0m
2017	<$18.6m	<$ 36.3m	<$ 450k	<$ 2.5m	<$ 400k	<$ 30k	<$ 620k	<$ 58.9m
2018	<$19.3m	<$ 37.1m	<$ 460k	<$ 2.6m	<$ 400k	<$ 30k	<$ 630k	<$ 60.6m
2019	< $20.1m	<$ 130.6m	<$ 470k	<$ 2.7m	<$ 400k	<$ 30k	<$ 640k	<$ 154.9m
2020	<$20.9m	<$ 352.1m	<$ 470k	<$ 2.8m	<$ 400k	<$ 30k	<$ 650k	<$ 377.4m

< - Estimates are considered high-end values based on conservative assumptions for major cost elements.

Projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.

NPV Stg I	**<$ 109.3m**	**<$ 472.8m**	**<$ 2.0m**	**<$ 14.5m**	**<$ 2.6m**	**<$ 200k**	**<$ 2.9m**	**<$ 604.3m**
NPV Stg II	**<$ 126.7m**	**<$ 781.7m**	**<$ 2.5m**	**<$ 29.2m**	**<$ 3.8m**	**<$ 400k**	**<$ 1.5m**	**<$ 945.8m**
NPV Stg I+II	**<$ 236.0m**	**<$ 1.25b**	**<$ 4.5m**	**<$ 43.7m**	**<$ 4.3m**	**<$ 500k**	**<$ 4.4m**	**<$ 1.54b**

Conservative Estimate of Costs

Factors that suggest ultimate compliance costs lower than those projected here include:

- technological innovation driven by an increasing need for water conservation;
- innovation driven by the rules themselves;
- improved accounting for known measures; and
- general advances in management of the impacts of developed lands and of nutrients at the federal level and nationwide.

DWQ notes that a Scientific Advisory Board required under the Jordan nutrient strategy will be addressing these issues and developing credit and accounting options during the next two years and beyond. DWQ believes that its projections err on the conservative side given that DWQ relied on the use of current technology while the ultimate catalog of creditable reduction practices will likely include more cost-effective measures and management practices resulting from innovation and technological advancement as implementation progresses over the next twenty five years. In addition, as water quality is evaluated based on implementation of Stage I requirements, possible future changes to the nutrient management strategy and rules could introduce even more uncertainty.

Stage I Costs

DWQ estimates total combined costs for implementation of Stage I requirements at less than $605 million. This cost estimate represents the high end cost range for Stage I. The net present

value of Stage I costs for individual rules ranges from less than $6 million for Agriculture to $249 million for Wastewater Treatment.

Stage II Costs
DWQ estimated compliance with Stage II reduction objectives to result in costs totaling less than $946 million. It is important to recognize that projecting plausible measures of costs and benefits that span almost three decades into the future involves an expanding set of uncertainties. Costs for timeframes further into the future must be viewed with that understanding.

Methods
In estimating costs, staff with DWQ's Nonpoint Source Planning Unit obtained input from each of the primary agencies that would be involved in implementation: local governments, university technical experts, published and unpublished data sources, and frequently relied on experience gained and tools developed in implementing similar rules in the Neuse and Tar-Pamlico River Basins and the Jordan Watershed.

One source of data for this evaluation was the Falls watershed model, mentioned under 'Falls Lake Nutrient Loading Sources' above, which was developed by the Division to support the rulemaking process. The watershed model includes acreages for all land cover types and estimates of baseline loading from each land cover type to the reservoir. This analysis also benefited from the availability of several tools developed specifically for implementing Neuse and Tar-Pamlico rules or that were prompted by the imposition of those rules. Two of DWQ's Tar-Pamlico implementation tools used in this Fiscal Analysis included a stormwater loading estimation tool developed by NCSU and pasture load estimation methods and data. DWQ also used nutrient removal efficiency values specific to piedmont North Carolina for agricultural and urban stormwater BMPs. These efficiencies were largely formalized for implementation of the Tar-Pam rules and cost information for both stormwater and agricultural BMPs in piedmont North Carolina that was largely developed since 1997.

In terms of our geographic approach, to avoid undue calculation complexity DWQ carried out calculations at the scale of the upper and lower watershed as show in Figure 1 above. DWQ frequently used data specific to counties, municipalities, land use types, discharger types, and subwatersheds, developing weighted averages as appropriate.

Individual Rule Cost Summaries

Six of the nine proposed rules would involve costs which are summarized below. The three remaining rules (Goals, Offset Options, and Definitions) and the two rule amendments (Neuse Stormwater, Neuse Basin Classification Schedule) are administrative in nature and do not themselves impose specific requirements that result in costs to affected parties. These rules are summarized below. Full detail on the cost analysis can be found in the Division's full Fiscal Analysis report (NC DWQ 2010).

.0277 Stormwater Management for New Development Costs

Developers face significant costs under this rule driven by the rule's stringent nutrient loading rate targets, which reflect the strategy reduction goals of 40 percent and 77 percent reduction in N and P loading respectively. Our most-likely estimate of watershed-wide annual costs to developers found in Table 3 begins at approximately $5 million/yr. A high-end estimate would begin at approximately $10 million/yr. Costs are also higher than they might be to meet the goals because of the requirement to achieve a minimum 50 percent reduction in loading onsite as opposed to allow a larger amount of potentially more cost-effective offsite reductions. Onsite cost for county residential development is expected to be only minimally higher than under current regulations, while municipal residential and more so commercial/industrial development would be expected to see larger cost increases for onsite control. Staff considers this level of austerity reasonable and recognize that other sources, such as agriculture which otherwise could sell reduction credits to developers, will face similar magnitudes of reduction over time and are expected to require all available inexpensive improvements such as riparian buffer restoration at a minimum toward their needs.

Because all local governments currently administer one or more of Water Supply Watershed, NPDES Phase II, and Neuse stormwater requirements, additional local costs of implementing this rule are expected to be fairly minor at approximately $90,000/yr watershed-wide. DWQ estimates the DWQ staff opportunity costs for implementing the entire set of rules at $100,000/yr for the first several years then reducing to approximately $66,000/yr collectively into the future.

Table 3. Summary of Costs - New Development Stormwater Rule[1]

Year	Private						Local Gov't	State Gov't (Oppor-tunity)	Total
	Developers				Prop Owners	Private Total			
	Capital	Planning	Reg Trans	Total	O&M				
2011	0	0	0	0	0	$0	$220k	$680 k	$900k
2012	$5.2 - 9.6 m	$1.2 - $2.1 m	$.97 - $2.8 m	$7.4 - $14.6 m	$90 - $110 k	$7.4 - $14.7 m	$110 - $271 k	$100k	$7.7 - $15.2 m
2013	$5.4 - 10.0 m	$1.2 - $2.2 m	$1.0 - $2.9 m	$7.6 - $15.1 m	$180 - 210 k	$7.8 - $15.3 m	$120 – $281 k	$110k	$8.0 - $15.9 m
2014	$5.6 - 10.4 m	$1.3 - $2.3 m	$1.04 - $3.0 m	$7.9 - $15.7 m	$270 - 330 k	$8.2 - $16.0 m	$120 – $291k	$110k	$8.4 - $16.6 m
2015	$5.8 - 10.7 m	$1.3 - $2.4 m	$1.08 - $3.2 m	$8.2 - $16.3 m	$370 - 450 k	$8.6 - $16.7 m	$130 – $302 k	$110k	$8.8 - $17.3 m
2016	$6.0 - $11.1 m	$1.4 – $2.5 m	$1.12 - $3.3 m	$8.5 - $16.9 m	$470 - 570 k	$9.0 - $17.4 m	$130 – $320 k	$110k	$9.2 - $18.0 m
2017	$6.2 - $11.5 m	$1.4 - $2.6 m	$1.16 - $3.4 m	$8.8 - $17.5 m	$580 - $690 k	$9.4 - $18.2 m	$130 - $330 k	$80k	$9.6 - $18.8 m
2018	$6.5 - $12.0 m	$1.5 - $2.7 m	$1.20 - $3.5 m	$9.2 - $18.1 m	$690 - $820 k	$9.9 - $18.9 m	$140 - $340 k	$80k	$10.1 - $19.6 m
2019	$6.7 - $12.4 m	$1.5 - $2.7 m	$1.24 - $3.6 m	$9.5 - $18.8 m	$800 - $960 k	$10.3 - $19.7 m	$140 - $350 k	$80k	$10.5 - $20.4 m
2020	$6.9 - $12.8 m	$1.6 - $2.8 m	$1.29 - $3.8 m	$9.8 - $19.4 m	$920 k - $1.1 m	$10.7 - $20.5 m	$150 - $370 k	$80k	$10.9 - $21.2 m

Projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is reason to believe that costs may ultimately be less than the values projected below.

NPV Stage I	**$36.2 - $66.9 m**	**$8.3 - $14.9 m**	**$6.7 - $19.6 m**	**$51.2 – $101 m**	**$2.7 - $3.2 m**	**$54.0 - $105 m**	**$990k - $2.1 m**	**$1.2 m**	**$56.1 - $109 m**
NPV Stage II	**$40.8 - $75.5 m**	**$9.4 - $16.8 m**	**$7.6 - $22.1 m**	**$57.8 - $114 m**	**$8.7 - $10.4 m**	**$66.5 - $125 m**	**$850k - $2.2 m**	**$400k**	**$67.7 - $129 m**
NPV Stage I+II	**$77.0 - $142 m**	**$17.7 - $31.6 m**	**$14.3 - $41.7 m**	**$109 - $216 m**	**$11.4 - $13.6 m**	**$120 - $229 m**	**$1.80 - $4.3 m**	**$1.60 m**	**$124 - $238 m**

[1] Costs estimates do not reflect Hearing Officer rule revisions affecting area and treatment thresholds.

.0278 Stormwater Management for Existing Development Costs

As illustrated in the summary cost tables, this rule (Table 4) and the wastewater rule (Table 5) will clearly impose the most significant costs of the strategy on local governments. While less uncertainty surrounds costs for the initial years of implementation, it is likely that more cost-effective measures than structural stormwater BMP retrofits will emerge even during the course of Stage I. More cost-effective load-reducing options are in various stages of development and quantification, but none were sufficiently well-developed to allow their use for these purposes. DWQ considers use of BMP retrofits to provide conservative or high-end estimates.

We estimated a total 10-year, Stage I cost of approximately $225 million watershed-wide, in net present value terms, making annual costs less than $22 million assuming a constant rate of implementation beginning in year one. Stage II estimates based on the same high-end BMP retrofit assumptions are approximately $51 million/yr or a total of approximately $776 million watershed-wide, in net present value terms, to meet the full reduction. A number of drivers, including the growing need for water conservation, the costs of conventional retrofit approaches under this rule, and the growing field of alternative options are expected to result in ultimate compliance costs significantly lower than these projections suggest.

Table 4. Summary of Costs - Existing Development Stormwater Rule

Year	Private	Local Government				State Gov't	Fed Gov't	Total
		Planning	Capital	O&M	Total			
2011	$ -	< $ 6.4 m	< $ 22.1 m	< $ 190 k	< $ 28.8 m	$ -	$ -	< $ 28.8 m
2012	$ -	< $ 6.6 m	< $ 22.6 m	< $ 390 k	< $ 29.6 m	$ -	$ -	< $ 29.6 m
2013	$ -	< $ 6.7 m	< $ 23.1 m	< $ 600 k	< $ 30.4 m	$ -	$ -	< $30.4 m
2014	$ -	< $ 6.8 m	< $ 23.6 m	< $ 820 k	< $ 31.2 m	$ -	$ -	< $ 31.2 m
2015	$ -	< $ 7.0 m	< $ 24.0 m	< $ 1.0 m	< $ 32.0 m	$ -	$ -	< $ 32.0 m
2016	$ -	< $ 7.1 m	< $ 24.5 m	< $ 1.3 m	< $ 32.9 m	$ -	$ -	< $ 32.9 m
2017	$ -	< $ 7.3 m	< $ 25.0 m	< $ 1.5 m	< $ 33.8 m	$ -	$ -	< $ 33.8 m
2018	$ -	< $ 7.4 m	< $ 25.5 m	< $ 1.8 m	< $ 34.6 m	$ -	$ -	< $ 34.6 m
2019	$ -	< $ 7.5 m	< $ 25.9 m	< $ 2.0 m	< $ 35.5 m	$ -	$ -	< $ 35.5 m
2020	$ -	< $ 7.6 m	< $ 26.4 m	< $ 2.3 m	< $ 36.3 m	$ -	$ -	< $ 36.3 m

Projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.

NPV Stg I	**$ -**	**< $ 48.9 m**	**< $ 169 m**	**< $ 7.5 m**	**< $ 225 m**	**$ -**	**$ -**	**< $ 225 m**
NPV Stg II	**$ -**	**< $112 m**	**< $ 403 m**	**< $35.8 m**	**< $ 551 m**	**$ -**	**$ -**	**< $ 551 m**
NPV Stg I+II	**$ -**	**< $161 m**	**< $ 571 m**	**< $43.3 m**	**< $ 776 m**	**$ -**	**$ -**	**< $ 776 m**

.0279 Wastewater Discharge Costs

Cost estimates were developed using a variety of methods and sources of information. Estimates for implementation of conventional biological nutrient removal (BNR) technologies are based on methods and estimates developed for the Chesapeake Bay nutrient program. Those for advanced treatment are based on reference information for the wastewater industry.

Cost estimates in Table 5 for Stage 1 improvements are based on upgrading from existing treatment capability to full conventional BNR by 2016 and additional capital improvements through 2020. Planning and design is scheduled for 2012-13 with construction to follow in 2014-2015. DWQ estimated a total 5-year net present value of Stage I cost of approximately $249 million watershed-wide, making annual costs approximately $25 million assuming a constant rate of implementation beginning in year one.

Stage II estimates based on the assumption that flows will steadily increase from current levels (50 percent of permitted flows) to full permitted flows by 2031 and that membrane filtration and reverse osmosis units will be added incrementally over that time: 20 percent of permitted capacity in 2020, another 30 percent in 2025, and the final 50 percent in 2030. The net present value of Stage II cost of approximately $229 million watershed-wide to meet the full reduction requirements.

Table 5. Summary of Estimated Costs For Total Nitrogen and Total Phosphorus Reductions - Wastewater Discharge Requirements[1,2]

	Private				Local Government				State Government	Federal Government	Total (Millions $)
Year	**Planning**	**Capital**	**O&M**	**Total**	**Planning**	**Capital**	**O&M**	**Total**			
2011	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
2012	$ 0.49	$ 0	$ 0	$ 0.49	$ 4.32	$ 0	$ 0	$ 4.32	$ 0	$ 0	$ 4.81
2013	$ 0.50	$ 0	$ 0	$ 0.50	$ 4.41	$ 0	$ 0	$ 4.41	$ 0	$ 0	$ 4.91
2014	$ 0	$ 1.68	$ 0	$ 1.68	$ 0	$ 15.00	$ 0	$ 15.00	$ 0	$ 0	$ 16.68
2015	$ 0	$ 1.72	$ 0	$ 1.72	$ 0	$ 15.29	$ 0	$ 15.29	$ 0	$ 0	$ 17.01
2016	$ 0	$ 0	$ 0.10	$ 0.10	$ 0	$ 0	$ 2.14	$ 2.14	$ 0	$ 0	$ 2.24
2017	$ 0	$ 0	$ 0.10	$ 0.10	$ 0	$ 0	$ 2.18	$ 2.18	$ 0	$ 0	$ 2.28
2018	$ 0	$ 0	$ 0.10	$ 0.10	$ 0	$ 0	$ 2.22	$ 2.22	$ 0	$ 0	$ 2.32
2019	$ 0	$ 0	$ 0.10	$ 0.10	$ 92.37	$ 0	$ 2.26	$ <94.63	$ 0	$ 0	$ <94.73
2020	$ 0	$ 0	$ 0.10	$ 0.10	$ 0	$ <313.13	$ 2.30	$ <315.43	$ 0	$ 0	$ <315.53

Projections of costs for advance treatment technologies and for points 10 years and further into the future involve a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.

Stage 1 NPV[3]	$ 0.83	$ 2.51	$ 0.29	$ 3.63	$ 57.62	$ <181.53	$ 6.47	$ <245.62	$ 0	$ 0	$ <249.25
Stage 2 NPV[4]	$ 0	$ 0	$ 0.54	$ 0.54	$ 33.81	$ <107.29	$ 87.81	$ <228.91	$ 0	$ 0	$ <229.45
Total NPV (Stages 1,2)	$ 0.83	$ 2.51	$ 0.83	$ 4.17	$ 91.43	$ <288.82	$ 94.28	$ <474.53	$ 0	$ 0	$ <478.70

Footnotes:

[1] Beyond initial BNR improvements, costs are based on an 'advanced treatment only' approach without consideration of reuse and other alternatives and are meant to approximate high-end costs for implementing the wastewater requirements rule, as conditioned in this chapter.

[2] All NPV costs are adjusted for inflation based on CPI projections (approximately 1.8% per annum), then discounted to 2010 values at a rate of 7% per annum.

[3] Stage 1 costs are those projected to occur from 2011 through 2020.

[4] Stage 2 costs are those projected to occur from 2021 through 2035.

.0280 Agriculture Costs

Cropland is currently subject to the existing Neuse Agriculture Rule, but farmers face additional costs under this rule driven by the rule's stringent nutrient loading rate targets, which reflect the strategy reduction goals of 40 percent and 77 percent reduction in N and P loading respectively. Both state and federal cost share programs are available to crop and pastureland producers. Thus, DWQ estimated capital costs to farmers for practice installation assuming that 75 percent of that cost would be captured as an opportunity cost to the State and Federal government through the use of cost share funding. The costs provided are those to meet nitrogen reduction goals, since currently available accounting criteria for phosphorus are qualitative in nature.

Our Table 6 estimates err on the conservative or higher side in that DWQ met the entire reduction need by assuming structural BMPs for pasture and assumed no additional opportunity for reductions from cropland. However, there may be additional more cost-effective reduction opportunities from cropland and workgroups are currently working on developing crediting for nutrient reducing management practices for pasture that may prove more cost effective in the future. In addition to this there are some no cost actions that may result in further nutrient reductions, such as fertilizer rate reductions, crop shifts yielding further N rate reductions, and land loss from agriculture. A summary of cost to farmers for implementing the agriculture rule and opportunity costs to state and federal agencies that provide BMP subsidies is provided below. The local governments cost estimates express estimated increase in capital costs related to land application of wastewater residuals per the Agriculture rule which requires land application be done in accordance with Realistic Yield Expectation nitrogen rates and compliance with the Phosphorus Loss Assessment Tool (PLAT) or other approved phosphorus rate index.

Table 6. Summary of Costs – Agriculture Rule

Year	Private (Farmers)					Local Gov't	State	Federal	Total
	Planning	Capital	O&M	Opportunity	Total	Total	Total	Total	All Parties
2011	$0	$0	$0	$0	$0	$20k	$10K	$60k	$90k
2012	$0	$0	$0	$0	$0	$20k	$10K	$60k	$90k
2013	$0	$0	$0	$0	$0	$20k	$10K	$70k	$90k
2014	$0	$170 – 210k	$10k	$4 – $5k	$190 – $220k	$330 - $430k	$80	$520 - $620k	$1.1 - $1.3m
2015	$0	$180 – $210k	$20 -$30k	$10k	$210 – $240k	$330 - $440k	$80	$530 - $630k	$1.1 – $1.4m
2016	$0	$180 - $220k	$30 – $40k	$10 – $10k	$230 – $270k	$330 - $440k	$80	$510 - $610k	$1.1 – $1.4m
2017	$0	$180 - $220k	$40 – $50k	$20 – $20k	$240 – $290k	$340 - $450k	$80	$520 - $620k	$1.2 – $1.4m
2018	$0	$190 -$220k	$60 – $70k	$20 -$20k	$260 – $310k	$350 - $460k	$80	$530 - $630k	$1.2 – $1.5m
2019	$0	$190 -$230k	$70 – $80k	$30 – $30k	$280 – $340k	$350 - $470k	$80	$540 - $640k	$1.3 – $1.5m
2020	$0	$190 - $230k	$80 -$100k	$30 – $30k	$300 – $360k	$360 - $470k	$80	$540 - $640kk	$1.3 – $1.6m
Projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.									
Stage I Inflated NPV	$0	$.81 – $1.0m	$180 – $220k	$70 -$80k	$1.1 – $1.2m	$1.5 – 2.0m	$370	$2.5 - $2.9m	$5.4 – $6.6m
Stage II Inflated NPV	$0	$470 – $560k	$630 -$740k	$310 – $360k	$1.4 – $1.7m	$1.5 – 2.5m	$420	$1.2 - $1.5m	$4.5 – $6.1
Total Inflated NPV (I+II)	$0	$1.3 – $1.5m	$.80 – $1.0m	$400k	$2.5 - $2.9m	$3.0 – 4.5m	$790k	$3.7 - $4.4m	$9.9-$12.6m

.0281 Stormwater Requirements for State and Federal Entities Costs

Provisions of the new and existing development stormwater rules, .0277 and .0278, are applied to state and federal entities, primarily the NC Department of Transportation (DOT), and other state and federally owned lands in the watershed. The Division would function as implementing agency. These parties would be required to achieve nutrient loading reductions in stormwater runoff from existing developed lands under their control toward the strategy percentage goals. They would also be required to obtain permits from the Division for new development, demonstrating that stormwater discharges from development projects would achieve export rate targets equating to the strategy percentage goals.

The Table 7 cost estimates provided for DOT, federal and Non-DOT state lands likely represent an overestimation of actual costs. DWQ suspect that the character of new development in the form of land consumption may vary substantially among them. Additionally, much of the state and federal land in the watershed is recreational, cultural, or historic in nature, all of which DWQ would expect to load nutrients at very low levels or related to agriculture research which would be covered under the agriculture rule. A summary of the combined costs for State and Federal entities is provided below.

Table 7. Summary of Costs – State & Federal Entities Rule

Year	State					
	Planning	Capital	O&M	Reg. TC	Opportunity	Total
2011	$0	$0	$0	$0	$0	$0
2012	$40 - $80k	$200 – $400k	$0	$40 -$100k	$0	$270 - $540k
2013	$370 - $410k	$200 – $400k	$10k	$40 -$100k	$0	$610 -$890k
2014	$370 – $410k	$1.5 -$1.7m	$70k	$40 -$100k	$0	$2.0- $2.2m
2015	$370 - $410k	$1.5 -$1.7m	$80k	$40 -$110k	$0	$2.0 - $2.3m
2016	$380 - $420k	$1.5 – $1.7m	$80k	$40 - $110k	$0	$1.5 – $1.8m
2017	$380 - $420k	$1.5 – $1.7m	$80 - $90k	$40 - $120k	$0	$1.6 – $1.9m
2018	$380 - $420k	$1.5 – $1.7m	$90k	$50 - $120k	$0	$1.6 – $2.0m
2019	$380 – $430k	$1.5 -$1.7m	$90 - $100k	$50 -$120k	$0	$1.7 – $2.0m
2020	$380 - $430k	$1.5 – $1.7m	$100k	$50 - $130k	$0	$1.7 – $2.1m
Projections of costs for advance treatment technologies and for points 10 years and further into the future involve a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.						
Stage I NPV	$2. – 2.2m	$7.0 - $8.1m	$380 - $390k	$250 - $700k	$0	$9.6 -$11.4m
Stage II NPV	$4.5 - $4.7m	$16.3 – $17.7m	$160 - $170k	$280 -$800k	$0	$22.7 - $24.9m
Stage I+ II NPV	$6.5 – $7.0m	$23.3 – $25.7m	$2.0 – $2.1m	$0.5 – $1.5m	$0	$32.3 - $36.4m

Table 7 *(Continued)*. Summary of Costs – State & Federal Entities Rule

Year	Federal					
	Planning	Capital	O&M	Reg. TC	Opportunity	Total
2011	$0k	$0k	$0k	$0k	$0	$0k
2012	$1k	$3 - $5k	$0k	$1k	$0	$4 - 8k
2013	$5 - $6k	$3 - $5k	$0k	$1k	$0	$9 - $13k
2014	$5 - $6k	$21 - $23k	$1k	$1k	$0	$28 - $32k
2015	$5 - $6k	$21 - $24k	$1k	$1 – $2k	$0	$28 - $32k
2016	$5 - $6k	$21 - $24k	$1k	$1 – $2k	$0	$22 - $26k
2017	$5 - $6k	$21 - $24k	$1 - 2k	$1 – $2k	$0	$22 -$ 27k
2018	$5 - $6k	$21 - $24k	$1k	$1 – $2k	$0	$23 - $28k
2019	$5 - $6k	$21 - $24k	$2k	$1 – $2k	$0	$24 - $28k
2020	$5 - $6k	$22 - $25k	$2k	$1 – $2k	$0	$24 - $30k
Projections of costs for advance treatment technologies and for points 10 years and further into the future involve a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.						
Stage I NPV	$30k	$100 - $114k	$6k	$4 - $10k	$0	$140 - $160k
Stage II NPV	$60 - $67k	$230 - $250k	$24k	$4 - $12k	$0	$320 - $350k
Stage I + II NPV	$90 -$99k	$330 - $360k	$30k	$7 - $22k	$0	$470 - $510k

Year	NCDOT					
	Planning	Capital	O&M	Reg. TC	Opportunity	Total
2011	$0	$0	$0	$0	$0	$0
2012	$0	$0	$0	$0	$0	$0
2013	$0	$0	$0	$0	$74 – $220k	$74 - $220k
2014	$0	$480 - $710k	$3 - $4k	$0	$76 - $230k	$560 - $940k
2015	$0	$620 - $910k	$7 - $9k	$0	$77 – $230k	$.70 - $1.1m
2016	$0	$380 - $920k	$21 – $26k	$0	79 - 240	$.48 – 1.2m
2017	$0	$390 - $930k	$25 – $31k	$0	81 - 240	$.49 – 1.2m
2018	$0	$390 - $940k	$58 – $95k	$0	82 - 250	$.53 – 1.3m
2019	$0	$400 - $950k	$62 – $101k	$0	83 - 250	$.54 – 1.4m
2020	$0	$400 - $960k	$67 – $108k	$0	85 - 250	$.56 – 1.3m
Projections of costs for advance treatment technologies and for points 10 years and further into the future involve a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.						
Stage I NPV	$0	$2.0 – $2.9m	$140 - $210k	$0	$400k – $1.2m	$2.5 - $4.3m
Stage II NPV	$0	$2.1 – $3.1m	$700k – $1.2m	$0	$400k – $1.3m	$3.3 – $5.6m
Stage I + II NPV	$0	$4.1 – $6.0m	$800k – $1.4m	$0	$850k – $2.6m	$5.8 – $10.0m

.0283 Fertilizer Management Costs[1]

DWQ estimates minimal new costs associated with this rule based on experience in the Neuse and Tar-Pamlico River Basins. The rule offers a no-cost option in NM training, and DWQ believe that only those who *already* meet the other option, implementing a certified plan, would choose that alternative instead. Training would involve no out-of-pocket costs to applicators since local Cooperative Extension Service offices would conduct trainings, they would charge no fee, would use existing staff resources, would obtain grant funding as was done in the Neuse and Tar-Pamlico Basins to cover the minimal costs, attendees would travel minimal distance since it would be offered in each county, and DWQ assume they would incur no significant travel costs. Trainees would face lost income for the one day they take to complete the training, and DWQ estimate the total lost income as $2,350. DWQ also estimate the Extension staff hours involved in providing the training and convert them to salary reflecting other duties displaced; this totals to approximately $5,300 which DWQ consider insignificant for fiscal reporting purposes. If an applicator were to choose the certified plan option and did not already meet its requirements, DWQ assume there would still be no net cost. While there is up-front planning cost, agricultural evaluations show that applicators are likely to realize net *savings* by obtaining and properly implementing certified nutrient management plan.

Summary of Benefits

In addition to providing estimated costs of rule compliance, this document also provides a discussion of the benefits of resulting from implementation of the proposed rules. Benefits are not as readily estimated in monetary terms as are costs. Many benefits are “non-market” in nature and are thus more difficult to monetize. In this section DWQ identifies a number of benefits DWQ believes are associated with successful implementation of the strategy, and assigns dollar values to as many as possible.

Assuming the strategy reductions are met, resulting improvements in raw water quality would help lower current drinking water treatment costs through reductions of chemical treatment needed and could also avoid potential future costs of expensive treatment upgrades. DWQ would also expect improved conditions for primary contact recreation which include swimming, fishing, boating, and skiing. Improvement in the water quality would also likely have a positive impact on local property values in general, increasing with greater proximity to the lake, and would serve to enhance the greater local economy through increased desire to live near a healthy sustainable natural resource. A listing of potential benefits is provided in Table 8.

[1] The Hearing Officers have removed rule from the final rule package.

Table 8. Potential Benefits of the Falls Nutrient Strategy[1]

Benefit Types	***Estimated Strategy Benefit Value***	***Estimated Value of Falls Lake Water Supply[2]***
Avoided Drinking Water Treatment Costs	$43 million - $266 million	*
Reduced Drinking Water Treatment Costs	$600k - $800k[4]	*
Value of Falls Lake	*	$420 million - $1.1 billion[3]
Recreational Benefits	$179 million - $336 million	*
Local Economy and Property Values	*	*
Upstream Reservoir Improvements	*	*
Watershed Stream Improvements	*	*
Aquatic Life Benefits	*	*
Ecological/Food Chain Communities	*	*
Neuse Estuary Improvement	*	*

* While these benefits will occur DWQ are unable to quantify them.
[1] Benefits were generated using various inflation & discount rates and are not directly comparable
[2] Estimated value of Falls Lake as a water supply is not additive with the strategy benefits
[3]Estimated Value of Falls Lake is in 2010 dollars – Not adjusted for Inflation / Discounted
[4] Annual Benefit – Not adjusted for Inflation / Discounted

Avoided Drinking Water Treatment Costs

While the E.M. Johnson (EMJ) Water Treatment Plant is currently very successful in cleansing Falls Lake water of TOC problems through vigilant use of existing treatment processes and aggressive flushing of the City's potable water distribution system, Raleigh's Public Utilities staff warn that increased TOC at the plant will require the implementation of more sophisticated and much more expensive treatment methods. These new, advanced treatment processes use Activated Carbon or Magnetic Ion Exchange resin and could increase operational costs by 20 to 25 percent annually. This upgrade to a more elaborate treatment method also would require capital construction projects that have a projected price tag of $120 million tag. The total capital and O&M costs of the different treatment upgrade options that would be needed should Falls lake water quality continue to deteriorate are estimated to range $43 to $266 million when adjusted for inflation by 3 percent annually over 30 years and discounted at 5 percent to provide net present value in 2010 dollars (City of Raleigh 2009).

Reduced Drinking Water Treatment Costs

Assuming the strategy reductions are met, then improvements in raw water quality can also help lower current drinking water treatment costs through the reduction of chemical treatment needed and help avoid the costs of expensive treatment upgrades in future. Based on evaluation of potential treatment options at Raleigh's EM Johnson drinking water facility, the total capital and O&M costs of the different treatment upgrade options that would be needed should Falls Lake water quality continue to deteriorate are estimated to range $43 to $266 million when adjusted for inflation by 3 percent annually over 30 years and discounted at 5 percent to provide net

present value in 2010 dollars. Improvement in the lake water quality is also expected to reduce the amount of chemical treatment needed and result in the current annual treatment costs to be reduced by approximately $600K on an annual basis.

Value of Falls Lake as a Drinking Water Supply

DWQ estimated range for the value of Falls Lake as a drinking water supply which attempts to quantify the value of Falls Lake as a clean and reliable source of drinking water. The value of the lake was calculated by estimating assumed replacement costs using other viable alternative drinking water sources. The high range estimate is based on calculations provided by the City of Raleigh based on their assessment of available alternative sources of drinking water including Kerr Lake, PCS Phosphate dewater, and the Atlantic Ocean. Kerr Lake was determined to represent the most likely estimated value of Falls Lake for this analysis based on its available volume for water supply. The low-end estimated value of the lake is based on cost information from the Lake Gaston Water Supply project in Virginia Beach, VA. The value of Falls Lake as a drinking water supply is estimated to be within the range of $420 million and $1.1 billion.

Recreational Benefits

DWQ collaborated with researchers at NCSU to obtain estimated benefits of the recreation use of Falls Lake. The recreation benefits are based on the core assumption that an overall increase in lake user-days can be correlated with improved water quality (Egan 2004). Additional benefits include a correlated increase in related recreation such as camping, hiking, and wildlife viewing. A cleaned-up water body will be more attractive to recreationists and therefore generate more intensive use and benefits to society (von Haefen 2010). The results from the sensitivity analysis from this study suggest that the benefits for North Carolina residents from the watershed-wide Falls Lake nutrient management strategy will be between $179 million to $336 million in net present value dollars when taking into account inflation over the next 30 years and assuming a 7 percent discount rate.

Local Property Value Benefits

Land prices are usually higher for land parcels close to lakes because of the views and boating or fishing opportunities (Kramer 2005). The greater desire to locate housing and businesses near the lake, benefit a productive economy (NCDWQ 2007).

Local Economy Benefits

Similar to the benefits to local property values, improved water quality resulting in an increased desire to live in proximity to a healthy natural resource would be expected to have a positive impact on the local economy within the watershed.

Water Storage Benefits

There are several benefits regarding upstream public water supply reservoirs located in the Falls Lake watershed. Since the proposed nutrient management strategy targets nonpoint sources of pollution or stormwater runoff, sedimentation (or the “filling in” of sediment) to the smaller upstream water supply reservoirs would occur more slowly. This could reduce the need for potential future dredge projects to restore volume capacity. Costs associated with developing a future water supply reservoir could be avoided by utilizing these existing reservoirs. In addition,

future nutrient reduction costs may be prevented for these existing reservoirs (upstream of Falls Lake).

Aquatic Life Benefits
Reduced occurrences of algal blooms and sediment contributions due to lower nutrient loading in the watershed would assist in meeting the water quality standard for turbidity and chlorophyll-*a*. In addition, the reduction in nutrient inputs will improve the aquatic environment with healthier dissolved oxygen and pH levels.

Neuse Estuary Improvement Benefits
Assuming these reductions are met, less nutrient loading is expected to leave Falls Lake at the Dam. Less loading coming from Falls Lake will help downstream affected parties who are mandated to reduce nutrient loading in the Neuse River Basin under the Nutrient Sensitive Waters (NSW) Management Strategy.

FISCAL ANALYSIS: UNCERTAINTY AND ALTERNATIVES

Uncertainty
The cost estimates calculated for implementation of each rule were developed using the most recent research and best available data and accounting tools. However numerous assumptions and estimates are necessary to project long range costs of implementation. In general, the long-term nature of these rule and the rapidly evolving field of watershed restoration combine to make projection of costs more than a few years into the future increasingly speculative. The costs as estimated in this document represent conservative high range estimates based on current available information and technology.

The nutrient reductions needed for Falls Lake to meet its water quality goals are substantial. It is likely that these rules and the large load reductions needed will drive innovation in technology and techniques resulting in more cost-effective means of achieving the necessary reductions. A number of drivers, including the growing need for water conservation, the costs of conventional engineered best management practices, the growing field of alternative options and ongoing research to refine and update credit accounting to capture innovative practices are all expected to result in ultimate compliance costs significantly lower than the projections provided in this analysis.

In addition to the uncertainty resulting from the long range nature of these rules and future innovations in more cost-effective technology, the rules themselves are designed using an adaptive management approach which introduces additional uncertainty in cost to implement. The Goals rule provides for an adaptive management approach which may result in changes in the required reductions as implementation continues into the future. The Rule includes language allowing for submittal of a supplemental model for EMC approval. Based on future approved monitoring and modeling, the Commission could consider revisions to the requirements of Stage II. The Goals Rule also enables the Commission to establish revised nutrient allocations based on the outcome of an approved supplemental model. The rule works to further address uncertainty in implementation by requiring DWQ to report to the EMC and public in 2016 and

every five years thereafter on a host of items that will inform future implementation including the following:

- The state of wastewater and stormwater nitrogen and phosphorus control technology
- Reuse and projected reuse of wastewater and land application opportunities
- The utilization and nature of nutrient offsets and projected changes
- Results of studies evaluating instream loading changes resulting from implementation of individual rules
- Assessment of instream benefits of local programmatic management measures
- Results of applicable studies, monitoring, modeling and establish a baseline for atmospheric nitrogen deposition
- Projected reductions in atmospheric deposition based on current modeling
- Results of studies evaluating nutrient loading from groundwater
- Updates to nutrient loading accounting tools
- Evaluation of available nutrient-related lake monitoring data; and
- Recommendations if any on rule revisions

Other factors relative to the individual rules that lead us to believe that technological innovation, refinements in accounting and new research will lead to additional management measures that will likely prove more cost-effective include such things as the following

- New accounting tools being developed for stormwater management that can provide reduction credit for management measures with benefits that were previously unquantified;
- Workgroups working on developing credit accounting for pasture practices to achieve additional reductions from Agriculture;
- Ongoing research of the loading contribution for onsite waste water systems. Reductions from onsite systems as yet unquantified may be a cost effective means of achieving nutrient reductions from existing development. The affected and contributions to overall reduction needs from other non-structural practices such as pet waste and fertilizer ordinances cannot yet be quantified;
- Re-use may prove to play an increased role as a more cost effective means of achieving reductions from point sources; and
- Ongoing reductions from atmospheric sources of nitrogen as a result of stricter emission standards for both mobile and immobile sources.

A Scientific Advisory Board required under the Jordan nutrient strategy will be addressing these issues and developing credit and accounting options during the next two years and beyond that may be feasible to apply to the Falls Lake strategy. . In addition to structural retrofits, which are also evolving to be more effective, future practices likely available to local governments include:

Programmatic:

- Requiring treatment on redevelopment,
- Pet waste regulation,
- Fertilizer application regulation,

- Improved street sweeping,
- Retrofitting existing stormwater quantity ponds,
- Off-line regional treatment facilities,
- Small-scale property owner practices, e.g. redirecting impervious surfaces,

Wastewater:
- Removing onsite sand filter discharges,
- Correcting malfunctioning septic systems
- Improvement of wastewater collection systems,
- Eliminating illicit discharges,

Ecosystem Restoration:
- Stream, wetland and riparian buffer restoration, and
- Purchase and reforestation of agricultural land.

Alternatives to the Strategy
During the stakeholder process, DWQ received input on possible alternative management measures. The following is a brief discussion of alternatives to the strategy itself. Ultimately none of the alternatives were considered viable options. In general, alternatives were not in agreement with the charge of the EMC and DWQ and would at best only result in limited water quality improvement in localized areas. Some do not address water quality improvement throughout the lake or their implementation was outside the authority of DWQ and DENR and required action from federal agencies outside the charge of the Division of Water Quality and the Commission. An overview of the major alternatives brought up during the stakeholder process is provided below:

Remove the Dam
Some stakeholders suggested that the water quality problems in the lake would not exist if the Dam was not built and the Neuse River was allowed to flow unobstructed by the impoundment. This is an extreme case alternative to implementing a management strategy that was raised early on in the stakeholder process. However in light of the Lake's obvious large scale benefits, such as serving as the primary drinking water supply for roughly 450,000 residents in Wake County, providing flood control, and recreational benefits, and the fact that this alternative does not agree with the charge of the EMC this alternative was not deemed a viable alternative strategy early on in the process.

Dredge the Lake
Dredging of the nutrient-rich upper sediment layers is another alternative to the strategy that was discussed. Lake bottom sediment in Falls Lake does contribute to the nutrient load to the lake through internal loading. However, removal of this source alone would not result in water quality standards being met throughout the lake. It would need to be performed in concert with an overall strategy addressing external sources of nutrient loading. Dredging would be a labor intensive operation with considerable costs and provide logistical problems related to disposal of dredging spoils. Again, given the fact that this approach would not completely alleviate the need for a management strategy and the fact that such activity is outside the authority of DWQ and the EMC it was not found to be a viable alternative.

Remove Road Crossings and Impoundments
Another alternative raised during the stakeholder process was the idea of removing or modifying the road crossing of the various highways and roads that cross the lake. The idea being that the causeways for such road crossing created small impoundments within the lake restricting the flow of water resulting in water quality problems. However, given that there are chlorophyll-a violations throughout the lake and not just in areas adjacent to road crossings and the fact that removing these causeways would at best likely only result in localized improvements, such an approach would sufficiently address the water quality problems throughout the lake.

Lake Pool Management
One alternative that may prove to play a role in the overall strategy in the future is the concept of "pool management". The thinking behind this being that by managing the lake pool levels it would be possible to improve water quality by potentially limiting inputs from vegetative growth that emerges in the exposed dry lake beds during dry months and later serves a source of nutrients as it dies off. While this is an intriguing approach, there is no scientific evidence that water quality standards could be met throughout the lake through pool management alone. This is emphasized by the fact that the lake has experienced high chl-*a* levels in both wet and dry years. Ultimately, control of pool levels and dam activity is outside the authority of DWQ and the EMC. Local governments may pursue other federal agencies and explore how they could potentially incorporate a regional approach such as this as a complimentary component to the implementation of the larger nutrient reduction strategy, but currently pool level management is not viewed as a viable alternative to the management strategy.

While alternatives to implementing a strategy could not be pursued, stakeholders did have the opportunity to provide valuable input on strategy implementation including input on the proportions of the reduction objectives, the geographic distribution of those objectives, and feedback on options for implementation that were ultimately incorporated into the strategy. A brief overview is provided below:

Reductions in both nitrogen and phosphorous loading are needed for Falls Lake. DWQ staff presented and received input from stakeholders on various potential nitrogen and phosphorus percent reduction combinations. These dual reduction combinations were developed using the calibrated nutrient response model. Ultimately the stakeholders provided input that favored a reduction combination calling for a larger portion of phosphorus reductions and a smaller nitrogen reduction (40 percent TN and 77 percent TP). Reasons given were that such a combination recognizes that agriculture and point sources have already achieved significant reductions in nitrogen loading under the existing Neuse nutrient management strategy in addition to the fact that reducing phosphorus loads is more cost effective for certain sources.

FORMAL RULEMAKING PROCESS

This section of the report summarizes the formal rulemaking process beginning with the presentation of the draft nutrient strategy to the EMC in March 2010. Detailed notes from the hearings as well as comments provided on the draft nutrient strategy can be found online at http://portal.ncdenr.org/web/wq/ps/nps/fallslake.

Public Hearings and Comment Period

The formal rulemaking process began in March 2010 when Division staff presented the draft rules to the EMC while requesting and receiving the Commission's approval to take the draft rules to public comment. At that time, three Commission members were designated as hearing officers for the public hearings (See Attachment A). These designees were:

- Tom Cecich
- Marion Deerhake
- Dickson Phillips III

Two public meetings on the Falls Lake Nutrient Strategy were scheduled. Attachment B contains DWQ's press release on the hearings that was circulated to local media outlets and on Division email lists. Details on these meetings and their attendees are in Table 9. Over the two meetings, there were a total of 217 registered participants and 76 speakers. Actual attendance at both meetings, however, appeared to be larger than the registered number of attendees.

Table 9. Falls Lake Public Hearing Meetings.

Hearing	Location	Date/Time	Registered Attendees	Speakers
1	Neal Middle School, Durham, NC	June 30th, 2010 7:00–10:00pm	109	39
2	Campbell Lodge, Durant Park, Raleigh, NC	July 1st, 2010 7:00–10:00pm	108	37
		Total	**217**	**76**

In addition to the public hearing comments, a 60-day comment period on the draft nutrient strategy ran from June 15, 2010 to August 16, 2010 where written comments were accepted. Table 10 summarizes the number of comments received on the nutrient strategy, both written and oral.

Table 10. Summary of Comments Received by Type.

Category	Number of Commenters
Local Government	34
State/Federal Entities	4
Business/Professional Organizations	13
Private / Non-Profit Organizations	29
Individual Support	
▪ Unique Emails/Letters	35
▪ Form Letters	493
Individual Conditional Support	6
Individual Oppose	6
Individual Other	9
Total	**629**

Summary of Comments Received

Public Hearings

Local government officials represented about one third of the speakers at the public hearings with the majority representing the City of Durham and Durham County. The remainder of hearing speakers was divided mostly between individual and non-profit organizations. While most individual and non-profit organization comments were supportive of the clean-up strategy, concerns were voiced mainly over the cost. Both hearings were similar in duration (i.e., three hours), attendance, and number of speakers.

Summary of Written and Public Hearing Comments

A common theme among comments for local governments was general support for Stage 1 of the nutrient strategy but belief that more assessment of Falls Lake's response to Stage 1 efforts was needed before embarking on Stage II implementation. This sentiment is taken from a set of consensus principles[1]developed and signed by most local governments in the watershed. Many of the principles are consistent with the nutrient strategy but some items, such as the call for re-evaluation of the nutrient strategy prior to Stage 2 implementation, contradicted provisions in the proposed rules. Other issues identified by local governments were concerns over the modeling used to develop the rules, the achievability of the nutrient reduction targets, and the high costs of implementing the strategy

Several commenters on the technical achievability of restoring nutrient related water quality standards throughout the lake pointed to provisions within the Clean Water Act that allow for pursuit of a site-specific standard for Upper Falls Lake. Their belief was that DWQ should establish a more achievable water quality standard for the Upper Lake, particularly prior to implementation of Stage II.

[1] A copy of the local government consensus principles can be found online at http://portal.ncdenr.org/c/document_library/get_file?uuid=4735c65e-3d44-4368-9656-70c2a91c1e08&groupId=38364

Non-profit and private organizations also offered numerous comments on the strategy. Many of these were from environmental groups (e.g., Neuse River Foundation, Sierra Club, NC Conservation Network) and were supportive of the strategy's goals to achieve nutrient related water quality standards throughout Falls Lake. They urged, however, that the clean-up occur more quickly than specified in the proposed rules. One consistent theme within non-profit organizations comments was the need to promote low-impact development (LID) as a tool to treat both the volume and quality of stormwater runoff. General interest and support was also expressed for exploring land conservation measures as a creditable practice for reducing nutrient inputs to the lake.

Most individual support for the rules was voiced in conjunction with letter and email campaigns organized through non-profit organizations. These comments mirrored those of their parent organizations highlighted in the previous paragraph. Other individual support for the rules was provided independent of non-profits. These commenters spoke of the need to take responsibility for past polluting practices through the clean-up strategy, the recreational value of Falls Lake and the importance of protecting the lake due to its use as a drinking water supply for the region.

Individual commenters in opposition to the nutrient strategy were concerned about the cost of the rules for themselves as well as burden they impose on the less affluent populations of the watershed. One concern frequently voiced by this group was that those watershed residents being asked to fund lake clean-up were not the primary beneficiaries of the implementation efforts (i.e., downstream drinking water users). Suggestions were made that a more regional funding strategy was needed to balance the costs and the benefits of the nutrient strategy.

Finally, comments on the achievability of the agricultural requirements were also provided. One provision supported by commenters found in Stage 1 of the rules was the collective compliance nature for agriculture to meet its nutrient reductions. There was opposition, however, to Stage II provisions that require individual compliance measures if Stage I targets are not achieved. Finally, comments were made on what size agricultural operations, both livestock and crop, should qualify for inclusion under the Agricultural Rule.

Hearing Officer Recommendations

The Falls Rules Hearing Officers have reviewed and weighed input from the stakeholder teams, potentially affected parties, local governments, legislators, concerned citizens, interest groups, individuals, and organizations, and staff. It is the recommendation of the Hearing Officers that the rules proposed herein, comprising the Falls Reservoir Water Supply Nutrient Strategy, be approved by the full Commission in November with changes noted, and if approved, be filed as permanent rules with the Rules Review Commission. The proposed effective date of the permanent rules is January 15, 2011, depending on whether they are approved by the December meeting of the RRC and whether sufficient objections are filed with the RRC to require their introduction in the 2011 Session of the General Assembly. The proposed effective date of the temporary rules is January 1, 2010. 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 from August 2010 through October 2010, formed positions on a number of key issues, and developed certain specific recommendations to accompany the rule changes. Those positions and recommendations are provided along with individual rule summaries in the following sections.

Conclusions

It is the unanimous recommendation of the Hearing Officers that the rules proposed herein comprising the Falls Reservoir Water Supply Nutrient Strategy be approved by the full Commission with changes noted, and be filed as permanent rules with the Rules Review Commission.

Motion 1: The Hearing Officers move that the Commission adopt the proposed rule [15A NCAC 02B.0275; 0276; 0277; .0278; .0279; .0280; .0281; .0282; .0282 and the proposed rule amendments to .0235 and .0315] as presented in Appendix C of this package as permanent rules at its November 2010 meeting.

Motion 2: The Hearing Officers further move that the Commission concurrently adopt the rules as presented in Appendix C of this package as temporary rules, as mandated by Session Law 2009-486, with a proposed effective date of January 1, 2011.

INDIVIDUAL RULES AND RECOMMENDED CHANGES

Following is a brief summary of each proposed 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 are provided as Appendix D. All rules will fall under Title 15A NCAC, Chapter 2B.

Rule .0275, Purpose and Scope
Describes strategy purpose, scope, and objectives; identifies the set of rules comprising the strategy; designates Falls watershed as a 'critical water supply watershed', which allows the EMC to require more stringent measures than minimum Water Supply Watershed requirements; defines geographically the "Upper Watershed" and "Lower Watershed"; identifies the baseline time period; establishes nitrogen and phosphorus (N and P) percentage reduction goals and corresponding point and nonpoint source lake loading targets relative to the baseline; establishes that all local governments – six counties and eight municipalities– are subject to certain rules; and provides for a two stage adaptive management approach. Stage I calls for initial reductions watershed-wide to ensure the chlorophyll-a standard is met in the lower lake by 2021. Stage II calls for additional reductions in upper watershed (area above NC 50) to ultimately achieve the chl-*a* standard lake-wide by 2041.

Hearing Officers' Recommended Changes:

1. On the 'Commission Note' over whether the duration of Stage 1 should last 7 or 10 years, the Commission believes Stage I should last 10 years to allow municipalities the time to institute the policies, develop the funding mechanisms, and begin the planning processes needed to achieve the nutrient reducing practices to achieve the Stage I objectives of 20 percent N and 40 percent P reductions.
2. Added language to clarify that the Stage II goal is to "achieve nutrient-related water quality standards throughout Falls Reservoir" and not limited to achieving the 40 percent N and 77 percent P nutrient reductions.
3. Defined sufficient time to demonstrate recovery of nutrient related water quality standards as at least two consecutive use support assessments demonstrating compliance with nutrient-related water quality standards.
4. Allowances for a person (who meets certain conditions) to request prior to January 2023 that the Division submit a report to the Commission in July 2025 that evaluates the effects of full implementation of Stage I and the implications for Stage II. This report is required to take into account the feasibility of Stage II, and whether alternative regulatory action would be sufficient to protect existing uses in the lake. Based on the report findings, the Division shall make recommendations, if any, on rule revisions to the Commission.

The Hearing Officers recognize the need to achieve nutrient related water quality standards throughout Falls Lake and the challenges that are present with this objective such as the magnitude of the required nutrient reductions and their associated costs. That combined with uncertainties including those associated with the model-based load reduction targets,

technological advancements, scientific understanding, and the lake's response to changes in loading together justify the adaptive management approach housed in this rule.

To this end, the Hearing Officers added the 2025 report provision. They believe, however, that uninterrupted progression into Stage II implementation is important, and that any review of Stage I be based on data collected following its completion. This led to the choice of the 2025 date for this review.

Rule .0276, Definitions
Defines terms that apply across rules and are specific to the set of Falls rules.

Hearing Officers' Recommended Changes:

1. Removed any terms and definitions not referenced in the proposed rules including definitions for perennial stream, intermittent stream, and TMDL.
2. Added a definition for atmospheric nitrogen.

Rule .0277, Stormwater Management for New Development
This rule requires all local governments in the Falls watershed – six counties and eight municipalities – to implement stormwater programs for new development activities. Those programs must be designed to meet nutrient loading rate targets (2.2 lbs/acre/year Total Nitrogen (TN) and .33 lbs/acre/year Total Phosphorus (TP)). Developers will be required to control nutrient export to certain levels onsite, but can meet remaining reduction needs through offsite measures including payment of fees for nutrient offset projects or through purchase of reduction credits from private sellers pursuant to the Falls trading rule .0282. Within two months after effective date, the Division submits a model local program to the EMC for approval. Within another five months, local governments submit programs for Division review and EMC approval. Within eighteen months after effective date, local governments implement permitting requirements. Annual reports are required.

Hearing Officers' Recommended Changes:

1. In light of the magnitude of reduction needs across all sources, the Hearing Officers revised the proposed rule to lower the disturbance thresholds requiring permits from one-half acre for commercial/industrial development and one acre for residential development to on-quarter acre for each category of development.
2. Adjusted onsite treatment criteria needed for New Development prior to using an offsite offset option. Adjusted New Development onsite treatment requirements are listed below:
    a. 30 percent or more in both nitrogen and phosphorus for activities disturbing one quarter acre but less than one acre.
    b. 50 percent or more in both nitrogen and phosphorus for activities disturbing one acre of land or more
    c. 30 percent or more in both nitrogen and phosphorus for proposed redevelopment activities that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period.

The Commission used public comments on this rule to gauge the opportunities for nutrient treatment and the level of effort needed to achieve treatment. Based on this feedback, the original site disturbance threshold options in the rule were replaced with the one-quarter acre limit for both residential and commercial development. This area, it was felt, would still be large enough to allow treatment with at least one BMP. Further, it was felt that this size threshold would capture significant development acreage while preventing enforcement of the Rule from becoming overly burdensome on local permitting agencies.

Changes to the treatment thresholds were spurred by local government questions over the achievability of the 60 percent onsite reduction option under the newly emerging Jordan new development accounting method. Ultimately, a 50% onsite reduction of both nutrients was considered feasible.

Rule .0278, Stormwater Management for Existing Development
The rule requires all local governments in the watershed to develop and implement within three years of rule effective date a Stage 1 load reduction program to reduce loading from existing developed lands to 2006 baseline levels by 2021. Stage II load reduction plans would be required for local governments with jurisdictions including land located in the upper watershed. Stage II load reduction programs will include compliance timeframes proposed by the local government and shall meet explicit criteria established in the rule. Local governments are required to submit revised plans for EMC approval every five years. The Commission will approve load reduction plans that it finds achieve the maximum level of reductions that is technically and economically feasible within the proposed timeframe of implementation based on plan elements identified in the rule.

Hearing Officers' Recommended Changes:

1. Added provision requiring local governments initial 5-year plans under Stage II to base rates of implementation on level of effort expended in Stage I, which could differ from rates needed to meet full reductions by 2036. These plans would be revisited in 2026 in light of the Division's 2025 report to the Commission.
2. Revised the standard for subsequent 5-year Stage II plans from "maximum extent technically and economically feasible" to the standard included in the Jordan session law, "reasonable and cost effective", giving the Commission latitude to modify a local government's Stage II plan for load reductions if alternative reasonable and cost-effective measures are available or the Commission finds that the required reductions should occur by an earlier date.
3. Added reporting of local governments of expenditures to their annual reports.

Given uncertainties over the achievability of the required nutrient load reductions 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 design of this rule. They accepted a staff proposal for interim Stage II plans to bridge the 2025 strategy review that was added to the Goals rule. Continuing Stage I rates of implementation until a clear determination is made on Stage II needs would avoid potentially unnecessary or misguided planning efforts by local governments.

The Hearing Officers accepted the Stage II plan approval standard taken from the Jordan legislation based on arguments that this language had been vetted in the 2009 legislative session, did not compromise the intent of the rule, and was requested by local governments.

Rule .0279, Wastewater Discharge Requirements
Distributes the total point source annual N and P mass loading goals in the form of annual mass allocations to three existing large wastewater dischargers (≥0.1 Million Gallons per Day (MGD)) in the upper watershed and establishes concentration limits for two large private plants in the lower watershed. In the upper watershed, Stage I of implementation will establish mass allocations based on a 20 percent reduction in TN and 40 percent reduction in TP to be achieved by 2016, and Stage II will establish mass allocations based on a 40 percent reduction in TN and 77 percent reduction in TP to be achieved by 2036. As in the Neuse River Basin nutrient strategy, there are provisions for new and expanding discharges; an option for group compliance; and potential for in-lieu fee payments to offset exceedance of the annual loading cap. There is also an option for transfer of allocation among individual dischargers.

Hearing Officers' Recommended Changes:

1. The draft rule has been revised to include new Stage I load allocations for the three major dischargers in the Upper Falls subwatershed. The new allocations still result in 20% TN and 40% TP reductions but re-distribute the allocations among the dischargers in order to address equity concerns voiced during the public comment period.
2. The draft rule has been revised to address the question of whether the Stage II limits for the Upper Falls dischargers will be achievable by 2036. The revised rule requires affected dischargers to submit a plan ten years after the effective date of the rule, describing their strategy for complying with the limitations and providing a schedule for construction of facility improvements. If a discharger determines that the limits will not be technically and economically feasible, it may present those findings and propose for the Division's approval a set of intermediate limits and a new timeline for attaining its Stage II limits.

Rule 0280, Agriculture
This rule establishes collective nitrogen and phosphorus reduction goals for agricultural operations in the watershed to be achieved in two stages. Stage I establishes reduction goals of 20 percent TN and 40 percent TP to be collectively achieved by agriculture by 2021. Municipal residual application operations will also be required to use Realistic Yield Expectation nitrogen application rates and to run and comply with the Phosphorus Loss Assessment Tool (PLAT) by the end of Stage I. Stage II calls for reduction goals of 40 percent TN and 77 percent TP to be collectively achieved by agriculture by 2036. Stage II will also require the buffering of all cropland and buffers and exclusion on all pasture if agriculture does not achieve their Stage I goal. Three years after effective date, the 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, the report shall include an assessment of the practicability of producers achieving the Stage I objective within ten years after the rule effective date, and recommendations to the Commission. Annual reports are required.

Hearing Officers' Recommended Changes:

1. Added clarification to the Stage II requirements with specification of a five-year timeframe for individual compliance in Stage II if Stage I reduction goals are not achieved.
2. Clarified the definition of the minimum buffer width as being 20 feet and that exclusion of livestock is needed if individual compliance is required.
3. Scaled back expectations for biosolids application rates on farmland based on expert input that science on the dynamics of chemically bound phosphorus in biosolids is not yet sufficient to adequately inform application decisions. As a result reporting requirement were added for operators applying residuals to their lands to provide the Divisions annual assessments of their soil test phosphorus index results and phosphorus loading rates. Using this data, the Division may recommend revisions to this rule to the Commission.
4. Added requirement that the Watershed Oversight Committee seek Division approval for any agriculture nutrient credit trading program they develop to establish criteria and process for exchange of nutrient credits between parties pursuant to Rule .0282. t.

The Hearing Officers considered comments on the applicability of the rule to "hobby farms" as requested by the Commission. They made several determinations. The rule's applicability criterion for cropland of "commercial", defined as "primarily for financial profit", provides a reasonable test for sorting among any garden-type hobby farms as opposed to an acreage threshold. Regarding horse-type hobby farms, they first reviewed data provided by staff and confirmed that the numeric threshold of 5 was sound in response to other comments on this subject. Recognizing that the rule does not apply the commercial criterion to livestock, in part given its poor suitability to horse operations, they reasoned that the numeric threshold approach is designed to distinguish a scale of operation deserving of inclusion irrespective of its character, and that management considerations including stocking density would be best addressed as part of implementation. They accepted the argument that dogs are not part of agriculture, and any dog kennels would fall to local governments under the Existing Development rule. They found that defining "hobby farm" would be quite difficult as well as unnecessary..

Comments received on livestock thresholds subject to the Agricultural Rule were considered along with research on animal nutrient production, and statistics on livestock numbers and number of livestock per operation. These data led the Hearing Officers to maintain the horse and other thresholds proposed in the draft rules. A basis for this decision was to capture the greatest majority of nutrients coming from livestock while limiting, to the degree possible, the number of operations affected.

The Hearing Officers considered comments from wastewater treatment plant (WWTP) operators on the concern over the loss of application fields if phosphorus applications were limited to by the Phosphorus Loss Assessment Tool (PLAT). WWTP operators were concerned over the loss of land application disposal mechanisms of residual waste. Additionally, there were concerns over the ability of PLAT to accurately predict the fate of chemically bound P and use of the PLAT model biosolids. With expertise from the PLAT developer and Division staff, it was agreed that more data are needed on the fate of phosphorus prior to restricting its application in residuals.

Rule .0281, Stormwater Requirements for State and Federal Entities
This rule establishes stormwater requirements for state and federal entities that are similar to those imposed on local governments for both new and existing development under rules .0277 and .0278. The NC DOT is treated differently than other state/federal entities based on the unique character of its activities. Annual reports would be required. New DOT road projects would be deemed compliant if they meet buffer protection rule treatment criteria. DOT is also given the option of implementing a combination of six stormwater retrofits per year for existing roadway development and other load-reducing measures identified in the program to control loading from existing development pursuant to .0278.

Hearing Officers' Recommended Changes:

1. Similar to changes in the New Development Rule, added requirements for a Division approved stormwater management plan for non-DOT development activities disturbing one quarter acre or more.
2. Similar to changes in the New Development Rule, adjusted onsite treatment criteria needed for State/Federal new development prior to using an offsite offset option. Adjusted onsite treatment requirements are listed below:
    a. 30 percent or more in both nitrogen and phosphorus for activities disturbing one quarter acre but less than one acre.
    b. 50 percent or more in both nitrogen and phosphorus for activities disturbing one acre of land or more
    c. 30 percent or more in both nitrogen and phosphorus for proposed redevelopment activities that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period.

3. Added provisions giving the Commission latitude to modify NC DOTs Stage II plan for load reductions if alternative reasonable and cost-effective measures are available or the Commission finds that the required reductions should occur by an earlier date.
4. Specified that NC DOT achieve 50 percent or more of the needed load reduction in both nitrogen and phosphorus loading onsite when constructing new roads.

Rule .0282, Options for Offsetting Nutrient Loads
Rule .0282 provides parties subject to the various rules - new development, existing development, State and Federal stormwater entities, agriculture, and point sources – the option to obtain more cost-effective reductions by purchasing reduction credit from other, offsite reduction sources or private sellers. This open, market-based framework provides options in addition to the NC EEP option currently used in the Neuse and Tar-Pamlico strategies. 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. It also establishes geographic restrictions on trading.

Hearing Officers' Recommended Changes:

1. Added clarification that entities meet the requirements of Rule .0240 of this Section, which establishes procedural requirements for nutrient offset payments

2. Allowed the Watershed Oversight Committee to submit to the Division for approval a trading program that demonstrates how individual trades shall meet the requirements of this Rule and Rule .0280

The Hearing Officers' belief that nutrient offset is an important component of the strategy was reinforced by the numerous comments they reviewed on including land conservation as an option for achieving nutrient reduction credit. In the end, they decided that this option needs to be further studied and, consequently, they added a provision to the Goals rule that the Division shall assess the load reduction value derived from preservation of existing forested land cover in its 2016 report to the Commission.

Due to the different load reduction objectives above and below State Route 50, the Hearing Officers decided not to allow trading from the Lower Falls watershed to the Upper.

Rule .0283, Fertilizer Management
Beginning three years after effective date, the application of fertilizer to lands in the watershed is to be done either by applicators that have completed nutrient management training offered by the Cooperative Extension Service, or pursuant to a certified nutrient management plan developed for the lands to which fertilizer is applied. It also requires property owners to ensure that applicators to their lands have met one of these requirements. The rule does not apply to fertilization of residential lands done by the homeowner. Wastewater residuals and septage application have earlier compliance timeframes. Animal waste application in compliance with a permitted waste utilization plan is deemed compliant.

Hearing Officers' Recommended Changes:

1. This Rule has been removed from the Falls Nutrient Strategy.

The Hearing Officers decided to eliminate this rule from the strategy based largely on the fact that the area was subject to similar requirements under the Neuse Basin's Nutrient Management Rule .0239 of this Section. The main difference between .0239 and .0283 is the size of agricultural operation that would be subject to the Rule (50 acres vs. 5 acres, respectively). Since the larger operations in the Falls watershed were covered under the Neuse Rule, the Hearing Officers weighed the potential benefit of lowering this acreage threshold against the costs and resources needed to adhere to its requirements. On benefits, several commenters raised doubt over whether nutrient management has been effective in reducing nutrient applications in the Neuse because phosphorus fertilizers continue to be applied to phosphorus saturated soils in the Neuse Basin. Comments provided by staff of NCSU Department of Soil Science pointed to results of an agriculture statistical survey conducted in the Neuse Basin that suggest that nutrient management training should not be considered behavior change, nor should requiring a nutrient management plan lead to expectations that it will be used. Given most of the applicators in the Neuse Basin have already received the training, and in light of the questions raised about the benefits, after careful deliberation, the Hearing Officers decided to eliminate this rule because the resources needed to implement it on operations between 5 and 50 acres in size were not warranted, particular given the questionable results of the .0239 rule in the Neuse Basin.

Amended Rules: (These rule amendment are administrative in nature and were not revised)

Rule .0235, Neuse New Development Stormwater Rule
The rule is amended to clarify that the Falls lake requirements supersede the Neuse stormwater rules for local governments located in the Falls Watershed.

Rule .0315, Neuse River Basin (Schedule of Classifications)
The rule amendment formalizes the reclassification of the non-Water Supply Watershed portions of the Falls watershed to WS-V and designates the entire watershed as Critical Water Supply Watershed.

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APPENDIX A. Hearing Officers' Appointment Letter

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

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

March 12, 2010

MEMORANDUM

TO: **Tom Cecich**
Marion Deerhake
Dickson Phillips III

FROM: **Coleen Sullins**

SUBJECT: **Hearing Officer Designation**

I hereby designate you as Hearing Officers for public hearings to be held for the proposed Falls Lake Nutrient Strategy rules. John Huisman (807-6436) will provide staff support for you and will coordinate the dates, times and locations of the public hearing and meeting once they have been confirmed. Thank you for your assistance and service.

cc: Stephen T. Smith
John Huisman
Lois Thomas
Hearing Record File

1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-807-6494 \ Customer Service: 1-877-623-6748
Internet: www.ncwaterquality.org

One NorthCarolina Naturally

APPENDIX B. Announcement of Public Hearings and Comment Period

Beverly Eaves Perdue, Governor

Dee Freeman, Secretary

N.C. Department of Environment and Natural Resources

Release: Immediate
Date: June 16, 2010

Contact: Susan Massengale
Phone: (919) 807-6359

Public Hearings to Gather Comments on Falls Lake Nutrient Strategy Scheduled

RALEIGH – The Environmental Management Commission, or EMC, has scheduled two hearings to gather public input on proposed rules to reduce nutrient pollution in the Falls Lake Reservoir.

The public comment period is open until Aug. 16.

Falls Lake Reservoir, the primary drinking water source for Raleigh and several nearby communities, is impaired for excessive amounts of chlorophyll a, an indicator of high levels of nutrients. Nutrients, specifically nitrogen and phosphorus, can be carried by stormwater runoff into Falls Lake and the watershed streams that feed it. While nutrients are beneficial to aquatic plant and animal life in the proper quantities, excessive levels can cause algae blooms that impair aquatic habitat and may lead to fishkills, increase the cost of treatment for drinking water and affect recreational activities. In 2005, the N.C. General Assembly passed legislation which requires the EMC to adopt a nutrient strategy for Falls Lake.

In 2008, stakeholders from local governments, agriculture, environmental groups and other concerns began work with the N.C. Division of Water Quality to formulate a nutrient management strategy. The stakeholders used three years of lake watershed data and subsequent modeling to help form the nutrient management strategy. The draft rules were approved for public comment by the EMC in March 2010.

The rules address reduction of nutrients from several sources including agriculture, new development, existing development and wastewater treatment plants. The two-stage approach is spread over 25 years and includes opportunities for evaluating progress towards the nitrogen and phosphorus reduction goals and adjusting requirements appropriately. The projected maximum cost for implementing the rules is approximately $1.5 billion. However, emerging technologies and management efficiencies may reduce that cost significantly. Copies of the draft rules and other helpful information are available on the N.C. Division of Water Quality's website at: http://portal.ncdenr.org/web/wq/ps/nps/fallslake.

The hearing schedule is:

- 7 p.m. June 30 at Neal Middle School, 201 Baptist Church Road, Durham;
- 7 p.m. July 1 at Campbell Lodge, Durant Nature Park, 3237 Spottswood St., Raleigh.

Registration for those who wish to speak at the hearings will begin at 6:30 p.m. Time for presentations may be limited to allow time for all registered speakers. Therefore, it is requested that printed copies be provided for remarks that are longer than three minutes. Written comments may also be submitted at the hearings or by mailing them to: John Huisman, DWQ Planning, 1617 Mail Service Center, Raleigh, N.C. 27699-1617 or john.huisman@ncdenr.gov.

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

Draft Falls Rules

15A NCAC 02B .0275 – Goals

15A NCAC 02B .0276 – Definitions

15A NCAC 02B .0277 – New Development

15A NCAC 02B .0278 – Existing Development

15A NCAC 02B .0279 – Wastewater Discharge

15A NCAC 02B .0280 – Agriculture

15A NCAC 02B .0281 – State & Federal Entity

15A NCAC 02B .0282 – Options for Offsetting Nutrient Loads

Draft Amended Neuse Rules

15A NCAC 02B .0235 – Neuse Stormwater Requirements

15A NCAC 02B .0315 – Neuse River Basin

15A NCAC 02B .0275 is proposed for adoption as follows:

15A NCAC 02B .0275 FALLS WATER SUPPLY NUTRIENT STRATEGY: PURPOSE AND SCOPE

PURPOSE. The purpose of this Rule and Rules 15A NCAC 02B .0276 through .0282 and .0315(q) shall be to attain the full classified uses of Falls of the Neuse Reservoir set out in 15A NCAC 02B .0211 from current impaired conditions related to excess nutrient inputs; protect its classified uses as set out in 15A NCAC 02B .0216, including use as a source of water supply for drinking water; and maintain or enhance protections currently implemented by local governments in existing water supply watersheds encompassed by the watershed of Falls of the Neuse Reservoir. The reservoir, and all waters draining to it, have been supplementally classified as Nutrient Sensitive waters (NSW) pursuant to 15A NCAC 02B .0101(e)(3) and 15A NCAC 02B .0223. These rules, as enumerated in Item (6) of this Rule, together shall constitute the Falls water supply nutrient strategy, or Falls nutrient strategy, and shall be implemented in accordance with 15A NCAC 02B .0223. The following items establish the framework of the Falls nutrient strategy:

(1) SCOPE AND LIMITATION. Falls of the Neuse Reservoir is hereafter referred to as Falls Reservoir. All lands and waters draining to Falls Reservoir are hereafter referred to as the Falls watershed. The Falls nutrient strategy rules require controls that reduce nitrogen and phosphorus loads from significant sources of these nutrients throughout the Falls watershed. These rules do not address atmospheric emission sources of nitrogen that is deposited into the watershed but do include provisions to account for reductions in such deposition as the water quality benefits of air quality regulations are quantified. Neither do these rules address sources on which there is insufficient scientific knowledge to base regulation, other sources deemed adequately addressed by existing regulations, sources currently considered minor, or nutrient contributions from lake sediments, which are considered outside the scope of these rules. The Commission may undertake additional rulemaking in the future or make recommendations to other rulemaking bodies as deemed appropriate to more fully address nutrient sources to Falls Reservoir. While the scope of these rules is limited to the reduction of nutrient loads to surface waters, practitioners are encouraged to maximize opportunities for concurrently benefiting other ecosystem services where feasible in the course of achieving the nutrient objectives;

(2) CRITICAL WATER SUPPLY WATERSHED DESIGNATION. Water supply waters designated WS-II, WS-III, and WS-IV within the Falls watershed shall retain their classifications. The remaining waters in the Falls watershed shall be classified WS-V. For waters classified WS-V, the requirements of water supply Rule 15A NCAC 02B .0218 shall be applied. The requirements of all of these water supply classifications shall be retained and applied except as specifically noted elsewhere within the Falls nutrient strategy. In addition, pursuant to G.S. 143-214.5(b), the entire Falls watershed shall be designated a critical water supply watershed and through the Falls nutrient strategy given additional, more stringent requirements than the state minimum water supply watershed management requirements. Water supply requirements of 15A NCAC 02B

.0104 apply except to the extent that requirements of the Falls nutrient strategy are more stringent than provisions addressing agriculture, forestry, and existing development. These requirements supplement the water quality standards applicable to Class C waters, as described in Rule .0211 of this Section, which apply throughout the Falls watershed. For WS-II, WS-III, and WS-IV waters, the retained requirements of Rules 15A NCAC 02B .0214 through .0216 are characterized as follows:

(a) Item (1) addressing best usages;

(b) Item (2) addressing predominant watershed development conditions, discharges expressly allowed watershed-wide, general prohibitions on and allowances for domestic and industrial discharges, Maximum Contaminant Levels following treatment, and the local option to seek more protective classifications for portions of existing water supply watersheds;

(c) Sub-Item (3)(a) addressing waste water discharge limitations;

(d) Sub-Item (3)(b) addressing nonpoint source and stormwater controls; and

(e) Sub-Items (3)(c) through (3)(h) addressing aesthetic and human health standards.

(3) GOAL AND OBJECTIVES. To achieve the purpose of the Falls nutrient strategy, the Commission establishes the goal of attaining and maintaining nutrient-related water quality standards identified in 15A NCAC 02B .0211 throughout Falls Reservoir pursuant to G.S. 143-215.8B and 143B-282(c) and (d) of the Clean Water Responsibility Act of 1997. The Commission establishes a staged and adaptive implementation plan, outlined hereafter, to achieve the following objectives. The objective of Stage I is to, at minimum, achieve and maintain nutrient-related water quality standards in the Lower Falls Reservoir as soon as possible but no later than 2021 and to improve water quality in the Upper Falls Reservoir. The objective of Stage II is to achieve and maintain nutrient-related water quality standards throughout ~~the~~Falls Reservoir. This is estimated to require a reduction in ~~by reducing~~ average annual mass loads of nitrogen and phosphorus delivered from the sources named in Item (6) in the Upper Falls Watershed by forty and seventy-seven percent, respectively, from a baseline of 2006. The resulting cumulative allowable loads to Falls Reservoir from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek shall be 658,000 pounds of nitrogen per year and 35,000 pounds of phosphorus per year. Portions of Falls Reservoir and its watershed shall be defined as follows:

(a) Upper Falls Reservoir shall mean that portion of the reservoir upstream of State Route 50;

(b) Upper Falls Watershed shall mean the area of Falls watershed draining to Upper Falls Reservoir;

(c) Lower Falls Reservoir shall mean that portion of the reservoir downstream of State Route 50; and

(d) Lower Falls Watershed shall mean the area of Falls watershed draining to Lower Falls Reservoir without first passing through Upper Falls Reservoir.

(4) STAGED IMPLEMENTATION. The Commission shall employ the staged implementation plan set forth below to achieve the goal of the Falls nutrient strategy:

(a) STAGE I. Stage I requires intermediate or currently achievable controls throughout the Falls watershed with ~~a minimum~~the objective of reducing nitrogen and phosphorus loading to, and attaining nutrient-related water quality standards in at least the Lower Falls Reservoir as soon as possible but no later than~~by~~ 2021, while also improving water quality in the Upper Falls Reservoir as described in this Item. Implementation timeframes are described in individual rules, with full implementation occurring no later than 2021;

(b) STAGE II. Stage II requires implementation of additional controls in the Upper Falls Watershed beginning no later than 2021 to achieve~~ the~~ nutrient-related water quality standards throughout Falls Reservoir~~percent reduction objective~~ to the maximum extent technically and economically feasible by 2041, with incremental progress toward this overall objective as described in Sub-Item(5)(a). ~~Implementation timeframes are described in individual rules, with full implementation occurring no later than 2036; and~~

(c) MAINTENANCE OF ALLOCATIONS. Throughout these implementation stages and indefinitely beyond, sources shall maintain the load reductions they achieve and the ultimate allowable loads they attain.

(5) ADAPTIVE IMPLEMENTATION. The Commission shall employ the following adaptive implementation plan in concert with the staged implementation approach described in this Rule.

(a) The Division shall perform water quality monitoring throughout Falls Reservoir and shall accept reservoir water quality monitoring data provided by other parties that meet Division standards and quality assurance protocols. The Division shall utilize this data to estimate load reduction achieved~~produce load reduction estimates~~ and to perform periodic use support assessments pursuant to 40 CFR 130.7(b). It shall ~~utilize~~ evaluate use support determinations to judge progress on and compliance with the goal of the Falls nutrient strategy, including the following assessments:

(i) Attainment of nutrient-related water quality standards downstream of Highway NC-98 crossing of Falls Reservoir no later than 2016;

~~(i)~~(ii) Attainment of nutrient-related water quality standards in the Lower Falls Reservoir no later than 2021;

~~(ii)~~(iii) Attainment of nutrient-related water quality standards in the Lick Creek arm of Falls Reservoir and points downstream no later than 2026;

~~(iii)~~(iv) Attainment of nutrient-related water quality standards in the Ledge and Little Lick Creek arms of Falls Reservoir and points downstream no later than 2031;

~~(iv)~~(v) Attainment of nutrient-related water quality standards at points downstream of the Interstate 85 crossing of Falls Reservoir no later than 2036;

~~(v)~~(vi) Attainment of nutrient-related water quality standards throughout Falls Reservoir no later than 2041;

~~(vi)~~(vii) Where the Division finds that acceptable progress has not been made towards achieving nutrient-related water quality standards throughout Falls Reservoir ~~standards are not attained~~ as ~~described~~ defined in Sub-Items (i) through (vi) of this Item, or that conditions have deteriorated in a ~~portion~~ segment of Falls Reservoir as described in this Item, ~~of Falls Reservoir~~ at any time, it shall evaluate compliance with the Falls nutrient strategy rules, and may request Commission approval to initiate additional rulemaking;

~~(vii)~~(viii) Where the Division finds, based on reservoir monitoring, that nutrient-related water quality standards are attained in a previously impaired ~~portion~~ segment of Falls Reservoir, as described in this Item~~of Falls Reservoir~~, and are met for sufficient time to ~~provide reasonable assurance~~demonstrate ~~of~~ sustained maintenance of standards, as specified in individual rules of this strategy, it may notify affected parties in that ~~portion's~~ segment's watershed that further load reductions are not required and of requirements for maintenance of measures to prevent loading increases. Sufficient time is defined as at least two consecutive use support assessments demonstrating compliance with nutrient-related water quality standards in a given segment of Falls Reservoir.~~; and~~

~~(viii) Where the Division finds that average annual mass loads of nitrogen and phosphorus from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek have been reduced to the allowable loads identified in Item (3), but that nutrient-related water quality standards are not attained in a portion or portions of Falls Reservoir, and that standards may not be attained, it may consider re-modeling Falls Reservoir for the purpose of establishing revised reduction needs and developing a revised nutrient strategy through additional rulemaking. The Division shall determine the likelihood of attaining standards by comparing the scale of impairment against the recency and magnitude of load reduction measures implemented in Upper Falls watershed.~~

~~(b) Recognizing the uncertainty associated with model-based load reduction targets, to ensure that allowable loads to Falls Reservoir remain appropriate as implementation proceeds, a party may develop and submit for Commission approval supplemental nutrient response modeling of Falls Reservoir based on additional data collected after a~~

~~period of implementation. The Commission may consider revisions to the requirements of Stage II based on the results of such modeling according to the following criteria:~~

~~(i) A party shall obtain Division review and approval of any monitoring study plan and description of the modeling framework to be used prior to commencement of such a study. The study plan and modeling framework shall meet any Division requirements for data quality and model support or design in place at that time;~~

~~(ii) Supplemental modeling shall include a minimum of three years of lake water quality data unless a party can provide information to demonstrate that a shorter time span is sufficient;~~

~~(iii) The Commission may review Stage II requirements if a party submits supplemental modeling data, products and results acceptable to the Commission for this purpose;~~

~~(iv) The Commission may accept modeling products and results that estimate a range of combinations of nitrogen and phosphorus percentage load reductions needed to meet the goal of the Falls nutrient strategy, along with associated allowable loads to Falls Reservoir, from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek and that otherwise comply with the requirements of this Item. Such modeling may incorporate the results of studies that provide new data on various nutrient sources such as atmospheric deposition, internal loading, and loading from tributaries other than those identified in this Sub-item;~~

~~(v) Where supplemental modeling is accepted by the Commission, and results indicate allowable loads of nitrogen and phosphorus to Falls Reservoir from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek that are substantially different than those identified in Item (3), then the Commission may establish those allowable loads as the revised objective of Stage II relative to their associated baseline values. Otherwise, the Commission shall continue to implement the Falls nutrient strategy as established in this Rule;~~

~~(vi) Where the substantially different allowable loads to Falls Reservoir are greater than those identified in Item (3), the Division shall work with affected parties to revise the accounting and implementation for individual rules according to these less stringent requirements. The Division shall establish revised allocations and the Director shall notify all affected parties of these revised requirements and allocations. Until such revisions are completed, implementation shall continue according to existing requirements; and~~

~~(vii) Where the substantially different allowable loads to Falls Reservoir are lesser than those identified in Item (3), the Commission may initiate rulemaking to amend the Falls nutrient strategy rules to incorporate these more stringent objectives. Until such amendments become effective, strategy implementation shall continue according to existing requirements.~~

~~(c) Nothing in this strategy shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by state or federal law, including the reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3.~~

~~(d)~~(b) Given that these regulations require significant load reductions over extended timeframes, to address resulting uncertainties including those related to technological advancement, scientific understanding, actions chosen by affected parties, resultant loading effects, and loading effects of other regulations, the Division shall report to the Commission and provide information to the public in January 2016 and every five years thereafter as necessary. The reports shall address all of the following subjects:

(i) Changes in nutrient loading to Falls Reservoir and incremental progress in attaining nutrient-related water quality standards as described in Sub-Items (5)(a)(i) through (vi) of this Rule;

~~(i)~~(ii) The state of wastewater and stormwater nitrogen and phosphorus control technology, including technological and economic feasibility;

~~(ii)~~(iii) Use and projected use of wastewater reuse and land application opportunities;

~~(iii)~~(iv) The utilization and nature of nutrient offsets and projected changes. This shall include an assessment of ~~the~~any load reduction value derived from preservation of existing forested land cover;

~~(iv)~~(v) Results of any studies evaluating instream loading changes resulting from implementation of ~~individual~~ rules;

~~(v)~~(vi) Results of any studies evaluating nutrient loading from conventional septic systems and discharging sand filter systems;

~~(vi)~~(vii) Assessment of the instream benefits of local programmatic management measures such as fertilizer or pet waste ordinances, improved street sweeping and the extent to which local governments have implemented these controls;

~~(vii)~~(viii) Results of applicable studies, monitoring, and modeling from which a baseline will be established to address changes in atmospheric deposition of nitrogen; ~~and establish a baseline for atmospheric nitrogen deposition~~;

(ix) Recent or anticipated changes in regulations affecting atmospheric nitrogen emissions and their projected effect on nitrogen deposition;

~~(viii) Projected reductions in atmospheric deposition based on current modeling;~~

~~(ix)~~(x) Results of any studies evaluating nutrient loading from groundwater;

~~(x)~~(xi) Updates to nutrient loading accounting tools; and

~~Evaluation of available nutrient-related lake monitoring data; and~~

(c) At the request no later than January 2023 from a person subject to the rules, the Division shall submit a report to the Commission in July 2025 to evaluate the effects of full implementation of Stage I and the implications for Stage II. The party requesting this review shall provide a demonstration of need, including providing data to support their position of the need to revisit the issues of economic and technological feasibility of Stage II objectives.

(d) If the demonstration of need in Sub-Item (5)(c) is met, the Division shall submit a report to the Commission in July 2025 that shall address the following subjects in addition to the content required elsewhere under this Sub-Item:

(i) The physical, chemical, and biological conditions of the Upper Falls Reservoir including nutrient loading impacts;

(ii) Whether alternative regulatory action pursuant to Sub-Item (5)(h) would be sufficient to protect existing uses as required under the Clean Water Act;

(iii) The impact of management of the Falls Reservoir on water quality in the Upper Falls Reservoir;

(iv) The feasibility of achieving the Stage II objective; and

(v) The estimated costs and benefits of achieving the Stage II objective.

(e) The Division shall make recommendations, if any, on rule revisions based on the information reported pursuant to Sub-Items (b) and (d) of this Rule.

(f) In developing the reports required under Sub-Items (b) and (d) of this Rule, the Division shall consult with and consider information submitted by local governments and other persons with an interest in Falls Reservoir. Following receipt of a report, the Commission shall consider whether revisions to the requirements of Stage II are needed and may initiate rulemaking or any other action allowed by law.

(g) Recognizing the uncertainty associated with model-based load reduction targets, to ensure that allowable loads to Falls Reservoir remain appropriate as implementation proceeds, a person may at any time during implementation of the Falls nutrient strategy develop and submit for Commission approval supplemental nutrient response modeling of Falls Reservoir based on additional data collected after a period of implementation. The Commission may consider revisions to the requirements of Stage II based on the results of such modeling as follows:

(i) A person shall obtain Division review and approval of any monitoring study plan and description of the modeling framework to be used prior to

commencement of such a study. The study plan and modeling framework shall meet any Division requirements for data quality and model support or design in place at that time. Within 180 days of receipt, the division shall either approve the plan and modeling framework or notify the person seeking to perform the supplemental modeling of changes to the plan and modeling framework required by the Division;

(ii) Supplemental modeling shall include a minimum of three years of lake water quality data unless the person performing the modeling can provide information to the Division demonstrating that a shorter time span is sufficient;

(iii) The Commission may accept modeling products and results that estimate a range of combinations of nitrogen and phosphorus percentage load reductions needed to meet the goal of the Falls nutrient strategy, along with associated allowable loads to Falls Reservoir, from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek and that otherwise comply with the requirements of this Item. Such modeling may incorporate the results of studies that provide new data on various nutrient sources such as atmospheric deposition, internal loading, and loading from tributaries other than those identified in this Sub-item. The Division shall assure that the supplemental modeling is conducted in accordance with the ~~water~~ quality assurance requirements of the Division;

(iv) The Commission shall review Stage II requirements if a party submits supplemental modeling data, products and results acceptable to the Commission for this purpose. Where supplemental modeling is accepted by the Commission, and results indicate allowable loads of nitrogen and phosphorus to Falls Reservoir from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek that are substantially different than those identified in Item (3), then the Commission may initiate rulemaking to establish those allowable loads as the revised objective of Stage II relative to their associated baseline values;

(h) Nothing in this strategy shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by state or federal law, including the reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3.

(6) RULES ENUMERATED. The Falls nutrient strategy rules shall be titled as follows:

(a) Rule .0275 Purpose and Scope;

(b) Rule .0276 Definitions. An individual rule may contain additional definitions for terms that are used in that rule only;

(c) Rule .0277 Stormwater Management for New Development;

(d) Rule .0278 Stormwater Management for Existing Development;

(e) Rule .0279 Wastewater Discharge Requirements;

(f) Rule .0280 Agriculture;

(g) Rule .0281 Stormwater Requirements for State and Federal Entities;

(h) Rule .0282 Options for Offsetting Nutrient Loads;

(i) Rule .0283 Fertilizer Management; and

(j) Rule .0315 Neuse River Basin.

(7) APPLICABILITY. Categories of parties responsible for implementing the Falls nutrient strategy rules and, as applicable, their geographic scope of responsibility, are identified in each rule. The specific local governments responsible for implementing Rules .0277, .0278, and .0282 shall be as follows:

(a) All incorporated municipalities, as identified by the Office of the Secretary of State, with planning jurisdiction within or partially within the Falls watershed. Those municipalities are currently:

(i) Butner;

(ii) Creedmoor;

(iii) Durham;

(iv) Hillsborough;

(v) Raleigh;

(vi) Roxboro;

(vii) Stem; and

(viii) Wake Forest.

(b) All counties with jurisdiction in Falls watershed and where municipalities listed in Sub-Item (6)(a) do not have an implementation requirement:

(i) Durham;

(ii) Franklin;

(iii) Granville;

(iv) Orange;

(v) Person; and

(vi) Wake.

(c) A unit of government may arrange through interlocal agreement or other instrument of mutual agreement for another unit of government to implement portions or the entirety of a program required or allowed under any rule of this strategy to the extent that such an arrangement is otherwise allowed by statute. The governments involved shall submit

documentation of any such agreement to the Division. No such agreement shall relieve a unit of government from its responsibilities under these rules.

(8) ENFORCEMENT. Failure to meet requirements of Rules .0275, .0277, .0278, .0279, .0280, .0281, or .0282 of this Section may result in imposition of enforcement measures as authorized by G. S. 143-215.6A (civil penalties), G.S. 143-215.6B (criminal penalties), and G.S. 143-215.6C (injunctive relief).

History Note: *Authority G. S. 143-214.1; 143-214.3; 143-214.5; 143-214.7; 143-215.1; 143-215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143 215.6C; 143-215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L. 2009-337; S.L. 2009-486.*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 02B .0276 is proposed for adoption as follows:

15A NCAC 02B .0276 FALLS WATER SUPPLY NUTRIENT STRATEGY: DEFINITIONS

The following words and phrases, which are not defined in G.S. 143, Article 21, shall be interpreted as follows for the purposes of the Falls nutrient strategy:

(1) "Allocation" means the mass quantity of nitrogen or phosphorus that a discharger, group of dischargers, nonpoint source, or collection of nonpoint sources is assigned~~ as part of a TMDL~~. For point sources, possession of allocation does not authorize the discharge of nutrients but is prerequisite to such authorization through a NPDES permit.

(2) "Applicator" means the same as defined in 15A NCAC 02B .0202(4).

(3) "Atmospheric nitrogen" means total oxidized nitrogen (NO_y) which includes all nitrogen oxides (including NO_2, NO, N_2, nitrogen trioxide [N_2O_3], nitrogen tetroxide [N_2O_4], dinitrogen pentoxide [N_2O_5], nitric acide (HNO_3) peroxyacl nitrates (PAN)), the sum of which is referred to as reduced nitrogen (NH_x)).

(~~4~~3) "Delivered," as in delivered allocation, load, or limit, means the allocation, load, or limit that is measured or predicted at Falls Reservoir. A delivered value is equivalent to a discharge value multiplied by the transport factor for that discharge location.

(~~5~~4) "Development" means the same as defined in 15A NCAC 02B .0202(23).

(~~6~~5) "Discharge," as in discharge allocation, load, or limit means the allocation, load, or limit that is measured at the point of discharge into surface waters in the Falls watershed. A discharge value is equivalent to a delivered value divided by the transport factor for that discharge location.

(~~7~~6) "Existing development" means development, other than that associated with agricultural or forest management activities that meets one of the following criteria:

(a) It either is built or has established a vested right based on statutory or common law as interpreted by the courts, as of the effective date of either local new development stormwater programs implemented under 15A NCAC 02B .0277 for projects that do not require a state permit or, as of the applicable compliance date established in 15A NCAC 02B .0281(5) and (6); or

(b) It occurs after the compliance date set out in Sub-Item (~~5~~4)(d) of Rule .0277 but does not result in a net increase in built-upon area.

~~(7) "Intermittent stream" means a well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table. The flow may be heavily supplemented by stormwater runoff. An intermittent stream often lacks the biological and hydrological characteristics commonly associated with the continuous conveyance of water.~~

(8) "Falls nutrient strategy," or "Falls water supply nutrient strategy" means the set of 15A NCAC 02B .0275 through .0282 and .0315(p).

(9) "Falls Reservoir" means the surface water impoundment operated by the US Army Corps of Engineers and named Falls of Neuse Reservoir.

(10) “Upper Falls Reservoir” means that portion of the reservoir upstream of State Route 50.

(11) “Upper Falls Watershed” means that area of Falls watershed draining to Upper Falls Reservoir.

(12) “Lower Falls Reservoir” means that portion of the reservoir downstream of State Route 50.

(13) “Lower Falls Watershed” means that are of Falls watershed draining to lower falls Reservoir without first passing through Upper Falls Reservoir.

(14) "Load" means the mass quantity of a nutrient or pollutant released into surface waters over a given time period. Loads may be expressed in terms of pounds per year and may be expressed as "delivered load" or an equivalent "discharge load."

(15) "Load allocation" means the same as set forth in federal regulations 40 CFR 130.2(g), which is incorporated herein by reference, including subsequent amendments and editions. These regulations may be obtained at no cost from http://www.epa.gov/lawsregs/search/40cfr.html or from the U.S. Government Printing Office, 732 North Capitol St. NW, Washington D.C., 20401.

(16) "New development" means any development project that does not meet the definition of existing development set out in this Rule.

(17) "Nitrogen" or "total nitrogen" means the sum of the organic, nitrate, nitrite, and ammonia forms of nitrogen in a water or wastewater.

(18) "NPDES" means National Pollutant Discharge Elimination System, and connotes the permitting process required for the operation of point source discharges in accordance with the requirements of Section 402 of the Federal Water Pollution Control Act, 33 U.S.C. Section 1251 et seq.

(19) "Nutrients" means total nitrogen and total phosphorus.

~~(20) "Perennial stream" means a well-defined channel that contains water year-round during a year of normal rainfall with the aquatic bed located below the water table for most of the year. Groundwater is the primary source of water for a perennial stream, but it also carries stormwater runoff. A perennial stream exhibits the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water.~~

(~~21~~20) "Phosphorus" or "total phosphorus" means the sum of the orthophosphate, polyphosphate, and organic forms of phosphorus in a water or wastewater.

(~~22~~21) "Stream" means a body of concentrated flowing water in a natural low area or natural channel on the land surface.

(~~23~~22) "Surface waters" means all waters of the state as defined in G.S. 143-212 except underground waters.

(~~24~~23) "Technical specialist" means the same as defined in 15A NCAC 06H .0102(9).

~~(25) "Total Maximum Daily Load," or "TMDL," means the same as set forth in federal regulations 40 CFR 130.2(i) and 130.7(c)(1), which are incorporated herein by reference, including subsequent amendments and editions. These regulations may be obtained at no cost from~~

~~http://www.epa.gov/lawsregs/search/40cfr.html or from the U.S. Government Printing Office, 732 North Capitol St. NW, Washington D.C., 20401.~~

(~~26~~24) "Total nitrogen" or "nitrogen" means the sum of the organic, nitrate, nitrite, and ammonia forms of nitrogen in a water or wastewater.

(~~27~~25) "Total phosphorus" or "phosphorus" means the sum of the orthophosphate, polyphosphate, and organic forms of phosphorus in a water or wastewater.

(~~38~~26) "Wasteload" means the mass quantity of a nutrient or pollutant released into surface waters by a wastewater discharge over a given time period. Wasteloads may be expressed in terms of pounds per year and may be expressed as "delivered wasteload" or an equivalent "discharge wasteload."

(~~29~~27) "Wasteload allocation" means the same as set forth in federal regulations 40 CFR 130.2(h), which is incorporated herein by reference, including subsequent amendments and editions. These regulations may be obtained at no cost from http://www.epa.gov/lawsregs/search/40cfr.html or from the U.S. Government Printing Office, 732 North Capitol St. NW, Washington D.C., 20401.

History Note: *Authority G S. 143-214.1; 1432-214.3;143-214.5; 143-214.7; 143-215.1; 143215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143-215.6C; 143 215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L 2009-337; S.L 2009-486*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 02B .0277 is proposed for adoption as follows:

15A NCAC 02B .0277 FALLS RESERVOIR WATER SUPPLY NUTRIENT STRATEGY: STORMWATER MANAGEMENT FOR NEW DEVELOPMENT

The following is the stormwater strategy, as prefaced in 15A NCAC 02B .0275, for new development activities within the Falls watershed:

(1) PURPOSE. The purposes of this Rule are as follows:

(a) To achieve and maintain the nitrogen and phosphorus loading objectives established for Falls Reservoir in 15A NCAC 02B .0275 from lands in the Falls watershed on which new development occurs;

(b) To provide control for stormwater runoff from new development in Falls watershed to ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows; and

(c) To protect the water supply, aquatic life and recreational uses of Falls Reservoir from the potential impacts of new development.

(2) APPLICABILITY. This Rule shall apply to those areas of new development, as defined in 15A NCAC 02B .0276, that lie within the Falls watershed and the planning jurisdiction of a municipality or county that is identified in 15A NCAC 02B .0275. This rule shall not apply to development activities on state and federal lands that are captured under Rule .0281 of this Section.

(3) REQUIREMENTS. All local governments subject to this Rule shall develop stormwater management programs for submission to and approval by the Commission, to be implemented in areas described in Item (2) of this Rule.~~, based on the standards in this Item:~~Nothing in this rule preempts local governments from establishing requirements that are more restrictive than those set forth in this rule. Local government stormwater management programs shall include the following elements and the standards contained in Item (4):

~~*****(Land Disturbance Threshold Option: A)***~~

~~(a) An approved stormwater management plan shall be required for all proposed new development disturbing one acre or more for single family and duplex residential property and recreational facilities, and one-half acre or more for commercial, industrial, institutional, multifamily residential, or local government property. These stormwater plans shall not be approved by the subject local governments unless the following criteria are met:~~

~~*****(Land Disturbance Threshold Option: B)******

(a) The requirement that a~~An approved~~ stormwater management plan shall be submitted for local government approval based on the standards in Item (4) ~~required~~ for all proposed new development disturbing one quarter acre or more.~~ 5,000 square feet or more.~~

(b) A plan to ensure maintenance of best management practices (BMPs) implemented to comply this rule for the life of the development; and

(c) A plan to ensure enforcement and compliance with the provisions in Item (4) of this Rule for the life of the new development.

(4) PLAN APPROVAL REQUIREMENTS. ~~These~~ A developer's stormwater plan~~s~~ shall not be approved by ~~the~~ a subject local government~~s~~ unless the following criteria are met:

(a~~i~~) Nitrogen and phosphorus loads contributed by the proposed new development activity shall not exceed the following unit-area mass loading rates ~~as follows~~ for nitrogen ~~-~~and phosphorus, respectively, expressed in units of pounds/acre/year: 2.2 and 0.33. Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that would not result in a net increase in built-upon area shall not be required to meet the nutrient loading targets or high-density requirements except to the extent that the developer shall provide stormwater control at least equal to the previous development. Proposed development that would replace or expand existing structures or improvements and would result in a net increase in built-upon area shall have the option either to achieve at least the percentage loading reduction objectives stated in 15A NCAC 02B . 0275 as applied to nitrogen and phosphorus loading from the previous development for the entire project site, or to meet the loading rate targets described in this Item. These requirements shall supersede those identified in 15A NCAC 02B .0104(q). The developer shall determine the load reductions needed to meet these loading rate targets by using the loading calculation method called for in Sub-Item (5~~4~~)(a) or other equivalent method acceptable to the Division.~~:~~

~~***(Onsite Treatment Option: A (50 Percent N / 60 Percent P)****~~

(b~~ii~~) The developer shall have the option of offsetting part of the nitrogen and phosphorus load by implementing or funding offsite management measures. Before using an offsite offset option, a development shall implement structural stormwater controls onsite that achieves one of the following levels of reductions:

(i) Proposed new development activity disturbing at least one quarter acre but less than one acre of land, except as stated in Sub-Item (3)(b)(iii), shall achieve 30 percent or more of the needed load reduction in both nitrogen and phosphorus loading onsite and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule;

(ii) Except as stated in Sub-Item (3)(b)(iii), proposed new development activity that disturbs one acre of land or more shall achieve 50 percent or more of the needed load reduction in both nitrogen and phosphorus loading onsite and shall meet any

requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule; or

(iii) Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that increases impervious surface within a local government's designated downtown area, regardless of area disturbed, shall achieve 30 percent of the needed load reduction in both nitrogen and phosphorus onsite, and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule. ~~attain a minimum of 50 percent reduction in post-construction nitrogen loading rate and 60 percent reduction in post-construction phosphorus loading rate on site and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(a)(iii) of this Rule.~~

(c) Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (~~4~~3)(a)~~(i)~~ of this Rule. ~~A developer may make offset payments to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program. A developer may use an offset option provided by the local government in which the development activity occurs.~~ A developer may use any measure that complies with the requirements of Rules .0240 and .0282. of this Section. ~~propose other offset measures to the local government, including providing his or her own offsite offset or utilizing a private seller. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282;~~

~~***(Onsite Treatment Option: B (60 Percent N / 60 Percent P)****~~

~~(ii) The developer shall have the option of offsetting part of the nitrogen and phosphorus load by implementing or funding offsite management measures. Before using an offsite offset option, a development shall implement structural stormwater controls that attain a minimum of 60 percent reduction in post-construction nitrogen loading rate and 60 percent reduction in post-construction phosphorus loading rate on site and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(a)(iii) of this Rule. Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (3)(a)(i) of this Rule. A developer may make offset payments to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program. A developer may use an offset option provided by the local government in which the development activity occurs. A developer may propose other offset measures to the local~~

~~government, including providing his or her own offsite offset or utilizing a private seller. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282;~~

(~~d~~iii) Proposed new development subject to NPDES, water supply, and other state-mandated stormwater regulations shall comply with those regulations in addition to the other requirements of this Sub-Item. Proposed new development in any water supply watershed in the Falls watershed designated WS-II, WS-III, or WS-IV shall comply with the density-based restrictions, obligations, and requirements for engineered stormwater controls, clustering options, operation and maintenance responsibilities, vegetated setbacks, land application, and landfill provisions described in Sub-Items (3)(b)(i) and (3)(b)(ii) of the applicable Rule among 15A NCAC 02B .0214 through .0216. ~~Notwithstanding~~ Provided, the allowance in water supply watershed rules for 10 percent of a jurisdiction to be developed at up to 70 percent built-upon area without stormwater treatment~~,~~ shall not be available in the Falls watershed.~~proposed new development in the Falls watershed shall not have the option to forego treatment.;~~

(~~e~~iv) Stormwater systems shall be designed to control and treat at a minimum the runoff generated from all surfaces in the project area by one inch of rainfall. The treatment volume shall be drawn down pursuant to standards specific to each practice as provided in the most recent version of the *Stormwater Best Management Practices Manual* published by the Division, or other at least technically equivalent standards acceptable to the Division.

(f) To ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows, ~~stormwater flows from the new development shall not contribute to degradation of waters of the State. A~~at a minimum, the new development shall not result in a net increase in pea~~kl~~k flow leaving the site from pre-development conditions for the one-year, 24~~-~~-hour storm event.~~;~~

~~(v) Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that would not result in a net increase in built-upon area shall not be required to meet the nutrient loading targets or high-density requirements except to the extent that it shall provide stormwater control at least equal to the previous development. Proposed new development that would replace or expand existing structures or improvements and would result in a net increase in built-upon area shall have the option either to achieve at least the percentage loading reduction objectives stated in 15A NCAC 02B .0275 as applied to nitrogen and phosphorus loading from the previous development for the entire project site, or to meet the loading~~

~~rate targets described in Sub-Item (3)(a)(i). These requirements shall supersede those identified in 15A NCAC 02B .0104(q);~~

(~~vi~~) ~~Proposed redevelopment that increases impervious surface within a local government's designated downtown area shall achieve a 30 percent reduction in both nitrogen and phosphorus loading from the untreated condition onsite before the remainder of the 40 percent nitrogen and 77 percent phosphorus reduction from the previous condition may be achieved through offsite offsets;~~

(~~gvii~~) New development may satisfy the requirements of this Rule by meeting the post-development hydrologic criteria set out in Chapter 2 of the North Carolina Low Impact Development Guidebook dated June 2009, or the hydrologic criteria in the most recent version of ~~this~~ that guidebook;

(~~hviii~~) Proposed new development shall demonstrate compliance with the riparian buffer protection requirements of 15A NCAC 02B .0233 and .0242~~.~~or subsequent amendments or replacements to those requirements.

~~(b) A plan to ensure maintenance of best management practices (BMPs) implemented as a result of the provisions in Sub-Item (3)(a) of this Rule for the life of the development;~~

~~(c) A plan to ensure enforcement and compliance with the provisions in Sub-Item (3)(a) of this Rule for the life of the new development;~~

~~(d) Nothing in these rules preempts local governments from establishing requirements that are more restrictive than those set forth in these rules.~~

(5~~4~~) RULE IMPLEMENTATION. This Rule shall be implemented as follows:

(a) Within two months after the effective date of this Rule, the Division shall submit a model local stormwater program, including a model local ordinance that embodies the criteria described in Item (3) and (4) of this Rule to the Commission for approval. The model program shall include a tool that will allow developers to account for nutrient loading from development lands and loading changes due to BMP implementation to meet the requirements of Item (3) and (4) of this Rule. The accounting tool shall utilize nutrient efficiencies and associated design criteria established for individual BMPs in the most recent version of the *Stormwater Best Management Practices Manual* published by the Division, or other more precise standards acceptable to the Division. At such time as data quantifying nutrient loads from onsite wastewater systems is made available, the new development nutrient export accounting tool shall be revised to require accounting for nutrient loading from onsite wastewater from newly developed lands that use such systems. Should research quantify significant loading from onsite wastewater systems, the Division may also make recommendations to the Commission for Public Health to initiate rulemaking to reduce nutrient loading to surface waters from these systems. The

Division shall work in cooperation with subject local governments and other watershed interests in developing this model program.

(b) Within five months after the Commission's approval of the model local stormwater program and model ordinance, subject local governments shall submit stormwater management programs, in conjunction with similar requirements in 15A NCAC 02B .0278, to the Division for preliminary approval. These local programs shall meet or exceed the requirements in Item (3) and (4) of this Rule;

(c) Within 10 months after the Commission's approval of the model local stormwater program, the Division shall provide recommendations to the Commission on local stormwater programs. The Commission shall either approve the programs or require changes based on the standards set out in Item (3) and (4) of this Rule. Should the Commission require changes, the applicable local government shall have two months to submit revisions, and the Division shall provide follow-up recommendations to the Commission within two months after receiving revisions;

(d) Within six months after the Commission's approval of a local program, or upon the Division's first renewal of a local government's NPDES stormwater permit, whichever occurs later, the affected local government shall complete adoption of and implement its local stormwater management program; and

(e) Upon implementation, subject local governments shall submit annual reports to the Division summarizing their activities in implementing each of the requirements in Item (3) and (4) of this Rule, including changes to nutrient loading. ~~due to implementation of Sub-Item (3)(a) of this Rule.~~

(~~6~~5) EQUIVALENT PROGRAM OPTION. A local government may in its program submittal under Sub-Item (4)(b) of this Rule request that the Division accept the local government's implementation of another stormwater program or programs as satisfying one or more of the requirements set forth in Item (3) and (4) of this rule. The Division will provide determination on the acceptability of any such alternative prior to requesting Commission approval of local programs as required in Sub-Item (~~5~~4)(c) of this Rule. Should a local government propose alternative requirements to achieve and maintain the rate targets described in Sub-Item (~~4~~3)(a)~~(i)~~ of this Rule, it shall include in its program submittal technical information demonstrating the adequacy of those ~~requirements,~~requirements. Should an alternative program propose monitoring of watersheds to compare measured loading to expected loading, it shall ~~and~~ at a minimum include the following:

(a) Engineering calculations that quantify expected loading from new development projects based on stormwater controls currently enforced;

(b) At least three years of continuous flow and nutrient monitoring data demonstrating that watershed loading rates are at or below ~~the rate targets described in~~rates that would result

from meeting the requirements of this Rule and Rule .0278 of this Section based on the land cover composition of the watershed~~ Sub-Item (43)(a)(i) of this Rule~~;

(c) An ongoing water quality monitoring program based on continuous flow and concentration sampling to be performed indefinitely into the future with results reported annually to the Division for review and approval;

(d) A corrective action plan to be implemented should data collected under the ongoing monitoring program demonstrate watershed loading is within 10 percent of the rate ~~targets described in Sub-Item (43)(a)(i) of this Rule~~estimated in compliance with this Item;

(e) Should a local government submit an alternate program for consideration that includes areas within its jurisdiction outside of the monitored watershed it shall submit technical information demonstrating the areas outside of the monitored watershed can reasonably be expected to load at equal or lesser rates than ~~the rate targets described in Sub-Item (43)(a)(i) of this Rule~~those estimated in compliance with this Item based on comparative analysis of land uses and other factors affecting nutrient loading.

History Note: *Authority G. S. 143-214.1; 143-214.3; 143-214.5; 143-214.7; 143-215.1; 143-215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143 215.6C; 143-215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L. 2009-337; S.L. 2009-486.*

Temporary Adoption Eff.___;

Eff.___.

15A NCAC 02B .0278 is proposed for adoption as follows:

15A NCAC 02B .0278 FALLS WATER SUPPLY NUTRIENT STRATEGY: STORMWATER MANAGEMENT FOR EXISTING DEVELOPMENT

This Rule establishes a staged, adaptive approach by which municipalities and counties shall contribute to achieving the nonpoint source loading objectives of the Falls Reservoir nutrient strategy by reducing or otherwise offsetting nutrient contributions from existing development. It provides local governments three years to develop ~~plan~~programs that propose Stage I load reduction actions to the Division and requires local governments to begin and track measures to reduce nutrient loads from existing developed lands within their jurisdiction within three years of the effective date of this Rule, as specified in Item (7). Local governments shall submit for approval and implement Stage II load reduction programs within ten years after the effective date of this Rule and submit revised load reductions ~~plan~~programs every five years thereafter. The following is the watershed stormwater strategy, as prefaced in Rule 15A NCAC 02B .0275, for existing development in the Falls watershed:

(1) PURPOSE. The purposes of this Rule are as follows:

(a) To achieve and maintain the nonpoint source nitrogen and phosphorus percentage reduction objectives established for Falls Reservoir in Rule 15A NCAC 02B .0275 on nutrient loading from existing development in the Falls watershed relative to the baseline period defined in that Rule. Existing development is defined in Rule 15A NCAC 02B .0276; and

(b) To protect the water supply, aquatic life, and recreational uses of Falls Reservoir.

(2) APPLICABILITY. This Rule shall apply to municipalities and counties in the Falls watershed as identified in Rule 15A NCAC 02B .0275.

(3) STAGED AND ADAPTIVE IMPLEMENTATION REQUIREMENTS. Local governments shall employ the following staged and adaptive implementation ~~plan~~program. All local governments subject to this Rule shall develop load-reducing programs for submission to and approval by the Commission that include the following staged elements and meet the associated minimum standards for each stage of implementation:

(a) In Stage I, a local government subject to this Rule shall implement a load reduction program that provides estimates of, and plans for offsetting within 10 years of the effective date of this Rule, nutrient loading increases from lands developed subsequent to the baseline period ~~but prior to implementation of a~~and not subject to the requirements of the local government's Falls Lake new development stormwater program. For these post-baseline existing developed lands, the current loading rate shall be compared to the loading rate for these lands prior to development for the acres involved, and the difference shall constitute the load reduction need in annual mass load, in pounds per year. Alternatively, a local government may assume uniform pre-development loading rates of 2.89 pounds/acre/year N and 0.63 pounds/acre/year P for these lands. The local

government shall achieve this Stage I load reduction within 10 years of the effective date of this Rule. This Stage I program shall meet the criteria defined in Item (4) of this Rule.

(b) Ten~~10~~ years after the effective date of this Rule and every five years thereafter, a local government located in the Upper Falls Watershed as defined in Item (3) of Rule 15A NCAC 02B .0275 shall submit and concurrently begin implementing a Stage II load reduction program that meets the following requirements:

(i) Provided that a local government achieves the Stage I reduction objectives described in this item, a local government's initial Stage II load reduction program shall provide for an annual expenditure that equals or exceeds the average annual amount the local government has spent to achieve nutrient reductions from existing development during the last seven years of Stage I. A local government's expenditures shall include all local government funds, including any state and federal grant funds used to achieve nutrient reductions from existing developed lands. The cost of achieving reductions from municipal wastewater treatment plants shall not be included in calculating a local government's expenditures. Notwithstanding this requirement, the EMC may approve an initial Stage II load reduction program based on a lower level of expenditure if the local government demonstrates that continuing the prior level of expenditure is not reasonable or cost-effective given the reductions that will be achieved, or the expenditure would cause serious financial hardship to the local government.

(ii) If Stage I reduction objectives are not achieved, a local government's initial Stage II load reduction program shall provide for an annual expenditure that equals or exceeds the average annual amount the local government has spent to achieve nutrient reductions from existing development during the highest three years of implementation of Stage I. Annual expenditures shall be calculated in accordance with Sub-Item (3)(b)(i).

~~(i)~~(iii) Subsequent five year programs shall be ~~-~~designed to achieve the Stage II percent load reduction goals from existing developed lands in ~~its~~ a local government's jurisdiction, ~~that includes~~shall include timeframes for achieving these goals and ~~that meets~~shall meet the requirements ~~criteria defined~~ ~~in~~of Item (4) of this Rule.

(4) ELEMENTS OF LOAD REDUCTION PROGRAMS. A local government's load reduction program shall address the following elements:

(a) Jurisdictions in the Eno River and Little River subwatersheds shall, as a part of their Stage I load reduction programs, begin and continuously implement a program to reduce loading from discharging sand filters and malfunctioning septic systems discharging into waters of the State within those jurisdictions and subwatersheds.

(b) Jurisdictions within any Falls subwatershed in which chlorophyll a levels have exceeded 40 micrograms/liter in more than seventy-five percent of the monitoring events in any calendar year shall, as part of their Stage I load reduction programs, begin and continuously implement a program to reduce nutrient loading into the waters of the State within those jurisdictions and that subwatershed.

(c) The total amount of nutrient loading reductions in Stage I is not increased for local jurisdictions by the requirements to add specific program components to address loading from malfunctioning septic systems and discharging sand filters or high nutrient loading levels pursuant to Sub-Items (4)(a) and (b) of this Rule.

(d) In preparation for implementation of their Stage I and Stage II load reduction programs, local governments shall develop inventories and characterize load reduction potential to the extent that accounting methods allow of the following within two years of the effective date of this Rule:

(i) Wastewater collection systems;

(ii) Discharging sand filter systems, including availability of or potential for central sewer connection;

(iii) Properly functioning and malfunctioning septic systems;

(iv) Restoration opportunities in utility corridors;

(v) Fertilizer management plans for local government-owned lands;

(vi) Structural stormwater practices, including intended purpose, condition, potential for greater nutrient control; and

(vii) Wetlands and riparian buffers including potential for restoration opportunities.

(e) A local government's load reduction need shall be based on the developed lands that fall within its general police powers and within the Falls watershed.

(f) The load reduction need shall not include lands under state or federal control, and a county shall not include lands within its jurisdictional boundaries that are under municipal police powers.

(g) Nitrogen and phosphorus loading from existing developed lands, including loading from onsite wastewater treatment systems to the extent that accounting methods allow, shall be calculated by applying the accounting tool described in Sub-Item (7)(a) and shall quantify baseline loads of nitrogen and phosphorus to surface waters in the local government's jurisdiction as well as loading changes post-baseline. It shall also calculate target nitrogen and phosphorus loads and corresponding load reduction needs.

(h) The Commission shall recognize reduction credit for early implementation of policies and practices implemented after January 1, 2007 and before timeframes required by this Rule, to reduce runoff and discharge of nitrogen and phosphorus per Session Law 2009-486. The load reduction program shall identify specific load-reducing practices

implemented to date subsequent to the baseline period and for which the local government is seeking credit. It shall estimate load reductions for these practices and their anticipated duration using methods provided for in Sub-Item (5)(a).

(i) The ~~plan~~program shall include a proposed implementation schedule that includes annual implementation expectations. The load reduction program shall identify the types of activities the local government intends to implement and types of existing development affected, relative proportions or a prioritization of practices, relative magnitude of reductions it expects to achieve from each, and the relative costs and efficiencies of each activity to the extent information is available. The program shall identify the duration of anticipated loading reductions, and may seek activities that provide long-term reductions.

(j) The load reduction program shall identify anticipated funding mechanisms or sources and discuss steps take or planned to secure such funding.

(k) The ~~plan~~program shall address the extent of load reduction opportunities intended from the following types of lands:

(i) Lands owned or otherwise controlled by the local government;

(ii) Each land use type of privately owned existing development as defined in Item (10) of Rule 15A NCAC 02B .0276, including ~~redevelopment that does not result in net increase in built upon area~~projected redevelopment, on which the local government's load reduction need is based as described in this Item; and

(iii) Lands other than those on which the local government's load reduction need is based as described in this Item, including lands both within and outside its jurisdiction and including through the use of interlocal agreements and private third party sellers.

(l) The ~~plan~~program shall address the extent of load reduction proposed from, at a minimum, the following stormwater and ecosystem restoration activities:

(i) Bioretention;

(ii) Constructed wetland;

(iii) Sand filter;

(iv) Filter strip;

(v) Grassed swale;

(vi) Infiltration device;

(vii) Extended dry detention;

(viii) Rainwater harvesting system;

(ix) Treatment of redevelopment;

(x) Overtreatment of new development;

(xi) Removal of impervious surface;

(xii) Retrofitting treatment into existing stormwater ponds;

(xiii) Off-line regional treatment systems;

(xiv) Wetland or riparian buffer restoration; and

(xv) Reforestation with conservation easement or other protective covenant.

(m) A local government may propose in its load reduction program the use of the following measures in addition to items listed in (l) and (n), or may propose other measures for which it can provide accounting methods acceptable to the Division:

(i) Redirecting runoff away from impervious surfaces;

(ii) Soil amendments;

(iii) Stream restoration;

(iv) Improved street sweeping; and

(v) Source control, such as pet waste and fertilizer ordinances.

(n) The ~~plan~~program shall evaluate the ~~extent of~~ load reduction ~~proposed~~potential from the following wastewater activities:

(i) Creation of surplus relative to an allocation established in Rule 15A NCAC 02B .0279;

(ii) Expansion of surplus allocation through regionalization;

(iii) Connection of discharging sand filters ~~a~~nd malfunctioning septic systems to central sewer or replacement with permitted non-discharge alternatives;

(iv) Removal of illegal discharges; and

(v) Improvement of wastewater collection systems.

(o) The ~~plan~~program shall include explicit ~~evaluate the extent~~evaluation of load ~~reductions proposed~~reduction potential relative to the following factors:

(i) Extent of physical opportunities for installation;

(ii) Landowner acceptance;

(iii) Incentive and education options for improving landowner acceptance;

(iv) Existing and potential funding sources and magnitudes;

(v) Practice cost-effectiveness (e.g., cost per pound of nutrient removed);

(vi) Increase in per capita cost of a local government's stormwater management program to implement the program;

(vii) Implementation rate without the use of eminent domain; and

(viii) Need for and projected role of eminent domain.

(5) The Commission shall approve a Stage I load reduction ~~plan~~program if it is consistent with Items (3) and (4) of this Rule. The Commission shall Approve a Stage II load reduction ~~plan~~program if it is consistent with Items (3) and (4) of this Rule unless the Commission finds that the local governments can, through the implementation of reasonable and cost-effective measures not included in the proposed program, meet the Stage II nutrient load reductions required by this Rule by a date earlier than that proposed by the local government. If the Commission finds that there

are additional or alternative reasonable and cost-effective measures, the Commission may require the local government to modify its proposed program to include such measures to achieve the required reductions by the earlier date. If the Commission requires such modifications, the local government shall submit a modified program within two months. The Division shall recommend that the Commission approve or disapprove the modified program within three months after receiving the modified program. In determining whether additional or alternative load reduction measures are reasonable and cost effective, the Commission shall consider factors including, but not limited to those identified in Sub-Item (4)(o) of this Rule. ~~and if it finds that the plan achieves the maximum level of reductions that is technically and economically feasible within the proposed timeframe of implementation based on plan elements identified elsewhere in this Item. Economic feasibility is determined by considering environmental impacts, capital cost of compliance, annual incremental compliance, per capita cost of local stormwater programs, cost-effectiveness of available measures, and impacts on local and regional commerce.~~ The Commission shall not require additional or alternative measures that would require a local government to:

(a) Install or require installation of a new stormwater collection system in an area of existing development unless the area is being redeveloped;

(b) Acquire developed private property; or

(c) Reduce or require the reduction of impervious surfaces within an area of existing development unless the area is being redeveloped.

(6) A municipality shall have the option of working with the county or counties in which it falls, or with another municipality or municipalities within the same subwatershed, to jointly meet the loading targets from all lands within their combined jurisdictions within a subwatershed. A local government may utilize private or third party sellers. All reductions involving trading with other parties shall meet the requirements of Rule 15A NCAC 02B .0282.

(7) RULE IMPLEMENTATION. This Rule shall be implemented as follows:

(a) Within 30 months after the effective date of this Rule, the Division shall submit a Stage I model local program to the Commission for approval that embodies the criteria described in Items (3)(a) and (4) of this Rule. The Division shall work in cooperation with subject local governments and other watershed interests in developing this model program, which shall include the following:

(i) Model local ordinances as applicable;

(ii) Methods to quantify load reduction requirements and resulting load reduction assignments for individual local governments;

(iii) Methods to account for discharging sand filters, malfunctioning septic systems, and leaking collection systems; and

(iv) Methods to account for load reduction credits from various activities.

(b) Within six months after the Commission's approval of the Stage I model local program, subject local governments shall submit load reduction programs that meet or exceed the requirements of Items (3) and (4) of this Rule to the Division for review and preliminary approval and shall begin implementation and tracking of measures to reduce nutrient loads from existing developed lands within their jurisdictions.

(c) Within 20 months of the Commission's approval of the Stage I model local program, the Division shall provide recommendations to the Commission on existing development load reduction programs. The Commission shall either approve the programs or require changes based on the standards set out in Item (4) of this Rule. Should the Commission require changes, the applicable local government shall have two months to submit revisions, and the Division shall provide follow-up recommendations to the Commission within two months after receiving revisions.

(d) Within three months after the Commission's approval of a Stage I local existing development load reduction program, the affected local government shall complete adoption of and begin implementation of its existing development Stage I load reduction program.

(e) Upon implementation of the programs required under Item (4) of this Rule, local governments shall provide annual reports to the Division documenting their progress in implementing those requirements within three months following each anniversary of program implementation date until such time the Commission determines they are no longer needed to ensure maintenance of reductions or that standards are protected. Annual report shall include accounting of total annual expenditures, including local government funds and any state and federal grants used toward load reductions achieved from existing developed lands. Local governments shall indefinitely maintain and ensure performance of implemented load-reducing measures.

(f) Ten years after the effective date of this Rule and every five years thereafter until either accounting determines load reductions have been achieved, standards are met in the lake, or the Commission takes other actions per Rule 15A NCAC 02B .0275, local governments located in the upper Falls watershed as defined in Item (3) of Rule 15A NCAC 02B .0275 shall submit and concurrently begin implementation of ~~begin to implement and shall submit~~ a Stage II~~2~~ load reduction program or program revision to the Division. Within nine months after submittal, the Division shall make recommendations to the Commission on approval of these programs. The Commission shall either approve the programs or require changes based on the standards set out in this Rule should the Commission require changes, the applicable local governments shall submit revisions within two months, and the Division shall provide follow-up recommendations to the Commission within three months after receiving revisions. Upon program approval,

local governments shall revise implementation as necessary based on the approved program.

(g) A local government may, at any time after commencing implementation of its load reduction program, submit program revisions to the Division for approval based on identification of more cost-effective strategies or other factors not originally recognized.

(h) Once either load reductions are achieved per annual reporting or water quality standards are met in the lake per Rule 15A NCAC 02B .0275, local governments shall submit ~~plan~~programs to ensure no load increases and shall report annually per Item (e) on compliance with no increases and take additional actions as necessary.

(i) At least every five years after the effective date, the Division shall review the accounting methods stipulated under Sub-Item (7)(a) to determine the need for revisions to those methods and to loading reductions assigned using those methods. Its review shall include values subject to change over time independent of changes resulting from implementation of this Rule, such as untreated export rates that may change with changes in atmospheric deposition. It shall also review values subject to refinement, such as nutrient removal efficiencies.

History Note: *Authority G.S. 143-214.1; 143-214.5; 143-214.7; 143-214.12; 143-214.21; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143-215.6C; 143 215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259;S.L. 2009-337;*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 02B .0279 is proposed for adoption as follows:

15A NCAC 02B .0279 FALLS WATER SUPPLY NUTRIENT STRATEGY: WASTEWATER DISCHARGE REQUIREMENTS

The following is the NPDES wastewater discharge management strategy for the Falls of the Neuse Reservoir watershed (the Falls watershed):

(1) Purpose. The purpose of this Rule is to establish minimum nutrient control requirements for point source wastewater discharges in the Falls watershed in order to restore and maintain water quality in the reservoir and protect its designated uses.

(2) Applicability. This Rule applies to all wastewater treatment facilities discharging in the Falls watershed that receive nutrient-bearing wastewater and are subject to requirements for individual NPDES permits.

(3) Definitions. For the purposes of this Rule, the following definitions apply:

(a) In regard to point source dischargers, treatment facilities, and wastewater flows and discharges,

(i) "Existing" means that which was subject to an NPDES permit as of December 31, 2006;

(ii) "Expanding" means that which has increased or will increase beyond its permitted flow as defined in this Rule; and

(iii) "New" means that which was not subject to an NPDES permit as of December 31, 2006.

(b) "Active" allocation means that portion of an allocation that has been applied toward and is expressed as a nutrient limit in an individual NPDES permit. Allocation that is held but not applied in this way is "reserve" allocation.

(c) “Current flow” means the actual discharge flow reported by a facility for the period from July 2008 through June 2009.

(d) "Limit," except when specified as a concentration limit, means the mass quantity of nitrogen or phosphorus that a discharger or group of dischargers is authorized through an NPDES permit to release into surface waters of the Falls watershed.

(e) "MGD" means million gallons per day.

(f) "Permitted flow" means the maximum monthly average flow authorized in a facility's NPDES permit as of December 31, 2006.

(g) "Reserve" allocation means allocation that is held by a permittee or other person but which has not been applied toward and is not expressed as a nutrient limit in an individual NPDES permit. Allocation that has been applied and expressed in this way is "active" allocation.

(4) This Item establishes initial ~~intermediate (~~Stage I~~)~~ and ~~final (~~Stage II~~)~~ nutrient allocations for existing dischargers in the Upper Falls watershed.

(a) Stage I nitrogen and phosphorus allocations for dischargers with permitted flows of 0.1 MGD or greater are as follows:

		Mass Allocations (pounds/year)	
Facility Name	NPDES No.	Total Nitrogen	Total Phosphorus
North Durham	NC0023841	97,665	10,631
SGWASA	NC0026824	22,420	2,486
Hillsborough	NC0026433	10,422	1,352

(b) Stage I allocations for dischargers with permitted flows less than 0.1 MGD are equal to the Stage II allocations specified in Sub-Items (c) and (d) of this Item.

(c) Stage II nitrogen and phosphorus allocations are as follows~~The initial collective nitrogen and phosphorus allocations are as follows~~:

~~Implementation Stage and~~	Mass Allocations (pounds/year)	
Discharger Subcategories	Total Nitrogen	Total Phosphorus
~~Final (Stage II)~~		
Permitted flows ≥ 0.1 MGD	~~95,858~~97,617	~~5,228~~5,438
Permitted flows < 0.1 MGD	1,052	175
~~Intermediate (Stage I)~~		
~~Permitted flows ≥ 0.1 MGD~~	~~128,686~~	~~14,008~~
~~Permitted flows < 0.1 MGD~~	~~527~~	~~88~~

(~~b~~d) The Stage II allocations in Sub-Item (~~a~~c) of this Item shall be divided among the existing dischargers in each subcategory ~~in proportion to 110% of the dischargers' current flows as defined in this Rule; the Stage II allocations shall be divided in the same manner but~~ in proportion to the dischargers' permitted flows as defined in this Rule,~~;~~ and the resulting nutrient allocations shall be assigned to each individual discharger.

(5) This Item describes allowable changes in nutrient allocations.

(a) The aggregate and individual nutrient allocations available to point source dischargers in the Falls watershed are subject to change:

(i) Whenever the Commission, through rulemaking, revises the nutrient reduction targets in or pursuant to 15A NCAC 02B .0275 in order to ensure the protection of water quality in the reservoir and its tributaries or to conform with applicable state or federal requirements;

(ii) Whenever one or more point source dischargers acquires any portion of the nonpoint load allocations under the provisions in this Rule and 15A NCAC 02B .0282, Options for Offsetting Nutrient Loads; or

(iii) As the result of allocation transfers conducted between point sources or between point and nonpoint sources and in accordance with this Rule, provided that nutrient allocation can be transferred and applied only within the portion of the Falls watershed to which it was originally assigned (Upper or Lower).

(b) In the event that the Commission changes any nutrient reduction target specified in 15A NCAC 02B .0275 or in Item (4) of this Rule, the Commission shall also re-evaluate the apportionment among the dischargers and shall revise the individual allocations as necessary.

(6) This Item establishes nutrient discharge limitations for existing facilities discharging in the Upper Falls watershed.

(a) Beginning with calendar year 2016, any existing discharger with a permitted flow of 0.1 MGD or greater shall limit its total nitrogen and phosphorus discharges to its active, individual Stage I allocations as defined or modified pursuant to this Rule.

(b) Beginning with calendar year 2036, except as provided in Sub-item (d) of this Item, each existing discharger with a permitted flow greater than or equal to 0.1 MGD shall limit its total nitrogen and phosphorus discharges to its active, individual Stage II allocations as defined or modified pursuant to this Rule.

(c) Not later than 60 days after the effective date of this Rule, the Director shall notify existing permittees of the individual Stage I and Stage II nutrient allocations initially assigned to them pursuant to this Rule.

(d) Not later than ten years after the effective date of this Rule, each existing discharger with a permitted flow greater than or equal to 0.1 MGD shall submit to the Division a plan for meeting its Stage II mass limitations. The plan shall describe the discharger's strategy for complying with the limitations and shall include a schedule for the design and construction of facility improvements and for the development *and implementation* of related programs necessary to the strategy. If a discharger determines that it cannot meet its limitations by calendar year 2036, the discharger may include its findings in the plan and request an extension of its compliance dates for the nitrogen and phosphorus limitations. ~~; in which case the~~*This alternate* plan shall document the ~~alternative~~*compliance* strategies considered and the reasons each was judged infeasible~~,~~; estimate the earliest date by which the discharger *expects to* meet each Stage II limitation; identify the minimum loadings that are technically and economically achievable by 2036~~,~~; and~~ estimate the earliest date by which the discharger can meet each Stage II limitation~~*propose intermediate limits for the period beginning with 2036 and extending*

until the Stage II limitations can be met. ~~Within 180 days of receipt, the Division shall approve the plan as submitted or inform the discharger of any changes or additional information necessary to obtain approval.~~ *Within 180 days of Receipt, the Division shall approve the plan as submitted, which could include intermediate limits, or inform the discharger of any changes or additional information needed for approval*. The Division shall incorporate the approved nitrogen and phosphorus mass limitations and compliance dates into the discharger's NPDES permit upon the next renewal or other major permit action *following plan approval*. If the Division extends the dates by which a discharger must meet Stage II limitations, the discharger shall update and submit its plan for Division approval every five years after the original submittal, and the Division shall take necessary and appropriate action as with the original plan, until the Stage II limitations are satisfied.

(e) It is the intent of this Item that all dischargers shall make continued progress toward complying with Stage II mass limitations. The Division shall not approve intermediate limitations that exceed either the applicable Stage I limitations or intermediate limitations previously approved pursuant to this Item.

(7) This Item establishes nutrient discharge limitations for existing facilities discharging in the Lower Falls watershed.

(a) Beginning with calendar year 2016, any existing discharger with a permitted flow of 0.1 MGD or greater shall limit its total nitrogen and phosphorus discharges as specified in this Item.

(b) Concentration limits. The nitrogen and phosphorus discharge limits for existing dischargers shall be as follows:

Discharge Limits (milligrams/liter)

Limit Type	Total Nitrogen	Total Phosphorus
Monthly Average	8.0	1.0
Annual Average	5.5	0.5

(c) Mass Limits.

(i) In addition to the concentration limits specified in this Item, the collective annual mass discharge of Total Phosphorus shall not exceed 911 pounds in any calendar year.

(ii) Any discharger may request a mass discharge limit in lieu of the concentration limit for nitrogen or phosphorus or both, in which case the Director shall set a limit equivalent to the annual average concentration limit at the facility's permitted flow. The resulting mass limit shall become effective with the ensuing calendar year or with calendar year 2016, whichever is later.

(8) This Item identifies nutrient control requirements specific to new discharges.

(a) Any person proposing a new wastewater discharge in the Upper Falls watershed shall meet the following requirements prior to applying for an NPDES permit:

(i) Evaluate all practical alternatives to said discharge, pursuant to 15A NCAC 02H .0105(c)(2);

(ii) If the results of the evaluation support a new discharge, acquire sufficient nitrogen and phosphorus allocations for the discharge. The proponent may obtain allocation for the proposed discharge from existing dischargers pursuant to the applicable requirements of Item (10) of this Rule or obtain allocation from other sources to offset the increased nutrient loads resulting from the proposed discharge. The proponent may fund offset measures by making payment to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program or to another seller of offset credits approved by the Division or may implement other offset measures contingent upon approval by the Division, either of which shall meet the requirements of Rule 15A NCAC 02B .0282. The amount of allocation or offsets obtained shall be sufficient for the duration of the discharge or for a period of 30 years, whichever is shorter. Payment for each allocation or offset shall be made prior to the ensuing permit issuance;

(iii) Determine whether the proposed discharge of nutrients will cause local water quality impacts; and

(iv) Provide documentation with its NPDES permit application demonstrating that the requirements of Sub-Items (i) through (iii) of this Sub-Item have been met.

(b) The nutrient discharge allocations and offsets for a new facility in the Upper Falls watershed shall not exceed the mass loads equivalent to a concentration of 3.0 milligrams per liter nitrogen or 0.1 milligrams per liter phosphorus at the permitted flow in the discharger's NPDES permit.

(c) Upon the effective date of its NPDES permit, a new discharger shall be subject to nitrogen and phosphorus limits not to exceed its active individual discharge allocations in any given calendar year.

(d) The Director shall not issue an NPDES permit for any new wastewater facility that would discharge in the Lower Falls watershed and to which this Rule would apply.

(9) This Item identifies nutrient control requirements specific to expanding discharges.

(a) Any person proposing to expand an existing wastewater discharge in the Upper Falls watershed beyond its permitted flow as defined in this Rule shall meet the following requirements prior to applying for an NPDES permit:

(i) Evaluate all practical alternatives to said discharge, pursuant to 15A NCAC 02H .0105(c)(2);

(ii) If the results of the evaluation support an expanded discharge, acquire sufficient nitrogen and phosphorus allocations for the discharge. The proponent may obtain allocation for the proposed discharge from existing dischargers pursuant to the applicable requirements of Item (10) of this Rule or obtain allocation from other sources to offset the increased nutrient loads resulting from the proposed discharge. The proponent may fund offset measures by making payment to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program or to another seller of offset credits approved by the Division or may implement other offset measures contingent upon approval by the Division, either of which shall meet the requirements of Rule 15A NCAC 02B .0282. The amount of allocation or offsets obtained shall be sufficient for the duration of the discharge or for a period of 30 years, whichever is shorter. Payment for each allocation or offset shall be made prior to the ensuing permit issuance;

(iii) Determine whether the proposed discharge of nutrients will cause local water quality impact; and

(iv) Provide documentation with its NPDES permit application demonstrating that the requirements of Sub-Items (i) through (iii) of this Sub-Item have been met.

(b) The nutrient discharge limits for an expanding facility shall not exceed the mass value equivalent to a concentration of 3.0 milligrams per liter nitrogen or 0.1 milligrams per liter phosphorus at the expanded flow limit in the discharger's NPDES permit; except that this provision shall not result in an active allocation or limit that is less than originally assigned to the discharger under this Rule.

(c) Upon expansion or upon notification by the Director that it is necessary to protect water quality, any discharger with a permitted flow of less than 0.1 MGD, as defined under this Rule, shall become subject to total nitrogen and total phosphorus permit limits not to exceed its active individual discharge allocations.

(d) The Director shall not issue an NPDES permit for the expansion of any wastewater discharge in the Lower Falls watershed to which this Rule applies.

(10) This Item describes additional requirements regarding nutrient discharge limits for wastewater facilities:

(a) Annual mass nutrient limits shall be established as calendar-year limits.

(b) Any discharger holding nutrient allocations pursuant to this Rule may by mutual agreement transfer all or part of its allocations to any new, existing, or expanding dischargers or to other person(s) in the Falls watershed, subject to the provisions of this Rule and the Falls nutrient strategy, except that allocation shall not be transferred between the Upper and Lower Falls watersheds.

(c) For NPDES compliance purposes, the enforceable nutrient limits for an individual facility or for a compliance association described in Item (11) of this Rule shall be the effective limits in the governing permit, regardless of the allocation held by the discharger or association.

(d) The Director may establish more stringent nitrogen or phosphorus discharge limits for any discharger upon finding that such limits are necessary to prevent the discharge from causing adverse water quality impacts on surface waters tributary to Falls Reservoir. The Director shall establish such limits through modification of the discharger's NPDES permit in accordance with applicable rules and regulations. When the Director does so, the discharger retains its nutrient allocations, and the non-active portion of the discharger's allocation becomes reserve allocation. The allocation remains in reserve until the Director determines that less stringent limits are allowable or until the allocation is applied to another discharge not subject to such water quality-based limits.

(e) In order for any transfer of allocation to become effective as a discharge limit in an individual NPDES permit, the discharger must request and obtain modification of the permit. Such request shall:

(i) Describe the purpose and nature of the modification;

(ii) Describe the nature of the transfer agreement, the amount of allocation transferred, and the dischargers or persons involved;

(iii) Provide copies of the transaction agreements with original signatures consistent with NPDES signatory requirements; and

(iv) Demonstrate to the Director's satisfaction that the increased nutrient discharge will not violate water quality standards in localized areas.

(f) Changes in a discharger's nutrient limits shall become effective upon modification of its individual permit but no sooner than January 1 of the year following modification. If the modified permit is issued after January 1, the Director may make the limit effective on that January 1 provided that the discharger made acceptable application in a timely manner.

(g) Regional Facilities. In the event that an existing discharger or group of dischargers accepts wastewater from another NPDES-permitted treatment facility and that acceptance results in the elimination of the discharge from the other treatment facility, the eliminated facility's nutrient allocations shall be transferred and added to the accepting discharger's allocations, except that allocation shall not be transferred between the Upper and Lower Falls watersheds.

(11) This Item describes the option for dischargers to join a group compliance association to collectively meet nutrient control requirements.

(a) Any or all facilities within the Upper or the Lower Falls watersheds may form a group compliance association to meet nutrient limits collectively within their respective portion of the Falls watershed. More than one group compliance association may be established in either portion of the watershed. No facility may be a co-permittee member of more than one association for any given calendar year.

(b) Any such association must apply for and shall be subject to an NPDES permit that establishes the effective nutrient limits for the association and for its members.

(c) No later than 180 days prior to the proposed date of a new association's operation or expiration of an existing association's NPDES permit, the association and its members shall submit an application for an NPDES permit for the discharge of nutrients to surface waters of the Falls watershed. The association's NPDES permit shall be issued to the association and its members. It shall specify the nutrient limits for the association and for each of its co-permittee members. Association members shall be deemed in compliance with the permit limits for nitrogen and phosphorus contained in their individually issued NPDES permits so long as they remain members in an association.

(d) An association's nitrogen and phosphorus limits shall be the sum of its members' individual active allocations for each nutrient plus any other active allocation obtained by the association or its members.

(e) The individual limits for each member in the association permit shall initially be equivalent to the discharge limits in effect in the member's NPDES permit. Thereafter, changes in individual allocations or limits shall be incorporated into the members' individual permits before they are included in the association permit.

(f) An association and its members may reapportion the individual allocations of its members on an annual basis. Changes in individual allocations or limits must be incorporated into the members' individual permits before they are included in the association permit.

(g) Changes in an association’s nutrient limits shall become effective no sooner than January 1 of the year following permit modification. If the modified permit is issued after January 1, the Director may make the limit effective on that January 1 provided that the association made acceptable application in a timely manner.

(h) Beginning with the first full calendar year that the nitrogen or phosphorus limits are effective, an association that does not meet its permit limit for nitrogen or phosphorus for a calendar year shall, no later than May 1 of the year following the exceedance, make an offset payment to the NC Ecosystem Enhancement Program contingent upon acceptance of payments by that Program or by implementing other load offsetting measures contingent upon approval by the Division, either of which shall meet the requirements of Rule 15A NCAC 02B .0282.

(i) Association members shall be deemed in compliance with their individual limits in the association NPDES permit for any calendar year in which the association is in compliance with its group limit for that nutrient. If the association fails to meet its limit, the association and the members that have failed to meet their individual nutrient limits in the association NPDES permit shall be deemed out of compliance with the association NPDES permit.

History Note: *Authority G.S. 143-214.1; 143-214.5; 143-215; 143-215.1; 143-215.3(a)(1); 143-215B; 143B-282(c); 143B-282(d);S.L. 2005-190; S.L. 2006-259;*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 02B .0280 is proposed for adoption as follows:

15A NCAC 02B .0280 FALLS RESERVOIR WATER SUPPLY NUTRIENT STRATEGY: AGRICULTURE

This Rule sets forth a staged process, as prefaced in 15A NCAC 02B .0275, by which agricultural operations in the Falls watershed will collectively limit their nitrogen and phosphorus loading to the Falls Reservoir. This process is as follows:

(1) PURPOSE. The purposes of this Rule are to achieve and maintain the percentage reduction objectives defined in 15A NCAC 02B .0275 for the collective agricultural loading of nitrogen and phosphorus from their respective 2006 baseline levels, to the extent that best available accounting practices will allow, in two stages. Stage I shall be 10 years and Stage II shall be 15 years, as set out in Item (5) of this Rule. Additionally this Rule will protect the water supply uses of the Falls Reservoir.

(2) PROCESS. This Rule requires accounting for agricultural land management practices at the county level in the Falls watershed, and implementation of practices by farmers to collectively achieve the nutrient reduction objectives on a watershed basis. Producers may be eligible to obtain cost share and technical assistance from the NC Agriculture Cost Share Program and similar federal programs to contribute to their counties' nutrient reductions. A Watershed Oversight Committee and Local Advisory Committees will develop strategies, coordinate activities, and account for progress.

(3) LIMITATION. This Rule may not fully address significant agricultural nutrient sources in that it does not directly address atmospheric sources of nitrogen to the Falls watershed from agricultural operations located both within and outside of the Falls watershed. As better information becomes available from ongoing research on atmospheric nitrogen loading to the Falls watershed from these sources, and on measures to control this loading, the Commission may undertake separate rule-making to require such measures it deems necessary from these sources to support the objectives of the Falls Nutrient Strategy.

(4) APPLICABILITY. This Rule shall apply to all persons engaging in agricultural operations in the Falls watershed, including those related to crops, horticulture, livestock, and poultry. This Rule applies to livestock and poultry operations above the size thresholds in this Item in addition to requirements for animal operations set forth in general permits issued pursuant to G.S. 143-215.10C. Nothing in this Rule shall be deemed to allow the violation of any assigned surface water, groundwater, or air quality standard by any agricultural operation, including any livestock or poultry operation below the size thresholds in this Item. This Rule shall not apply to dedicated land application sites permitted under 15A NCAC 02T .1100. This Rule does not require specific actions by any individual person or operation if agriculture in the Falls watershed can collectively achieve its Stage I nutrient reduction objectives, in the manner described in Item (5) of this Rule,

within ten years of the effective date of this Rule. If the Stage I nutrient reduction objectives are not met within ten years of the effective date of the rule, Stage II of implementation shall require specific actions by individuals and operations. For the purposes of this Rule, agricultural operations are activities that relate to any of the following pursuits:

(a) The commercial production of crops or horticultural products other than trees. As used in this Rule, commercial shall mean activities conducted primarily for financial profit.

(b) Research activities in support of such commercial production.

(c) The production or management of any of the following number of livestock or poultry at any time, excluding nursing young:

(i) Five or more horses;

(ii) 20 or more cattle;

(iii) 20 or more swine not kept in a feedlot, or 150 or more swine kept in a feedlot;

(iv) 120 or more sheep;

(v) 130 or more goats;

(vi) 650 or more turkeys;

(vii) 3,500 or more chickens; or

(viii) Any single species of any other livestock or poultry, or any combination of species of livestock or poultry that exceeds 20,000 pounds of live weight at any time.

(5) METHOD FOR RULE IMPLEMENTATION. This Rule shall be implemented in two stages and through a cooperative effort between the Watershed Oversight Committee and Local Advisory Committees in each county. The membership, roles and responsibilities of these committees are set forth in Items (7) and (8) of this Rule. Committee's activities shall be guided by the following constraints:

(a) In Stage I, agriculture shall achieve a collective 20 percent reduction in nitrogen loading and a 40 percent reduction in phosphorus loading relative to the 2006 baseline within 10 years after the effective date of this Rule.

(b) In Stage II, beginning 10 years after the effective date of this Rule, agriculture shall achieve a collective 40 percent reduction in nitrogen loading and a 77 percent reduction in phosphorus loading relative to the 2006 baseline within 25 years after the effective date of this Rule.

(c) Within two years after the effective date of this Rule, the Watershed Oversight Committee shall provide the Commission with an initial assessment of the extent to which agricultural operations in the Falls watershed have achieved the Stage I nitrogen and phosphorus reduction objectives identified in Item (1) of this Rule through activities conducted since the baseline period. The Watershed Oversight Committee shall use the accounting process described in Items (7) and (8) of this Rule to make its assessment.

~~(d) Stage II shall require a collective 40 percent reduction in nitrogen loading and 77 percent reduction in phosphorus loading relative to the 2006 baseline to be achieved within 25 years after the effective date of this Rule.~~

(~~e~~d) If annual reporting following the tenth year of implementation indicates that agriculture has not collectively achieved its Stage I nitrogen and phosphorus reduction objectives identified in this Item~~ within ten years of the effective date of this Rule~~, Stage II ~~of implementation~~ shall include ~~additional~~ specific implementation requirements for individual operators. ~~to, within~~Specifically, within five years of the start of Stage II ~~implementation~~, ~~buffer~~ cropland operators shall establish vegetated riparian buffers adjacent to streams on all cropland ~~and pasture~~ where such buffers do not already exist. Additionally, pastured livestock operators shall establish excluded vegetated riparian buffers adjacent to streams where such excluded buffers do not already exist. Streams to which these requirements apply shall be those ~~and exclude all livestock from surface waters~~ that meet the classification of intermittent or perennial streams using the most recent version of the *Identification Methods for the Origins of Intermittent and Perennial Streams Manual* published by the Division. ~~Buffers~~Existing and newly established riparian buffers shall be a minimum of 20 feet in width with criteria further defined by the Watershed Oversight Committee. The Commission may also consider alternative recommendations from the Watershed Oversight Committee based on ~~its~~ the Committee's assessment of the practicability of agricultural operations meeting the ~~watershed~~ Stage I objectives. Should the Commission ~~require~~ accept some alternative form of individual compliance, then it shall also subsequently approve a framework proposed by the Watershed Oversight Committee for allowing producers to obtain credit through offsite measures. Such offsite measures shall meet the requirements of 15A NCAC 02B .0282.

(~~f~~e) Should a committee called for under Item (5) of this Rule not form nor follow through on its responsibilities such that a local strategy is not implemented in keeping with Item (8) of this Rule, the Commission shall require all persons subject to this Rule in the affected area to implement BMPs as needed to meet the objectives of this Rule.

(6) RULE REQUIREMENTS FOR INDIVIDUAL OPERATIONS. Persons subject to this Rule shall adhere to the following requirements:

(a) Persons subject to this Rule shall register their operations with their Local Advisory Committee according to the requirements of Item (8) of this Rule;

(b) With the exception of Sub-Item (d) of this Item, persons are not required to implement any specific BMPs in Stage I but may elect to contribute to the collective local nutrient strategy by implementing any BMPs they choose that are recognized by the Watershed Oversight Committee as nitrogen-reducing or phosphorus-reducing BMPs;

(c) The Division shall require that residuals application, animal waste application, and surface irrigation pursuant to permits issued under 15A NCAC 02T .1100, 15A NCAC 02T .1300, and 15A NCAC 0 2T.0500 respectively, to lands within the Falls watershed be done in a manner that minimizes the potential for nitrogen and phosphorus loading to surface waters by implementing the following measures:.

-(i) Persons Animal waste application operators subject to these permitting requirements in Sub-Item (6)(c) shall meet Realistic Yield Expectation Yield-based nitrogen application rates and shall apply phosphorus in compliance with guidance established in the most recent version of North Carolina Agricultural research Service's Technical Bulletin 323, "North Carolina Phosphorus Loss Assessment: I Model Description and II. Scientific Basis and Supporting literatureLiterature" developed by the Department of Soil Science and Biological and Agricultural Engineering at North Carolina State University. The Division shall modify all existing permits for affected lands to include these requirements upon their next renewal after effective date, and shall include these requirements in all new permits issued after effective date. Permittees shall be required to comply with this condition upon permit issuance or renewal as applicable; and

(ii) Residual application and surface irrigation operators subject to the permitting requirements in Sub-Item (6)(c) shall meet Realistic Yield Expectation based nitrogen application rates and shall conduct and provide to the Division annual assessments of their soil test phosphorus index results and phosphorus loading rates. At such time as data quantifying the fate and transport of chemically bound phosphorus are made available, the Division may make recommendations to the Commission to consider whether revisions to the requirements of this Rule are needed and may initiate rulemaking or any other action allowed by law.

(d) Should a local strategy not achieve its Stage I objectives within ten years of the effective date of this Rule, operations within that local area shall face specific implementation requirements, as described under Sub-Item (5)(ge) of this Rule.

(7) WATERSHED OVERSIGHT COMMITTEE. The Watershed Oversight Committee shall have the following membership, role and responsibilities:

(a) MEMBERSHIP. The Director shall be responsible for forming a Watershed Oversight Committee within two months of the effective date of this Rule. Until such time as the Commission determines that long-term maintenance of the nutrient loads is assured, the Director shall either reappoint members or replace members at least every six years. The Director shall solicit nominations for membership on this Committee to represent each of the following interests, and shall appoint one nominee to represent each interest except

where a greater number is noted. The Director of the Division of Water Quality may appoint a replacement at any time for an interest in Sub-Items (7)(a)(vi) through (7)(a)(x) of this Rule upon request of representatives of that interest or by the request of the Commissioner of Agriculture:

(i) Division of Soil and Water Conservation;

(ii) United States Department of Agriculture-Natural Resources Conservation Service (shall serve in an "ex-officio" non-voting capacity and shall function as a technical program advisor to the Committee);

(iii) North Carolina Department of Agriculture and Consumer Services;

(iv) North Carolina Cooperative Extension Service;

(v) Division of Water Quality;

(vi) Three environmental interests, at least two of which are residents of the Falls watershed;

(vii) General farming interests;

(viii) Pasture-based livestock interests;

(ix) Equine livestock interests;

(x) Cropland farming interests; and

(xi) The scientific community with experience related to water quality problems in the Falls watershed.

(b) ROLE. The Watershed Oversight Committee shall:

(i) Develop tracking and accounting methods for nitrogen and phosphorus loading. Submit methods to the Water Quality Committee of the Commission for approval based on the standards set out in Sub-Item (7)(c) of this Rule within 15 months after the effective date of this Rule;

(ii) Identify and implement future refinements to the accounting methods as needed to reflect advances in scientific understanding, including establishment or refinement of nutrient reduction efficiencies for BMPs;

(iii) Within two years after the effective date of this Rule, collect data needed to conduct initial nutrient loading accounting for the baseline period and the most current year feasible, perform this accounting, and determine the extent to which agricultural operations have achieved the Stage I nitrogen loading objective and phosphorus loading trend indicators for the watershed. Present findings to the Water Quality Committee of the Commission;

(iv) Review, approve, and summarize local nutrient strategies if required pursuant to Sub-Item (5)(d) of this Rule and according to the timeframe identified in Sub-Item (8)(c)(ii) of this Rule. Provide these strategies to the Division;

(v) Establish requirements for, review, approve and summarize local nitrogen and phosphorus loading annual reports as described under Sub-Item (8)(e) of this Rule, and present the report to the Division annually, until such time as the Commission determines that annual reports are no longer needed to fulfill the purposes of this Rule. Present a report three years after the effective date to the Commission. Should that report find that agriculture in the watershed has not met its collective nitrogen or phosphorus objective, include an assessment in that report of the practicability of producers achieving the Stage I objective within ten years after the effective date, and recommendations to the Commission as deemed appropriate;

(vi) Obtain nutrient reduction efficiencies for BMPs from the scientific community associated with design criteria identified in rules adopted by the Soil and Water Conservation Commission, including 15A NCAC 06E .0104 and 15A NCAC 06F .0104; and

(vii) Investigate and, if feasible, develop an accounting method to equate implementation of specific ~~nitrogen~~nutrient-reducing practices on cropland or pastureland to reductions in ~~nitrogen~~ nutrient loading delivered to streams~~.~~ ~~Quantify~~; quantify the nitrogen and phosphorus credits ~~generate~~ generated by such practices for the purpose of selling or buying credits~~. Establish~~; establish criteria and a process as needed for the exchange of ~~nitrogen~~ nutrient credits between parties ~~meeting the criteria of Sub-section (4)(a)(b) or (c) of~~subject to this Rule with each other or with parties subject to other nutrient strategy rules in the Falls lake watershed pursuant to the requirements of 15A NCAC 02B .0282~~. Approve~~; obtain approval from the Division for this trading program pursuant to the requirements of Rule .0282; approve eligible trades~~,~~; and ensure that ~~such practices~~credits traded for purposes of meeting this Rule are accounted for and tracked separately from those contributing to the objectives of ~~this Rule.~~other rules of the Falls nutrient strategy.

(c) ACCOUNTING METHODS. Success in meeting this Rule's purpose will be gauged by estimating percentage changes in nitrogen loading from agricultural lands in the Falls watershed and by evaluating broader trends in indicators of phosphorus loading from agricultural lands in the Falls watershed. The Watershed Oversight Committee shall develop accounting methods that meet the following requirements:

(i) The nitrogen method shall estimate baseline and annual total nitrogen loading from agricultural operations in each county and for the entire Falls watershed;

(ii) The nitrogen and phosphorus methods shall include a means of tracking implementation of BMPs, including number, type, and area affected;

(iii) The nitrogen method shall include a means of estimating incremental nitrogen loading reductions from actual BMP implementation and of evaluating progress toward and maintenance of the nutrient objectives from changes in BMP implementation, fertilization, individual crop acres, and agricultural land use acres;

(iv) The nitrogen and phosphorus methods shall be refined as research and technical advances allow;

(v) The phosphorus method shall quantify baseline values for and annual changes in factors affecting agricultural phosphorus loading as identified by the phosphorus technical advisory committee established under 15A NCAC 02B .0256(f)(2)(C). The method shall provide for periodic qualitative assessment of likely trends in agricultural phosphorus loading from the Falls watershed relative to baseline conditions;

(vi) Phosphorus accounting may also include a scientifically valid, survey-based sampling of farms in the Falls watershed for the purpose of conducting field-scale phosphorus loading assessments and extrapolating phosphorus loading for the Falls watershed for the baseline period and at periodic intervals; and

(vii) Aspects of pasture-based livestock operations that potentially affect nutrient loading and are not captured by the accounting methods described above shall be accounted for in annual reporting to the extent that advances in scientific understanding reasonably allow. Such accounting shall, at a minimum, quantify ~~by quantifying~~ changes in the extent of livestock-related nutrient controlling BMPs. Progress may be judged based on percent change in the extent of implementation relative to percentage objectives identified in ~~the objectives rule.~~Item (5) of this Rule.

(8) LOCAL ADVISORY COMMITTEES. Local Advisory Committees required by Sub-Item (5)(a) of this Rule shall be formed for each county within the watershed within one year after the effective date of this Rule, and shall have the following membership, roles, and responsibilities:

(a) MEMBERSHIP. A Local Advisory Committee shall be appointed as provided for in this Item. It shall terminate upon a finding by the Commission that it is no longer needed to fulfill the purposes of this Rule. Each Local Advisory Committee shall consist of:

(i) One representative of the county Soil and Water Conservation District;

(ii) One representative of the county office of the United States Department of Agriculture Natural Resources Conservation Service;

(iii) One representative of the North Carolina Department of Agriculture and Consumer Services ~~whose regional assignment includes the county~~;

(iv) One representative of the county office of the North Carolina Cooperative Extension Service;

(v) One representative of the North Carolina Division of Soil and Water Conservation whose regional assignment includes the county;

(vi) At least two farmers who reside in the county; and

(vii) One representative of equine livestock interests.

(b) APPOINTMENT OF MEMBERS. The Director of the Division of Water Quality and the Director of the Division of Soil and Water Conservation of the Department of Environment and Natural Resources shall appoint members described in Sub-Items (8)(a)(i), (8)(a)(ii), (8)(a)(iv), and (8)(a)(v) of this Rule. The Director of the Division of Water Quality, with recommendations from the Director of the Division of Soil and Water Conservation and the Commissioner of Agriculture, shall appoint the members described in Sub-Items (8)(a)(iii) and (8)(a)(vi) of this Rule from persons nominated by nongovernmental organizations whose members produce or manage agricultural commodities in each county. Members of the Local Advisory Committees shall serve at the pleasure of their appointing authorities.

(c) ROLE. The Local Advisory Committees shall:

(i) Conduct a registration process for persons subject to this Rule. This registration process shall be completed within 12 months after the effective date of this Rule. The registration process shall request at a minimum the type and acreage of agricultural operations. It shall provide persons with information on requirements and options under this Rule, and on available technical assistance and cost share options;

(ii) Develop local nutrient control strategies for agricultural operations, pursuant to Sub-Item (8)(d) of this Rule, to meet the nitrogen and phosphorus objectives of this Rule. Strategies shall be submitted to the Watershed Oversight Committee no later than 18 months after the effective date of this Rule;

(iii) Ensure that any changes to the design of the local strategy will continue to meet the nutrient objectives of this Rule; and

(iv) Submit reports to the Watershed Oversight Committee, pursuant to Sub-Item (8)(e) of this Rule, annually beginning two years after the effective date of this Rule until such time as the Commission determines that annual reports are no longer needed to fulfill the purposes of this Rule.

(d) LOCAL NUTRIENT CONTROL STRATEGIES. Local Advisory Committees shall develop nutrient control strategies that meet the following requirements. If a Local Advisory Committee fails to submit a nutrient control strategy required in Sub-Item (8)(c)(ii) of this Rule, the Commission may develop one based on the accounting

methods that it approves pursuant to Sub-Item (7)(b)(i) of this Rule. Local strategies shall meet the following requirements:

(i) Local nutrient control strategies shall be designed to achieve the required nitrogen loading reduction objectives and qualitative trends in indicators of agricultural phosphorus loading within 10 years after the effective date of this Rule, and to maintain those reductions in perpetuity or until such time as this Rule is revised to modify this requirement; and

(ii) Local nutrient control strategies shall specify the numbers, acres, and types of all agricultural operations within their areas, numbers of BMPs that will be implemented by enrolled operations and acres to be affected by those BMPs, estimated nitrogen and phosphorus loading reductions, schedule for BMP implementation, and operation and maintenance requirements.

(e) ANNUAL REPORTS. The Local Advisory Committees shall be responsible for submitting annual reports for their counties to the Watershed Oversight Committee until such time as the Commission determines that annual reports are no longer needed to fulfill the purposes of this Rule. The Watershed Oversight Committee shall determine reporting requirements to meet these objectives. Those requirements may include information on BMPs implemented by individual farms, proper BMP operation and maintenance, BMPs discontinued, changes in agricultural land use or activity, and resultant net nitrogen loading and phosphorus trend indicator changes. The annual reports in 2016 and 2026 shall address agriculture's success in complying with the load reduction requirements described in Items (5)(b) and (5)(f) of this Rule and shall include adjustments to address deficiencies to achieve compliance.

(f) PROGRESS. In 2016 the Division of Water Quality, in consultation with the Watershed Oversight Committee, shall submit a report to the Commission gauging the extent to which reasonable progress has been achieved towards the Stage I objectives described in this Rule.

History Note: *Authority G. S. 143-214.1; 143-214.3; 143-214.5; 143-214.7; 143-215.1; 143-215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143 215.6C; 143-215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L. 2009-337; S.L. 2009-486.*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 02B .0281 is proposed for adoption as follows:

15A NCAC 02B .0281 FALLS WATER SUPPLY NUTRIENT STRATEGY: STORMWATER REQUIREMENTS FOR STATE AND FEDERAL ENTITIES

The following is the stormwater strategy, as prefaced in Rule 02B .0275, for the activities of state and federal entities within the Falls watershed.

(1) PURPOSE. The purposes of this Rule are as follows.

(a) To achieve and maintain, on new non-road development lands, the nonpoint source nitrogen and phosphorus percentage reduction objectives established for Falls Reservoir in 15A NCAC 02B .0275 relative to the baseline period defined in that Rule, to provide the highest practicable level of treatment on new road development, and to achieve and maintain the percentage objectives on existing developed lands by reducing loading from state-maintained roadways and facilities, and from lands controlled by other state and federal entities in the Falls watershed;

(b) To ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows from state-maintained roadways and facilities and from lands controlled by other state and federal entities in the Falls watershed; and

(c) To protect the water supply, aquatic life, and recreational uses of Falls Reservoir.

(2) APPLICABILITY. This Rule shall apply to all existing and new development, both as defined in 15A NCAC 02B .0276, that lies within or partially within the Falls watershed under the control of the NC Department of Transportation (NCDOT), including roadways and facilities, and to all lands controlled by other state and federal entities in the Falls watershed.

(3) NON-NCDOT REQUIREMENTS. With the exception of the NCDOT, all state and federal entities that control lands within the Falls watershed shall meet the following requirements:

~~***(Land Disturbance Threshold Option: A)****~~

~~(a) For any new development proposed within their jurisdictions that would disturb one-half acre or more, non-NCDOT state and federal entities shall develop stormwater management plans for submission to and approval by the Division. These stormwater plans shall not be approved by the Division unless the following criteria are met:~~

(Land Disturbance Threshold Option: B)*

(a) ~~(a)~~ For any new development proposed within their jurisdictions that would disturb ~~5,000~~one quarter acre ~~square feet~~ or more, non-NCDOT state and federal entities shall develop stormwater management plans for submission to and approval by the Division. ~~These stormwater plans shall not be approved unless the following criteria are met:~~

(b) The non-NCDOT state or federal entity shall include measures to ensure maintenance of best management practices (BMPs) implemented as a result of the provisions in Sub-Item (3)(a) of this Rule for the life of the development;

(c) A plan to ensure enforcement and compliance with the provisions in Sub-Item (4) of this Rule for the life of the new development.

(4) PLAN APPROVAL REQUIREMENTS. A developer's stormwater plan shall not be approved unless the following criteria are met:

(a~~i~~) Nitrogen and phosphorus loads contributed by the proposed new development activity shall not exceed the following unit-area mass loading rates ~~as follows~~ for nitrogen and phosphorus, respectively, expressed in units of pounds/acre/year: 2.2 and 0.33. Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that would not result in a net increase in built-upon area shall not be required to meet the nutrient loading targets or high-density requirements except to the extent that the developer shall provide stormwater control at least equal to the previous development. Proposed development that would replace or expand existing structures or improvements and would result in an net increase in built-upon are shall have the option either to achieve at least the percentage loading reduction objectives stated in 15A NCAC 02B .0275 as applied to nitrogen and phosphorus loading from the previous development for the entire project site, or to meet the loading rate targets described in this item. These requirements shall supersede those identified in 15A NCAC 02B .0104(q). The developer shall determine the need for engineered stormwater controls to meet these loading rate targets by using the loading calculation method called for in Sub-Item (5~~4~~)(a) of 15A NCAC 02B .0277 or other equivalent method acceptable to the Division.

~~***(Onsite Treatment Option: A (50 percent N / 60 percent P)****~~

(b) The developer shall have the option of offsetting part of their nitrogen and phosphorus loads by implementing or funding offsite management measures. Before using an offsite offset option, a development shall implement structural stormwater controls onsite that achieves one of the following levels of reductions:

(i) Proposed new development activity disturbing at least one quarter acre but less than one acre of land, except as stated in Sub-Item (3)(b)(iii), shall achieve 30 percent or more of the needed load reduction in both nitrogen and phosphorus loading onsite and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule;

(ii) Except as stated in Sub-Item (3)(b)(iii), proposed new development activity that disturbs one acre of land or more shall achieve 50 percent or more of the needed load reduction in both nitrogen and phosphorus loading onsite and shall meet any

requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule; or

(iii) Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that increases impervious surface within a non-DOT state or federal entity 's designated downtown area, regardless of area disturbed, shall achieve 30 percent of the needed load reduction in both nitrogen and phosphorus onsite, and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(d) of this Rule.

~~that attain a minimum of 50 percent reduction in the post-construction nitrogen and 60 percent reduction in post-construction phosphorus loading rate on-site and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(a)(iv) of this Rule.~~

~~(b)~~(c) Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (~~43~~)(a)~~(i)~~ of this Rule. A developer may use any measure that complies with the requirements of Rules .0240 and .0282 of this Section. ~~may make offset payments to the NC Ecosystem Enhancement Program or a public or private seller of reduction credit contingent upon acceptance of payments by that Program. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282:~~

~~***(c) **(Onsite Treatment Option: B (60 percent N / 60 percent P)***~~

~~(ii) The developer shall have the option of offsetting part of their nitrogen and phosphorus loads by implementing or funding offsite management measures. Before using an o***ffsite offset option, a development shall implement structural*** stormwater controls that attain a minimum of 60 percent reduction in the post-construction nitrogen and 60 percent reduction in post-construction phosphorus loading rate on-site and shall meet any requirements for engineered stormwater controls described in Sub-Item (3)(a)(iv) of this Rule. Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (3)(a)(i) of this Rule. A developer may make offset payments to the NC Ecosystem Enhancement Program or a public or private seller of reduction credit contingent upon acceptance of payments by that Program. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282:~~

(d) Proposed new development subject to NPDES, water supply, and other state-mandated stormwater regulations shall comply with those regulations and with applicable permit limits in addition to the other requirements of this Sub-Item. Proposed new development in any

water supply watershed in the Falls watershed designated WS-II, WS-III, or WS-IV shall comply with the density-based restrictions, obligations, and requirements for engineered stormwater controls, clustering options, operation and maintenance responsibilities, vegetated setbacks, land application, and landfill provisions described in Sub-Items (3)(b)(i) and (3)(b)(ii) of the applicable rule among 15A NCAC 02B .0214 through .0216. ~~Notwithstanding~~ Provided, the allowance in water supply watershed rules for 10 percent of a jurisdiction to be developed at up to 70 percent built-upon area without stormwater treatment~~,~~ shall not be available in the Falls watershed. ~~proposed new development in the Falls watershed shall not have the option to forego treatment;~~

~~(d)~~ Stormwater systems shall be designed to control and treat at a minimum the runoff generated from all surfaces in the project area by one inch of rainfall. The treatment volume shall be drawn down pursuant to standards specific to each practice as provided in the most recent version of the *Stormwater Best Management Practices Manual* published by the Division, or other at least technically equivalent standards acceptable to the Division.

(~~iv~~) ~~Stormwater systems shall be designed to control and treat at a minimum the runoff generated from all surfaces in the project area by one inch of rainfall. The treatment volume shall be drawn down pursuant to standards specific to each practice as provided in the most recent version of the *Stormwater Best Management Practices Manual* published by the Division, or other at least technically equivalent standards acceptable to the Division.~~

(e) To ensure that the integrity and nutrient processing functions of receiving waters and associated riparian buffers are not compromised by erosive flows, ~~stormwater flows from the new development shall not contribute to degradation of waters of the State. A~~at a minimum, the new development shall not result in a net increase in peak flow leaving the site from pre-development conditions for the one-year, 24-hour storm event.~~;~~

~~(v) Proposed development that would replace or expand structures or improvements that existed as of December 2006, the end of the baseline period, and that would not result in a net increase in built-upon area shall not be required to meet the nutrient loading targets or high-density requirements except to the extent that it shall provide stormwater control at least equal to the previous development. Proposed new development that would replace or expand existing structures or improvements and would result in a net increase in built-upon area shall have the option either to achieve at least the percentage loading reduction objectives stated in 15A NCAC 02B .0275 as applied to nitrogen and phosphorus loading from the previous development for the entire project site, or to meet the loading rate targets described in Sub-Item (3)(a)(i). These requirements shall supersede those identified in 15A NCAC 02B .0104(q);~~

(f) New development may satisfy the requirements of this Rule by meeting the post-development hydrologic criteria set out in Chapter 2 of the *North Carolina Low Impact Development Guidebook* dated June 2009, or the hydrologic criteria in the most recent version of ~~this~~ that guidebook;

(~~h~~vii) Proposed new development shall demonstrate compliance with the riparian buffer protection requirements of 15A NCAC 02B .0233 and .0242;

~~(viii) The non-NCDOT state or federal entity shall include measures to ensure maintenance of best management practices (BMPs) implemented as a result of the provisions in Sub-Item (3)(a) of this Rule for the life of the development;~~

~~(ix) A plan to ensure enforcement and compliance with the provisions in Sub-Item (3)(a) of this Rule for the life of the new development.~~

(5~~b~~) NON-NCDOT STAGED AND ADAPTIVE IMPLEMENTATION REQUIREMENTS. For existing development, non-NCDOT state and federal entities shall develop and implement staged load reduction programs for achieving and maintaining nutrient load reductions from existing development based on the standards set out in this ~~Sub-~~Item. Such entities shall submit these load-reducing programs for approval by the Commission that include the following staged elements and meet the associated minimum standards for each stage of implementation:

(a~~i~~) In Stage I, entities subject to this rule shall implement a load reduction program that provides estimates of, and plans for offsetting within 10 years of the effective date of this Rule, nutrient loading increases from lands developed subsequent to the baseline ~~period but prior to implementation~~ and not subject to the requirements of the Falls Lake new development stormwater program~~s~~. For these post-baseline existing developed lands, the current loading rate shall be compared to the loading rate for these lands prior to development for the acres involved, and the difference shall constitute the load reduction need in annual mass load, in pounds per year. Alternatively, a state or federal entity may assume uniform pre-development loading rates of 2.89 pounds per acre per year N and 0.63 pounds per acre per year P for these lands. The entity shall achieve this stage one load reduction within 10 years of the effective date of this Rule. This Stage I program shall meet the criteria defined in Item (4) of 15A NCAC 02B .0278.

(b) Ten years after the effective date of this Rule and every five years thereafter, a state ~~and~~ or federal entity located in the Upper Falls Watershed as defined in Item (3) of 15A NCAC 02B .0275 shall submit and concurrently begin implementing a Stage II load reduction program or revision designed to achieve the percent load reduction objectives from existing developed lands under its control, that includes timeframes for achieving these objectives and that meets the criteria defined in Item (5~~4~~) of this Rule.~~.~~

(5~~4~~) ELEMENTS OF NON-NCDOT LOAD REDUCTION PROGRAMS. A non-NCDOT state or federal entity load reduction program shall address the following elements:

(a) State and federal entities in the Eno River and Little River subwatersheds shall, as part of their Stage I load reduction programs, begin and continuously implement a program to reduce loading from discharging sand filters and malfunctioning septic systems owned or used by state or federal agencies discharging into waters of the State within those subwatersheds.

(b) State and federal entities in any Falls subwatershed in which chlorophyll a levels have exceeded 40 ug/L in more than seventy-five percent of the monitoring events in any calendar year shall, as part of their Stage I load reduction programs, begin and continuously implement a program to reduce nutrient loading into the waters of the State within that subwatershed.

(c) The total amount of nutrient loading reductions in Stage I is not increased for state and federal entities by the requirements to add specific program components to address loading from malfunctioning septic systems and discharging sand filters or high nutrient loading levels pursuant to Sub-Item (4)(a) and (b) of this Rule.

(d) In preparation for implementation of their Stage I and Stage II load reduction programs, state and federal entities shall develop inventories and characterize load reduction potential to the extent that accounting methods allow for the following:

(i) Wastewater collection systems;

(ii) Discharging sand filter systems, including availability of or potential for central sewer connection;

(iii) Properly functioning and malfunctioning septic systems;

(iv) Restoration opportunities in utility corridors;

(v) Fertilizer management plans for state and federally owned lands;

(vi) Structural stormwater practices, including intended purpose, condition, potential for greater nutrient control; and

(vii) Wetlands and riparian buffers including potential for restoration opportunities.

(e) A state or federal entities load reduction need shall be based on the developed lands owned or used by the state or federal entity within the Falls watershed.

(f) Nitrogen and phosphorous loading from existing developed lands, including loading from onsite wastewater treatment systems to the extent accounting methods allow, shall be calculated by applying the accounting tool described in Item (11) and shall quantify baseline loads of nitrogen and phosphorus to surface waters from the lands under the entity's control as well as loading changes post-baseline. It shall also calculate target nitrogen and phosphorus loads and corresponding reduction needs.

(g) Nitrogen and phosphorus loading from existing developed lands, including loading from onsite wastewater treatment systems to the extent accounting methods allow, shall be calculated by applying the accounting too described in Item (11) of this Rule and shall

quantify baseline loads of nitrogen and phosphorus to surface waters from state and federal entities as well as loading changes post-baseline. It shall calculate target nitrogen and phosphorus loads and corresponding load reduction needs.

(h) The Commission shall recognize reduction credit for early implementation of policies and practices implemented after January 1, 2007 and before timeframes required by this Rule, to reduce runoff and discharge of nitrogen and phosphorus per Session Law 2009-486. The load reduction program shall identify specific load-reducing practices implemented to date subsequent to the baseline period and for which the entity is seeking credit. It shall estimate load reductions for these practices and their anticipated duration using methods provided for in Sub-Item (9~~8~~).

(i) The ~~plan~~program shall include a proposed implementation schedule that includes annual implementation expectations. The load reduction program shall identify the types of activities the state of federal entity intends to implement and types of existing development affected, relative proportions or prioritization of practices, relative magnitude of reductions it expects to achieve from each, and the relative costs and efficiencies of each activity to the extent information is available. The program shall identify the duration of anticipated loading reductions, and may seek activities that provide long-term reductions.

(j) The load reduction program shall identify anticipated funding mechanisms or sources and discuss steps taken or planned to secure such funding.

(k) The ~~plan~~program shall address the extent of load reduction opportunities intended from the following types of lands:

(i) Lands owned or otherwise controlled by the state or federal entity; and

(ii) Lands other than those on which the entity's load reduction need is based as described in this Item, including lands both within and outside its jurisdiction and third party sellers.

(l) The ~~plan~~program shall address the extent of load reduction proposed from, at a minimum, the following stormwater and ecosystem restoration activities:

(i) Bioretention;

(ii) Constructed wetland;

(iii) Sand filter;

(iv) Filter Strip;

(v) Grassed swale;

(vi) Infiltration device;

(vii) Extended dry detention;

(viii) Rainwater harvesting system;

(ix) Treatment of Redevelopment;

(x) Overtreatment of new development;

(xi) Removal of impervious surface;

(xii) Retrofitting treatment into existing stormwater ponds;

(xiii) Off-line regional treatment systems;

(xiv) Wetland or riparian buffer restoration; and

(xv) Reforestation with conservation easement or other protective covenant.

(m) A state of federal entity may propose in its load reduction program the use of the following measures in addition to items listed in (l) and (n), or may propose other measures for which it can provide accounting methods acceptable to the Division:

(i) Redirecting runoff away from impervious surfaces;

(ii) Soil amendments;

(iii) Stream restoration;

(iv) Improved street sweeping; and

(v) Source control, such as per waste and fertilizer controls.

(n) The ~~plan~~program shall evaluate the ~~extent of~~ load reduction ~~proposed~~ potential from the following wastewater activities:

(i) Creation of surplus relative to an allocation established in 15A NCAC 02B .0279;

(ii) Expansion of surplus allocation through regionalization;

(iii) Connection of discharging sand filters and malfunctioning septic systems to central sewer or replacement with permitted non-discharge alternatives;

(iv) Removal of illegal discharges; and

(v) Improvement of wastewater collection systems.

(o) The ~~plan~~program shall include explicit ~~evaluate the extent~~ evaluation of load reduction potential ~~proposed~~ relative to the following factors:

(i) Extent of physical opportunities for installation;

(ii) Landowner acceptance;

(iii) Incentive and education options for improving landowner acceptance

(iv) Existing and potential funding sources and magnitudes; and

(v) Practice cost-effectiveness (e.g., cost per pound of nutrient removed);

(vi) Increase in per capita cost of a non-NCDOT state or federal entity's stormwater management program to implement the program;

(vii) Implementation rate without the use of eminent domain; and

(viii) Need for and projected role of eminent domain.

(6~~5~~) The Commission shall approve a non-NCDOT Stage I load reduction ~~plan~~program if it meets the requirements of Items (4~~3~~) and (5~~4~~) of this Rule. The Commission shall approve a Stage II load reduction ~~plan~~program if it meets the requirements of Items (4~~3~~) and (5~~4~~) of this Rule unless the

Commission finds that the local non-DOT state or federal entity can, through the implementation of reasonable and cost-effective measures not included in the proposed program, meet the Stage II nutrient load reductions required by this Rule by a date earlier than that proposed by the non-DOT state or federal entity. If the Commission finds that there are additional or alternative reasonable and cost-effective measures, the Commission may require the non-DOT state or federal entity to modify its proposed program to include such measures to achieve the required reductions by the earlier date. If the Commission requires such modifications, the non-DOT state or federal entity shall submit a modified program within two months. The Division shall recommend that the Commission approve or disapprove the modified program within three months after receiving the modified program. In determining whether additional or alternative load reduction measures are reasonable and cost effective, the Commission shall consider factors including, but not limited to those identified in Sub-Item (5)(o) of this Rule. ~~and if it finds that the plan achieves the maximum level of reductions that is technically and economically feasible within the proposed timeframe of implementation based on plan elements identified elsewhere in this Item. Economic feasibility is determined by considering environmental impacts, capital cost of compliance, annual incremental compliance, per capita cost of stormwater programs, cost-effectiveness of available measures, and impacts on local and regional commerce.~~ The Commission shall not require additional or alternative measures that would require a non-NCDOT state or federal entity to:

(a) Install a new stormwater collection system in an area of existing development unless the area is being redeveloped; or

(b) Reduce impervious surfaces within an area of existing development unless the area is being redeveloped.

(7~~6~~) A non-NCDOT state or federal entity shall have the option of working with the county or counties in which it falls, or with a municipality or municipalities within the same subwatershed, to jointly meet the loading targets from all lands within their combined jurisdictions within a subwatershed. The entity may utilize private or third party sellers. All reductions involving trading with other parties shall meet the requirements of 15A NCAC 02B .0282.

(8~~7~~) NCDOT REQUIREMENTS. The NCDOT shall develop a single Stormwater Management Program that will be applicable to the entire Falls watershed and submit this program for approval by the Division according to the standards set forth below. In addition, the program shall, at a minimum, comply with NCDOT's then-current stormwater permit. This program shall:

(a) Identify NCDOT stormwater outfalls from Interstate, US, and NC primary routes;

(b) Identify and eliminate illegal discharges into the NCDOT's stormwater conveyance system;

(c) Establish a program for post-construction stormwater runoff control for new development, including new and widening NCDOT roads and facilities. The program shall establish a process by which the Division shall review and approve stormwater

designs for new NCDOT development projects. The program shall delineate the scope of vested projects that would be considered as existing development, and shall define lower thresholds of significance for activities considered new development. In addition, the following criteria shall apply:

(i) For new and widening roads, weight stations, and replacement of existing bridges, compliance with the riparian buffer protection requirements of Rules 15A NCAC 02B .0233 and .0242 shall be deemed as compliance with the purposes of this Rule;

(ii) New non-road development shall achieve and maintain the nitrogen and phosphorus percentage load reduction objectives established in 15A NCAC 02B .0275 relative to either area-weighted average loading rates of all developable lands as of the baseline period defined in 15A NCAC 02B .0275, or to project-specific pre-development loading rates. Values for area-weighted average loading rate targets for nitrogen and phosphorus, respectively, expressed in units of pounds per acre per year: 2.2 and 0.33. The NCDOT shall determine the need for engineered stormwater controls to meet these loading rate targets by using the loading calculation method called for in Item (12) of this Rule ~~Sub-Item (4)(a) of 15A NCAC 02B .0277~~ or other equivalent method acceptable to the Division. Where stormwater treatment systems are needed to meet these targets, they shall be designed to control and treat the runoff generated from all surfaces by one inch of rainfall. Such systems shall be assumed to achieve the nutrient removal efficiencies identified in the most recent version of the *Stormwater Best Management Practices Manual* published by the Division provided that they meet associated drawdown and other design specifications included in the same document. The NCDOT may propose to the Division nutrient removal rates for practices currently included in the BMP Toolbox required under its NPDES stormwater permit, or may propose revisions to those practices or additional practices with associated nutrient removal rates. The NCDOT may use any such practices approved by the Division to meet loading rate targets identified in this Sub-Item. New non-road development shall also control runoff flows to meet the purpose of this Rule regarding protection of the nutrient functions and integrity of receiving waters; and

~~***(Onsite Treatment Option: A (50 percent N / 60 percent P)****~~

(iii) For new non-road development, the NCDOT shall have the option of offsetting part of their nitrogen and phosphorus loads by implementing or funding offsite management measures. Before using an offsite offset option, a development shall implement structural stormwater controls that achieve 50 percent or more

of the needed load reduction in both nitrogen and phosphorus loading onsite~~attain a minimum of 50 percent reduction in the post-construction nitrogen and 60 percent reduction in post-construction phosphorus loading rate on site~~ and shall meet any requirements for engineered stormwater controls described in Sub-Item (~~7~~8)(c)(ii) of this Rule. Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (~~7~~8)(c)(ii) of this Rule. The NCDOT may use any measure that complies with the requirements of Rules .0240 and .0282. of this Section~~may make offset payments to the NC Ecosystem Enhancement Program or a public or private seller of reduction credit contingent upon acceptance of payments by that Program. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282.~~

~~***(Onsite Treatment Option: B (60 percent N / 60 percent P)****~~

~~(iii) For new non-road development, the NCDOT shall have the option of offsetting part of their nitrogen and phosphorus loads by implementing or funding offsite management measures. Before using an offsite offset option, a development shall implement structural stormwater controls that attain a minimum of 60 percent reduction in the post-construction nitrogen and 60 percent reduction in post-construction phosphorus loading rate on site and shall meet any requirements for engineered stormwater controls described in Sub-Item (7)(c)(ii) of this Rule. Offsite offsetting measures shall achieve at least equivalent reductions in nitrogen and phosphorus loading to the remaining reduction needed onsite to comply with the loading rate targets set out in Sub-Item (7)(c)(ii) of this Rule. The NCDOT may make offset payments to the NC Ecosystem Enhancement Program or a public or private seller of reduction credit contingent upon acceptance of payments by that Program. All offset measures identified in this Sub-Item shall meet the requirements of 15A NCAC 02B .0282.~~

(d) Establish a program to identify and implement load-reducing opportunities on existing development within the watershed. The long-term objective of this effort shall be for the NCDOT to achieve the nutrient load objectives in 15A NCAC 02B .0275 as applied to existing development under its control, including roads and facilities.

(i) The NCDOT may achieve the nutrient load reduction objective in 15A NCAC 02B .0275 for existing roadway and non-roadway development under its control by the development of a load reduction program that addresses both roadway and non-roadway development in the Falls watershed. As part of the accounting

process described in Item (11) of this Rule, baseline nutrient loads shall be established for roadways and industrial facilities using stormwater runoff nutrient load characterization data collected through the National Pollutant Discharge Elimination System (NPDES) Research Program under NCS0000250 Permit Part II Section G.

(ii) The program shall include estimates of, and plans for offsetting, nutrient load increases from lands developed subsequent to the baseline period but prior to implementation of its new development program. It shall include a technical analysis that includes a proposed implementation rate and schedule. This schedule shall provide for proportionate annual progress toward reduction objectives as practicable throughout the proposed compliance period. The program shall identify the types of activities NCDOT intends to implement and types of existing roadway and non-roadway development affected, relative proportions or a prioritization of practices, and the relative magnitude of reductions it expects to achieve from each.

(iii) The program to address roadway and non-roadway development may include stormwater retrofits and other load reducing activities in the watershed including: illicit discharge removal; street sweeping; source control activities such as fertilizer management at NCDOT facilities; improvement of existing stormwater structures; use of rain barrels and cisterns; stormwater capture and reuse; and purchase of nutrient reduction credits.

(iv) NCDOT may meet minimum implementation rate and schedule requirements by implementing a combination of at least six stormwater retrofits per year for existing development in the Falls watershed or some other minimum amount based on more accurate reduction estimates developed during the accounting tool development process.

(v) To the maximum extent practicable, retrofits shall be designed to treat the runoff generated from all surfaces by one inch of rainfall, and shall conform to the standards and criteria established in the most recent version of the Division-approved NCDOT BMP Toolbox required under NCDOT's NPDES stormwater permit. To establish removal rates for nutrients for individual practices described in the Toolbox, NCDOT shall submit technical documentation on the nutrient removal performance of BMPs in the Toolbox for Division approval. Upon approval, NCDOT shall incorporate nutrient removal performance data into the BMP Toolbox. If a retrofit is proposed that is not described in the NCDOT BMP Toolbox, then to the maximum extent practicable, such retrofit shall conform to the standards and criteria set forth in the most recent version of

the *Stormwater Best Management Practices Manual* published by the Division, or other technically equivalent guidance acceptable to the Division.

(e) Initiate a "Nutrient Management Education Program" for NCDOT staff and contractors engaged in the application of fertilizers on highway rights of way. The purpose of this program shall be to contribute to the load reduction objectives established in 15A NCAC 02B .0275 through proper application of nutrients, both inorganic fertilizer and organic nutrients, to highway rights of way in the Falls watershed in keeping with the most current state-recognized technical guidance on proper nutrient management; and

(f) Address compliance with the riparian buffer protection requirements of 15A NCAC 02B .0233 and .0242 through a Division approval process.

(9~~8~~) NON-NCDOT RULE IMPLEMENTATION. For all state and federal entities that control lands within the Falls watershed with the exception of the NCDOT, this Rule shall be implemented as follows:

(a) Upon Commission approval of the accounting methods required in Item (9) of this Rule, subject entities shall comply with the requirements of Sub-Item (3)

(b) Within 30 months after the effective date of this Rule, the Division shall submit a Stage I model local program to the Commission for approval that embodies the criteria described in Items (3)(b) and (4) of this Rule. The Division shall work in cooperation with subject state and federal entities and other watershed interests in developing this model program, which shall include the following:

(i) Methods to quantify load reduction requirements and resulting load reduction assignments for individual entities;

(ii) Methods to account for discharging sand filters, malfunctioning septic systems, and leaking collection systems; and

(iii) Methods to account for load reduction credits from various activities.

(b) Within six months after the Commission's approval of the Stage I model local program, subject entities shall submit load reduction programs that meet or exceed the requirements of Items (3)(a) and (4) of this Rule to the Division for review and preliminary approval and shall begin implementation and tracking of measures to reduce nutrient loads from existing developed lands owned or controlled by the responsible state or federal entity.

(c) Within 20 months of the Commission's approval of the Stage I model local program, the Division shall provide recommendations to the Commission on existing development load reduction programs. The Commission shall either approve the programs or require changes based on the standards set out in Item (4) of this Rule. Should the Commission require changes, the applicable state or federal entity shall have two months to submit

revisions, and the Division shall provide follow-up recommendations to the Commission within two months after receiving revisions.

(d) Within three months after the Commission's approval of a Stage I existing development load reduction program, the affected entity shall complete adoption of and begin implementation of its existing development Stage I load reduction program.

(e) Upon implementation of the programs required under Item (4) of this Rule, state and federal entities subject to this Rule shall provide annual reports to the Division documenting their progress in implementing those requirements within three months following each anniversary of program implementation date until such time the Commission determines they are no longer needed to ensure maintenance of reductions or that standards are protected. State and federal entities shall indefinitely maintain and ensure performance of implemented load-reducing measures.

(f) Ten years after the effective date of this Rule, and every five years thereafter until either accounting determines load reductions have been achieved, standards are meeting the lake or the Commission takes other actions per 15A NCAC 02B .0275, state and federal entities located in the upper Falls watershed as defined in Item (3) of 15A NCAC 02B .0275 ~~shall begin implementing and~~ shall submit and concurrently begin implementation of Stage II load reduction program or program revision to the Division. Within nine months after submittal, the division shall make recommendations to the Commission on approval of these programs. The Commission shall either approve the programs or require changes based on the standards seer out in this Rule. Should the Commission require changes, the applicable state or federal entity shall submit revisions within two months, and the Division shall provide follow-up recommendations to the Commission within three months after receiving revisions. Upon approval, the state or federal entity shall adjust implementation based on its approved program.

(g) A state or federal entity may, at any time after commencing implementation of its load reduction program, submit program revisions to the Division for approval based on identification of more cost-effective strategies or other factors not originally recognized.

(h) Once either load reductions are achieved per annual reporting or water quality standards are met in the lake per 15A NCAC 02B .0275, state and federal entities shall submit ~~plan~~programs to ensure no load increases and shall report annually per Sub-Item (8)(e) on compliance with no increases and take additional actions as necessary.

(i) At least every five years after the effective date, the Division shall review the accounting methods stipulated under Sub-Item (9~~8~~)(a) to determine the need for revisions to those methods and to loading reductions assigned using those methods. Its review shall include values subject to change over time independent of changes resulting from implementation of this Rule, such as untreated export rates that may change with changes in atmospheric

deposition. It shall also review values subject to refinement, such as nutrient removal efficiencies.

(10~~9~~) NCDOT RULE IMPLEMENTATION. For the NCDOT, this Rule shall be implemented as follows:

(a) Within 30 months of the effective date of this Rule, the NCDOT shall submit the Stormwater Management Program for the Falls watershed to the Division for approval. This Program shall meet or exceed the requirements in Item (~~7~~8) of this Rule;

(b) Within 36 months of the effective date of this Rule, the Division shall request the Commission's approval of the NCDOT Stormwater Management Program;

(c) Within 36 months of the effective date of this Rule, the NCDOT shall implement the Commission-approved Stormwater Management Program; and

(d) Upon implementation, the NCDOT shall submit annual reports to the Division summarizing its activities in implementing each of the requirements in Item (~~7~~8) of this Rule. This annual reporting may be incorporated into annual reporting required under NCDOT's NPDES stormwater permit.

(~~10~~11) RELATIONSHIP TO OTHER REQUIREMENTS. A party may in its program submittal request that the Division accept its implementation of another stormwater program or programs, such as NPDES stormwater requirements, as satisfying one or more of the requirements set forth in Item (~~3~~4) or (~~4~~5) of this Rule. The Division shall provide determination on acceptability of any such alternatives prior to requesting Commission approval of programs under this Rule. The party shall include in its program submittal technical information demonstrating the adequacy of the alternative requirements.

(~~11~~12) ACCOUNTING METHODS. Within 18 months after the effective date of this Rule, the Division shall submit a nutrient accounting framework to the Commission for approval. This framework shall include tools for quantifying load reduction assignments on existing development for parties subject to this Rule, load reduction credits from various activities on existing developed lands, and a tool that will allow subject parties to account for loading from new and existing development and loading changes due to BMP implementation. The Division shall work in cooperation with subject parties and other watershed interests in developing this framework. The Division shall periodically revisit these accounting methods to determine the need for revisions to both the methods and to existing development load reduction assignments made using the methods set out in this Rule. It shall do so no less frequently than every 10 years. Its review shall include values subject to change over time independent of changes resulting from implementation of this Rule, such as untreated export rates that may change with changes in atmospheric deposition. It shall also review values subject to refinement, such as BMP nutrient removal efficiencies.

History Note: *Authority G. S. 143-214.1; 143-214.3; 143-214.5; 143-214.7; 143-215.1; 143-215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143 215.6C; 143-215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L. 2009-337; S.L. 2009-486.*
Temporary Adoption Eff.___;
Eff.___

15A NCAC 02B .0282 is proposed for adoption as follows:

15A NCAC 02B .0282 FALLS WATER SUPPLY NUTRIENT STRATEGY: OPTIONS FOR OFFSETTING NUTRIENT LOADS

PURPOSE. This Rule provides parties subject to other rules within the Falls nutrient strategy with options for meeting rule requirements by obtaining or buying credit for nutrient load-reducing activities conducted by others (sellers). It provides the potential for parties who achieve excess load reductions under the Falls nutrient strategy to recover certain costs by selling such credits, and it provides opportunity for third parties to produce reductions and sell credits. Overall it provides the potential for more cost-effective achievement of strategy reduction objectives. Accounting is required to ensure and track the availability and use of trading credits. This accounting will be compared against compliance accounting required under other rules of the Falls nutrient strategy to ensure that crediting is properly accounted for. This Rule furthers the adaptive management intent of the strategy to protect the water supply, aquatic life, and recreational uses of Falls Reservoir. The minimum requirements for the exchange of load reduction credits are:

(1) PREREQUISITES. The following buyers shall meet applicable criteria identified here and in rules imposing reduction requirements on them before utilizing the option outlined in this Rule:

(a) Agriculture Rule .0280: Owners of ~~A~~agricultural ~~producers~~ land shall receive approval from the Watershed Oversight Committee to obtain offsite credit pursuant to the conditions of Sub-Item (7~~5~~)(b)(vii) of Rule .0280;

(b) New Development Rule .0277: Developers shall meet onsite reduction requirements enumerated in Sub-Item (3)(a)(vii) of Rule .0277 before obtaining offsite credit;

(c) Wastewater Rule .0279: New and expanding dischargers shall first make all reasonable efforts to obtain allocation from existing dischargers as stated in Sub-Items (7)(a)(ii) and (8)(a)(ii), respectively of Rule .0279; and

(d) State and Federal Entities Stormwater Rule .0281:

(i) Non-DOT entities shall meet onsite new development reduction requirements enumerated in Sub-Item (3)(a)(ii) of Rule .0281; and

(ii) NC DOT shall meet onsite non-road new development reduction requirements enumerated in Sub-Item (4)(c)(iii) of Rule .0281 before obtaining offsite credit.

(2) The party seeking approval to sell ~~loading~~load reduction credits pursuant to this Rule shall demonstrate to the Division that such reductions meet the following criteria:

(a) Load reductions eligible for credit shall not include reductions ~~achieved~~that result from actions required to mitigate ~~or offset~~nutrient load-increasing actions ~~that increase nutrient loading~~ under ~~regulations other than the Falls nutrient strategy~~any regulation, except where a rule in this Section expressly allows such credit; and

(b) The party seeking to sell credits shall define the nature of the activities that would produce reductions and define the magnitude and duration of those reductions to the Division, including addressing the following items:

(i) Quantify and account for the relative uncertainties in reduction need estimates and ~~loading~~load reduction estimates;

(ii) Ensure that ~~loading~~load reductions shall take place at the time and for the duration in which the reduction need occurs; and

(iii) Demonstrate means adequate for assuring the achievement and claimed duration of ~~loading~~load reduction, including the cooperative involvement of any other involved parties.

(~~3~~c) Geographic Restrictions. Eligibility to use ~~loading~~ load reductions as credit is based on the following geographic criteria:

(~~a~~i) Impacts in the upper Falls watershed as defined in Item (19) of 15A NCAC 02B. 0276 may be offset only by ~~loading~~load reductions achieved in the upper Falls watershed; and

(~~b~~ii) Impacts in the lower Falls watershed as defined in Item (20) of 15A NCAC 02B. 0276 ~~may~~ shall be offset ~~only~~ by ~~loading~~load reductions achieved anywhere within the Falls watershed.

(~~4~~3) The party seeking approval to sell ~~loading~~ load reduction credits shall provide for accounting and tracking methods that ensure genuine, accurate, and verifiable achievement of the purposes of this Rule, and shall otherwise meet the requirements of Rule .0240 of this Section, which establishes procedural requirements for nutrient offset payments. The Division shall work cooperatively with interested parties at their request to develop such accounting and tracking methods to support the requirements of Item (2) of this Rule.

(~~5~~4) Local governments have the option of combining their reduction needs from NPDES dischargers assigned allocations in 15A NCAC 02B .0279 and existing development as described in 15A NCAC 02B .0278, including loads from properly functioning and malfunctioning septic systems and discharging sand filters, into one reduction and allocation requirement and meet them jointly.

(~~6~~5) Proposals for use of offsetting actions as described in this Rule shall become effective after determination by the Director that the proposal contains adequate scientific or engineering standards or procedures necessary to achieve and account for load reductions as required under Items (2) ~~through (4)~~and (3) of this Rule, and that specific accounting tools required for these purposes in individual rules have been adequately established. In making this determination, the Director shall also evaluate the potential for ~~loading~~load offset elsewhere that results in~~to produce~~ localized adverse water quality impacts that contribute to impairment of classified uses of the affected waters.

(~~7~~6) A party seeking to purchase nutrient offset credit from the NC Ecosystem Enhancement Program or from a public or private seller of reduction credit shall meet the applicable requirements of Rule .0240 of this Section, which establishes procedural requirements for nutrient offset payments, in addition to applicable requirements of this Rule. Requirements of Rule .0240 include, but are not limited to, the requirement for non-governmental entities to purchase credit from a provider other than the NC Ecosystem Enhancement Program if such credit is available.

(7) The Watershed Oversight Committee under Rule 15A NCAC 2B .0280 may satisfy the seller requirements of Items (2) and (3) of this Rule and the trading provisions of Rule .0280 for individual agricultural land owners by submitting to the Division for approval a trading program, or revisions to such a program, that demonstrates how individual trades shall meet the requirements of ~~both rules~~this Rule and Rule .0280, and by subsequently including in annual reports required under Rule .0280 separate tracking and accounting for such trades.

History Note: *Authority G S. 143-214.1; 1432-214.3;143-214.5; 143-214.7; 143-215.1; 143215.3; 143-215.3(a)(1); 143-215.6A; 143-215.6B; 143-215.6C; 143 215.8B; 143B-282(c); 143B-282(d); S.L. 2005-190; S.L. 2006-259; S.L 2009-337; S.L 2009-486*
Temporary Adoption Eff.___;
Eff.___.

15A NCAC 2B .0235 is proposed for adoption as follows:

15A NCAC 02B .0235 NEUSE RIVER BASIN-NUTRIENT SENSITIVE WATERS MANAGEMENT STRATEGY: BASINWIDE STORMWATER REQUIREMENTS

The following is the urban stormwater management strategy for the Neuse River Basin:

(1) The following local governments shall be designated, based on population and other factors, for stormwater management requirements as part of the Neuse River Nutrient Sensitive Waters stormwater management strategy:

(a) Cary,

(b) Durham,

(c) Garner,

(d) Goldsboro,

(e) Havelock,

(f) Kinston,

(g) New Bern,

(h) Raleigh,

(i) Smithfield,

(j) Wilson

(k) Durham County,

(l) Johnston County,

(m) Orange County,

(n) Wake County, and

(o) Wayne County.

(2) Other incorporated areas and other counties, not listed under Item (1) of this Rule, may seek to implement their own local stormwater management plan by complying with the requirements specified in Items (5), (6) and (7) of this Rule.

(3) The Environmental Management Commission may designate additional local governments by amending this Rule based on their potential to contribute significant nutrient loads to the Neuse River. At a minimum, the Commission shall review the need for additional designations to the stormwater management program as part of the basinwide planning process for the Neuse River Basin. Any local governments that are designated at a later date under the Neuse Nutrient Sensitive Waters Stormwater Program shall meet the requirements under Items (5), (6) and (7) of this Rule.

(4) Within 12 months of the effective date of this Rule, the Division of Water Quality shall submit a model local stormwater management program plan to control nutrients to the Commission for approval. The Division shall work in cooperation with subject local governments in developing

this model plan. The model plan shall address nitrogen reductions for both existing and new development and include, but not be limited to, the following elements:

(a) Review and approval of stormwater management plans for new developments to ensure that:

(i) the nitrogen load contributed by new development activities is held at 70 percent of the average nitrogen load contributed by the 1995 land uses of the non-urban areas of the Neuse River Basin. The local governments shall use a nitrogen export standard of 3.6 pounds/acre/year, determined by the Environmental Management Commission as 70 percent of the average collective nitrogen load for the 1995 non-urban land uses in the basin above New Bern. The EMC may periodically update the design standard based on the availability of new scientific information. Developers shall have the option of partially offsetting their nitrogen loads by funding wetland or riparian area restoration through the North Carolina Wetland Restoration Fund at the rate specified in Rule .0240 of this Section. However, before using offset payments, the development must attain, at a minimum, a nitrogen export that does not exceed 6 pounds/acre/year for residential development and 10 pounds/acre/year for commercial or industrial development. <u>For the following local governments and any additional local governments identified in rule by the Commission, the post-construction requirements of 15 NCAC 02B .0277 shall supersede the requirements in this Sub-Item for areas within their jurisdiction within the watershed of the Falls of the Neuse Reservoir: Durham, Raleigh, Durham County, Orange County, and Wake County.</u>

(iii) there is no net increase in peak flow leaving the site from the predevelopment conditions for the 1-year, 24-hour storm.

(b) Review of new development plans for compliance with requirements for protecting and maintaining existing riparian areas as specified in 15A NCAC 2B .0233;

(c) Implementation of public education programs;

(d) Identification and removal of illegal discharges;

(e) Identification of suitable locations for potential stormwater retrofits (such as riparian areas) that could be funded by various sources; and

(f) Submittal of an annual report on October 30 to the Division documenting progress on and net changes to nitrogen load from the local government's planning jurisdiction.

(5) Within 12 months of the EMC's approval of the model local government stormwater program or later designation (as described in Item (3) of this Rule), subject local governments shall submit their local stormwater management program plans to the Commission for review and approval. These local plans shall equal or exceed the requirements in Item (4) of this Rule. Local

governments may submit a more stringent local stormwater management program plan. Local stormwater management programs and modifications to these programs shall be kept on file by the Division of Water Quality.

(6) Within 18 months of the EMC's approval of the model local government stormwater program or designation, subject local governments shall adopt and implement a local stormwater management program according to their approved plan. Local governments administering a stormwater management program shall submit annual reports to the Division documenting their progress and net changes to nitrogen load by October 30 of each year.

(7) If a local government fails to submit an acceptable local stormwater management program plan within the time frames established in this Rule or fails to properly implement an approved plan, then stormwater management requirements for existing and new urban areas within its jurisdiction shall be administered through the NPDES municipal stormwater permitting program per 15A NCAC 2H .0126.

(a) Subject local governments shall develop and implement comprehensive stormwater management programs, tailored toward nitrogen reduction, for both existing and new development.

(b) These stormwater management programs shall provide all components that are required of local government stormwater programs in Sub-items (4)(a) through (f) of this Rule.

(c) Local governments that are subject to an NPDES permit shall be covered by the permit for at least one permitting cycle (five years) before they are eligible to submit a local stormwater management program for consideration and approval by the EMC.

History Note: *Authority G.S. 143-214.1; 143-214.7; 143-215.1; 143-215.3(a)(1); S.L. 1995, c. 572;*
Eff. August 1, 1998.
Amended Eff. ___.

15A NCAC 02B .0315 is proposed for amendment as follows:

15A NCAC 02B .0315 NEUSE RIVER BASIN

(a) The Neuse River Basin Schedule of Classification and Water Quality Standards may be inspected at the following places:

(1) the Internet at http://h2o.enr.state.nc.us/csu/; and

(2) the North Carolina Department of Environment and Natural Resources:

(A) Raleigh Regional Office
3800 Barrett Drive
Raleigh, North Carolina

(B) Washington Regional Office
943 Washington Square Mall
Washington, North Carolina

(C) Wilmington Regional Office
127 Cardinal Drive
Wilmington, North Carolina

(D) Division of Water Quality
Central Office
512 North Salisbury Street
Raleigh, North Carolina.

(b) The Neuse River Basin Schedule of Classification and Water Quality Standards was amended effective:

(1) March 1, 1977;

(2) December 13, 1979;

(3) September 14, 1980;

(4) August 9, 1981;

(5) January 1, 1982;

(6) April 1, 1982;

(7) December 1, 1983;

(8) January 1, 1985;

(9) August 1, 1985;

(10) February 1, 1986;

(11) May 1, 1988;

(12) July 1, 1988;

(13) October 1, 1988;

(14) January 1, 1990;

(15) August 1, 1990;

(16) December 1, 1990;

(17) July 1, 1991;

(18) August 3, 1992;

(19) April 1, 1994;

(20) July 1, 1996;

(21) September 1, 1996;

(22) April 1, 1997;

(23) August 1, 1998;

(24) August 1, 2002;

(25) July 1, 2004;

(26) November 1, 2007;

(27) January 15, 2011.

(c) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin has been amended effective July 1, 1988 as follows:

(1) Smith Creek [Index No. 27-23-(1)] from source to the dam at Wake Forest Reservoir has been reclassified from Class WS-III to WS-I.

(2) Little River [Index No. 27-57-(1)] from source to the N.C. Hwy. 97 Bridge near Zebulon including all tributaries has been reclassified from Class WS-III to WS-I.

(3) An unnamed tributary to Buffalo Creek just upstream of Robertson's Pond in Wake County from source to Buffalo Creek including Leo's Pond has been reclassified from Class C to B.

(d) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin has been amended effective October 1, 1988 as follows:

(1) Walnut Creek (Lake Johnson, Lake Raleigh) [Index No. 27-34-(1)]. Lake Johnson and Lake Raleigh have been reclassified from Class WS-III to Class WS-III B.

(2) Haw Creek (Camp Charles Lake) (Index No. 27-86-3-7) from the backwaters of Camp Charles Lake to dam at Camp Charles Lake has been reclassified from Class C to Class B.

(e) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin has been amended effective January 1, 1990 as follows:

(1) Neuse-Southeast Pamlico Sound ORW Area which includes all waters within a line beginning at the southwest tip of Ocracoke Island, and extending north west along the Tar-Pamlico River Basin and Neuse River Basin boundary line to Lat. 35 degrees 06' 30", thence in a southwest direction to Ship Point and all tributaries, were reclassified from Class SA NSW to Class SA NSW ORW.

(2) Core Sound (Index No. 27-149) from northeastern limit of White Oak River Basin (a line from Hall Point to Drum Inlet) to Pamlico Sound and all tributaries, except Thorofare, John Day Ditch were reclassified from Class SA NSW to Class SA NSW ORW.

(f) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective December 1, 1990 with the reclassification of the following waters as described in (1) through (3) of this Paragraph.

(1) Northwest Creek from its source to the Neuse River (Index No. 27-105) from Class SC Sw NSW to Class SB Sw NSW;

(2) Upper Broad Creek [Index No. 27-106-(7)] from Pamlico County SR 1103 at Lees Landing to the Neuse River from Class SC Sw NSW to Class SB Sw NSW; and

(3) Goose Creek [Index No. 27-107-(11)] from Wood Landing to the Neuse River from Class SC Sw NSW to Class SB Sw NSW.

(g) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective July 1, 1991 with the reclassification of the Bay River [Index No. 27-150-(1)] within a line running from Flea Point to the Hammock, east to a line running from Bell Point to Darby Point, including Harper Creek, Tempe Gut, Moore Creek and Newton Creek, and excluding that portion of the Bay River landward of a line running from Poorhouse Point to Darby Point from Classes SC Sw NSW and SC Sw NSW HQW to Class SA NSW.

(h) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective August 3, 1992 with the reclassification of all water supply waters (waters with a primary classification of WS-I, WS-II or WS-III). These waters were reclassified to WS-I, WS-II, WS-III, WS-IV or WS-V as defined in the revised water supply protection rules, (15A NCAC 02B .0100, .0200 and .0300) which became effective on August 3, 1992. In some cases, streams with primary classifications other than WS were reclassified to a WS classification due to their proximity and linkage to water supply waters. In other cases, waters were reclassified from a WS classification to an alternate appropriate primary classification after being identified as downstream of a water supply intake or identified as not being used for water supply purposes.

(i) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective April 1, 1994 as follows:

(1) Lake Crabtree [Index No. 27-33-(1)] was reclassified from Class C NSW to Class B NSW.

(2) The Eno River from Orange County State Road 1561 to Durham County State Road 1003 [Index No. 27-10-(16)] was reclassified from Class WS-IV NSW to Class WS-IV B NSW.

(3) Silver Lake (Index No. 27-43-5) was reclassified from Class WS-III NSW to Class WS-III B NSW.

(j) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective July 1, 1996 with the reclassification of Austin Creek [Index Nos. 27-23-3-(1) and 27-23-3-(2)] from its source to Smith Creek from classes WS-III NSW and WS-III NSW CA to class C NSW.

(k) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective September 1, 1996 with the reclassification of an unnamed tributary to Hannah Creek (Tuckers Lake) [Index No. 27-52-6-0.5] from Class C NSW to Class B NSW.

(l) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective April 1, 1997 with the reclassification of the Neuse River (including tributaries) from mouth of Marks Creek to a point 1.3 miles downstream of Johnston County State Road 1908 to class WS-IV NSW and from a point 1.3 miles downstream of Johnston County State Road 1908 to the Johnston County Water Supply intake (located 1.8 miles downstream of Johnston County State Road 1908) to class WS-IV CA NSW [Index Nos. 27-(36) and 27-(38.5)].

(m) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective August 1, 1998 with the revision of the Critical Area and Protected Area boundaries surrounding the Falls Lake water supply reservoir. The revisions to these boundaries is the result of the Corps of Engineers raising the lake's normal pool elevation. The result of these revisions is the Critical and Protected Area boundaries (classifications) may extend further upstream than the current designations. The Critical Area for a WS-IV reservoir is defined as .5 miles and draining to the normal pool elevation. The Protected Area for a WS-IV reservoir is defined as 5 miles and draining to the normal pool elevation. The normal pool elevation of the Falls Lake reservoir has changed from 250.1 feet mean sea level (msl) to 251.5 feet msl.

(n) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective August 1, 2002 with the reclassification of the Neuse River [portions of Index No. 27-(56)], including portions of its tributaries, from a point 0.7 mile downstream of the mouth of Coxes Creek to a point 0.6 mile upstream of Lenoir County proposed water supply intake from Class C NSW to Class WS-IV NSW and from a point 0.6 mile upstream of Lenoir County proposed water supply intake to Lenoir proposed water supply intake from Class C NSW to Class WS-IV CA NSW.

(o) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective July 1, 2004 with the reclassification of the Neuse River (including tributaries in Wake County) [Index Nos. 27-(20.7), 27-21, 27-21-1] from the dam at Falls Lake to a point 0.5 mile upstream of the Town of Wake Forest Water Supply Intake (former water supply intake for Burlington Mills Wake Finishing Plant) from Class C NSW to Class WS-IV NSW and from a point 0.5 mile upstream of the Town of Wake Forest proposed water supply intake to Town of Wake Forest proposed water supply intake [Index No. 27-(20.1)] from Class C NSW to Class WS-IV NSW CA. Fantasy Lake [Index No. 27 -57-3-1-1], a former rock quarry within a WS-II NSW water supply watershed, was reclassified from Class WS-II NSW to Class WS-II NSW CA.

(p) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective November 1, 2007 with the reclassification of the entire watershed of Deep Creek (Index No. 27-3-4) from source to Flat River from Class WS-III NSW to Class WS-III ORW NSW.

(q) The Schedule of Classifications and Water Quality Standards for the Neuse River Basin was amended effective January 15, 2011 with the reclassification of all Class C NSW waters and all Class B NSW waters upstream of the dam at Falls Reservoir from Class C NSW and Class B NSW to Class WS-V NSW and Class WS-V & B NSW, respectively. All waters within the Falls Watershed are within a designated Critical Water Supply Watershed and are subject to a special management strategy specified in Rules 15A NCAC 02B .0275 through .0283.

History Note: *Authority G.S. 143-214.1; 143-215.1; 143-215.3(a)(1);*
Eff. February 1, 1976;
Amended Eff. January 15, 2011; November 1, 2007; July 1, 2004 (see SL 2001-361); August 1, 2002; August 1, 1998; April 1, 1997; September 1, 1996; July 1, 1996; April 1, 1994; August 3, 1992; July 1, 1991.

APPENDIX D. Summary of Public Comments with Staff Replies

APPENDIX D: Summary of Public Comments with Staff Replies Falls Reservoir Nutrient Strategy

Description

This appendix provides a summary of both the written and oral public comments received during the 60-day public comment period from June 15th, 2010 to August 16th, 2010. Staff responses follow each summarized comment or group of comments on an issue. Those commenters associated with a comment are listed below the staff response along with hyperlinks to their respective comments.

Where possible, comments are organized by the section of the Rules to which they apply as specified in this Appendix's Table of Contents.

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LIST OF COMMENTERS

LOCAL GOVERNMENT

Commentor	Title	Affiliation
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County	Attorneys	Cities of Durham, Raleigh, Durham, Butner, Creedmoor; Counties of Granville and Person
Darryl Moss	Mayor	City of Creedmoor
Karen Sindelar (8/16/10)	Attorney	City of Durham
Karen Sindelar (6/30/10)	Attorney	City of Durham
Theodore Voorhees (8/16/10)	Deputy City Manager	City of Durham
Theodore Voorhees (7/1/10)	Deputy City Manager	City of Durham
Thomas Bonfield	City Manager	City of Durham
Bill Bell	Mayor	City of Durham
Mike Woodard	Councilman	City of Durham
Steve Levitas	Attorney	City of Durham
Donald Greeley (6/30/10)	Director	City of Durham Dept. of Water Management
Donald Greeley (8/16/10)	Director	City of Durham Dept. of Water Management
Katie Kalb	Director	City of Durham Public Works
Michele Woolfolk	Staff Person	City of Durham Stormwater Services
Paul Wiebke	Assistant Manager	City of Durham Stormwater Services
Sara Knies	Staff Person	City of Durham Stormwater Services
John Cox	Manager, Stormwater Quality	City of Durham Stormwater Services
Sandra Wilbur	Staff Person	City of Durham Stormwater Services
J. Russell Allen (8/3/10)	City Manager	City of Raleigh
J. Russell Allen (7/20/10)	City Manager	City of Raleigh
Dan McLawhorn-Raleigh	Attorney	City of Raleigh
Russ Stephenson	Councilman	City of Raleigh
Charles Meeker	Mayor	City of Raleigh
Kenny Waldroup	Assistant Director, Public Utilities	City of Raleigh
Floyd McKissick	State Senator	District 20 / Durham Area
Chris Robert	Manager, Sediment and Erosion Control	Durham County
Drew Cummings	Assistant County Manager	Durham County
Michael Page	Chairman	Durham County Board of Commissioners
Ellen Reckhow	Vice Chair	Durham County Board of Commissioners
Robert Jordan	Supervisor	Durham County Health Department
Eddie Culbertson	Director	Durham County Soil and Water Conservation District
Deborah Luecken	Chair	Durham Environmental Affairs Board
Jim Wrenn (8/16/10) / Jim Wrenn (6/30/10)	Attorney	Granville and Person Counties, Butner, Creedmoor, and South Granville Water and Sewer Authority
Valerie Foushee	Chair	Orange County Board of Commissioners
David Stancil	Director	Orange County Department of Environment, Agriculture, Parks and Recreation
Kenneth Keel	Town Engineer	Town of Hillsborough
Mike Gering	Commissioner	Town of Hillsborough Board of Commissioners
Thomas Esqueda, P.E.	Director	Wake County Environmental Services Dept.

BUSINESS/PROFESSIONAL

Commentor/Web Link	Title	Affiliation
Kevin Davis	Staff Person	Bull City Rising
Carmine Bondatti	Broker	Coldwell Banker
Durham Chamber of	N/A	Durham Chamber of Commerce
Talmage Layton (8/16/10)	President	Farm Bureau - Durham County
Talmage Layton (6/30/10)	President	Farm Bureau - Durham County
Jim Smith	Vice President	HagerSmith Design
Frank Thomas	Director of Government Relations	Home Builders Association-Durham, Orange, & Chatham Counties
Suzanne Harris (7/1/10)	Vice President, Government Affairs	Home Builders Association-Wake County
Suzanne Harris (8/13/10)	Vice President, Government Affairs	Home Builders Association-Wake County
Anne Coan (6/30/10)	Director of Environmental Affairs	NC Farm Bureau
Anne Coan (8/16/10)	Director of Environmental Affairs	NC Farm Bureau Federation
Dan McLawhorn-NRCA	Chairman	Neuse River Compliance Association
Ann Prospero	N/A	Prosperos Kitchen
Amy Poole (7/12/10)	Business Owner	Rolling View Marina
Amy Poole (6/30/10)	Business Owner	Rolling View Marina
Hunter Freeman	Stormwater Manager	Withers & Ravenel

NON-PROFIT/PRIVATE

Commentor	Title	Affiliation
Peter Raabe	Director, NC Conservation	American Rivers
Hope Taylor	Director	Clean Water for North Carolina
D. Reid Wilson	Executive Director	Conservation Trust for North Carolina
Melissa Norton	Government Relations Director	Downtown Durham, Inc.
Bill Holman-Phosphorus Bill Holman-Bacteria Bill Holman-Rates Bill Holman-Septics	Director of State Policy, Nicholas School of the Environment	Duke University
Ryke Longest	Director of Environmental Law & Policy, Nicholas School of the Environment	Duke University
Kenneth Reckhow, PhD	Professor, Nicholas School of the Environment	Duke University
Jack Steer	Vice President	Durham Citizens Coalition
Environment North Carolina Letters (343)	N/A	Environment North Carolina
Elizabeth Ouzts	Director	Environment North Carolina
Miguel Rubiera	Executive Director	Habitat for Humanity of Durham
NC Conservation Network Letters (105)	N/A	NC Conservation Network
Grady McCally	Policy Director	NC Conservation Network
NC Conservation Network & American Rivers	N/A	NC Conservation Network / American Rivers
Sue Gray	Executive Director	NC Horse Council
Deanna Osmond, PhD	Professor, Department of Soil Science	NC State University
Neuse River Foundation Letters (45)	N/A	Neuse Riverkeeper Foundation
Stephanie Bishop	Member	Neuse Riverkeeper Foundation
Alissa Bierma / Larry Baldwin	Riverkeeper	Neuse Riverkeeper Foundation
Alissa Beirma	Riverkeeper, Upper Neuse	Neuse Riverkeeper Foundation
David Schwartz	Executive Committee Member	Sierra Club (Cypress Group)
Robert Gordon	Member	Sierra Club (The Capital Group)
John Shaw	Co-Chair	Sierra Club, (The Capital Group)

Jessica Robinson (8/16/10)	Staff Person	Source to Sea
Jessica Robinson (7/1/10)	Staff Person	Source to Sea
Kay Bond	Attorney	Southern Environmental Law Center
Marilyn Kille	Representative	Southern Orange County Farmers and Landowners
Southern Orange County Farmers and Landowners Coalition	N/A	Southern Orange County Farmers and Landowners
Bill Flournoy	President	Triangle Greenways Council
Michael Schlegel	Water Resources Program Manager	Triangle J Council of Governments
Lawrence Band & Phillip Berke	Director, Institute for the Environment	UNC - Chapel Hill
Kari Wouk	Board Member	Wake County Audubon Society
Karen Rindge (8/13/10)	Executive Director	WakeUP Wake County
Karen Rindge (7/1/10)	Executive Director	WakeUp Wake County
Bob Mulder	Member	Watershed Protection Council

STATE/FEDERAL

Commentor	Title	Affiliation
Steven Troxler	Commissioner	NC Department of Agriculture and Consumer Services
Kelly Ibrahim / Julie Henshaw	Staff, Nonpoint Source Programs Section	NC Division of Soil and Water Conservation
Shari Bryant	Piedmont Regional Coordinator	NC Wildlife Resources Commission
Greg Thorpe, PhD	Manager	Project Development & Environmental Analysis Branch

INDIVIDUAL-SUPPORT

Commentor	Commentor
Elliot Baron	Jane Hunt
John Little	Kevin Seymour
Doris Whitfield	Andrew Campbell
Becky Burmester	Marvin Woll
Bob/Cristina Balthasar	Wanda Register
David McCracken	Pat/Paul Kelly
Elizabeth Brunner	Tabitha Vigliotti
Francis Lamberti	Lynn Edmonds
Helen Cleereman	Don Yanavjak
Susan Bowers	Jan Snyder
Sal Corbo	Bob Rodriguez
Mary Stascak	Heidi Giusto
Emily Shaffer	Tina Motely-Pearson
Tara Steinmetz	Trevor Mitchele
Gabriell Vires	Wanda Webb
Barbara Gambling	Adrianna Beech
Matthew Stark	Chris Giusto
Michael Youth	

INDIVIDUAL CONDITIONAL SUPPORT

Commentor	Commentor
Samantha Gasson	Michael Bacon
Patrick Byker	Samantha Gasson
Rob Gelblum	Jeff Poupart

INDIVIDUAL-OPPOSE

Commentor	Commentor
Lisa Etzel	Thomas O'Neal
Richard Hennessey	Thomas Saunders
Shirley Cates	Marion Lamberth

INDIVIDUAL-OTHER

Commentor	Commentor
Dale Pahl	Mary Mitchell
John Konanc	Curt Olson
Mike Shifett	Jim Quinn
Bruce Haverys	Fred Dietrich
Denise Hill	

FALLS RULE COMMENTS

GENERAL COMMENTS

Comment ID: **4**

Comment: **Falls Lake recreation and drinking water supply uses do not appear to be adversely impacted.**

Response: *While the Lake's uses have not been eliminated by the degraded water quality they have been impaired or limited. For example, some commenters have stated that they have stopped swimming or allowing their families to swim in the Lake as a result of experiences attributed to poor water quality. The strategy is expected to produce both direct and indirect benefits. Benefits would include the following: reduced drinking water treatment costs, direct health benefits for consumptive water users, subsistence and recreational anglers, primary contact recreaters (swimmers, boaters, and others), aquatic biota, and wildlife that relies on the Lake; aesthetic or quality of life benefits for these groups as well as for recreational users around the Lake, such as campers, hikers, wildlife viewers, runners and bikers; similar benefits for all the same groups associated with tributary streams with improved water quality as a result of these rules; economic benefits to the local economy and property owners; and similar health, quality of life, and economic benefits to downstream user groups on the Neuse River. Without the proposed strategy, we believe that the rapid growth occurring in parts of the watershed can be expected to increase nutrient loading and further degrade water quality.*

Commenters:

Donald Greeley (6/30/10)
Donald Greeley (8/16/10)

Comment ID: **10**

Comment: **Cost and Benefits:**

- **Many communities being asked to fund clean-up of the Lake will not benefit from their efforts.**
- **The questions of "who pays" and "who benefits" need to be considered to make these rules fair. Falls Lake watershed communities are being asked to shoulder a great deal of the burden of protecting the drinking water of Raleigh which will not, it seems, be asked to contribute much to the protection of the watershed around their reservoir.**
- **Taxpaying residents should not bear the clean-up costs for developers.**
- **The proposed rules represent an expensive and unfunded mandate.**
- **Wake County needs to significantly contribute to Falls Lake clean-up both financially and organizationally. City of Durham residents have already done their fair share to promote clean water in Falls Lake through high sewer rates that have paid for improved waste water treatment. Further, the City estimates its compliance cost of the nutrient strategy will exceed $1 billion, making it the most expensive capital project in the city's history. This cost needs to be better balanced with the benefits to the City.**
- **State funding should be made available to assist with the Falls Lake clean-up as this is a regional problem and the vast majority of costs associated with the rules will be borne by local governments.**

Response: *It seems inherent in any such complex rulemaking as this that necessarily works with pre-existing facts of interdependent geography that there may be some degree of unavoidable inequity, often between who pays and who benefits. We have strived to meet the requirements of Chapter 143-215.8B for watershed nutrient sources to jointly share the responsibility of reducing loads in a "fair, reasonable and proportionate" manner. This requirement does not necessarily speak to upstream/downstream cost/benefit issues. We did not see a solution in the design of the rules for this potential inequity, and none was suggested by stakeholders. Staff understands the desire to seek regional cost sharing of such a regional cost and benefit. We would at the same note that the general principle of addressing ones' own contributions stands to cost everyone when they are an upstream party and benefit everyone when they are a downstream party.*

Rule implementation costs and benefits were researched thoroughly and presented in the Strategy's Fiscal Analysis report. Implementation costs for the strategy are distributed across the controllable nutrient sources to the Lake. Findings from the Fiscal report show that, while challenging, implementation costs are balanced with the benefits of water quality improvements to the Lake. While sensitive to these costs, the Commission cannot adjust agency funding rules or mandate legislative actions.

Benefits from the water quality clean-up of Falls Lake will be felt throughout the region . The Lake is utilized for more than just a water supply and serves as a recreational asset to the population of the entire watershed. Anticipated additional benefits from implementation of the nutrient strategy include protection and improvement of both impaired and unimpaired streams in the watershed, along with water quantity benefits resulting from greater infiltration of runoff, which improves baseflow conditions and sustains streams and lakes in dry times. The upper Watershed is responsible for the more degraded conditions in the upper lake, and is being called on to reduce its inputs in proportion to the extent of the problem in the upper lake. The rules reflect the recommendations of a stakeholder committee that considered the results of a specific evaluation of this watershed.

The Division recognizes that local governments have already achieved reductions in nutrient loading under the existing Neuse NSW rules. However, the required reductions under those rules relate to achieving water quality standards in the Neuse Estuary and do not represent what is needed to achieve standards in Falls Lake. Local governments will receive credit for any nutrient reducing practices they have implemented after January 1, 2007 (post baseline). However, the continued water quality impairment of the Lake indicates that additional reductions in nutrient loading are needed to restore water quality in Falls Lake.

To help insure that unnecessary costs are not incurred, the Division has proposed adaptive management elements to the strategy that allow for re-examination of the clean-up goals so that some Stage 2 components of the Strategy and their associated costs are not undertaken without assessing the need for the required reductions.

Commenters:

Jack Steer
Valerie Foushee
Rob Gelblum
Theodore Voorhees (7/1/10)
Thomas Saunders
Michael Page
Dale Pahl
Bob Mulder
Miguel Rubiera
Patrick Byker
Samantha Gasson
Durham Chamber of Commerce
Marvin Woll

Comment ID: **17**

Comment: **The wastewater treatment technology required to meet stringent proposed nutrient reductions are not present anywhere in the world. Therefore, to impose these treatment requirements on point sources in the Falls Lake watershed suggests that, in the global context, the Falls Lake watershed is one of the most polluted watersheds in the world.**

Response: *Staff does not feel that the premise is accurate but would offer a different inference; that the United States has higher water quality expectations than many parts of the world Those expectations are established in the federal Clean Water Act and we are required to attempt to meet them. The high level of standard violation in Falls Lake was the reason for large reductions that, in some cases, may require advanced treatment technology. Recognizing that technology improvements will make meeting these rules much more feasible, DWQ is proposing an adaptive staged approach to implement the strategy over the next 25 years that allows sources to identify the flexibility to choose the most cost-effective options for them to achieve the necessary reductions over time.*

The required level of treatment is a function of both the mass limits and the flows discharged by the facilities. The major facilities are currently operating at one half to one third of their permitted capacities and, at those flows, they can meet the limits with existing technologies. But as flows approach permitted levels, the nitrogen concentrations at each facility must decrease in the same proportion (hence, treatment must improve) until they are beyond what is achievable with current technologies. Treatment capabilities will improve with time, though we cannot speculate on how far or how quickly. In order to meet the proposed limits, it will also be necessary for the facilities to manage their wastewater flows and to pursue other means of reducing their nutrient contributions to the lake. And if the limits are truly not achievable by 2036, the wastewater rule now provides that the dischargers can request intermediate limits and an extended compliance date for Stage II limits.

Commenters:
Kenneth Keel

Comment ID: **33**
Comment: **Rules need better scientific backing:**

- **Better science is needed than what has been presented to justify implementation of these rules and their associated cost.**
- **DWQ information and analyses do not identify or verify the key cause-effect relationships that are essential to demonstrate attainment of the Falls Lake nutrient management strategy and the proposed rules. Without clear identification and verification of the key cause-effect relationships, it is not possible to demonstrate with reasonable certainty that implementing the draft rules will achieve the intended water quality management outcomes.**
- **The rule-making process has suffered due to a greatly accelerated timeline. A concern is that none of the accounting tools that the State and local governments will need are yet available and we don't know what kinds of credit various activities will receive.**

Response: *No supporting evidence has been provided that suggests there are faults with the science used to inform this rulemaking process. Under the direction of a Technical Advisory Committee (TAC), intensive monitoring used to model and assess Falls Lake began in 2005 and continued through 2007. Monitoring data met the Division's collection and processing guidelines. The Lake model used to develop the nutrient reduction estimates (i.e., Environmental Fluid Dynamics Computer Code) is promoted by the EPA for representing complex bathymetric and algal conditions such as those found in Falls Lake. The TAC was involved throughout the process and provided input on the data collection and modeling. An independent third party conducted a review of the model calibration and did not identify any issues.*

The strategy follows a pattern of nutrient-driven restoration strategies begun in the Chowan River Basin in 1979 and used in the New, Neuse, Tar-Pamlico, and Jordan Lake basins. It is based on evaluation of relative source contributions specific to each watershed and has been vetted during a stakeholder process. The rules in each case are commensurate to the water quality needs of the Lake. Adaptive management provisions have been incorporated into the strategy to help better understand the Lake's response to Stage 1 nutrient reduction activities and assess the need for Stage 2 implementation efforts..

While the Division recognizes that nutrient benefits for some activities require better quantification, it also recognizes that the scientific backing, benefits and methods for most activities are well-established and sufficient to proceed with implementation. We will work with local governments to develop accounting that will allow them to pursue these other measures. We appreciate that this places local governments at a disadvantage relative to an ideal condition of knowing the value of all actions, and we will work to provide and continually update accounting tools toward this end as implementation proceeds.

The timeline for the rulemaking process is driven by Senate Bill 1020 passed in the summer of 2009 that directed the Commission to complete a nutrient management strategy for Falls Lake by January 15, 2011. Under the direction of the Commission, DWQ has undertaken the comprehensive assessment detailed in this response. The Division believes its work is thorough in presenting a strategy that will remove nutrient related impaired conditions in Falls Lake.

Commenters:

Thomas Bonfield	Michael Page	Theodore Voorhees (8/16/10)
Drew Cummings	Robert Jordan	Dale Pahl

Comment ID: **44**

Comment: **Nutrient Strategy's costs overstated; benefits justify proposed actions:**

- **The $1.5 billion cost-estimate is a worst case scenario and not justification to reject these rules for several reasons: it will be shared by both public and private parties; it will be borne by both upstream and downstream communities; would costs each resident in the watershed an average of $0.72/day; and costs are coming down on technologies required to meet new development standards.**
- **Keeping proposed Stage 2 pollution reduction requirements will help drive research and lower overall costs for technologies to achieve pollution reductions.**
- **Claims that controlling pollution will cost too much are distracting; uncontrolled pollution imposes even greater costs on people, and downstream users, and the public that uses the Lake.**

Response: *We agree with the general sentiment of these comments. Our fiscal calculations, assume a worst-case scenario of meeting the goals entirely through the use of the most costly and difficult approach, structural stormwater retrofits, as well as purchasing all the land required for doing so. The rule, on the other hand, allows for a wide range of load-reducing practices and identifies a large number of possibilities. 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.*

Commenters:

Karen Rindge (7/1/10)
Karen Rindge (8/13/10)
Lynn Edmonds
NC Conservation Network & American Rivers

Comment ID: **45**

Comment: **Clean-up of the Lake is vital to the health of both humans and wildlife.**

Response: *The Division agrees with the general sentiments of this comment.*

Commenters:

Peter Raabe
Bob Rodriguez
Kevin Seymour
Trevor Mitchele
Wanda Webb
John Shaw
Kari Wouk

Comment ID: **46**

Comment: **Nutrient strategy for Falls Lake is needed:**

- **While a TMDL has not yet been established for Falls Lake or its impaired tributaries, the proposed rules may avert the need for a lengthy and expensive TMDL process – but not if the final rules are weakened.**
- **Support implementation of the management strategy as proposed.**
- **Our legacy to future generations is to take responsibility for our actions and leave them a healthy environment should be considered in the decision-making about Falls Lake.**
- **Rules should maintain clean water in Lake.**

Response: *The Division agrees with the general sentiments of this comment.*

Commenters:

Peter Raabe
Hope Taylor
Bob Rodriguez
John Little
Lynn Edmonds
NC Conservation Network & American Rivers
Elliot Baron
Francis Lamberti
Jane Hunt
Tara Steinmetz
Alissa Beirma
Jan Snyder
Michael Youth
Amy Poole (6/30/10)
Kari Wouk
Stephanie Bishop
Karen Rindge (7/1/10)
Karen Rindge (8/13/10)

Comment ID: **51**

Comment: **The comment period on the Management Strategy needs to be extended through September to provide greater opportunity for citizens and elected officials to provide input. This would allow additional time to those not available during this summer comment period because of vacations or breaks in meeting schedules.**

Response: *Due to the legislative requirements directing the EMC to adopt a nutrient management strategy for Falls Lake no later than January 15, 2011, it is not feasible to extend the public comment period beyond the required 60 day time period. The proposed rules were drafted with input from an extensive stakeholder process that spanned 18 months (August 2008 – January 2010) that included multiple opportunities for stakeholder comment on early drafts of the rules before they were noticed for public comment in June 2010.*

Commenters:

Valerie Foushee
David Stancil

Comment ID: **59**

Comment: **Communities downstream of Falls Lake should have to meet the same discharge standards proposed for those communities in Falls Lake watershed.**

Response: *The reductions called for under the proposed Falls Lake nutrient management strategy are based on watershed specific information and have been developed to achieve water quality standards in Falls Lake. Communities that are not a source of nutrients to the Falls Lake watershed, therefore, are not subject to the proposed nutrient reduction objectives. However these downstream communities may be subject to other management strategies like the existing Neuse NSW rules put in place to restore water quality in the estuary. Future review of the success of that strategy may indicate the need for a greater scope or stringency of reduction requirements, which would be watershed-specific.*

Commenters:
Bruce Haverys

Comment ID: **60**
Comment: **Falls Lake provides benefits to users across the region:**

- **People need to be able to enjoy the use of Falls Lake without concern over the safety of its water.**
- **Due to its status as a regional attraction, residents in the watershed both use the Lake and will benefit from its clean-up.**
- **An economic driver for growth in the region is clean drinking water from Falls Lake. Without it, people will not want to move here.**
- **Protection is needed of our drinking water or we risk having our water supply lost or diminished.**

Response: *The Division agrees with the general sentiments of this comment. The entire region will benefit from restoring the Lake's water quality. In addition to its valued use as a drinking water supply, the Lake as a recreational resource to the entire region, including residents of the watershed. Additional benefits include protection of unimpaired streams in the watershed, economic improvements to businesses and housing in the region, and water quantity benefits resulting from greater infiltration of runoff, which improves baseflow conditions and sustains streams and lakes in dry times.*

Commenters:
Matthew Stark
Alissa Beirma
Jessica Robinson (8/16/10)
Stephanie Bishop
Robert Gordon
Marvin Woll
Elizabeth Ouzts
Andrew Campbell
Chris Giusto
Barbara Gambling
Helen Cleereman
Heidi Giusto
Susan Bowers
Tara Steinmetz
John Shaw
Bob Mulder

Comment ID: **65**
Comment: **Lake clean-up needs to involve non-profit organizations and volunteers so the costs are not all borne by the government.**

Response: *The Division believes that Falls Lake clean-up efforts need to involve many levels of society, including non-profit organizations. These organizations have provided valued input during development of the Falls Nutrient Strategy. Due to the magnitude of the required nutrient reductions, the Division supports their continued constructive involvement, however, because of their non-profit nature, these organizations will have to independently decide their role and level of involvement in the Falls clean-up process.*

Commenters:
Mike Shifett

Comment ID: **66**
Comment: **Enforcement of water quality protection rules and penalties are needed to support clean-up:**

- **Rules should require serious penalties for anyone adding to or creating water pollution so that the polluters pay.**
- **Better enforcement of existing rules is needed to make polluters of the Lake pay for its clean-up**

Response: *Individual local governments are identified in the Goals Rule (.0275(7)(a)) as being subject to the stormwater rules. Local governments that do not comply with the rule requirements would be subject to enforcement action at any point, which may involve civil penalties, criminal penalties or injunctive relief as established in statutes 143-215.6A, 6B, and 6C respectively. The agriculture rule uses a collective approach to compliance initially, which could be argued provides less accountability than the stormwater approach. However, we believe the agriculture rule elements gives the Commission opportunity to require more specific actions after an initial implementation period provides reasonable and sufficient accountability for agriculture. Beyond that point, individual producer enforcement options would be available if needed.*

Commenters:

Fred Dietrich
Jan Snyder
Mike Shifett

Comment ID: **68**

Comment: **Strategy's potential secondary impacts:**

- **These rules will increase secondary impacts from development by steering growth away from economic centers found in the Falls Basin, increasing commuting times and degrading air quality.**
- **Requirements for technologies required under the proposed rules (e.g., reverse osmosis waste water treatment) have a much larger energy demand and, consequently, a larger carbon footprint than current treatment technologies. This creates impacts to air resources which should be considered.**

Response: *We agree that secondary impacts such as those described would be undesirable if they were to occur. We do not see, however, where the design of the rules would necessarily lead to such outcomes. We also did not receive any proposals for rule designs that would alleviate the commenters' perceived problems. We note that we have built flexibility into the strategy where possible to avoid these impacts through an adaptive management approach that allows consideration of the Strategy's uncertainties and assessment of additional information as it becomes available. Under Goals Rule .0275(5)(d), DWQ is required to report to the Commission and provide information to the public in January 2016 and every five years thereafter as necessary to address these uncertainties including those related to technological advancement, scientific understanding, actions chosen by affected parties, resultant loading effects, and loading effects of other regulations. Any additional information or data related to changes in atmospheric deposition will also be included as part of this report.*

Secondary or cross-media impacts may occur. It is difficult at this early date to foresee what sort of wastewater management approach and, in particular, what treatment technologies, may be necessary to achieve the nutrient reductions required by 2036; even more difficult to anticipate and address any indirect impacts of the rule. The revised rule includes adaptive management features in order to avoid unreasonable implementation requirements. For instance, point source dischargers are now given the opportunity to make the case that achieving Stage II reductions is not technically and economically feasible within the target dates. On the other hand, technological innovation or other wastewater treatment or reuse strategies could render achievement of the goals more feasible than may currently appear and may, in turn, reduce secondary or cross-media impacts.

Commenters:

Kevin Davis
Kenneth Keel
Frank Thomas
Mike Gering

Comment ID: **69**

Comment: **Governments should organize to aid implementation of these rules.**

- **An authority with regional oversight of stormwater, sewer, and drinking water is needed to share the Falls Lake clean-up costs across the region so that they don't unfairly burden one municipality to the benefit of others.**
- **The State should examine regional water management districts to better manage situations such as these.**
- **Local governments in the region should form an association to pool the resources needed to achieve pollution reduction requirements.**
- **New York City (NYC) reservoir management is an example of multi-jurisdictional watershed management where watershed protection costs and benefits are borne by both upstream and downstream users. NYC has invested significantly in stormwater controls, land conservation and other BMPs in its water supply reservoirs and benefits from that investment through reduced water treatment costs.**

Response: *We appreciate the desire for regional solutions to help recover this regional amenity. Please see our replies to comments # 10, 60 and 65. Also, provisions allowing municipalities the option to jointly meet loading targets are included in Existing Development and Options for Offsetting Nutrient Load rules (i.e., sections .0278(6) and (.0282(5), respectively). In addition, recent legislation has passed allowing Falls Basin communities to form a coalition to aid coordination and implementation of the Falls Nutrient Strategy. Under this Session Law 2010-155, local governments have authority to form the Falls Lake Watershed Association to jointly implement water quality protection plans for the Falls Lake watershed. Other purposes of the Association are to coordinate funding, monitoring and nutrient trading activities governed under the Falls Lake rules. Where appropriate, the Division will coordinate with the Association to insure that activities to promote water quality improvement are consistent with the Nutrient Strategy and the Division's data collection procedures.*

Regarding the last comment, New York City's commendable reservoir protection efforts have evolved over decades and are model that that has worked with success. As the Falls Nutrient strategy evolves, models such as this will be considered to help clean-up efforts.

Commenters:

Kevin Davis	Bill Bell	Michael Bacon
Jim Wrenn (6/30/10)	Jim Wrenn (6/30/10)	Lawrence Band & Phillip Berke

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Comment ID: **70**

Comment: **Rule implementation costs impose a hardship, particularly to lower income residents:**

- **Lower income residents will face real hardships in paying increased fees required for this clean-up**
- **Poor, more rural communities in the region will have to bear the clean-up costs for the richer residents downstream.**
- **A definitive clean-up cost estimate to be paid by citizens is needed to help them understand whether or not the support these rules.**

Response: *The Hearing Officers are sensitive to the potential costs that these rules may impose on both local governments and citizens, including lower income populations. Adaptive management provisions in the goals rule are included to help insure that clean-up costs are not unnecessarily incurred*

In addition, we believes that implementation costs of the strategy are a high-end estimate. As noted in the Division's Fiscal Analysis report on the nutrient strategy, "creditable reduction practices will likely include more cost-effective measures and management practices resulting from innovation and technological advancement as implementation progresses over the next

twenty five years."

Regarding the last bulleted comment, estimation of costs for Individuals was beyond the scope of the Fiscal Analysis. These estimates would be increasingly speculative based on the compliance needs for individual jurisdictions, property characteristics, and municipality's compliance strategies.

Commenters:

Donald Greeley (8/16/10)
Marion Lamberth
Miguel Rubiera
Thomas Saunders

Comment ID: **81**

Comment: **Concerns of the horse industry need to be heard because, statewide, 65,000 horse owners help generate over $700 million in annual revenue.**

Response: *The Hearing Officers have reviewed and considered the comments and concerns of the horse industry as well as other Falls Lake stakeholders. Their decisions are made with consideration for balancing these concerns with our responsibility to protect, preserve, and enhance the State's water resources, and to meet the requirements of Chapter 143-215.8B requiring that all watershed nutrient sources share in reducing loads in a fair, reasonable, and proportionate manner. Please see also our more specific reply to similar comments in the Agriculture rule section in response to comment #78.*

Commenters:

Lisa Etzel

Comment ID: **84**

Comment: **Questions on the Strategy timing and benefits:**

- **What benefit(s) will we get in return for the money spent on implementation of the Stage 2 rules?**
- **How long will it take for reductions in nutrient levels in the Lake to be seen based on reductions in nutrient loading in the watershed?**

Response: *The Nutrient Strategy is intended to improve water quality throughout the Lake in two Stages; Stage 1 is to be completed by 2021 and will improve water quality throughout the Lake and result in reduced Chl. a levels that meet water quality standards in Lower Falls Lake below State Route 50. Stage 2 requirements will result in load reductions to the lake and water quality improvements so that water quality standards are achieved in Upper Falls Lake by 2041. Additional benefits of water quality improvements are covered under Comment 10.*

Commenters:

Steve Levitas
Valerie Foushee

Comment ID: **91**

Comment: **Legal mandates require a comprehensive clean-up strategy:**

- **Existing laws (i.e., Clean Water Responsibility Act, Clean Water Act, Clean Lakes Bill) require that rules should not be adjusted to accommodate permanent degradation of Falls Lake.**
- **A use-attainability analysis that finds that lower water quality standards upper Falls Lake is needed to accommodate economic or social development in the watershed would ignore those same factors for downstream communities who depend on clean and healthy water from Falls Lake.**
- **EMC statutory mandates dictate that delaying implementation of lake clean-up is unacceptable.**

Response: *The strategy as designed does not allow for permanent degradation; it sets specific dates for compliance or, where technologies may prove unreasonable or cost-ineffective, that compliance timeframes be proposed by affected parties and approved by the Division. The Division believes the nutrient strategy, when implemented, will achieve the necessary nutrient reductions to achieve nutrient related water quality standards throughout the Lake potentially by 2041. Implementation of Stage 1 is scheduled to begin in 2011 while those for Stage 2 will begin with the completion of Stage 1 in 2021.*

The Clean Water Act does allow for pursuit of different water standards for the Lake through proposal of a site-specific standard for the Lake. The nutrient strategy acknowledges this allowance in Sub-Item (5)(c) of the Purpose and Scope Rule (15A NCAC 02B .0275) stating that "Nothing in this strategy shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by the state or federal law, including reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3."

Finally, if alternate water quality standards are ultimately pursued, they must be designed to protect the designated, existing, and downstream uses. Please see also our reply to the next comment.

Commenters:
Kay Bond
Ryke Longest

Comment ID: **105**

Comment: **Is it feasible to continue to maintain all designated uses of Falls Lake? Or, are there alternative water quality standards which would be sufficient to protect the main uses of Falls Lake?**

Response: *The chlorophyll a standard applies to all waters in the state, and is associated with the most basic designated uses allowable – aquatic life propagation and maintenance, secondary recreation, wildlife and agriculture. There are no lesser designated uses that could be entertained under the requirements of the federal Clean Water Act. Potential alternatives under the Act are to pursue a site-specific standard or a variance from the standard for dischargers. It is unclear whether either option could eventually be considered feasible, but it is clear that neither could be entertained until full efforts are made to restore the lake by all sources.*

Commenters:

Valerie Foushee

Comment ID: **110**

Comment: **Reductions in loads from septic systems would be costly and impose unnecessarily complex treatment units with intensive maintenance and sampling requirements. Also, the proposed strategy will require homeowners whose systems fail to pay expensive upgrades for new systems.**

Response: *The proposed rules do not include reduction requirements for septic systems but do identify it as a potential option for local governments to receive credit toward their nutrient reduction objectives under the existing development rule to the extent that loadings from functioning or malfunctioning systems can be accountably quantified. Failing septics, therefore, represent a potential opportunity for local governments to both help meet their pollution reduction requirements for existing development and improve local health and environmental conditions that may be impacted by runoff of undertreated waste.*

Commenters:

Shirley Cates
Valerie Foushee

Comment ID: **140**

Comment: **Alternative Lake clean-up approaches:**

- **Are there ways to modify Falls Lake to improve the quality of water in the Lake and to reduce algae growth? If so, why are such modifications not being considered along with the rules to reduce nutrient loading in the Lake?**
- **Algae in the Lake should be suctioned out and dispersed on uplands as an alternative nutrient control.**
- **Dredging the Lake should be considered an option to deepen it and help its clean-up.**
- **Aeration devices (e.g., fountains) should be used to prevent low oxygen conditions caused by algae blooms.**

Response: *Alternative Lake clean-up measures may in theory have an effect on some of the symptoms of degraded water quality (e.g., low dissolved oxygen) but would not address the ongoing and growing causes of the Lake's impaired water quality conditions. The Division and EPA would not consider the approach substituting receiving water treatments for source control remedies to be sound management. For this strategy, in addition to legal issues, there would be questions regarding their efficacy, costs, ownership, maintenance and long-term impacts. Vertical mixing technology has been suggested in other locations (Neuse River) and has not been used due to such considerations. However, lake amelioration practices may become a more feasible adjunct approach over time depending on progress under the proposed strategy.*

Commenters:

Curt Olson
Mike Shifett
John Konanc

Comment ID: **145**

Comment: **Additional management measures should be considered in this strategy including the prohibition of motor craft, swimming at the Lake and septic systems near the Lake. These areas should be serviced by sewer systems instead of on-site wastewater.**

Response: *The Strategy's nutrient control measures are far reaching and based on researched nutrient control practices that have demonstrated performance and have been employed in other basins of the State and across the nation. The Division believes that these measures, when implemented, will result in the Lake achieving nutrient related water quality standards and that further requirements on New Development are not currently necessary. Additional future measures, however, may be needed if this result does not occur. We do not consider banning motorcraft or swimming as contributing measurable reductions toward addressing the Lake's nutrient problems.*

Commenters:
Carmine Bondatti
Mary Mitchell
Marvin Woll

Comment ID: **150**
Comment: **Nutrient sources covered under the strategy.**

- **All nutrient sources (e.g., Agricultural, Existing and New Development along with Wastewater Treatment) must pay their share to clean-up the Lake.**
- **Support the proposed reporting requirements for other land uses beside agriculture. Also, support the use of scientifically-based tools to produce the reduction estimates.**
- **Under the proposed rules, nutrient reductions from development, septic, or NC DOT would result in nutrient reductions beyond what is being required.**
- **Organic matter left behind during the construction of the Lake contributes to the Lake's degraded water quality and should be considered in developing the nutrient strategy.**

Response: *The Division agrees that, due to the magnitude of the nutrient reduction requirements, the nutrient strategy must address as much of the controllable nutrient sources to the Lake as feasible. Indeed, the nutrient strategy requires reductions from most controllable sources of nutrients to the Lake. This includes the same relative reductions from development and NC DOT that are required from other sources - wastewater, agriculture, and existing development (i.e., 40% reduction in TN and 77% reduction in TP). While the proposed rules do not include reduction requirements for septic systems, they do identify it as a potential option available to local governments to receive credit toward their nutrient reduction objectives under the existing development rule to the extent that loads from septic systems are accountably quantified. Residual organic matter resulting from lake construction is not considered a controllable nutrient source under the strategy.*

Commenters:
Durham Chamber of Commerce
Mike Gering
Anne Coan (8/16/10)

Comment ID: **154**

Comment: **To provide clear, unambiguous enforcement of the proposed rules in Creedmoor, a community bisected by the line dividing upper and lower Falls Lake management areas, change the definition in 15A NCAC 02B.02T6 (11) to read "Upper Falls Watershed" means those portions of the reservoir upstream of State Route 50 except all of the incorporated area within the City of Creedmoor plus its ETJ. Also change 15A NCAC 02B.02T6 (13), to read "Lower Falls Watershed" means those portions of the reservoir downstream of State Route 50 including all of the incorporated area within the City of Creedmoor plus its ETJ.**

Response: *The Hearing Officers considered this request but ultimately did not consider this request supportable . While they are sensitive the concerns, redefining the upper and lower watershed based on local government jurisdictional boundaries and not on hydrology would not be appropriate . There are other local governments, like Wake County and Granville County that have portions of their jurisdictions in both the upper and lower watershed as well and any special treatment could create concerns over equity. They did not consider it necessary to providing clear, unambiguous enforcement that all of Creedmoor be considered within the lower watershed.*

Commenters:

Darryl Moss

Comment ID: **157**

Comment: **Beach Closures.**

- **Beach closures brought on by pollution of Falls Lake have a negative impact on the Lake's uses and status as a recreational destination.**
- **Information from Wake County's recreational water sampling program for bacteria should be reviewed (see** http://portal.ncdenr.org/c/document_library/get_file?uuid=f2e73e10-46d6-49fb-9242-12e1cbfd2bd1&groupId=38364**) by the EMC because the proposed rules, while designed to reduce nitrogen and phosphorus, may also reduce bacteria and other pollutants.**
- **Beach closings are caused by elevated bacteria levels and have nothing to do with algae. Because bacteria from warm blooded animals generally do not persist in the environment, their occurrence is generally related to local sources, e.g. local wildlife or runoff from local streams.**

Response: *Falls Lake beach closures have been based on high bacteria levels and not directly related to high chlorophyll levels caused by excessive nutrients. The Nutrient Strategy's goals, therefore, do not directly address reducing bacteria, the cause of beach closures. Implementation of the strategy, however, may reduce bacteria sources through treatment of stormwater that can include bacteria from wildlife and other sources, failing septic systems, sanitary sewer leaks or spills, and animal waste. This treatment will benefit bacteria levels in local waterways but it is uncertain what influence that may have on beach closures. Finally, an important outcome of the strategy is that the recreational appeal of Falls Lake will improve as clean-up efforts result in decreased nutrient and chlorophyll levels.*

Commenters:

Bill Holman-Bacteria
Theodore Voorhees (8/16/10)
Jessica Robinson (7/1/10)

Comment ID: **159**

Comment: **Please review water and wastewater rates in the Upper Neuse River Basin in your consideration of the proposed Falls Lake Rules (see** http://portal.ncdenr.org/c/document_library/get_file?uuid=171825ec-567b-45b9-b52c-b85520d35091&groupId=38364 **and** http://portal.ncdenr.org/c/document_library/get_file?uuid=5ecd0fe9-60e9-4b76-8936-a04c83857a9d&groupId=38364**)**

Response: *We appreciate the submission of this information to aid in the consideration of the Nutrient Strategy. The findings provided based on the results of using the Water Rates Dashboard developed by the Environmental Finance Center (EFC) at UNCH-CH (www.efc.unc.edu)to estimate sewer and water rates arevery helpful in understanding the relative expenses currently incurred by present day water users. It is interesting to note that water utility rates are lower in Raleigh and Durham than most other areas within NC. Similarly the rates for SGWASA and Hillsborough appear to be on the higher end of the spectrum. This information is helpful in understanding the relative current rates used by local governments and may be a useful tool in the development of future Fiscal Analysis documents.*

Commenters:
Bill Holman-Rates

Comment ID: **160**
Comment: **A septic repair program carried out by the Western Piedmont Council of Government should be considered as a model for any efforts to repair failing septic tanks in Falls Lake watershed (see** http://portal.ncdenr.org/c/document_library/get_file?uuid=fe48ba21-53d3-4406-b5ee-542057d8eb77&groupId=38364 **and** http://portal.ncdenr.org/c/document_library/get_file?uuid=120a6152-b7dc-4887-ab1d-a76d4fe16967&groupId=38364).

Response: *We appreciate the submission of this information to aid in the consideration of the Nutrient Strategy. We note that as described in the documents provided, a septic repair program to assist homeowners obtain funding to repair or replace failing septic systems is something local governments should be encouraged to consider as part of any plan to achieve nutrient loading reductions from existing developed lands. Having successful programs like the repair program carried out by the Western Piedmont Council of Government to model future efforts after will be beneficial to interested local governments.*

Commenters:
Bill Holman-Septics

Comment ID: **201**

Comment: **Alternative strategy construct needed to emphasize implementation in Lower Falls Lake:**

- **An equitable approach to address Falls Reservoir drinking water treatment is to determine the source of nitrogen, phosphorus, and chlorophyll at Raleigh's intake and apportion control costs according to relative contribution. In an elongated reservoir like Falls, the adjacent sources of contaminants have a greater impact on water quality than do remote sources. This is particularly true for reservoirs such as Falls that have constrictions between basins. Thus, even though most of the water in Falls Lake is coming from the upper Falls, the relative impact of phosphorus and nitrogen contributions that affect Raleigh's intake will be larger from Wake County than from the counties in the upper watershed (e.g., Granville, Durham, and Person). Therefore, an approach which focuses on the upper Falls to reduce nitrogen and phosphorus, or chlorophyll a in the lower Falls, particularly near Raleigh's water intake, is not scientifically sound.**
- **DWQ has not demonstrated that the upper Falls Lake has a large impact on the lower portion of the Lake. The numerous causeways and constructions in the upper portion of the Lake form subareas in the Lake. These factors—coupled with the long length of the Lake, low summer flows and shallow depth in the upper portion of the Lake, and the significant influence in the lower lake of nutrient sources near the dam—raise significant questions about the influence of the upper portion of the Lake.**

Response: *The objective of the nutrient strategy is to remove nutrient related water quality impairments throughout Falls Lake. This objective would not be realized under the proposed alternative approach. Equity within the strategy has been addressed through assigning the 40% N and 77% P nutrient reduction requirements equally to both point and non-point sources.*
Regarding the second bullet, the observations from Division modeling and monitoring has shown that Upper Falls Lake nutrient contributions contribute greatly to failed water quality standards in the Upper Lake and much less to the Lower. With the Strategy's objective to achieve standards throughout the Lake, however, greater nutrient reductions are required for the Upper Lake. Here nutrient inputs from the upper tributaries, combined with the commenter's aforementioned description of the Lake's construct, have resulted in more degraded water quality conditions than the lower Lake and, subsequently, more challenging implementation requirements.

Commenters:
Kenneth Reckhow, PhD
Dale Pahl

Comment ID: **202**

Comment: **Adaptive management provisions of the strategy need strengthening:**

- **The Falls Rules do not truly incorporate adaptive management; they simply stage or delay implementation of controls. The Falls Rules should be modified to take a more flexible "adaptive" approach of "learning by doing".**
- **It may be counterproductive not to take the time required to better evaluate modeling results and the nutrient management strategy. The proposed rules should, therefore, provide an ongoing activity to adaptively evaluate and manage Falls Lake. Additional evaluation, in turn, could lead to more reliable model outputs, reduced uncertainty, and enhanced cooperation.**

Response: *If the commeters' definition of adaptive management necessarily includes remodeling, then it would seem to be a fair statement that the rules do not fully mandate adaptive management, but do provide the potential for it. However, we believe that the rules capture the spirit of adaptive management to the greatest degree possible within the mandated framework of rulemaking in North Carolina. They do so based on sound modeling that provides sufficient knowledge for implementation, recognizing its necessity despite unavoidable modeling uncertainties; then by including monitoring, assessment and experimentation during implementation; which supports a process of reconsideration based on implementation, load reductions, better understanding of source contributions and lake response, while ultimately tempering the stringency of potential implementation requirements weighing costs and benefits. While the strategy includes stages of implementation it also calls on the Division to continue annual water quality monitoring for the lake and to report results of monitoring and implementation to the EMC every five years. These five year reports will serve as a "check in" on the implementation and learn from how the lake is responding. It will also allow for further exploration of the various uncertainties identified and allow for the Division to make rule revisions recommendations, if any, to the EMC for consideration.*

Additional reporting requirements have been added to the rule language under what is new Sub-Item (5)(d) calling for, at the request of a person subject to the rules, a report to the EMC in 2025 to address the full effects of Stage I implementation that will address 1. The physical, chemical, and biological conditions of the lake 2. Whether alternative regulatory action would be sufficient to protect existing uses of ht e lake 3. The Impact of management of the Falls Reservoir on water quality in the Upper Lake 4. The feasibility of achieving the Stage II objective 5. The estimated costs and benefits of achieving the Stage II objective. Again, all of these reporting requirements help to evaluate implementation and inform recommendations to adapt the strategy moving forward.

Commenters:
Kenneth Reckhow, PhD
Lawrence Band & Phillip Berke

Comment ID: **247**

Comment: **Land use controls needed to protect Falls Lake:**

- **Increased forest cover provides myriad benefits and should be encouraged to protect watershed functions. For example, a study on the protection of forest cover in watersheds found that for every 10% increase in forest cover, drinking water treatment costs decreased by approximately 20%.**
- **Projected regional growth needs to be well-managed to protect sensitive lands. Otherwise, it will lead to increased impervious surfaces, loss of vegetated cover and soil compaction, weakening the Falls Lake watershed's natural ability to process and filter harmful concentrations of nitrogen and phosphorus.**
- **Impacts from future growth can result in stream bank instability; changes in stream morphology and substrate; increased sediment, nutrients and toxicant loads; degraded benthic habitat, and changes to fish and freshwater mussel communities. To protect water quality and aquatic habitat in developing landscapes, please consider having local governments implement measures described in the NC WRC Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality (2002).**

Response: *We agree that increased forest cover is an excellent tool for protecting and even restoring water quality, and the rules provide opportunities for crediting both forest preservation and reforestation. The Existing Development Stormwater rule identifies reforestation as a load-reducing option for local governments, several cost-shared practices involving reforestation are creditable under the Agriculture rule, and developers can reduce their proposed untreated nutrient loads by maximizing preservation of forest cover under the New Development Stormwater rule, and can offset part of their load reduction needs by funding offsite restoration of forested riparian buffers. In addition, existing vegetated riparian buffers are protected watershed-wide under the existing Neuse Basin nutrient strategy.*

The rules maintain the density-based requirements and ceilings of Water Supply Watershed rules applicable to the nine existing WS-classified watersheds nested within the watershed. We then expand on those requirements using a nutrient load performance approach; we did not consider prescriptive mandating of land use planning to be a plausible option. The New Development stormwater rule includes requirements that are intended to protect receiving streams from the hydrologic impacts associated with development while also meeting nutrient loading rate targets. The rule also encourages use of Low Impact Development as a tool for doing both. Local governments, who are conventionally responsible for making growth management decisions, may choose to take additional measures such as requiring LID. Please see also our more specific replies to similar comments regarding hydrologic impacts in the New Development rule section.

Commenters:
D. Reid Wilson
Shari Bryant
Jim Wrenn (8/16/10)

Comment ID: **255**
Comment: **Please review examples of innovative restoration to both new and existing built environments (see link http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf)**

Response: *We appreciate the submission of this information to aid in the consideration of the Nutrient Strategy.*

Commenters:
Lawrence Band & Phillip Berke

Comment ID: **308**
Comment: **Algal threats to Falls Lake:**

- **Falls Lake is threatened by excessive Chl-a causes conditions (e.g., low DO, reduced light penetration) which damage the biological integrity of a waterbody and harm its ability to support aquatic life. Increased nutrient loads can increase other risks such as: fish kills; loss of recreational uses; altered food web dynamics, weakened fish immune systems; and lowered oxygen levels in neighboring areas.**
- **Increased algal levels not only limit the enjoyment value of the Lake, but have the potential to threaten the health of recreationists and wildlife. Some cyanobacteria can produce powerful poisons for which no known antidote is known. In fact, one of these cyanotoxins, microcystin, has been have been found in Falls Lake in levels high enough to warrant concern (Ehrlich, 2008). These toxins have been linked to tumor promotion and liver damage and can cause illness through simple recreational contact. The Center for Disease Control warns that cyanobacterial harmful algal blooms (CyanoHABs) can make people and their pets sick, that children are at a higher risk of illness, and that care should be taken to avoid close contact with any water experiencing a CyanoHAB**

(CDC).

Response: *The strategy goal is to reduce Chl-a levels so that Falls Lake achieves water quality standards. The 40% N and 77% P nutrient reductions needed to achieve this will lower Chl-a levels and subsequently, reduce the risks of fish kills, low oxygen conditions, and degraded recreational uses. The Division shares the concern that Cyanobacterial blooms are a public health concern in drinking water supply reservoirs and in recreational waters such as Falls Lake. Additional studies of this topic are needed to determine the correlations of nutrient levels and cyanobacterial blooms.*

Commenters:
Alissa Bierma / Larry Baldwin
NC Conservation Network & American Rivers

Comment ID: **358**

Comment: **Scientific studies have not substantiated the claim that Total Organic Carbon (TOC) levels at Raleigh's drinking water intake are related to elevated chlorophyll a. This is not a result of nitrogen or phosphorus emissions from point sources or developed land, or of chlorophyll-a. It is a result of rainfall and the many forested areas that surround the Falls Lake reservoir. These forested areas are on State lands and in buffers and other protected areas, and they will remain a source of TOC despite the levels of chlorophyll-a in the Lake.**

Response: *Information provided by Raleigh for the E.M. Johnson Water Treatment Plant (WTP) has shown increased levels in turbidity and TOC at the water intake in the five-year period from 2004 to 2009 when compared with the 2000 to 2004 time period. From a water quality and treatment perspective, these trends are concerning and suggest changes in sources beyond those of forest lands that surround the Lake. While the exact source(s) of these degrading conditions at the intake may not be known, the result, however, is increased use of chemicals to disinfect and treat water at increased costs. The ongoing lake monitoring conducted by DWQ coupled with the watershed monitoringseveral local governments are planning to conduct as part of their Falls Association may make it possible to continue to evaluate source attribution as additional data becomes available.*

Commenters:
Donald Greeley (8/16/10)

MODELING & DATA

Comment ID: **3**

Comment: **Monitoring data used in Falls Lake model does not represent normal conditions:**

- **Data used to model the Lake and establish nutrient reduction targets should represent normal lake conditions unlike data used in Falls which was collected during periods of drought.**
- **Stage 2 targets must be re-evaluated using a longer period of environmental data to reduce the large uncertainty in predicting lake response to changes in the watershed.**
- **The Falls Lake model was developed in a short time and calibrated over only one year that had extreme weather patterns. Therefore, it may not have resulted in accurate quantitative results or percentage reduction goals.**
- **Watershed modeling relied on insufficient monitoring data;**
- **The model could be improved with better monitoring data.**

Response: *The Lake monitoring data used in the Lake model was collected during 2005, 2006, and 2007. While 2005 and 2007 were dry years 2006 was not and represents normal conditions. The reduction objectives of the strategy are measured against normal lake conditions because the baseline year selected for the strategy is 2006. In addition to this, it should be noted that the Lake monitoring data shows the Lake did not meet the state's Chl-a water quality standards under both drought and normal conditions.*

Any model calibration can be refined with appropriate additional monitoring data. All data used in the Falls nutrient response model were collected according to DWQ SOPs and QA/QC requirements.

Commenters:

Donald Greeley (6/30/10) Michele Woolfolk Deborah Luecken
Kenneth Keel Sandra Wilbur Dale Pahl

Comment ID: **14**

Comment: **Watershed modeling under-represented non-point source pollutant load contributions to Falls Lake.**

Response: *The meaning of this comment is not clear. Monitoring data were used to calibrate the model. The best available nonpoint source-specific data (agriculture, septic systems, land application, etc.) were used as inputs to the model.*

Commenters:

Kenneth Keel

Comment ID: **20**

Comment: **For selection of nutrient reduction targets, the Division of Water Quality should have used a reservoir-based approach where calibration considers the entire Falls reservoir instead of a point-based approach. The reservoir-based approach would better enable the Division to mimic water quality time and space trends lake wide.**

Response: *DWQ did not use a point-based approach. The model was indeed calibrated for the reservoir as a whole, i.e., the goal was to mimic water quality time and space trends lake wide. Model calibration was performed over several months in 2008 and 2009, and was reviewed by the TAC and others. The baseline area was selected in consultation with the TAC well after the calibration was complete, as is appropriate. Various approaches to selection of the baseline area were discussed internally and with the TAC.*

Commenters:
Michele Woolfolk
Sandra Wilbur
Deborah Luecken
Dale Pahl

Comment ID: **21**
Comment: **If a combination of reduction goals is used for any of the upstream monitoring points, none of these other points can meet the water quality target under any scenario except removal of the reservoir.**

Response: *The commenter provides no supporting evidence for this assertion. Removal of the reservoir has not been evaluated. Documentation provided with the comments demonstrates that as the baseline area is moved upstream, greater nutrient reductions are required.*

Commenters:
Michele Woolfolk
Sandra Wilbur

Comment ID: **22**
Comment: **Relocation of compliance point further towards the mid-Lake would result in less restrictive nutrient reduction targets.**

Response: *Agreed. As the baseline area is moved downstream, less reduction in nutrient loading is required to meet water quality standards in the baseline area, but more of the Lake upstream fails to meet standards.*

Commenters:
Michele Woolfolk
Sandra Wilbur
Michael Page

Comment ID: **23**
Comment: **The reduction curves upon which the reduction targets are based contain a mistake and need to be recalculated. Currently, the reduction curve fails to account for reduction in living N and P loads (e.g., like those included in algae) to correspond with modeled reductions in non-living N and P load coming from the watershed. By not accounting for living N and P load reductions, the overall proposed reductions needed at the compliance point are overestimated.**

Response: *No mistake was made. There is no convention for estimating the reductions the commenter describes; therefore, the DWQ modeler used judgment and made a choice. The attached memo from the commenter's consultant includes an analysis in which the modeler made a different choice. It yields similar results to DWQ's, i.e., similar percent exceedances of the chlorophyll a standard. There is uncertainty associated with any model, and DWQ's conservative approach can be considered a margin of safety.*

Commenters:

Theodore Voorhees (8/16/10) Sandra Wilbur Deborah Luecken
Michele Woolfolk Michael Page Frank Thomas

Comment ID: **25**

Comment: **Data is needed to evaluate Lake's response to the Nutrient Strategy:**

- **A rigorous program of sampling, monitoring, and analysis should be completed to help better define the sources of nutrients and better quantify how to achieve the Falls Lake water quality goals.**
- **Regular acquisition and use of aerial imagery, especially that with panchromatic and multispectral bands specifically chosen to characterize water pollution (e.g., sediment plumes), is strongly encouraged for re-evaluation of Stage 2 proposed nitrogen and phosphorus loads reductions. High quality imagery provides spatially continuous data that not even the best chemical or biological water monitoring program can provide. This allows for easier identification of spatial patterns. Also, having a time series of such images creates the ability to assess real water quality impacts on a water body, helping plan for water quality improvements.**

Response: *The proposed Goals Rule includes a commitment from the Division to perform water quality monitoring throughout the Lake and to accept water quality monitoring data provided by other parties that meet the Division standards and quality assurance protocols. As stated in Sub-Item (5)(a) of the Goals Rule, the Division shall use this data to produce load reduction estimates and to perform periodic use support assessments and judge progress on compliance with the reduction goals.*

Regarding the second bullet, the Division agrees that aerial and satellite imagery provide valuable watershed planning tools for assessing terrestrial and aquatic conditions particularly for assessing restoration and stormwater retrofit opportunities While remotely based data such as these are valuable, improved results in water quality monitoring data from the Lake are the measuring stick that will be used to assess progress towards attaining and maintaining nutrient-related water quality standard in the Lake.

Commenters:

Donald Greeley (8/16/10) Deborah Luecken Theodore Voorhees (8/16/10)
Michael Page Mike Gering

Comment ID: **26**

Comment: **Question application of Chlorophyll *a* as a water quality standard for Falls Lake:**

- **The use of Chlorophyll a as pollutant indicator is antiquated and inaccurate.**
- **North Carolina's chlorophyll a numeric water quality standard is arbitrary, inflexible, and need to be re-examined. It cannot take into account individual factors that might be pertinent to determining an appropriate standard for a water body such as surrounding land uses, soil types, water depth, water movement, and the actual uses for various parts of the water body.**
- **The chlorophyll-a standard is based on 10% of the samples violating 40 µg/L, not necessarily on 10% of the samples at a given point violating the standard. Nutrients disperse throughout a body of water, therefore taking a measurement at a single point, does not adequately characterize the water body. This approach is not the "standard" way that water quality is assessed under the Federal Clean Water Act.**
- **North Carolina water quality standards were developed about thirty years ago, and did not consider important factors such as whether the design of constructed lakes and reservoirs impedes or prevents the attainment of water quality standards. In Falls Lake design, factors such as reduced summer stream flow, periodic drought, and the extremely shallow depth in upper portions of Falls Lake contribute to eutrophic conditions in the upper portion of Falls Lake, to increased algal production and density, and to increased chlorophyll-a production in the upper shallow portions of Falls Lake. Indeed, Water quality monitoring reports from the period after Falls Lake was constructed (i.e., 1983-1987) indicate that upper portions of the Falls Lake exceeded the chlorophyll-a standard of 40 µg/L. The lower portion of Falls Lake closest to Raleigh and Wake County did not exceed the chlorophyll-a standard.**
- **Water quality standards for Falls Lake are overly restrictive when compared with other water bodies in North Carolina or those of adjacent states.**

Response:

Our current chlorophyll a standard was developed, in the early to mid 1970s, following algal blooms and fish kills in the Chowan River Estuary and other water bodies that interfered with industrial water supplies, fishing and recreational uses. To that end, the Commission developed the Chlorophyll a standard to maintain and protect the fishing/recreation and water supply uses of the waters of the state. The standard has received EPA approval and, under the CWA, it must protect human health and aquatic life. Consideration of the commenters' aforementioned factors is not allowed when a standard is developed.

Regarding the final bullet, the Chl-a standard is a state water quality standard that applies to all lakes throughout the state, not just Falls Lake.

Commenters:

Patrick Byker	Karen Sindelar (8/16/10)	Deborah Luecken
Donald Greeley (8/16/10)	Dale Pahl	Jack Steer

Comment ID: **27**

Comment: **Recognition that Falls Lake north of I-85 is fundamentally different in its function from Falls Lake at the Raleigh drinking water intake is absent from DWQ's analysis.**

Response: *The entire lake is classified to support aquatic life. Chlorophyll a is used as a measure of aquatic life use support. DWQ recognizes that chlorophyll a levels are higher in the upper parts of the Lake than at the intake.*

Commenters:

Patrick Byker

Comment ID: **31**

Comment: **Septic load contributions are overestimated**

- **Attenuation rates for septic effluent have been based on research from outside of the region and do not represent the unique soils found in the watershed. Limited research done within the watershed indicates that nutrient loading from septic systems may be limited.**
- **Additional studies are needed for septic systems to better quantify their nutrient contributions to Falls Lake. Contributions of septic systems may be overestimated in the model.**
- **On-site wastewater systems (i.e., non-sand filter systems) do not represent a significant source of nutrients to Falls Lake.**

Response: *It is not clear what the commenter means by attenuation rates. Falls Lake watershed soils and associated characteristics were used in the watershed model. The estimated nutrient loads from septic systems were relatively small compared to other watershed sources.*
Additional information is always welcome. The rules do not require any nutrient reductions specifically from septic systems.

Commenters:

Michael Page	Valerie Foushee
Robert Jordan	David Stancil

Comment ID: **52**

Comment: **Water quality conditions in Lake do not warrant actions proposed:**

- **Water quality studies funded by Durham and Raleigh show no deterioration and possible improvement in water quality of upper reservoir but deteriorating conditions in the lower. This suggests that the Lake is stable and there is no urgent need for the actions proposed in the nutrient management strategy.**
- **Water quality in Falls Lake has been stable over the past five years making the rushed approach to this rule-making unwarranted and unwise. Unadjusted water quality data from USGS monitoring stations throughout Falls Lake show flat or improving water quality since 2005. Statistically adjusted data show neither statistically significant improvement nor degradation. In addition, those years included both drought and rapid growth, both factors that stress water quality.**
  Lower Falls Lake near Raleigh's drinking water intake is already in compliance with chlorophyll a standards and should stay in compliance as long as new development and agriculture controls are implemented in the lower Falls Lake.

Response: *While conditions in the Lake may be stable, they continue to be in violation of water quality standards. Falls Lake, in its entirety, is listed on the 2010 EPA 303(d) list of impaired waters for not meeting water quality standards. This means the entire lake is indentified as impaired. Based on the water quality data collected between 2005 and 2007, the % of data that exceeded the Chl-a standard ranged between 50% and 80%. In light of the high frequency of standard violation and given that existing sources of nutrient (like new development) continue to increase in the watershed, a "wait and see" approach would not provide adequate water quality improvement results to remove the Lake's impaired designation.*

Regarding the third bullet, while the Division agrees that Chl. a levels in the Lower Lake are better than those of the Upper Lake, there is no assurance that these conditions will meet standards as regional growth portends increases to both point and non-point source loads in the Basin. The Nutrient Strategy's Stage 1 implementation measures will assure that nutrient related water quality standards are met in the Lower Lake in spite of the forecast development.

Commenters:

Sara Knies
Michael Page
Durham Chamber of Commerce
Donald Greeley (8/16/10)

Comment ID: **55**

Comment: **During Stage 1, new and recently collected data (e.g., land cover, water quality, precipitation, and atmospheric deposition) should be used to re-evaluate the Stage 2 strategy.**

Response: *Additional information is always welcome. The rules provide for consideration of new information and regular status reports.*

Commenters:

Theodore Voorhees (8/16/10)
Kenny Waldroup
Katie Kalb
Deborah Luecken
John Cox

Comment ID: **99**

Comment: **Lake impairment due more to urban sources:**

- **Nutrient loads emanating from urban areas are much greater than those originating in rural areas, as evidenced by the preponderance of impaired streams in the more urban areas of the Falls Lake Watershed.**
- **Developed lands and their associated impervious surfaces are responsible for the majority of nitrogen and phosphorus pollution in Falls Lake.**

Response: *The results from the Falls Lake Watershed model do not agree with the conclusions presented in these comments and no supporting data was provided for consideration. The watershed model was used to determine relative loading contributions from the various sources in the water. According to the model, 29% of the nitrogen loading and 46% of the phosphorus loading from the upper five subwatershed comes from Agriculture while developed lands are estimated to contribute 13% of the nitrogen and 5% of the phosphorus loading. As discussed in the Watershed model report there are uncertainties with every model and the results of the watershed model were not used to determine the load reduction objectives for the strategy. The load reduction objectives are based on the Lake model which uses actual lake water quality data. Under the Falls All controllable sources of nutrient loading to the lake, including both agriculture and developed lands are required to achieve nutrient loading reductions.*

Commenters:

Anne Coan (8/16/10)
Samantha Gasson
Valerie Foushee

Comment ID: **300**

Comment: **Better documentation is needed to improve confidence in the nutrient strategy:**

- **Comments from the Technical Advisory Committee on (TAC) the draft Falls Lake model and report occurred before DWQ had prepared the Stage 2 nutrient reduction curves and limits. Thus the methods used to set Stage 2 reduction requirements did not receive technical peer review from the TAC prior to rulemaking.**
- **The basis behind the upward revision in nutrient reductions from 70% P / 30% N to 77% P / 40% N is not sufficiently explained or justified. This is a substantial jump in amount and complexity of the reduction requirements that must be thoroughly evaluated.**
- **The Falls Lake Nutrient Response Model Final Report (Nov. 30th, 2009) does not provide full documentation of the methods DWQ used to calculate the Stage 2 nutrient reduction curves and limits. Without this documentation, support is lacking to maintain the currently proposed limits for Stage 2.**

Response: *In response to the first bullet, we note that the Stage 2 reduction requirements were set after thorough discussion and consultation with the stakeholder group.*

In response to the second bullet we would like to point out that the basis, methodologies, and calculations to adjust the reduction objectives to capture the redistribution of load reduction needs from uncontrollable sources (like forest land) to controllable sources was discussed in detail at numerous stakeholder meetings.

Regarding the third bullet, we note that we have provided additional information when requested. An explanation of how the lake model was used to evaluate the Stage I reductions is posted to the Falls Lake Stakeholder wiki and can be accessed at the following url: http://fallslakestakeholder.wikispaces.com/file/view/DRAFTStage1ScenarioStakeholders.doc/110772649/DRAFTStage1ScenarioStakeholders.doc

It should also be noted that Tetra Tech, a consultant working for the City of Durham, recently replicated DWQ's Stage 2 nutrient reduction curves. The Tetra Tech memo was provided with the public comments submitted and can be accessed online at the following url: http://portal.ncdenr.org/c/document_library/get_file?folderId=1163089&name=DLFE-20442.pdf

Commenters:
Greg Thorpe, PhD
Deborah Luecken

Comment ID: **307**

Comment: **Support the modeling results upon which the nutrient reductions are based. The model has been well-vetted with the expertise and input of a Technical Advisory Committee.**

Response: *The Division agrees with the general sentiments of this comment.*

Commenters:
Alissa Bierma / Larry Baldwin

Comment ID: **392**

Comment: **State water quality models demonstrate that it may not be possible for the upper portion of Falls Lake to meet nutrient or chlorophyll-a standards. For example, State water quality models demonstrate that even if all cities, towns, and agricultural lands in the upper portion of Falls Lake were reforested and wastewater treatment plants were removed, a large portion of the upper Falls Lake would not be able to comply with nutrient and chlorophyll-a standards.**

Response: *State water quality models demonstrate that the upper lake near I-85 will meet the chlorophyll a standard after implementation of Stage 2 requirements. The scenario was run that the commenter refers to, involving reforestation, and it also demonstrated that the standard would be met under those conditions.*

Commeters:

Dale Pahl

GOALS RULE (.0275)

Comment ID: **5**

Comment: **Strategy re-evaluation is needed prior to Stage II:**

- **Prior to the implementation of Stage 2, the proposed adaptive management approach allows, but currently does not require, an evaluation based on the Lake's response to Stage 1 implementation efforts.**
- **The large disparity between reductions required for Jordan Lake versus those required for Falls Lake is evidence that Falls Lake Stage 2 nutrient reduction requirements need to be reviewed.**
- **The rules need to allow for additional modeling, consideration of the model results, and a review of physical, chemical, and biological conditions of the Lake with a focus on nutrient loading impacts to ensure that the proposed Stage 2 reductions are accurate and reasonably attainable**

Response: *The Hearing Officers have revised the rule at (5)(c) and (d) to allow for a report in 2025 at the request of an interested party. The report would provide an evaluation of the full effects of Stage I and implications for Stage II. While they considered the reporting and adaptive design of the strategy to be sound without this addition, they also saw value in accommodating the interests of others who may seek a fuller evaluation following Stage I. In addition to this, the Commission may also review the magnitude of Stage II requirements if a party submits supplemental modeling data, products and results acceptable to the Commission for this purpose. Supplemental modeling may be proposed at any time but must include a minimum of three years of lake water quality data.*

Commenters:

Kevin Davis	Charles Meeker	Jim Wrenn (6/30/10)
Mike Woodard	J. Russell Allen (8/3/10)	Jim Wrenn (8/16/10)
Theodore Voorhees (7/1/10)	Kenny Waldroup	Michael Bacon
Theodore Voorhees (8/16/10)	Melissa Norton	Richard Hennessey
Thomas Bonfield	Chris Robert	Thomas O'Neal
Donald Greeley (6/30/10)	Drew Cummings	Anne Coan (8/16/10)
Donald Greeley (8/16/10)	Ellen Reckhow	Shari Bryant
John Cox	Michael Page	Valerie Foushee
Michele Woolfolk	Deborah Luecken	David Stancil
Paul Wiebke	Mike Gering	Greg Thorpe, PhD
Sandra Wilbur		

Comment ID: **6**

Comment: **A set of consensus principles developed by local governments in the Falls Lake Watershed should be incorporated into the Division of Water Quality's Falls Lake Water Supply Nutrient Strategy (For a copy of these principles, see** http://portal.ncdenr.org/c/document_library/get_file?uuid=4735c65e-3d44-4368-9656-70c2a91c1e08&groupId=38364**).**

Response: *With revisions made by the Hearing Officers, the vast majority of the local government consensus principles are now reflected in the proposed rules. Those elements of the Consensus Principles that are revised or not incorporated are considered to be inconsistent with the requirements of the federal Clean Water Act as proposed by the local governments. It should also be noted that not all of the local governments have signed on to the consensus principles and that the document is exclusive to local governments and is not necessarily endorsed by other stakeholders in the watershed. The rules reflect the recommendations of a stakeholder committee made up of parties including but not limited to local governments that considered the results of a specific evaluation of this watershed.*

Commenters:

Bill Bell	J. Russell Allen (7/20/10)	Ellen Reckhow
Karen Sindelar (6/30/10)	Kenny Waldroup	Jim Wrenn (8/16/10)
Theodore Voorhees (7/1/10)	Russ Stephenson	Dale Pahl
Donald Greeley (6/30/10)	Floyd McKissick	Mike Gering
Charles Meeker	Drew Cummings	Thomas Esqueda, P.E.

Comment ID: 7

Comment: **Alternative Water Quality Standards should be pursued for Upper Falls Lake:**

- **A use attainability study is needed, as allowed for by the EPA, to determine the feasibility of meeting water quality standards in Falls Lake and whether or not site-specific standards are needed.**
- **A use attainability analysis should be required prior to the implementation of Stage 2 given the limited modeling that supports the Falls rules and the massive implementation costs.**
- **The Commission should consider evaluating the applicability of the chlorophyll a water quality standard in Falls Lake, particularly its upper portion. The City of Durham was established well before the damming of Falls Lake and now is required to spend hundreds of millions of dollars to fix a nutrient problem that State regulators would not acknowledge when the reservoir was proposed. The original Army Corps of Engineers documents published before Falls Lake construction indicated that algae productivity would be an issue for upper Falls Lake.**
- **Recognizing the impossibility of meeting the current chlorophyll a standard in upper portions of Falls Lake, the Commission should take advantage of existing State or federal mechanisms (i.e., Use Attainability Analysis, Site Specific Standard, or modification of compliance determination methods) which authorize flexibility to tailor a solution that protects Falls Lake uses in a reasonable and balanced approach.**

Response: *The option of conducting a use attainability analysis and /or proposing a site-specific standard for the Lake is available to those who are interested and need not be included in the rules since they are already addressed under existing state and federal regulations. Nevertheless, we acknowledge these options in the rule at (5)(h), and the Hearing Officers have incorporated language at (5)(d)(2) based on consensus principles that would call for the Division to evaluate the question of whether such alternative regulatory action is needed as part of a 2025 report to the Commission. Sub-Item (5)(h) of the rule states that "Nothing in this strategy shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by the state or federal law, including reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3."*

Commenters:

Thomas Bonfield	Theodore Voorhees (8/16/10)	Michael Page
Kenneth Reckhow, PhD	Ellen Reckhow	Deborah Luecken
Karen Sindelar (8/16/10)	Dale Pahl	

Comment ID: **15**

Comment: **The water quality model does not show reduction in loads from the land use categories of septic, developed and forest which, combined, account for 43% of delivered N to Falls Lake.**

Response: *The comment seems to confound the functions of the watershed model and the lake response model. The watershed model was used to determine relative loading contributions from major sources in the watershed; it was not used to determine the load reduction objectives for the strategy. The load reduction objectives are based on the Lake model which uses lake water quality data and other data to estimate the magnitude of overall reductions needed regardless of source type.*

The rules are fashioned in such a way to allow flexibility as to how reductions can be achieved so parties can identify the most cost-effective means to meet their required load reduction objectives. Under the existing development rule, local governments have the option of achieving nutrient reduction credit by addressing loading from onsite wastewater treatment systems to the extent that loads from this source can be accountably quantified during implementation. We note too that the load reduction needs from background sources like forest were redistributed to the controllable sources and are reflected in the overall reduction objectives called for under the rules.

Commenters:

Kenneth Keel
Mike Gering

Comment ID: **37**

Comment: **Implementation of the proposed Stage 2 management strategy should occur without stoppage for evaluation of the Lake's response to Stage 1 implementation measures.**

Response: *The Hearing Officers agree with the general sentiments of this comment and retained this design in the rules. They did add the ability post-Stage I for a fuller review of its effectiveness through a report in 2025, and as written, the Goals rule allows for the submittal of additional monitoring data and a supplemental model while implementation is ongoing so any evaluation of the Lakes response to Stage I reductions would not require a "full stop" in implementation of reduction requirements.*

Commenters:

Jim Smith
Adrianna Beech
Chris Giusto
Emily Shaffer
Heidi Giusto
Rob Gelblum
Tabitha Vigliotti
Tara Steinmetz
Tina Motely-Pearson
Wanda Webb
Alissa Beirma
Alissa Bierma / Larry Baldwin
Stephanie Bishop
John Shaw
Karen Rindge (8/13/10)

Comment ID: **41**

Comment: **The timeframe for Falls Lake clean-up should be 25 years or less.**

Response: *Due to the large and unprecedented reduction needs required under this strategy, considering that the overall reduction objectives may go beyond what is considered current limits of technology on several fronts, and taking into account the significant financial investments needed to accomplish needed reductions, the strategy was designed with what we consider the most reasonable timeline for implementation. Sub-Item (4)(b) of the rule states that Stage II requires implementation of additional controls in the Upper Falls Watershed beginning 2021 to achieve nutrient-related water quality standards throughout Falls Reservoir to the maximum extent technically and economically feasible. The individual rules build upon this requirement by requiring local governments to submit plans in Stage II for their point source and existing development reductions that include detailing the reduction they plan to achieve by 2036, and based on their assessments to propose a date by which they plan to achieve the full reduction objective.*

Commenters:

Hope Taylor
Jim Smith
Elliot Baron
Rob Gelblum
Tina Motely-Pearson
Wanda Register
Wanda Webb
Neuse River Foundation Letters (45)
Jessica Robinson (7/1/10)

Comment ID: **42**

Comment: **The nutrient management strategy should support clean up of the entire Lake:**

- **Achievement of chlorophyll a standards in upper Falls Lake of 40 micrograms per liter, as proposed in Stage 2, is important and the clean-up should not stop with the lower lake.**
- **Falls Lake's clean-up needs to occur throughout the Lake so that polluted water in the upper part of the Lake does not flow to the lower lake, threatening the lower Lake's usefulness for recreation and water supply.**

Response: *The Hearing Officers agree with the general concerns raised here. Falls Lake is not meeting the Chl-a water quality standard throughout the Lake. The Stage I reduction objectives are expected to result in the lower lake meeting water quality standards, but the additional reductions called for in Stage II will be needed to restore the upper lake.*

Commenters:

Hope Taylor
Elizabeth Ouzts
Jim Smith
Andrew Campbell
David McCracken
Elizabeth Brunner
Kevin Seymour
Lynn Edmonds
Michael Youth
Alissa Bierma / Larry Baldwin
Stephanie Bishop
Robert Gordon
John Shaw
Jessica Robinson (7/1/10)
Kay Bond
Kari Wouk
Karen Rindge (7/1/10)
Karen Rindge (8/13/10)
NC Conservation Network & American Rivers
Neuse River Foundation Letters (45)
Environment North Carolina Letters (343)
Susan Bowers
Tabitha Vigliotti
Wanda Register
Rob Gelblum

Comment ID: **47**

Comment: **The proposed nutrient management strategy should require implementation as quickly as possible.**

Response: *The time allowed for full implementation of each stage is based on our best professional judgment of what we believe can be reasonably expected given the large reductions needed. The proposed management strategy calls for Stage I and Stage II reduction objectives to be achieved in 10 and 15 years respectively (total of 25 years).*

Commenters:

Hope Taylor	Rob Gelblum	Francis Lamberti
Becky Burmester	Tabitha Vigliotti	Helen Cleereman
Bob/Cristina Balthasar	Neuse River Foundation Letters (45)	Jan Snyder
David McCracken	Amy Poole (7/12/10)	Mary Stascak
Elizabeth Brunner	John Shaw	Pat/Paul Kelly

Comment ID: **56**

Comment:

- **The Stage 1 implementation timeframe should be 7 years (as proposed) or shorter given that cleaner conditions in the lower lake make it easier to achieve the proposed nutrient reduction goals.**
- **Under the Goals Rule ((15A NCAC 2B .0275(4)(a)), the timeline for implementation should be further reduced to a timeframe of four (4) years for Stage I, with full implementation occurring no later than 2015. It should not take 7 or 10 years to undo 4 years of development and return Falls Lake back to its 2006 baseline condition.**

Response: *The Hearing Officers appreciate the desire to see implementation to achieve water quality standards in the lake as fast as possible. The timeframe for achieving stage I objectives and Stage II objectives were chosen after careful consideration of the large reduction needs and associated costs and technical achievability. Given the Stage I reductions from existing development will require significant planning and financial investment to implement potentially thousands of practices, we believe that the Stage I timeframe of ten years is a reasonable.*

Commenters:

Elizabeth Ouzts	Helen Cleereman	Environment North Carolina Letters (343)
Adrianna Beech	Lynn Edmonds	NC Conservation Network & American Rivers
Chris Giusto	Grady McCally	Karen Rindge (7/1/10)
Emily Shaffer	Robert Gordon	Karen Rindge (8/13/10)
Heidi Giusto		Alissa Bierma / Larry Baldwin

Comment ID: **57**

Comment:

- **The Class C 40 microgram/liter Chl. a standard for Falls Lake should not be lowered (i.e., less stringent) because it is already the lowest allowable level.**
- **Upper Fall's Lake is used for fishing, swimming and boating now, therefore, no part of Falls Lake can legally be reclassified to a standard lower than 'fishable and swimmable'.**

Response: *We believe the basic points contained in these comments have merit. However, regulations allow refinements in water quality standards pursuant to G.S. 143-215.3(e), 143-214.3 or 143-214.1 (Reference: 15A NCAC 02B .0226). These modifications must be reviewed and approved by the US EPA as part of the Triennial Review of Water Quality Standards conducted pursuant to 40 CFR 131.10(g). We note that a minimum all waters must be protected for secondary recreation, fishing, wildlife, fish consumption, aquatic life (including propagation, survival and maintenance*

of biological integrity) and agriculture.

Commenters:

Grady McCally
Ryke Longest
NC Conservation Network & American Rivers

Comment ID: **82**

Comment:

- **Construction of Falls Lake resulted in a heterogeneous water body where the physical make-up of upper Falls Lake (i.e., shallow, slow moving water) makes achievement of the chlorophyll a standard extremely difficult. A more reasonable water quality standard is needed for that portion of the Lake.**
- **A more adaptive appropriate approach to managing Falls Lake would come by setting standards that are site-specific to different parts of the Lake. Falls Lake, because of its road crossings, acts more like six lakes than one. Water quality noticeably improves downstream of each of these crossings, reinforcing the concept that each section of the Lake should have distinct site-specific standards.**

Response: *The current chlorophyll-a standard applies to the entire lake and the nutrient reduction strategy must therefore implement controls designed to achieve that standards throughout the lake. Regulations allow refinements in water quality standards pursuant to G.S. 143-215.3(e), 143-214.3 or 143-214.1 (Reference: 15A NCAC 02B .0226). These modifications must be reviewed and approved by the US EPA as part of the Triennial Review of Water Quality Standards conducted pursuant to 40 CFR 131.10(g).*

Commenters:

Steve Levitas
Dale Pahl
Durham Chamber of Commerce
Michael Bacon
Deborah Luecken
Michael Page

Comment ID: **83**

Comment: **Upper Lake uses are different from those of the lower Lake so these areas should have different use classifications and water quality standards.**

Response: *The statement is not clear as to its intent. At a minimum all waters must protect for secondary recreation, fishing, wildlife, fish consumption, aquatic life (including propagation, survival and maintenance of biological integrity) and agriculture.*

Commenters:

Steve Levitas
Deborah Luecken

Comment ID: **85**

Comment: **Even with the implementation of these rules, are water quality standards in the Lake achievable given the 30-year growth projections for the region?**

Response: *Based on the modeling performed, we believe that the current strategy will result in achieving water quality standards in the lake even if the watershed sees additional growth in the future ; the strategy includes nutrient reduction requirements from future development based on the overall reduction needs of 40% nitrogen and 77% phosphorus by calling on new development to meet nutrient export targets of 2.2 lbs/ac/yr nitrogen and 0.33 lbs/ac/yr phosphorus.*

Commenters:

Sal Corbo

Comment ID: **95**

Comment: **The EMC's duty to protect and restore North Carolina waters would be abandoned if it acts to lower water quality standards in upper Falls Lake.**

Response: *The Hearing officers agree with the general sentiments of this comment. The strategy does not propose to lower water quality standards in any portion of Falls Lake. The goals rule does contain a re-evaluation provision that would provide and assessment, after the full implementation of Stage I, of any alternative regulatory action that could be taken and still protect the existing uses in the Upper Reservoir as required by the Clean Water Act. However, this re-evaluation does not necessarily mean standards for the lake can or will be changed.*

Commenters:
Kay Bond

Comment ID: **100**

Comment: **Nutrient loading rate targets should be used instead of the proposed percentage-based nutrient reduction targets. In rural areas, nutrient loads are low already. Achieving the percentage based reductions in rural areas, therefore, will not significantly reduce nutrients. In heavily developed areas with high loading rates, however, nutrient loads will remain high comparative to rural areas after achieving the percentage-based nutrient reductions.**

Response: *The strategy's approach of the same relative reductions across all sources is considered appropriate because it requires every source to reduce it loads by an amount that is considered fair, reasonable, and proportionate to the amount of nutrient loading they are estimated to contribute. We disagree with the statement that the rule design does not acknowledge different loading rates between urban and rural. The rule, in requiring the same relative reduction from both counties and cities provides what we consider a fairer solution than the alternative recommended in the comment of imposing one uniform loading rate value on all developed lands, since the latter does not recognize the inherent differences in loading rates between land use types and would result in grossly unfair requirements for cities and little to no reduction need for counties. We note that the rule does not require reductions from undeveloped lands, thus only the developed portions of counties or cities will be included in reduction target calculations.*

We also note that the trading provisions of the strategy allow for seeking the most cost-effective reduction solutions. This would allow for parties to take advantage of the phenomenon that the comment appears to recognize, which is that more cost-effective reductions can be obtained from a given treatment practice applied to higher input loading rates.

Commenters:
Valerie Foushee

Comment ID: **107**

Comment: **Ongoing monitoring and evaluation of water quality in both the Lake and its contributing tributaries are recommended to document the effects of Stage 1.**

Response: *We agree with this recommendation; in fact, DWQ has developed a Falls Lake Sampling plan and begun collecting monthly water quality samples in May 2010 from ten stations throughout the lake. Results of the ongoing monitoring will be posted to the DWQ Intensive Survey Unit website on an annual basis. The current monitoring plan is also available on the DWQ website at the following url:*
http://portal.ncdenr.org/c/document_library/get_file?uuid=9b6861b4-9f7a-409f-82ef-dec3603c6d57&groupId=38364
It also appears that lake and tributary data will be collected by a recently formed "Association" made up of the local governments in the Falls watershed. The data collected by this association can be used by the Division if collected in accordance with DWQ's quality assurance protocols and methods. We hope such data will be made available to DWQ for consideration when evaluating the full effects of Stage I implementation. Please see our response to comment #172 also.

Commenters:
Valerie Foushee

Comment ID: **109**
Comment: **To meet the proposed N and P reductions, loading rates from developed lands in Orange County would need to be reduced to 0.78 lbs/ac/yr TN and 0.07 lbs/ac/yr TP. These loading rates are essentially the same as background rates.**

Response: *We believe the assumptions used as the basis of this comment were inaccurate and feel the conclusions reached are incorrect. While staff were not provided any data that supports the assumptions used, we have reviewed the explanation submitted and concluded that Orange county used a flawed approach to estimate nutrient loads from existing developed lands that likely resulted in underestimating the loading rates from existing development. It is extremely unlikely that reductions from existing developed lands would require achieving the loading rates of 0 .78lbs/ac/yr TN and 0.07 lbs/ac/yr TP.*

Commenters:
Valerie Foushee

Comment ID: **115**
Comment:

- **Duration of Stage 1 should be 10 years and not shortened. It is essential that Stage 1 reductions be in effect for a period sufficiently long to determine its effectiveness prior to implementation of Stage 2. Also, local governments will need time to build capacity and raise the funding needed to retrofit existing development and achieve the mandated Stage 1 reductions. Currently, no local government in the watershed has the resources to implement a formal retrofit program. Finally, the watershed planning needed to identify retrofit opportunities will take time to complete.**
- **For evaluation of Falls Lake response to Stage 1, it may take more than 7 years to see improvement. The Lake will likely to respond slowly to changes in inputs because Lake sediment is a significant source of internal loading. Exchange between Lake sediments and the water column will keep nutrients in the system for many years after inputs have been reduced.**
-

Response: *We agree with the general sentiments of this comment. The rules call for full implementation of Stage I controls within 10 years. We agree with the concern that more than 7 years will be needed to gauge the effects of Stage I. Following from this concern, the Hearing Officers added provisions that any re-evaluation will be performed no sooner than 2025 in order to assess the full effects of Stag I implementation. We cannot support the concept of postponing Stage II while such an assessment is conducted, so the revisions call for this review of Stage I's effects concurrently with implementation of Stage II.*

Commenters:

Theodore Voorhees (8/16/10)
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)
Steven Troxler
Kelly Ibrahim / Julie Henshaw
Anne Coan (8/16/10)
Shari Bryant
Valerie Foushee

Comment ID: **117**

Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(a)), the rules need to provide additional details about when and where the water quality sampling will take place. In particular, the frequency of testing. The rules also need to spell out the standard and quality assurance protocols that will be used to approve monitoring data that is provided by other parties.**

Response: *We did not consider rule text to be the most appropriate place to satisfy the recommendation to provide a narrative explanation of the requirements for acceptable water quality sampling and supplemental models that would be acceptable to the Division. Instead the rule directs the reader to the Division website for details on the criteria that must be met. The current monitoring plan for Falls Lake is available on the DWQ website at the following url: http://portal.ncdenr.org/c/document_library/get_file?uuid=9b6861b4-9f7a-409f-82ef-dec3603c6d57&groupId=38364.*

The rules also point the reader to the DWQ website for quality assurance protocols that must be met in order for supplemental water quality data to be accepted by the Division. These criteria can be found at the following url: http://portal.ncdenr.org/web/wq/ps/mtu/assessment

Commenters:

J. Russell Allen (7/20/10)

Comment ID: **118**

Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(a)(vii), the department needs to define what will constitute sufficient time when determining whether a section of the Lake has met nutrient related water quality standards and is capable of maintaining those levels. The rules should also require notification of an affected party when it is determined that water quality standards have been met and additional load reduction requirements will not be necessary.**

Response: *The Hearing Officers agreed with this concern, and the rule language has been modified to define sufficient time as "at least two consecutive use support assessments demonstrating compliance with nutrient-related water quality standards in a given segment of the Falls Reservoir". The language in this section makes it elective to notify affected parties should it be determined that no additional load reductions requirements are necessary, leaving latitude for consideration of other factors in such a decision.*

Commenters:

J. Russell Allen (7/20/10)

Comment ID: **119**

Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(a)(viii)), the rules need to say how long water quality standards must be in non-attainment before the division would consider re-modeling the reservoir. Additional detail is also needed to define how the scale of impairment, recency, and magnitude of load reduction will be measured and weighed against one another when calculating the likelihood of attaining water quality standards. The current language is ambiguous.**

Response: *The Language in Sub-Item (5)(a)(viii) has been removed from this rule.*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **120**

Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(i)), in order to ensure that parties can adequately prepare for future modeling of the basin, the rules need to detail what Division requirements for data quality and model support or design will be imposed for proposed monitoring study plans brought by a party.**

Response: *Please see our response to comment #117 above.*

Commenters:
J. Russell Allen (7/20/10)
Jim Wrenn (8/16/10)

Comment ID: **121**

Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(ii)), the phrase "unless a party can provide information to demonstrate that a shorter time span is sufficient" needs to be removed from the rules. Modeling supported by data of less than three years is insufficient to provide an accurate picture of present or future nutrient loading within the basin.**

Response: *While we agree that it is unlikely that anything less than three years of data would be sufficient to provide an accurate picture of present or future nutrient loading within the basin we feel it is equally important to allow an interested party the opportunity to make their case to the contrary and provide any data they may have to support their argument. DWQ still has the right to require nothing less than three years of additional data.*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **122**

Comment: **"Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(iii)), the rules need to establish the standard that will be used to judge supplemental modeling data provided by a party for review of Stage 2 requirements. These standards should be the same as the**

standards requested in (5)(b)(i). Detailing these standards allow for all parties to plan for future modeling and know the standards that modeling must meet for division approval."

Response: *The Hearing Officers have revised the construction of this section (and its location) in a manner that may satisfy the concern driving this comment. However, our intent is, and the text reflects that Commission approval of remodeling would be based on the work's compliance with all of the preceding elements called for in that section, not solely on the quality assurance requirements of a study plan and modeling framework. To provide a measure of predictability and consistency, we note that the Division's data and modeling quality assurance protocols are posted on the Modeling and TMDL Unit's web pages at http://portal.ncdenr.org/web/wq/ps/mtu.*

Commenters:
J. Russell Allen (7/20/10)
Jim Wrenn (8/16/10)

Comment ID: **123**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(v)), the phrase "shall establish" should be changed to may establish so that the commission is allowed deference to take into account different relevant considerations when deciding whether or not to change nutrient goals if revised modeling data is submitted.**

Response: *The Language in Sub-Item (5)(b)(v) has been removed from this rule.*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **142**
Comment: **Much of the water quality impairment in the lower lake is a result of development in Wake County and the rules should be structured to reflect that reality.**

Response: *We do not know that this is the case and no data were provided to support the contention. We do believe based on the lake modeling that water quality in the lower lake is affected by nutrient loading from both the upper and lower watershed. In fact, water quality modeling shows that the standards cannot be met in the lower lake with reductions from the lower watershed alone. The strategy is designed to call for the necessary reductions from the respective parts of the watershed. We note that the Stage I load reduction objectives for existing development apply to both the upper and lower watershed, which includes Wake County. The requirements for new development to achieve reductions from pre-development conditions apply watershed-wide as well.*

Commenters:
Michael Bacon

Comment ID: **172**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(a)), the rule needs to recognize recently passed legislation authorizing the Falls Lake Watershed Association to be established for the purpose of operating a sampling and modeling program in lieu of DWQ. When DWQ approves a modeling and sampling plan and the information is gathered in accordance with the plan, the information should be treated as if it were gathered by DWQ. Accordingly, this section should be amended to that information gathered by the Falls Lake Watershed Association is deemed to be information gathered by DWQ for purposes of this section of the rule.**

Response: *The Division is aware of the recent legislation authorizing the Falls Lake Watershed Association, and we support the intent of this comment. . We believe that the text as written satisfies the commenter's concern, since the rule language in Sub-Item (5)(a) already directs the Division to "accept reservoir water quality monitoring data provided by other parties that meet Division standards and quality assurance protocols"*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **173**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)), the term "party" in this part of the rule is confusing. It is not a defined term, although it traditionally has been used to denote a participant in a legal proceeding. A different term should be used, for example "person" which is broadly defined in General Statute 143-212(4).**

Response: *The Hearing Officers agree with this comment and have revised the language in this Sub-Item to refer to "a person".*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **174**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(i)), this provision should be amended to direct that DWQ become involved in the new modeling if the monitoring results show a significant variance from the monitoring information used for the model that was the basis of the Stage 2 goals. This assures that DWQ review and reruns of the model will occur before the results are submitted to the Commission. One possible revision is adding a sentence at the end of the paragraph stating: "When monitoring results from the approved study plan vary substantially from the monitoring results upon which the Commission relied for establishing the Stage II goals, the Division shall participate in the runs of the model so that its comments and suggestions can be provided to the Commission at the same time the person conducting the model development makes its submission to the Commission."**

Response: *We support the concept of the Division participating in re-modeling efforts. The Hearing Officers revised this section of the rule such that we believe the language captures this concern; Sub-Item (5)(g)(iii) requires the Division to assure that any supplemental modeling is conducted in accordance with the quality assurance requirements of the Division.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **175**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(iii)), this provision should mandate a review by the Commission if supplemental modeling data are submitted consistent with the applicable requirements. This change will help conform the proposed rules to the Consensus Principles.**

Response: *The use of " may" instead of "shall" simply recognizes that the commission is allowed deference to take into account different relevant considerations when deciding whether or not to change nutrient goals if revised modeling data is submitted*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **176**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(iv)), the provision refers to the "goal" of the Falls nutrient strategy. There are multiple goals which are generally time-sequential. The provision should explicitly state which goal(s) is intended. The City believes the appropriate goals are the Stage 2 goals.**

Response: *We feel that the language in this section of the rule is sufficiently clear. While there are two nutrient reduction objectives divided among two stages of implementation, there is only one goal of the Falls nutrient management strategy. The goal is to achieve water quality standards throughout the lake. This is stated in Item (3) of the rule.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **177**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(b)(vii)), this provision should mandate new rulemaking if the model is shown to have such fundamental flaws. This change will conform the proposed rules to the Consensus Principles when the newer modeling shows an overestimation of the magnitude of the required remedies.**

Response: *The Language in Sub-Item (5)(b)(vii) has been removed from this rule. However, the rule revisions clearly state that "The Commission shall review Stage II requirements if a party submits supplemental modeling data, products and results acceptable to the Commission for this purpose". It further states that "where supplemental modeling is accepted by the Commission and results indicate allowable loads of nitrogen and phosphorus to Falls Reservoir from Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek that are substantially different those identified in Item (3), then the Commission may initiate rulemaking to establish those allowable loads as the revised objective of Stage II relative to their associated baselines".*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **178**
Comment:

- **Under the Strategy's Goals section (15A NCAC 2B .0275(5)(d)), this provision should be changed so that the report from DWQ to the Commission occurs in conjunction with the Neuse Basin Plan cycle. The date for the first submission should be January 2018 rather than January 2016 since the same, or similar information, will have to be included in the Basin Plan.**
- **Under the Stage 1 goals and rule provisions, there should be slight to no improvements in water quality by January 2016 so reporting should be delayed until 2018. The point source discharge changes begin that year, so no new benefits should be shown from that sector. The existing development rules will not have required retrofits of nonpoint**

source discharges by then, especially if the baseline data is gathered two years in advance of the Basin plan update as is typical. Moreover, the agricultural BMPs will have made modest gains at best by then.

Response: *We retain the 2016 reporting date for the following reason. Under the current basin plan schedule the next basin plans are scheduled to be submitted to the EMC in 2012 and 2017. Submitting the first five year Falls Lake report in 2016 will allow the information from this report to be captured in the 2017 Neuse Basin plan. While we agree that the full effects of Stage I will not be expressed by 2016, we recognize that there are elements of the five year report that provide useful information in addition to any new water quality data collected.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County
NC Conservation Network & American Rivers
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **200**

Comment: **The primary goal of the proposed strategy is to protect aquatic life and recreational uses of Falls Reservoir. Concerns about water quality at the drinking water intake are associated with treatment costs for extra filtration and odor problems, not with Safe Drinking Water Act compliance with drinking water standards.**

Response: *We agree with the general sentiments of this comment. The goal of the strategy is to achieve water quality standards throughout the lake to protect the existing uses as required under the Clean Water Act. And, as stated by the City of Raleigh during the rulemaking process, Raleigh's drinking water is safe and in compliance with SDWA requirements. We do, however, recognize the concerns expressed by local governments about the increased water treatment costs they face if water quality does not improve and the secondary financial benefits of the avoiding these increase costs through improved water quality in the lake.*

Commenters:

Kenneth Reckhow, PhD
Dale Pahl

Comment ID: **203**

Comment: **A use attainability analysis should be required prior to the implementation of Stage II given the limited modeling that supports the Falls rules and the massive implementation costs.**

Response: *The option of petitioning for a use attainability analysis remains available to any affected party at any time. Requiring a use attainability analysis prior to implementation of Stage II however seems unwarranted; no supportable justification to do so has been provided and it is unclear to us how any current use could be removed from the lake. As Stated in Sub-Item (5)(h) of the goals rule "Nothing in this strategy shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by state or federal law, including reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3"*

Commenters:

Kenneth Reckhow, PhD

Comment ID: **209**

Comment: **Urge rewording these Rules wherever necessary and appropriate to clarify that meeting water quality standards, not any particular percentage reduction goals, is the objective.**

Response: *We appreciate this comment to make the rules easier to understand. The Hearing Officers have made several changes to clarify the distinction between the goal (achieving water quality standards throughout the lake) and objectives (achieving specific percent reductions in nutrient loading) of the Falls lake nutrient management strategy.*

Commenters:
Jim Wrenn (8/16/10)

Comment ID: **211**

Comment: **Under the Goals Rule (15A NCAC 2B .0275(3)), strike the word "throughout" and replace with "in". Also, reword section to specify the objective of Stage 2 is to achieve and maintain standards "in both the Lower Falls Reservoir and the Upper Falls Reservoir. Modeling performed by the Division indicates that it will be necessary to reduce average annual mass loads of nitrogen and phosphorus delivered from the sources named in Item (6)(c)(i) in the Upper Falls Watershed by forty and seventy-seven percent, respectively, from a baseline of 2006 to achieve the Stage 2 objective. As a result, the allowable loads to Falls Reservoir from the Upper Falls Watershed (defined below to include the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek) shall be 658,000 pounds of nitrogen per year and 35,000 pounds of phosphorus per year."**

Response: *The Hearing officers do not agree with the first recommendation and do not feel the recommended rewording is necessary or justified. The current language is appropriate based on the premise that the chl-a standard applies throughout the Falls Reservoir and likewise the overall goal of the Falls Nutrient Strategy is to achieve nutrient related water quality standards throughout the entire lake.*

The Hearing Officers have revised wording to capture the intent behind the second comment.

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **212**

Comment: **Under the Goals Rule (15A NCAC 2B .0275(4)(b)), request language be adjusted so that it reads that Stage 2 implementation "achieve nutrient-related water quality standards in the Upper Falls Watershed in accordance with timeframes described in individual rules;"**

Response: *The Hearing Officers agree with the recommendation to replace "percent reduction objective" with "nutrient-related water quality standards" ; the rule text in Sub-Item (4)(b) has been revised to read "Achieve nutrient-related water quality standards throughout Falls Reservoir to the maximum extent technically and economically feasible by 2041." However, as noted in our reply to comment #211 above, we retain "throughout" in the rule text because the overall goal of the strategy, which culminates with full implementation of Stage II, is to achieve water quality standards throughout the Lake and not only in some certain location.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **213**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(a)), request less specific Falls Lake Strategy water quality milestones. In particular, suggest rewording this Section to read that the Division shall utilize support determinations to judge progress "in attaining the goals of the Falls nutrient strategy, including progress in attaining nutrient related water quality standards in the Lower Falls Reservoir by 2021 and progress in attaining nutrient related water quality standards in the Upper Falls Reservoir by 2041."**

Response: *The Hearing Officers retained the incremental water quality milestones and added one for 2016. They felt that milestones are an effective and practical tool for guiding and measuring progress toward the ultimate goal of achieving standards throughout and allow for the measurement of incremental achievements which is important in implementing an adaptive management approach to the nutrient reduction strategy.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **214**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(a)), remove the proposed section (viii) authorizing EMC action given achievement of the nutrient reductions but non-attainment of water quality standards.**

Response: *The Language in Sub-Item (5)(b)(viii) was intended as advisory and illustrative of that aspect of adaptive management. However, because it has generated sufficient controversy, the Hearing Officers removed it from the rule.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **215**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)), adjust language to allow any person to develop nutrient response modeling results and submit them for Commission approval. Also, require the Commission to consider whether such modeling results justify revisions to Stage 2 requirements.**

Response: *The Hearing Officers agree with this recommendation and have revised the language in this Sub-Item to refer to "a person". The language in the rule provides the Commission with the option to consider revisions to the requirements of Stage II based on the results of such modeling. Staff believe the EMC should be allowed deference to take into account different relevant considerations when deciding whether or not to change nutrient goals if revised modeling data is submitted*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **216**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(i)), strike language requiring DWQ approval of a proposed water quality monitoring plan and modeling framework. Any person wishing to perform such work that meets DWQ requirements should only need to "seek" approval. In turn, language is needed requiring DWQ to review and respond to such a modeling proposal within a reasonable timeframe (e.g., 180 days) or have it deemed approved.**

Response: *We feel it is important and necessary to preserve the quality of any supplemental data or modeling work by requiring Division approval of any such work. Simply seeking approval but not actually requiring approval is too low a standard for such an important process. We agree it is reasonable to set a timeframe for the approval process and have revised the rule text calling on the Division to respond to any submittal within 180 days.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County
Jim Wrenn (8/16/10)

Comment ID: **217**
Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(iii)), strike section language allowing the Commission to review Stage 2 requirements if a party submits data and results acceptable to the Commission for this purpose. Commission authority in this provision is covered under our proposed revisions to section .0275(5)(d).**

Response: *This language was retained (but moved) consistent with other changes made to these sections by the Hearing Officers.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **218**
Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(iv)), suggest rewording to allow modeling to demonstrate need for load reductions in areas beyond the upper tributaries (i.e., Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek). Also, add language requiring that DWQ "participate in any supplemental modeling to assure that the supplemental modeling is conducted in accordance with the quality assurance requirements of the Division."**

Response: *The text allows for future supplemental models to include areas beyond the upper five subwatersheds of the Falls watershed. We did not revise the text also because it is critical that the allowable loads from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek be a part of any future model outputs given the existing reduction objectives and allowable allocations for Stage II are based on the modeling of loading and needed reductions from these watersheds. Regarding the last comment, as described in reply to a previous comment we believe the language as constructed requires DWQ's participation.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **219**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(v)), strike wording specific to upper tributaries and allow acceptable modeling to indicate loads of nitrogen and phosphorus delivered to Falls Lake are different than those required by these rules. Commission authority in this provision is covered under our proposed revisions to section .0275(5)(d). Also, where no supplemental modeling data is provided, strike the language requiring the Commission to "continue to implement the Falls nutrient strategy as established in this Rule."**

Response: *We could not support the first recommendation for reasons described in reply to the preceding comment. The Hearing Officers deleted the language as requested in the second recommendation.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **220**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(vi)), strike the language in this sub-item requiring the Division work with affected parties to revise the accounting and implementation if it is found that allowable loadings to Falls Lake are greater than those proposed in Goals item (3). Also, strike language requiring that DWQ revise allocations.**

Response: *The Language in Sub-Item (5)(b(vi) has been removed from the rule.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **221**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(b)(vii)), strike the language in this sub-item allowing the Commission to pursue further rulemaking if it is found that allowable loading to Falls Lake are lower than those proposed in Goals item (3). Commission authority in this provision is covered under our proposed revisions to section .0275(5)(d).**

Response: *The Language in Sub-Item (5)(b(vii) has been (moved and) broadened, but not eliminated, in association with other changes to these sections of the rule.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **222**

Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(d)), adjust language to better detail the uncertainties associated with this strategy, including cost, feasibility, benefits, potential changes in technology, and our scientific understanding of nutrient management.**

Response: *See response to comment #223*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **223**
Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(d)), add sub-items detailing DWQ's reporting requirements on the Strategy including: physical, chemical, and biological conditions of the Upper Falls Reservoir; nutrient loading impacts; existing uses in the Upper Falls Reservoir and whether alternative water quality standards are sufficient to protect those existing uses; the impact of the management of the Falls Reservoir on water quality in the Upper Falls Reservoir; the methods used to establish compliance with nutrient-related water quality standards in Falls Reservoir and alternative methods used by other states; the feasibility of achieving the Stage II objective; and the projected costs and benefits of achieving the Stage II objective.**

Response: *The suggested revisions have been made in large part. Additional reporting requirements have been added to the rule language under what is new Sub-Item (5)(d) calling for, at the request of a person subject to the rules, a report to the EMC in 2025 to address the full effects of Stage I implementation. This report would address 1. The physical, chemical, and biological conditions of the lake 2. Whether alternative regulatory action would be sufficient to protect existing uses of the lake 3. The Impact of management of the Falls Reservoir on water quality in the Upper Lake 4. The feasibility of achieving the Stage II objective 5. The estimated costs and benefits of achieving the Stage II objective.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **224**
Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(d)(xii), strike language that DWQ include recommendations, if any, on rule revisions as part of its 5-year reporting to the Commission on the status and progress of the Fall's Strategy. This provision is covered under our proposed revisions to same section (i.e., .0275(5)(d)).**

Response: *The Language in Sub-Item (5)(d)(xii) has been moved as part of a reorganization of this section.*

Commenters:

Comment ID: **225**
Comment: **Under the Goals Rule Adaptive Management Section (15A NCAC 2B .0275(5)(d)), DWQ's reporting requirements on the Fall's Lake nutrient strategy status and progress should include consideration of information provided by local governments and interested persons on sub-items listed under (5)(d). Also, DWQ should be required to recommend to the Commission any modifications to the Strategy deemed necessary by DWQ. The Commission, in turn, should accept comment from the public on those reports and consider whether revisions to Stage 2 requirements need to be undertaken through rulemaking.**

Response: *We agree that DWQ should include consideration of information provided by local governments and other interested persons. Language has been added to the new Sub-Item (5)(f) stating that "In developing the reports required under Sub-Items (5)(b) and (d) of This Rule, the Division shall consult with and consider information submitted by local governments and other persons with an interest in the Reservoir". The other recommendations in the comment are captured in revised construction of this section.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **235**
Comment:

- **The Commission and the DWQ should be required to re-evaluate the Lake whether or not a party submits a scientifically sound supplemental model. Due to the costs of these rules - particularly Stage 2, DWQ should be evaluating data and improving its models continuously using data and other information gathered during Stage 1.**
- **DWQ needs to commit to re-modeling of the Lake using more complete and location-relevant process descriptions and input data. This modeling will more thoroughly characterize the Lake's response to nutrient controls and help better target those reductions most effective for achieving the standards.**

Response: *The Hearing Officers appreciate the magnitude of the reductions and associated costs of implementing these rules but believe that including such mandatory remodeling requirements is both unnecessary and unwarranted. The rules have been revised to include provisions allowing for an interested person to submit a supplemental model in addition to allowing an affected party to request a re-evaluation of the full effects of Stage I and the implications for Stage II in the 2025 report to the EMC. In both cases the Division shall make recommendations, if any, on rule revisions based on the information provided by the supplemental model or any of the five year reports.*

Commenters:
Deborah Luecken
Anne Coan (8/16/10)

Comment ID: **238**
Comment: **Attainment of water quality standards in the upper end of the Lake is not considered in these rules, effectively reclassifying it to a lower designated use. This de facto reclassification does not follow the procedures for a use attainability analysis and, therefore, violates the Clean Water Act. Further, there is no set date for which all of Falls Lake is brought into compliance. The Commission cannot approve rules with an indefinite state of non-attainment.**

Response: *We do not agree with these comments. The chl-a standard applies to the entire lake and the overall objective of the Falls Nutrient Management Strategy is to achieve nutrient-related water quality standards throughout the entire reservoir. This includes both the Upper and Lower Reservoir. The modeling used to develop the reduction curve for the strategy used an area below I-85 as the basis of the curve because this proved to be the most appropriate area to use as the basis for a lake wide reduction strategy. There are uncertainties in the model and assumptions in the nutrient loading inputs that allow for the reasonable assumption that the area above I-85 sees water quality improvement as a result of implementing the nutrient reduction strategy. Furthermore, the adaptive management element of the strategy allows for revisiting the reduction called for in the event that it becomes clear additional measures are needed to achieve standards throughout the lake.*

We also do not agree with the suggestion that rules allow for an indefinite state of standard non-attainment. Sub-Item (4)(b) of the rule states that Stage II requires implementation of additional controls in the Upper Falls Watershed beginning 2021 to achieve nutrient-related water quality standards throughout Falls Reservoir to the maximum extent technically and economically feasible. The individual rules build upon this requirement by requiring local governments to submit plans in Stage II for their point source and existing development reductions that include detailing how much reduction they plan to achieve by 2036 and based on their assessments to propose a date by which they plan to achieve the full reduction objective.

Commenters:
Ryke Longest

Comment ID: **258**
Comment: **Stage 1 should require reductions in phosphorus that go beyond 2006 levels. Postponing stricter reductions to Stage 2 only makes them tougher to achieve.**

Response: *Due to the large and unprecedented reduction needs required under this strategy, considering the significant financial investments that will be needed to achieve these reductions just to get back to baseline levels, and the time needed to identify reduction opportunities, the strategy was designed with what we consider the most reasonable timeline for implementation. We do not view getting back to baseline in Stage I as a postponement of reductions since the reductions needed to do so are significant and represent the first step in a continuing process to achieve the overall 77% reduction in Phosphorus loading.*

Commenters:
Karen Rindge (8/13/10)

Comment ID: **260**
Comment: **Federal water quality standards and requirements will likely get tougher, not easier, if re-evaluation of Falls Lake occurs prior to Stage 2.**

Response: *The Hearing Officers agree with the general sentiments of this comment, although such changes would likely be the case irrespective of when they occur.*

Commenters:
Karen Rindge (8/13/10)

Comment ID: **277**
Comment: **Local governments should not be burdened by the costs of writing, implementing, and enforcing ordinances under these rules. If they are charged with enacting these ordinances, those local governments listed in 15A NCAC 2B .0275(7)(a) and (b) should be reviewed to remove the requirements for local governments that do not have this capability already.**

Response: *The General Assembly has identified the protection of water resources, in general, and water supply watersheds and impaired drinking water supplies, in particular, as important legislative goals and policies. The Legislature has delegated authority to the EMC to develop rules for the protection and preservation of the State's water resources, including drinking water supplies and water supply watersheds.*
The Water Supply Watershed Protection Act (WSWPA), G.S 143-214.5, requires local governments to adopt ordinances implementing local watershed protection programs that meet or exceed State minimum requirements that would be established by the EMC. In doing so, the Legislature, and not the EMC, has placed responsibility on local governments to fund and administer watershed protection programs. The Jordan Reservoir has been determined to be impaired pursuant to the Clean Water Act and is considered appropriate for designation as a critical water supply watershed pursuant to the WSWPA. The WSWPA authorizes the EMC to adopt management requirements for critical water supply watersheds that are more stringent than the minimum statewide requirements.

In 2005, in S.L. 2005-190, the GA explicitly recognized excess nutrients as a major source of impairment in drinking water supplies and identified the need to protect impaired drinking water supplies in accordance with N.C. Gen. Stat. Ch. 143, Art 21, Part 1 and S.L. 1997-458, the Clean Water Responsibility Act. The GA specifically directed the EMC to develop strategies to prevent excess nutrient loading in impaired drinking water reservoirs, such as the Falls Reservoir, and to promulgate rules implementing such strategies to restore and protect water quality in these reservoirs.

Local governments retain the authority and responsibility to develop and administer nutrient reduction programs that are consistent with these rules. The rules do not require that local governments acquire property. Instead, they provide flexibility to local governments to develop programs that are best suited to specific local needs and problems.

Commenters:
Jim Wrenn (8/16/10)
Anne Coan (8/16/10)

Comment ID: **288**
Comment: **Under the Strategy's Goals section (15A NCAC 2B .0275(7)), include a sub-item detailing that the State shall implement applicable requirements to the exclusion of local governments for Forestry and Agriculture activities as well as activities in areas under the following jurisdiction(s): State, Federal, local units, multiple jurisdictions, and areas without local government jurisdiction.**

Response: *We feel that such language is unnecessary in the goals rule because applicability of the requirements called for is clearly defined in the text of the individual rules.*

Commenters:
Steven Troxler
Kelly Ibrahim / Julie Henshaw

Comment ID: **289**
Comment: **Recommend a mean summer chlorophyll a lower limit of no less than 15 micrograms/l for the middle section of the reservoir at NC 50. Ch-a levels lower than 15 can compromise bass fisheries in Falls Lake.**

Response: *The Hearing Officers appreciate this recommendation and are sensitive to the needs of the aquatic life present in Falls lake, however, revising the Chl-a standard applicable to Falls Lake requires additional regulatory action that goes beyond the scope of this rule making process.*

Commenters:
Shari Bryant

Comment ID: **296**
Comment: **Under the Goals rule (15A NCAC 2B .0275(3)), the term "nutrient-related water quality standards" is not defined and should be removed and replaced with "chlorophyll a standard". This comment is supported by the fact that the strategy was developed based on attaining and maintaining chlorophyll a standards.**

Response: *While we agree the strategy is based on attaining and maintaining the chlorophyll a standard, the use of the term "nutrient-related water quality standards" is better suited for the purposes of this rule because there are other nutrient related water quality standards (like turbidity and pH) that may need to be addressed in Falls Lake in the future. Addressing these other standards, if needed would likely be done through the existing strategy and use of this terminology in the current rule text allows more flexibility for amending the strategy in the future.*

Commenters:
Greg Thorpe, PhD

Comment ID: **297**
Comment: **Under the Goals rule (15A NCAC 2B .0275(3)), rule language should be amended to clarify whether NC DOT facilities in the lower watershed are subject to regulation. If they are, the rules should be further amended to allow NC DOT to claim Stage 2 compliance credit for load reduction measures implemented in the lower Falls watershed.**

Response: *NCDOT facilities in the entire watershed are subject to regulation as described in rule .0281. Individual requirements and applicability are detailed in the individual rules and not within the goals rule ; addressing individual requirements within the goals rule is not appropriate. However, as stated in the goals rule in Sub-Item (4)(b), Stage II requires implementation of additional controls in the Upper Falls Watershed beginning no later than 2021 to achieve nutrient related water quality standards throughout Falls Reservoir. Since reduction in nutrient loading to the Upper Reservoir can only be achieved through controls implemented in the Upper Reservoir, we would consider it inconsistent and inappropriate to amend the rules to allow NC DOT to claim Stage II compliance credit for load reduction measures implemented in the Lower watershed.*

Commenters:
Greg Thorpe, PhD

Comment ID: **298**
Comment: **The large disparity between reductions required for Jordan Lake versus those required for Falls Lake is evidence that Falls Lake Stage 2 nutrient reduction requirements need to be reviewed.**

Response: *We believe that there are differences between Falls and Jordan Lakes, including lake depth, width, and residence time that play a large role in the difference in how the lakes respond to nutrient inputs in addition to differences in how modeling results were applied. We do not believe that the differences in reduction need alone warrant a reevaluation. Nevertheless, The Goals Rule (.0275) has been revised to include a re-evaluation, at the request of an affected party, in 2025 to evaluate the effects of full implementation of Stage I and implications for Stage II that will include an evaluation of whether alternative regulatory action would be sufficient to protect the lakes existing uses as required under the Clean Water Act. These alternative regulatory actions may include surface water reclassification, alternative water quality standards, and variances.*

Commenters:
Greg Thorpe, PhD

Comment ID: **301**
Comment: **An evaluation is needed of Falls Lake Stage 2 to optimize nutrient reduction requirements with respect to cost and environmental benefits. This should be overseen by a Scientific Advisory Board.**

Response: *The Goals Rule (.0275) has been revised to include a re-evaluation, at the request of an affected party, in 2025 to evaluate the effects of full implementation of Stage I and implication for Stage II that will include an evaluation of whether alternative regulatory action would be sufficient to protect the lakes existing uses as required under the Clean Water Act. These alternative regulatory actions to be evaluated may include surface water reclassification, alternative water quality standards, and variances. The Division would expect to conduct an open and full stakeholder process, including participation from experts in the field as has occurred here. We would not consider it appropriate or responsible to relinquish control of what is ultimately a regulatory management decision-making process to a group of expert researchers, nor would we expect such a group to want such responsibility.*

Commenters:
Valerie Foushee
Greg Thorpe, PhD

Comment ID: **310**
Comment: **Under the Goals Rule ((15A NCAC 2B .0275(4)(a)), the timeline for implementation should be further reduced to a timeframe of four (4) years for Stage I, with full implementation occurring no later than 2015. It should not take 7 or 10 years to undo 4 years of development and return Falls Lake back to its 2006 baseline condition.**

Response: *Due to the large and unprecedented reduction needs required under this strategy and considering the significant financial investments that will be needed to achieve these reductions, and the time needed to identify reduction opportunities, the strategy was designed with what we consider the most reasonable timeline for implementation.*

Commenters:
Alissa Bierma / Larry Baldwin

Comment ID: **311**
Comment: **Under the Goals Rule (15A NCAC 2B .0275), adequate flexibility has been written into the rule to allow new information to be reviewed, supplemental models considered, allocations revised and standards re-assessed. Further modification of this Rule to add flexibility is not necessary.**

Response: *We agree that the proposed rule do provide adequate flexibility to allow new information including supplemental monitoring and modeling information to be submitted for review and consideration. Any changes to the relevant sections of the rules were performed simply to clarify the process for providing additional information and how it will be considered and detailing an approach that will ensure continued implementation while supplemental data is reviewed and reported to the EMC.*

Commenters:
NC Conservation Network & American Rivers
Alissa Bierma / Larry Baldwin

Comment ID: **313**
Comment: **Under the Goals Rule, additional nutrient reduction progress milestones are needed. Suggestions include: Reduce annual mass loads of nitrogen by 5% and phosphorus by 10% no later than 2015, in order to meet water quality standards downstream of the Highway 98 crossing of Falls Lake; Reduce annual mass loads of nitrogen by 10% and phosphorus by 20% no later than 2018, in order to meet water quality standards throughout Lower Falls Reservoir; Reduce annual mass loads of nitrogen by 15% and phosphorus by 35% no later than 2021, in order to meet water quality standards in the Lick Creek arm of Falls Reservoir; Reduce annual mass loads of nitrogen by 25% and phosphorus by 50% no later than 2024, in order to meet water quality standards in the Ledge and Little Lick Creek arms of the Lake; Reduce annual mass loads of nitrogen by 35% and phosphorus by 65% no later than 2027, in order to meet water quality standards at points downstream of the Interstate 85 crossing of Falls Reservoir; Reduce annual mass loads of nitrogen by 40% and phosphorus by 77% no later than 2030, in order to meet water quality standards throughout Falls Reservoir.**

Response: *The additional milestone of attaining nutrient-related water quality standards downstream of the Highway 98 crossing of the Falls Reservoir no later than 2015 has been added to the rules along with the milestones already included in the rule text. Staff feel that the current timeline assigned to the milestones in the rules is appropriate given the large reduction needs required and the high costs associated. It will take time to identify and implement the necessary reduction practices and the amount of time provided is the most reasonable timeframe based on our assessment of the strategy and current available technology. We do not include incremental percent reduction objectives with any milestones given in part that we do not have a scientific basis for prescribing a certain percent reduction objective outside of the Stage I and Stage II objectives described in rule.*

Commenters:
Alissa Bierma / Larry Baldwin

Comment ID: **320**
Comment: **Nutrient reduction requirements should be completed by 2028, 8 years sooner than currently proposed. The current timeline in the proposed rules will not achieve 2036 compliance with water quality standards in the Upper Lake because reductions need to be made several years before water quality targets are to be met to allow for lag time needed to clean out nutrients already cycling in the water column. Also, an implementation schedule that accomplishes significant earlier reductions in nutrients will make later years of the strategy less burdensome. In particular, implementation of Existing Development and Wastewater nutrient reductions should happen sooner (see http://portal.ncdenr.org/c/document_library/get_file?uuid=b51e3764-ea2b-48d1-8a7b-42df7ec2720e&groupId=38364).**

Response: *Due to the large and unprecedented reduction needs required under this strategy and considering the overall reduction objectives go beyond what is considered current limits of technology in addition to the significant financial investments that will be needed to achieve these reductions, and the time needed to identify reduction opportunities, the strategy was designed with what we consider the most reasonable timeline for implementation. The duration of Stage II allows time for advances in technology and the ability to spread the costs out over time. The rule calls for standards to be met throughout the lake by 2041 in recognition of the lag time phenomenon described by the commenter.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **321**

Comment: **Except for point sources, the proposed rules unnecessarily gather several management measures on either side of the Stage I/ Stage II divide. In fact, there is no clear distinction in the on-the-ground practices needed to address existing development or agriculture; compliance for those sources of pollution is best advanced through an ongoing cycle of five-year plans. The process needed to upgrade point sources, however, make this source unique and one that should be addressed in two stages. Therefore, stage 2 point source requirements should be scheduled for 2028, giving time to examine Lake monitoring data to decide whether or not they are necessary and allowing local governments to build funding strategies into their capital improvement programs.**

Response: *We appreciate the observations regarding continuous implementation by most sources. Nevertheless as stated elsewhere we believe the Stage I benchmarks for Agriculture and Existing Development will likely prove demanding under the timeframes proposed. We believe the annual reports required of both provide for continuous engagement by the Division with them. The Hearing Officers did not shorten the point source Stage II horizon. Please see also response to comment #320.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **322**

Comment: **Recommend that the EMC finalize the remodeling provisions of .0275 as proposed, with one addition: a requirement that any remodeling submitted for consideration must identify (and ground in the data) a target curve for reductions that covers all segments of the Lake, to ground the EMC's further analysis. Based on the current lake model, it is impossible to draw a precise target curve, and also impossible to conclude how steep the target curve will be between I-85 and the upper corners of the Lake. Additional monitoring and remodeling could help greatly to refine this.**

Response: *While we agree that additional monitoring and modeling could serve to refine the target curve for reductions the rule as written already calls for any supplemental modeling to "estimate a range of combinations of nitrogen and phosphorus percentage load reductions needed to meet the goal of the Falls nutrient Strategy along with the associated allowable loads from the watersheds of Ellerbe Creek, Eno River, Little River, Flat River, and Knap of Reeds Creek". So any future modeling must include the upper Lake and provide reduction curves related to achieving water quality standards throughout the lake.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **325**

Comment: **Expand the use of "milestone" assessments as a way to help measure incremental achievements and judge progress in the Lake's clean-up. In addition, existing milestones should be met earlier. Suggested milestones include: attainment of nutrient-related water quality standards downstream of the Highway 98 crossing of Falls Reservoir no later than 2015; attainment of nutrient-related water quality standards throughout Lower Falls Reservoir no later than 2018; attainment of nutrient- related water quality standards in the Lick Creek arm of Falls Reservoir and points downstream no later than 2023; attainment of nutrient-related water quality standards in the Ledge and Little Lick Creek arms of Falls Reservoir and points downstream no later than 2028. attainment of nutrient-related water quality standards at points downstream of the Interstate 85 crossing of Falls Reservoir no later than 2033; attainment of nutrient-related water quality standards throughout Falls Reservoir no later than 2038.**

Response: *The additional milestone of attaining nutrient related water quality standards downstream of the Highway 98 crossing of the Falls Reservoir no later than 2015 has been added to the rules along with the milestones already included in the rule text. Staff feel that the current timeline assigned to the milestones in the rules is appropriate given the large reduction needs required and the associated expense. It will take time to identify and implement the necessary reduction practices and the amount of time provided is the most reasonable timeframe based on our assessment of the strategy.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **327**

Comment: **A weakness of allowing a blanket reassessment prior to Stage 2 is that it isn't likely to provide much basis for determining the feasibility of specific management measures. Without that, it is difficult to evaluate the feasibility of the nutrient management strategy as a whole. If one management measure proves infeasible, others should still proceed in order to reduce achievable pollution levels.**

Response: *Staff agrees with the general sentiments of this comment. The rule as revised by the Hearing Officers does not call for a reevaluation prior to Stage II. It does however allow for a reevaluation, at the request of an affected party, to evaluate the effects of full implementation of Stage I and the implication for Stage II. Such a re-evaluation would be included in a 2025 report to the EMC, a full four years after full implementation of the Stage I controls measures. We agree with the concern over a potential uniform determination on proceeding with Stage II. We believe that the ability of individual sources or measures to implement or be implemented further should become apparent as the strategy proceeds, and sound decisions would be made in 2025.*

Commenters:

Comment ID: **328**

Comment: **Reevaluation prior to required Stage 2 reductions is inconsistent with the State and federal laws, essentially committing the EMC to conduct a Use Attainability Analysis well before a time that is legally appropriate. Under the CWA, the EMC has a responsibility to see that TMDLs are developed for the Lake and its impaired tributaries before proceeding with a use attainability analysis. Because the State has not yet conducted, and EPA has not approved, a full TMDL for Falls Lake or any of the tributaries, it is too early for the EMC to commit to a Use Attainability Analysis.**

Response: *We agree with the general sentiments of this comment. While requested by some parties, neither the public comment version nor the Hearing Officers revisions to the rules call for a reevaluation prior to Stage II. The Hearing Officers' revisions do allow for a reevaluation, at the request of an affected party, to evaluate the effects of full implementation of Stage I and the implications for Stage II. Such a reevaluation would be included in a 2025 report to the EMC four years after completion of Stage I.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **349**
Comment: **North Carolina should reexamine its methods for reservoir compliance determination. As long as quality and consistency are assured, states have flexibility in the methods by which water quality compliance is determined. Notably if North Carolina followed Alabama's method of determining reservoir compliance (i.e., sampling at the water intake and at a mid-lake point), it is possible that no modeling of Falls Lake would have been conducted since Raleigh's intake point has always been in compliance and the points mid-lake are generally in compliance with the 40 micrograms/liter standard.**

Response: *We find the factual representations made in this comment to be misleadingly general; states have flexibility in* certain aspects *of use support determination, including in aggregating uniform results. However, state water quality standards apply to all parts of water bodies – we do not have discretion or flexibility about that. Regarding the leading recommendation to reexamine our methods for compliance determination, we do periodically refine those methods. However, we would not entertain the example given in the comment; we would not consider that approach consistent with the concept of recovering full designated uses throughout the reservoir, which we interpret as our charge under state and federal law.*

Commenters:
Karen Sindelar (8/16/10)

Comment ID: **382**
Comment: **Conservative assumptions (e.g., static Lake benthic and algae tributary load contributions, negligible lower watershed nutrient contributions, biased model focus on the upper 5 tributaries, and using a single point to determine the strategy) have compounded to create inflated targets. With these cumulative assumptions, it appears DWQ entered the development of this strategy with the intent to create the largest possible reduction target for the upper Falls communities.**

Response: *It was DWQ's intent to establish reduction targets that recover full designated uses throughout the reservoir, which we interpret as our charge under state and federal law. It was not DWQ's intent to create the largest possible reduction target for the upper Falls communities as concluded by the commenter. We note that cell choices existed that would have invoked more stringent requirements than those proposed in the strategy. The model was developed in cooperation with the Falls Technical Advisory Committee, and its design and execution were favorably reviewed by the TAC and third party contractors.. While our application of the model results did involve selection of a single cell of the model as the basis for the reduction goals, the Division chose that cell with the TAC's and stakeholders' participation, after due deliberation, as a fair estimator of overall lake reduction needs.*

We do not believe the model is biased. Inputs and parameters used in the modeling are contained in the model report,
http://portal.ncdenr.org/c/document_library/get_file?uuid=33debbba-5160-4928-9570-5549653

9f667&groupId=38364. See especially Section II-2, Model Configuration, pages 12-24. Table II-8 on pages 23 and 24 contains a comparison of parameters used for the Falls model with those used for other waterbodies.

Commenters:

Theodore Voorhees (8/16/10)

DEFINITIONS (.0277)

No comments were received on this rule.

NEW DEVELOPMENT STORMWATER RULE (.0277)

Comment ID: **35**

Comment: **New Development needs improved volume control measures:**

- **Technologies designed to keep stormwater on-site, like low impact development, should be recognized and encouraged in the rules.**
- **New development rules should require sites to mimic the pre-development natural hydrologic patterns for runoff from large storm events.**
- **Proposed new development rules fail to address stormwater runoff volume. These rules need to be restructured to treat volume from increased runoff rather than imposing pollutant removal standards.**
- **To help achieve hydrologic matching, new development should be required to contain 90% of the runoff resulting from the two-year, 24 hour reference storm.**
- **Under the Strategy's New Development section (15A NCAC 2B .0277(3)(a)(v)), where the language reads "At a minimum, the new development shall not result in a net increase in peak flow leaving the site from pre-development conditions for the one-year, 24-hour storm event" it is recommended to add "or the 2-year, 24-hour storm."**

Response: *We appreciate and share the concern underlying these comments that the rule as proposed may not be wholly adequate to protect receiving streams from flow-related destabilization, which would likely produce increased nutrient loading downstream in addition to habitat degradation from scouring and sedimentation. Staff considered the concept of requiring some form of volumetric hydrologic matching such as the Low Impact Development approach. The rulemaking timeframes did not allow a sufficiently rigorous evaluation to support either the concerns stated here or specific volumetric recommendations. The rule as designed sets release rate limitations for the water quality event, that is runoff from an inch of rainfall, and the 1-year, 24-hour design storm, which is a larger, infrequent storm yielding approximately 3 inches of rainfall and generally associated with a "bankfull" stream condition. The rule does not call for total volume loss matching for any size event, but does encourage voluntary use of LID designs. We feel that a more stringent volumetric requirement would require fuller substantiation of the limitations of the proposed standards (which are in place in the Neuse, Tar-Pamlico, and Jordan Lake watersheds), and a more robust development process for design of such standards. In addition, the Division would need to concurrently develop a compliance tool designed to credit a fuller range of volume-reducing site practices than available tools allow.*

Commenters:

J. Russell Allen (8/3/10)
Jim Smith
Andrew Campbell
Helen Cleereman
Lynn Edmonds
Mary Stascak
Tabitha Vigliotti
Tina Motely-Pearson
Wanda Register
Wanda Webb
Neuse River Foundation Letters (45)
Alissa Bierma / Larry Baldwin
Stephanie Bishop
Emily Shaffer
John Shaw
Jessica Robinson (7/1/10)
Karen Rindge (7/1/10)
Karen Rindge (8/13/10)
Hunter Freeman
NC Conservation Network & American Rivers

Comment ID: **386**

Comment: **For Low impact development (LID) to be a feasible part of this strategy, credit is needed for options that help mimic pre-development hydrology. Currently, North Carolina's treatment approach to stormwater runoff relies exclusively on engineered controls, particularly in areas of the State with poorly drained soils like Falls Lake. While, LID does not focus on treatment of stormwater, it does reduce the volume of runoff leaving a site to mimic predevelopment hydrologic conditions. Other states credit the disconnection of**

impervious surfaces in their nutrient reduction strategies (e.g., Maryland, Virginia). Falls Lake communities will need this type of credit to integrate LID into their stormwater treatment programs.

Response: *We believe this comment identifies a legitimate concern. Our reply to the preceding comment acknowledges the need expressed here.*

Commenters:

Theodore Voorhees (8/16/10)

Comment ID: **36**

Comment: **Quick Implementation needed for New Development Rules:**

- **Do not delay in the implementation of the proposed new development rules. Delay will increase the overall costs to clean-up the Lake.**
- **Redevelopment rules should remain in the new development section of the rules rather than being moved to the existing development section. Requirements for redevelopment should, like the requirements for new development, become effective immediately upon adoption of the rules**
- **City of Durham has passed an ordinance that meets the currently proposed new development water quality standards. These are the most stringent in the State and demonstrate their commitment to clean-up Falls Lake.**

Response: *The current proposed New Development Stormwater Rules calls for local governments to implement their local stormwater programs within 18 months of the effective date of the rule. This is likely the fastest the requirements can be implemented given the time necessary for local governments to develop and adopt local ordinances. An 18 month implementation timeframe represents a much quicker implementation than under past strategies. This quicker implementation is a result of the Divisions ability to save time by utilizing existing model program and ordinance language from previous strategies and adjust them for the Falls Lake strategy requirements.*

Commenters:

Jim Smith
Andrew Campbell
Emily Shaffer
Paul Wiebke
Tina Motely-Pearson
Wanda Register
J. Russell Allen (7/20/10)
John Cox
Wanda Webb
Kari Wouk
Theodore Voorhees (8/16/10)

Comment ID: **64**

Comment: **Redevelopment projects need flexible pollution reduction requirements:**

- **Downtown areas need flexible pollutant reduction requirements for redevelopment (e.g., increased off-site buy down options) due to their complexity and inherent restrictions. This will also help support smart growth initiatives without increasing impervious surfaces.**
- **Include redevelopment activities in the rules for Existing Development, not New Development. This provides flexibility for local governments to adapt redevelopment opportunities to local conditions.**
- **Under the Strategy's New Development rule (15A NCAC 2B .0277(3)(a), agree with sections (v) and (vi) of this rule. It is appropriate that a proposed redevelopment that does not increase the net built-upon area would only have to achieve the level of stormwater control reached by the previous development.**
- **For the purposes of load reduction accounting, load reductions from redevelopment should count toward Existing Development goals.**
- **Downtown development should be addressed more as a system to lower on-site requirements to treat runoff.**

Response: *These comments capture several interrelated concerns regarding redevelopment. The rule provides greater flexibility for redevelopment in general than for greenfield development, recognizing in part the challenges that may be associated with obtaining redevelopment, For the general case, the rule requires treatment where impervious area increases but includes an optional site-specific treatment standard that still meets strategy reduction goals. It then leaves the decision to local governments as to whether to require treatment where impervious area does not increase. For the downtown case, the rule requires less onsite treatment while still requiring full load reductions through the combination of onsite and offsite measures, recognizing the likelihood of space constraints and the concern for incompatibility of extensive onsite treatment with the downtown landscape. We believe this strikes a reasonable balance, setting minimum onsite requirements, consistent strategy-based overall requirements, and the flexibility for local governments to require more if they choose to do so as a tool for obtaining load reductions creditable toward their existing development requirements.*

Recognizing that redevelopment occurs on existing developed land cover that contributes loads to the total that local governments will be tasked with reducing under the existing development rule, local governments would be able to credit load reductions via redevelopment that is required by this new development rule toward their existing development rule requirements. They could also elect to require additional load reductions or require load reductions where there is no net increase in impervious area, and credit those gains toward their existing development requirements as well. We believe that these actions and options are available as the rules are designed and do not require redevelopment requirements to be placed in the existing development rule. The existing development rule recognizes local government options regarding redevelopment.

Regarding the last comment, we believe that the flexibility shown downtown development and the offsite option in the rule provide the maximum reasonable opportunity within these rulemaking timeframes to entertain downtowns as a system.

Commenters:

Melissa Norton
Durham Chamber of Commerce
Michael Page
Suzanne Harris (8/13/10)
NC Conservation Network & American Rivers
Theodore Voorhees (8/16/10)
Shari Bryant

Comment ID: **94**

Comment: **Developers are likely to receive unfair treatment under these rules:**

- **Under the proposed rules, new development, unlike other nutrient sources, has no phased strategy but needs to meet Stage 2 water quality criteria immediately upon adoption of the nutrient strategy.**
- **New development, in addition to paying for the costs to reduce their controllable nutrient loads, will likely also have a financial burden for reducing controllable load from other sectors (e.g., existing development, point sources) as local governments look for additional funding resources to finance implementation of these rules.**
- **Upon Phase I completion, if a re-evaluation occurs, there are concerns that additional requirements will be put on new development. This will restrict new development even further even though they are required to meet 100% of their nutrient targets from the beginning whereas the other sources (e.g., point sources, agriculture, and existing development) have 25-30 years.**

Response: *This rule follows the same basic design as in previous nutrient strategies, and while we recognize and appreciate that the magnitude of reduction needs in this watershed exceeds previous ones, We consider the burdens proposed for development to be fair, reasonable and proportionate. The ephemeral nature of development activity necessitates, in our opinion, requirements for achieving the full percentage reductions at the time. No alternative concepts were offered during the rulemaking process.*

The concern for potential additional reduction requirements is understandable, however in our opinion it is unlikely that local governments would require greater magnitudes of reduction than the percentage goals necessitate given the stringency of those requirements. It is possible for a local government to go beyond the requirements of this rule by imposing the full requirements on all *types of development, including all redevelopment, but we leave that decision to local governments. It would be difficult to speculate on the potential for additional requirements on new development beyond Phase I, but we would expect any such consideration at that time to receive a full collaborative evaluation by all parties.*

Commenters:
Suzanne Harris (7/1/10)
Suzanne Harris (8/13/10)

Comment ID: **125**
Comment: **Under the Strategy's New Development section (15A NCAC 2B .0277(3)(a)), support the selection of "Land Disturbance Threshold Option B" (i.e., 5,000 sq. ft).**

Response: *The Hearing Officers found it reasonable, given the unparalleled reduction needs in the Falls watershed, to lower the disturbance threshold from one-half for commercial/industrial and one acre for single family and duplex residential to one-quarter acre for both to capture the many small-scale development activities that occur. They considered it too fine a scale to set that threshold at 5,000 square feet, or slightly over one-tenth acre, weighing the number of people who would be affected against the cumulative gain from doing so.*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)
NC Conservation Network & American Rivers
Alissa Bierma / Larry Baldwin

Comment ID: **126**
Comment: **Under the Strategy's New Development section (15A NCAC 2B .0277(3)(a)(ii)), support more stringent standard of "Onsite Treatment Option B (60% N, 60% P)" for the management measures on new development".**

Response: *We and the Hearing Officers accepted arguments made by local governments that these greater onsite requirements would be prohibitive based on application of the almost-completed new development accounting tool for the Jordan Lake watershed to a range of development scenarios, recognizing that we expect to propose use of this tool for the same purpose in the Falls watershed,.*

Commenters:
J. Russell Allen (7/20/10)
Michael Page
Jim Wrenn (8/16/10)

Comment ID: **378**
Comment: **Language in (3)(a)(ii) Option A needs adjustment to allow for achievable onsite treatment**

thresholds for Nitrogen. Using the beta version of the Jordan New Development Accounting Tool, a 50% reduction in nitrogen loading rate is not possible using two BMPs in series regardless of development intensity. A 60% reduction in phosphorous loading rate is possible using two BMPs. Based on these findings, to achieve DWQ's stated treatment intent of using two BMPs, substitute language is needed to reflect the "needed reduction" rather than reduction in load. For example, 12 pounds per acre per year must be brought down to 2.2 pounds per acre per year, so the needed reduction is 12 – 2.2 = 9.8 pounds per acre per year. In this example, it is possible for two BMPs in series to achieve 50% of the needed reduction onsite (i.e. 50% of 9.8 pounds per acre per year = 4.9 pounds per acre per year). Option A, therefore, needs rewording to read "Before using an offsite option, a development shall implement structural BMPs that achieve 50 percent or more of the needed reduction in nitrogen, and 60 percent of the needed reduction in phosphorous".

Response: *Based on these concerns and recognition of some level of uncertainty associated with application of this new accounting tool until it is finalized and greater experience is gained with it, the Hearing Officers agreed to reduce the onsite treatment requirements to 50% of the needed load reduction for both nitrogen and phosphorus for the general development case. Please see also our reply to the preceding comment.*

Commenters:
Theodore Voorhees (8/16/10)

Comment ID: **377**

Comment: **Under the Strategy's New Development section (15A NCAC 2B .0277(3)(a)), support having an alternative Option where commercial, industrial, institutional, and multi-family have land disturbance threshold of 12,000 square feet. Single Family/Duplex land disturbance should remain at 1 acre or more, as stated in the current Option A. Option B will substantially increase demands on existing development review staff and potentially make infill sites undevelopable, triggering a "takings." Further, because of their small size these projects have a small cumulative impact on Falls Lake water quality.**

Response: *The Hearing Officers agreed to a uniform disturbance threshold of one-quarter acre, or slightly less than 11,000 square feet. Please see our replies to Comments #125 and #126 above for additional information..*

Commenters:
Theodore Voorhees (8/16/10)

Comment ID: **206**

Comment: **Due to Falls Lake's limited geographic area, nutrient offset credits will be difficult and expensive to purchase for new development unable to meet 100% of its reductions on-site.**

Response: *We believe that offsite options are likely to become more expensive over time, and developers will increasingly need to weigh cost-effectiveness of other options. This would seem to be an unavoidable element of a strategy that requires large reductions across all sources.*

Commenters:
Suzanne Harris (8/13/10)

Comment ID: **207**

Comment: **Developers who put in off-site road improvements required as a condition of approval for their development should be treated the same as NC DOT. In particular, if NC DOT is considered exempt from the rules, developers required off-site road work should also be**

considered exempt.

Response: *It does not appear to us that developers face the same restricted set of options that NC DOT faces in terms of available land for achieving project load reduction targets. For this reason we did not propose such an exemption.*

Commenters:
Frank Thomas
Suzanne Harris (8/13/10)

Comment ID: **208**

Comment: **New development rules make it exceedingly difficult to offer affordable housing in the Falls Lake watershed for multiple reasons (e.g., stormwater treatment costs, low development densities, high land costs). They will contribute to sprawl and segregation of housing types.**

Response: *The rule may not require substantially more treatment than is already required (a BMP that removes 85% of Total Suspended Solids) by existing stormwater regulations for the vast majority of the watershed. The outcome will be both project-dependent, driven by site use intensity, and dependent on the final form of the accounting tool currently being completed for the Jordan watershed and that we expect to apply to the Falls watershed. We assume that the rule will make some development more expensive, particularly considering the likelihood of increasing costs for offsite reductions over time. Some impact on affordable housing may result, the scale of which may be difficult to estimate. No estimates were provided for consideration during the rulemaking process.*

Commenters:
Frank Thomas
Suzanne Harris (8/13/10)

Comment ID: **233**

Comment: **More flexible requirements should be allowed, particularly for new development stormwater, to allow more creativity in improving water quality. For example, the use of practices such as regional or sub-basin controls instead of required on-site practices, if allowed, could improve stormwater quality from new and existing development at a cost savings. These sub-basin mechanisms are being privately developed in Durham and should be considered by DWQ.**

Response: *Regional controls may be proposed under this rule, either toward onsite requirements if a project would drain to such a control or as an offsite option. Regional controls have been an option under the Neuse and Tar-Pamlico stormwater programs; however we are not aware of any party pursuing a regional design to date. We note that instream impoundments as a type of regional control have to date faced significant regulatory concerns from US EPA and the Division, but those challenges lie outside of this rule.*

Commenters:
Durham Chamber of Commerce

Comment ID: **244**

Comment: **Modification needed for New Development Equivalent Program Option (5)(b),**

- **Support the Equivalent Program Option however, target loading rates for TN and TP (i.e., 2.2 lbs/ac/yr and 0.33 lbs/ac/yr, respectively) do not appear to account for background loadings present in Piedmont streams. More appropriately, background concentrations or watershed loading rates should be defined. Then, local governments pursuing the Equivalent Program Option should be required to achieve**

in-stream nutrient concentrations that meet or exceed the equivalent of the site-specific nutrient targets plus the allowance for background nutrient concentrations.

- **Instead of requiring local governments pursuing the Equivalent Program Option to demonstrate (with three years of monitoring data) that they meet the nutrient reduction targets in advance of the ten year Stage 1 timeframe, it would be consistent with Stage 1 to allow local governments to submit monitoring data demonstrating incremental progress towards the reduction goals, with the expectation that the goals will be achieved by the end of Stage 1.**

Response: *Background loading rates to which the commenter refers are already factored into the new development loading rate targets; it would be inappropriate to add them to the targets. The second comment seems to confound existing development timeframes with requirements for new development. It would be inappropriate to allow new development to proceed for any time period beyond the implementation timeframe set for local new development programs without that program meeting the rate targets either project by project or collectively.*

Commenters:
Thomas Esqueda, P.E.

Comment ID: **246**
Comment: **Under the Strategy's New Development section (15A NCAC 2B .0277(3)(a)), support the selection of "Land Disturbance Threshold Option A" (i.e., 1 acre) for the following reasons:**

- **Option B stormwater controls are expensive and could increase a single family house price by $5000-$10,000;**
- **Infill development would hindered by additional site constraints and increased costs;**
- **Low-income housing availability would be diminished by the added stormwater control costs.**

Response: *Please see our replies to comments #125, #377, and #208 above, which address various aspects of this comment.*

Commenters:
Michael Page
Shari Bryant
Miguel Rubiera

Comment ID: **265**
Comment: **More stringent on-site requirements are needed for New Development:**

- **New development should have increased on-site nitrogen and phosphorus treatment requirements prior to allowing off-site buy-down. This would help encourage measures to increase infiltration of stormwater.**
- **Under the Strategy's New Development rules (15A NCAC 2B .0277(3)(a)), require that new development achieve 80% reduction of both nitrogen and phosphorus onsite before seeking to offset their nutrient load offsite. Of the two options offered, however, prefer Option B.**
- **Future residential and commercial development near Falls Lake should be limited and only allowed if it is determined that there would be no negative environmental impact on Falls Lake.**
- **Under the Strategy's New Development rule (15A NCAC 2B .0277(3)(a)(vi), redevelopment should be changed to meet the same requirements as new development. Redevelopment offers an important opportunity for obtaining load reductions in developed areas**

Response: *Please see our replies to comments #64, #126, and #378 above, which address the comments captured here regarding onsite treatment requirements. We consider the recommendation to prohibit development near Falls Lake unless it demonstrates no negative environmental impact to be beyond the scope of these nutrient rules and prohibitively broad as articulated.*

Commenters:
Karen Rindge (8/13/10)
Alissa Bierma / Larry Baldwin
NC Conservation Network & American Rivers
Marvin Woll

Comment ID: **295**
Comment: **Under the New Development rule (15A NCAC 2B .0277(2)), language is needed to clarify that development governed under .0281 (i.e., ., NC DOT) is not covered by this rule.**

Response: *We agree that this needs to be clarified. The rule language in Item (2) has been revised to include the statement "This rule shall not apply to development activities on state and federal lands that are captured under Rule .0281 of this Section."*

Commenters:
Greg Thorpe, PhD

EXISTING DEVELOPMENT STORMWATER RULE

Comment ID: **11**

Comment: **High costs associated with Stage 2 requirements, particularly treatment of existing development stormwater, will inhibit economic development.**

Response: *The long-term nature of these rules and the rapidly evolving field of watershed restoration combine to make projections of costs more than a few years into the future increasingly speculative. The costs estimated in the Fiscal Analysis represent conservative high range estimates based on current available information and technology. Numerous assumptions and estimates are necessary to project the long range costs of implementation and there is good reason to believe that costs may ultimately be less than the values projected for Stage II in the Fiscal Analysis. A number of drivers, including the growing need for water conservation, the costs of conventional engineered best management practices, the growing field of alternative waste treatment options and ongoing research to refine and update credit accounting to capture innovative practices are all expected to result in ultimate compliance costs significantly lower than the projections provided in the Fiscal Analysis.*

Commenters:

Jack Steer
Thomas O'Neal

Comment ID: **34**

Comment: **Rule language requiring the reduction of nutrients from existing development should be taken from the Jordan Lake Nutrient Management Strategy to protect local governments from unrealistic implementation timelines and excessive costs.**

Response: *The Jordan Legislation language has been incorporated into the Existing Development Rule language under Sub-Item(5).*

Commenters:

Karen Sindelar (6/30/10)
Theodore Voorhees (7/1/10)
Theodore Voorhees (8/16/10)
Thomas Bonfield
Floyd McKissick

Comment ID: **38**

Comment: **Regulations guiding development of the Lake watershed have failed to protect its water quality indicating our development regulations are outdated and inadequate.**

Response: *The Division recognizes that Falls Lake has become impaired despite the current stormwater regulations in place. While stormwater is not the only source of nutrients to the Lake it is a significant contributor given the ongoing growth in the region. It is for this reason that the proposed Stormwater Rule calls for new development to achieve nutrient export targets that are more stringent than the existing Neuse NSW strategy nutrient targets. The Falls Strategy also puts in place nutrient reductions for existing development stormwater.*

Commenters:
Andrew Campbell
Hunter Freeman

Comment ID: **43**

Comment: **Existing Development rule justified:**

- **In the Falls Lake clean-up, communities in the watershed have an obligation to take responsibility for past development that is polluting the Lake.**
- **Proposed existing development retrofits are an equitable way to achieve nutrient reductions. Since the enactment of the Neuse Basin Rules, agriculture has been retrofitting its lands to reduce nutrient runoff.**

Response: *The Division agrees that this rule is necessary for recovering the Lake. It is clear in this watershed that existing developed lands represent a significant portion of loading to the Lake. As such, it would be irresponsible and would disregard statutory and Clean Water Act mandates not to require actions to address this source.*

Commenters:
Andrew Campbell
Hunter Freeman
Anne Coan (8/16/10)

Comment ID: **54**

Comment: **In areas with dense existing development, feasibility to achieve the targeted nutrient reductions will be difficult due to high costs and lack of space.**

Response: *These comments, as well as our fiscal calculations, assume a worst-case scenario of meeting the goals entirely through the use of the most costly and difficult approach, structural stormwater retrofits, as well as purchasing all the land required for doing so. The rule, on the other hand, allows for a wide range of load-reducing practices and identifies a large number of possibilities. 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. The long-term nature of this rule also means that other factors can be expected to further reduce costs. One is the expected reductions in atmospheric deposition of nitrogen over the next 30 years based on regulations already adopted. Another factor is the growing recognition of the value of stormwater as a valuable resource to be conserved, and the growing set of tools for this that will also reduce nutrient loading.*

We understand questions on the achievability of the rule's objectives given the untested nature of such an approach on this scale. Nevertheless, we believe that a range of tools is available at supportable costs to make realistic progress, and we provide for adaptive management over time. We recognize that nutrient benefits for some activities require better quantification but we also recognize that benefits and methods are well-established for many and sufficient to proceed with implementation. We will work with local governments to develop accounting that will allow them to pursue these other measures.

Commenters:
John Cox

Comment ID: **108**

Comment: **Lack of an accounting tool makes it difficult to estimate the costs for water quality treatment of existing development. Application of the Neuse and Tar-Pam accounting tools in Orange County revealed that nutrient targets for developed land are already well below the baseline target for nitrogen included in the Stage 1 portion of the draft rules.**

Response: *We agree that the lack of an accounting tool presents challenges to accurately estimate the reductions needed from existing development. However, we do not agree with the assumptions used used by Orange county in developing an estimated nutrient load from developed land within their jurisdiction and feel the conclusions are incorrect. While staff were not provided any data that supports the assumptions they have reviewed the explanation submitted and concluded that Orange county used a flawed approach to estimate nutrient loads from existing developed lands that likely resulted in underestimating the loading rates. It is extremely unlikely that reductions from existing developed lands would require achieving the loading rates of .78lbs/ac/yr TN and 0.07 lbs/ac/yr TP.*

Commenters:
Valerie Foushee

Comment ID: **129**

Comment: **Under the Strategy's Existing Development section (15A NCAC 2B .0278(4)(h)), preservation should be a form of credit here as it is in other regulations.**

Response: *Please see response to comment #116*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **184**

Comment: **Under the Strategy's Existing Development section (15A NCAC 2B .0278(3)(a)), the recent legislation reviving expired development permits and extending the expiration date of unexpired permits makes this provision unclear. While that category of new developments is defined as "existing development" in the definitions, these developments may include properties built after, but exempted from, the new development rules adopted by local governments under the Falls nutrient management rules. This rule needs to be revised so it is clear that developments otherwise exempted from the new development rules are put into the groups of existing development for purposes of preparing the baseline of reductions to be achieved from the loading of existing development. The phrase "from lands developed subsequent to the baseline period but prior to the implementation of a Fall Lake new development stormwater program." Creates an ambiguity. The phrase should be revised to use the term "existing development" which includes development post the new Falls Lake new development stormwater program, but otherwise exempt from complying with it as a vested permit.**

Response: *We agree with this recommendation and have clarified the rule language to address this issue by revising the rule text to read"shall implement a load reuction program that provide estimates of, and plans for offsetting within 10 years of the effective date of this Rule, nutrient loading increases from lands developed subsequent to the baseline period and not subject to the requirements of the local government's Falls Lake new development stormwater program.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **185**

Comment: **Under the Strategy's Existing Development Rule (15A NCAC 2B .0278), the implementation schedule provides too much time for DWQ and the Commission to take action and too little time for local governments:**

- **The proposed (7)(a), rule provides until approximately the winter of 2014 for the development of a model program to existing development retrofits. Local governments, however, are required to submit an implementation plan within 6 months and to make any amendments required by the Commission within 2 months. Local governments will have to rely, at least in part, on zoning and planning powers. Local governments cannot meet the statutorily established procedures for amendment of proposed plans dependent on zoning and planning powers within 2 months. This implementation schedule should be conformed to the times allowed for local government revisions and implementation in the new development rule.**
- **Under item (a), the rule needs to require the Division to submit Stage 1 model programs to the commission within 12 months rather than 30.**
- **Under item (7)(f), the rules need to allow local governments additional time to re-submit their Stage 2 load reduction programs if they are rejected by DWQ. A change from 2 months to 6 months is suggested. The current timeline is not feasible for municipalities under existing land use approval law.**
-

Response: *While it is not our intent to overly burden the local governments with the implementation timeline of this rule, we disagree with the basis of this comment. Unlike the New Development Stormwater Rule, implementation of the Existing Development requirements does not require the development and adoption of a local ordinance by a local government. For this reason the same amount of time is not necessary. At the same time, requiring the Division to Develop and submit a model to the EMC within 12 months rather than 30 is not feasible because it will be necessary to build off the accounting tools and model progrmas developed by the Scientific Advisory Board in the Jordan Process which will not be completed within that timeframe.*

Commenters:
J. Russell Allen (8/3/10)
J. Russell Allen (7/20/10)
Jim Wrenn (8/16/10)

Comment ID: **226**

Comment: **Under the Existing Stormwater (15A NCAC 02B .0278(4)(o), eliminate sub-item (vii) on having local governments develop plans on the need for eminent domain to achieve the strategy.**

Response: *The rule language simply directs the local government to provide and evaluation of the need for and projected role of eminent domain in the load reduction plan along with and assessment of the implementation rate without its use. Use of eminent domain is not a requirement and in the absence of any supporting information as to why it should be removed from consideration we feel it is appropriate to leave this language in the rule.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **227**

Comment: **Under the Existing Stormwater (15A NCAC 02B .0278(5), add provision allowing the Commission the ability to approve Stage 2 load reduction plans submitted by local governments that differ from those specified in Items (3) and (4) of this rule as long as the alternative plans meet Stage 2 nutrient load reduction requirements. Also, add language allowing the Commission, if it finds that there are alternative reasonable and cost-effective measures, to require local governments to modify their plans to include these treatment measures of existing development stormwater. In determining whether additional or alternative load reduction measures are reasonable and cost effective, the Commission shall consider factors including, but not limited to, the increase in the per capita cost of a local government's stormwater management program that would be required to implement such measures and the cost per pound of nitrogen and phosphorus removed by such measures. Also, strike both the language requiring the Commission to consider whether a local government plan "is technically and economically feasible within the proposed timeframe" along with the criteria used to make this determination.**

Response: *The Hearing officers agree to include the Jordan Legislation language and the protections it provides to accomplishes the desired outcome described in this comment. The hearing officers also agree to remove the language including the technically and economically feasibility language.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **241**

Comment: **Credit is needed to reward proactive water quality improvement measures:**

- **Under the proposed existing development rules, equitable and quantifiable credit is needed for early implementation of policies and practices that have served to protect the water quality of Falls Lake. Senate Bill 1020 allows the EMC to award such credits to local governments that administer and enforce more stringent practices than required by the proposed rules. Credits, in turn, should be either allowed to be traded or used toward a local governments nutrient reduction targets.**
- **Where early implementation credits are given for existing development, DWQ should provide local governments with detailed calculations and technical documentation for determining the quantity of nutrient credits to be awarded for strategies identified as**

being more stringent than the proposed rules (e.g., low-density development and 100 foot buffers)

- **Jurisdictions that have demonstrated proactive water quality protection measures should be recognized and rewarded for such efforts, possibly via credits towards meeting the requirements of the Falls Lake Rules.**

Response: *We agree those jurisdictions that have demonstrated proactive water quality protection measures should be rewarded for such efforts. They in fact will benefit from the credit earned by any early reductions achieved when their baselines existing development loads are calculated. Any early reductions will be reflected in a lowering of the relative reduction need from existing developed lands.*

Commenters:

Thomas Esqueda, P.E.
Valerie Foushee
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **243**

Comment: **Legal limitations exists for local governments to address existing development load reductions where roads within the municipality are maintained either by NC DOT or privately, prohibiting access to stormwater conveyance systems. Accordingly, the proposed rules should be aligned with the legal limitations faced by local governments unable to access and treat stormwater conveyances associated with roads.**

Response: *The intent of this comment is not clear, but we would like to clarify that the existing development rule does not require local governments to be held responsible for reducing nutrient loads from NC DOT roadways. NCDOT has is responsible for achieving reductions from its own existing developed lands as detailed in Rule .0281.*

Commenters:

Thomas Esqueda, P.E.

Comment ID: **312**

Comment: **Existing development rule should hasten treatment of stormwater and specify planning requirements:**

- **The Existing Development Rule should require local governments to begin a set level of retrofit work immediately in order to quicken the Lake's clean-up process.**
- **Implementation of local government five-year existing development plans should occur in early 2014, foregoing the distinction between Stage I and Stage II for existing development. This will help speed development of techniques and accounting methods to clean-up Falls Lake. Also, some necessary low-cost measures will be forced to occur more quickly (e.g., phosphorus fertilizer ban). To facilitate this, the Existing Development Rule should rule specify that local governments design their load reduction programs to address total nutrient load reduction goals (40% nitrogen and 77% phosphorus) from inception.**
- **Municipalities in the Falls Lake Watershed should survey their lands and infrastructure for opportunities to implement nutrient reduction practices (e.g., buffer**

plantings, elimination of sewer leaks and spills, and reduction of impervious surfaces).

Response: *Given the large reduction needs and the time needed for planning to identify available reduction opportunitie,s we feel the proposed timeline is the most reasonable. We would also like to point out that requirements described under Sub-Item (3)(d)of the rule direct the local governments to develop inventories and characterize load reduction potential of existing development opportunities within two years of the effective date of the rule in preparation for implementation of their Stage I and Stage II load reduction programs.*

Commenters:
Alissa Bierma / Larry Baldwin
NC Conservation Network & American Rivers
Fred Dietrich

Comment ID: **332**

Comment: **Existing development should have milestones to gauge and guide their implementation of existing development programs. Suggested examples include: for the plan beginning implementation in 2014, reduce annual mass loads of nitrogen by 5% and phosphorus by 10% no later than 2019; for the plan beginning implementation in 2019, reduce annual mass loads of nitrogen by 10% and phosphorus by 20% no later than 2024; for the plan beginning implementation in 2014, reduce annual mass loads of nitrogen by 15% and phosphorus by 35% no later than 2029; for the plan beginning implementation in 2018, reduce annual mass loads of nitrogen by 25% and phosphorus by 50% no later than 2034; for the plan beginning implementation in 2034, reduce annual mass loads of nitrogen by 35% and phosphorus by 65% no later than 2039; for the plan beginning implementation in 2039, reduce annual mass loads of nitrogen by 40% and phosphorus by 77% no later than 2041.**

Response: *The additional milestone of attaining nutrient-related water quality standards downstream of the Highway 98 crossing of the Falls Reservoir no later than 2015 has been added to the rules along with the milestones already included in the rule text. Staff feel that the current timeline assigned to the milestones in the rules is appropriate given the large reduction needs required and the high costs associated. It will take time to identify and implement the necessary reduction practices and the amount of time provided is the most reasonable timeframe based on our assessment of the strategy and current available technology. We also note that although we provide milestones for achieving nutrient-related water quality standards, we do not include incremental percent reduction objectives with those milestones as the commenter suggests because we don't have a scientific basis for prescribing a certain percent reduction objective outside of the Stage I and Stage II objectives described in rule.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **366**

Comment: **Under the Existing Development rules, language establishing implementation to the point of economic feasibility is vague. Communities will have problems and priorities that compete with these rules (e.g., feeding the hungry, unemployment, and education) it difficult to establish their economic feasibility.**

Response: *The language referring to technical and economic feasibility has been removed from the Existing Development rule language.*

Commenters:
Michael Page

Comment ID: **367**

Comment: **Septic requirements are overly burdensome; Credit needed to reduce septic loads:**

- **The nutrient impact from DWQ-permitted discharging systems (i.e., sand filters) needs to be reviewed. While county health departments have no jurisdiction over these systems, the proposed rules make local governments accountable for the nutrient loading from these systems. A mechanism for calculating nutrient loads from these systems needs to be developed and the counties should not be held responsible for these pounds.**
- **To implement the proposed rules, Durham County estimates that it will cost in excess of $50 million to connect failing septic and sandfilter systems in the County's portion of the Falls Lake Watershed. Many served by these systems are lower income and may have to be evicted from their homes because of cost to resolve failures.**
- **Upgrading septic systems should receive nutrient reduction credits that can be used for Existing Development requirements.**

Response: *It is not clear what requirements the commenter is referring to. The Falls Lake rules do not include requirements for reductions from onsite wastewater systems. The rules do, however,consider onsite systems a potential source of nutrients and recognize they offer an opportunity for reduction credit. The option of addressing septic systems and receiving reduction credit towards meeting the existing development reduction requirements is left to the decision of the local government.*

Commenters:
Michael Page
Karen Rindge (8/13/10)
Robert Jordan

WASTEWATER DISCHARGE RULE

Comment ID: **1**

Comment:

- **Point source proposed requirements will result in difficult to attain effluent concentrations, limiting growth opportunities by those communities impacted by these rules.**
- **Proposed rule waste water treatment requirements will result in expensive improvements to treatment facilities resulting in customer costs that much exceed the 1% median household income level recommended by NC Institute of Government.**

Response: *The Division is acutely aware that the proposed nutrient control requirements, both for point and nonpoint sources, would be the most stringent ever adopted in North Carolina. However, our analyses of nutrient impacts on the Falls Reservoir indicate that extensive N and P reductions are necessary to ensure that water quality standards (in this case, the chlorophyll-a standard) are met. The capacity of our surface waters to assimilate treated wastewater and still meet established standards is finite. Ultimately, any community that discharges to surface waters could face a limit to its growth. It must then either accept that limit or seek an alternate wastewater management approach. We seem to have reached that point in the upper Falls watershed. There is an increasing awareness that we need to look at our water resources from a broader perspective and consider water supply, wastewater, water reclamation, and perhaps stormwater as one resource to be managed collectively. This represents a new way of thinking and would require considerable effort and investment to Implement. Still, it offers some opportunity to reduce our impacts on our water resources.*

Commenters:

Donald Greeley (6/30/10) Kenneth Keel Mike Gering
Donald Greeley (8/16/10) Jim Wrenn (6/30/10)

Comment ID: **12**

Comment: **Proposed point source nutrient load reductions exceed current treatment technologies and, therefore, are unreasonable and should be abandoned in favor of technology-based limits.**

Response: *'Exceed current technologies'*
At full permitted flows, the nutrient concentrations equivalent to the Stage II mass TN limits for the three large upper Falls dischargers (1.13 mg/L TN and 0.06 mg/L TP) are beyond the current capabilities of conventional treatment technologies (commonly given as 3 mg/L TN and 0.1 mg/L TP) and will require some form of advanced technologies (probably in combination with wastewater reclamation or other alternate approach). Stage I limits are achievable at 'current + 10%' flows (3.0-3.6 mg/L TN, 0.33-0.46 mg/L TP); but if the dischargers' flows increase significantly during Stage I, the Stage I mass limits will also require advanced technologies. There is no clear-cut choice for this advanced technology. The Division and the dischargers assume at this point that the limits can be met using conventional processes followed by reverse osmosis (RO) treatment. (The RO process has been used primarily to treatdomestic water supplies (desalination of brackish waters) and industrial process waters (such as for electronics mfg.). Its application in wastewater treatment is limited to small-scale research projects for the most part; however, a limited body of research indicates that RO systems can reach 1 mg/L TN or less. Even so, there is still the significant issue of 'reject' waters. Typically, 70-80% of flow to an RO unit passes through as treated water ('permeate'), and the captured pollutants are concentrated in the remaining 20-30%. This reject stream is not suitable for discharge without further treatment and can only be applied to land at low loading rates. The three plants have combined flow limits of 28.5 MGD, so20-30% represents a significant flow, and it is not clear how or if it can be properly managed. The volume can be reduced by treating with additional RO units, but it is not clear whether the advantage of the lesser volume is offset by the further increase in pollutant

concentrations.

It is difficult to predict what the capabilities of treatment technology will be in 20-25 years. But, given the improvements made in the last 25 years, it is reasonable to expect significant improvements, both in treatment and in reclamation technologies, and that the proposed limits will be more readily achievable than they appear today. Still, in order to address the uncertainties surrounding this issue, the rule now includes provisions for the dischargers to propose alternate limits and compliance dates if they find that the limits are not technically and economically achievable by 2036.

Stage I limits – concentration v. mass. The Division recognized this dilemma when the reduction targets were first released. We originally proposed technology-based concentration limits for TN and TP for Stage I, to be followed by mass limits for Stage II. This approach would significantly reduce the point source N & P contributions in the short term but would allow time for the municipalities to more thoroughly evaluate alternative approaches tomeeting the final limits. There would be some possibility of technology improvements in that interim period as well.

Durham and SGWASA voiced a preference for mass limits for Stage I, because it would allow them to trade among themselves in that time. Hearing no objections, we switched to mass limits, eventually settling on limits equivalent to 20% TN and 40% TP reductions.

Commenters:

Donald Greeley (8/16/10) Mike Gering
Kenneth Keel

Comment ID: **13**

Comment: **Methods used to develop the point source allocation amongst waste water treatment facilities were not equitable, requiring excessive load reductions for some facilities while allowing increased loads for others.**

Response: *In evaluating potential reduction targets for Stage I, we calculated the mass limits for various reductions and the equivalent concentrations (i.e., treatment levels) these would represent at current flows plus a 10% allowance for short-term growth. In doing so, we looked at the impact of various targets on the dischargers in the aggregate. From this perspective, the 20/40 reduction targets resulted in equivalent concentrations of 3.05 mg/L TN and 0.33 mg/L TP – readily achievable limits – for the three municipalities as a group. It was only later that we looked at the results for each individual facility and discovered that the results were not what we had intended at the individual facility level:*

- *The Stage I limits for Durham represent 7% TN and 10% TP increases relative to the facility's 2006 baseline loads. At the same time, the limits for SGWASA require 47% TN and 79% TP reductions, and those for Hillsborough require 68% TN and 61% TP reductions. The discrepancy is due to the fact that the Durham plant was removing nutrients effectively during the baseline period while the other facilities were not, so those facilities have greater improvements to make to catch up with Durham. Still, it is not equitable to allow Durham to increase loadings during Stage I.*

- *The Stage I TN limit for Hillsborough was actually less than its Stage II limit.*

In an attempt to set more equitable limits, the Division evaluated alternate distributions of the Stage I allocations among the Upper Falls dischargers. At the same time, it updated its calculations to include corrections in the 2006 baseline loads, which were previously discussed with the dischargers, and this resulted in minor increases to the baseline loads and the Stage I and

Stage II limits.

In order to set more equitable limits while not undermining Durham's planning efforts (which would apply its added allocations toward Existing Development reductions), the rule has been revised, with the consent of the dischargers, while adhering to the overall 20% TN and 40% TP reduction goals. The Stage I limits now proposed for Durham are, at the City's request, the same as originally proposed. In exchange for not reducing its limits, the City proposed that the allocation increases it would have received after the baseline correction be added instead to Hillsborough's allocations. Thus, Hillsborough's limits are the sum of its revised allocations and Durham's allocation increases. And SGWASA's limits are its allocations as revised for the baseline correction, without further adjustments.

As for Stage II limits, the allocations resulting from the baseline corrections are divided among the dischargers in proportion to their permitted flows, as they were previously.

Commenters:
Kenneth Keel
Mike Gering

Comment ID: **16**
Comment: **Load reallocation from non-point pollution sources to point sources is needed due to uncertainty in the water quality model.**

Response: *The watershed model was used to determine relative loading contributions from the various sources in the waters. Point Source allocations are not based on information derived from the watershed model. The reduction objectives are based on the Lake model which uses actual lake monitoring data. The Stage I allocations for the point sources are based on a 20% reduction in TN and 40% reduction in TP with the allocations apportioned based on 110% of current flow (2008-2009 flow). The Stage II allocations are based on a 40% reduction in TN and 77% reduction in TP based on 2006 flows.*

Commenters:
Kenneth Keel
Mike Gering

Comment ID: **75**
Comment: **Rules should allow dischargers to sell or trade their lost allocations:**

- **Rules need to make clear that the Falls Lake allocations do not change the pre-existing Neuse River Estuary (NRE) allocations so that Falls Lake communities will be able to sell their NRE allocations to help finance implementation of the rules.**
- **Under the Strategy's Wastewater Discharge Sources section (15A NCAC 2B .0279(5)(b)), we support the addition of provision as described in the Note. It is important that the dischargers that must bear the cost of complying with the proposed Falls reductions should be able to sell or lease excess allocation as allowed under the Neuse Rules to offset Falls Lake compliance costs.**

Response: *The Division believes that the Falls Lake and Neuse River Estuary rules, read together in the context of the two strategies, make sufficient distinction between the two sets of allocations and that they allow for the transfer of NRE allocations downstream of Falls Dam*

Commenters:
Michael Page
Jim Wrenn (6/30/10)
Dan McLawhorn-NRCA
J. Russell Allen (8/3/10)

Comment ID: **132**

Comment: **Under the Strategy's Wastewater section (15A NCAC 2B .0279(5)(b)), waste load allocation trading should be allowed to occur above and below the dam.**

Response: *As in Comment 75 above, the Division believes that the Falls Lake and Neuse River Estuary rules, taken together in the context of the two strategies, make sufficient distinction between the two sets of allocations and that they allow for the transfer of NRE allocation downstream of Falls Dam.*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **187**

Comment: **Under the Strategy's Wastewater Discharge Sources section (15A NCAC 2B .0279(6)), support an amendment to this provision that allows the Hillsborough Wastewater Treatment Plant to use its higher poundage allocation in Stage 2 as its poundage allocation in Stage 1. This situation is an anomaly arising from the timing of Hillsborough's expansion as compared to the timing in this set of rules. It is inequitable and contrary to the general principles underlying the staged approach taken by the Commission to require Hillsborough to achieve a higher rate of reductions in Stage 1 than in Stage 2.**

Response: *The draft rule proposed to distribute the available N and P allocations among the Upper Falls dischargers in proportion to 'current + 10%' flows. Because different flow values were used (permitted flows were used for Stage II limits), the resulting limits were inequitable: they allow Durham to increase its N & P discharges over baseline levels by 7% and 10%, respectively, and set Hillsborough's Stage I TN limit at a level less than its Stage II limit. In an effort to set more equitable limits while not undermining Durham's planning efforts (which would apply its added allocations toward Existing Development reductions), the rule has been revised to redistribute the available Stage I allocations among the Upper Falls dischargers. At the same time, the Division made a long-foreseen correction in the 2006 baseline loads, which resulted in minor increases to the baseline loads and the Stage I and Stage II limits. The Stage I limits now proposed use a similar Stage I allocation method as in the draft rule and set SGWASA's limits at the adjusted values; however, with the consent of the dischargers, Hillsborough receives both its share and Durham's share of the allocation increases in exchange for not reducing Durham's proposed Stage I limits. In the case of the Stage II limits, the increased allocations are divided among the dischargers in proportion to their permitted flows, as was done for the draft rules*

Commenters:
Donald Greeley (8/16/10)
Jim Wrenn (8/16/10)
J. Russell Allen (8/3/10)

Comment ID: **188**

Comment: **Under the Strategy's Wastewater Discharge Sources section (15A NCAC 2B .0279(8)(a)(ii)), oppose new wastewater treatment discharges being permitted that cannot operate within the mass poundage allocations set for wastewater dischargers. For that reason, the Commission is urged to remove the buy-down option in this rule. If the provision is to remain, the Commission is urged to modify the proposed rule so that the buy-down loading reductions must exist and have been proven successful at the time the Authorization to Construct issues to the permit holder.**

Response: *It is essential that the rule's provisions for new and expanding discharges be consistent with those in the existing Neuse River Estuary strategy if either strategy is to be workable. Nutrient offsets ('buy-downs') under either strategy will be conducted according to guidelines established elsewhere for this purpose.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **190**
Comment: **Under the Strategy's Wastewater Discharge Sources section (15A NCAC 2B .0279(9)(d)), oppose this provision as written. When the expansion of an existing facility in the Lower Falls watershed will reduce nutrient loading from septic systems and the facility can acquire sufficient poundage from the mass load allocations, then there should not be an absolute prohibition of such expansion requests.**

Response: *In light of the uncertain capabilities of future wastewater treatment technologies to meet Stage II nitrogen limits, the rule has been revised to incorporate similar provisions. Dischargers will be required to submit plans by Year 10 to describe how they will meet the Stage II limits. In the event a discharger finds the limits to be infeasible, it must document its findings and propose alternate, intermediate limits. The new rule language includes more specific requirements for the plans, including justification of intermediate nutrient limits if the treatment technology necessary to meet Stage II limits is not available or is not technically or economically feasible, and requires the continued review of treatment capabilities in such cases. The rule also states that dischargers must make continued progress toward meeting the final limits and that intermediate limits shall not be less stringent than Stage I limits or any previously approved intermediate limits.*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **228**
Comment: **Under the Wastewater Discharge Requirements rule (15A NCAC 02B .0279), remove the definitions "Active" allocation as well as "Reserve" allocation.**

Response: *The comment does not provide any rationale for the proposed change. However, experience in the Neuse River Estuary nutrient strategy has shown that the distinction between 'active' and 'reserve' allocations is necessary to effective management and tracking of the point source allocations.*

Commenters:
Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **229**
Comment: **Under the Wastewater Discharge Requirements rule (15A NCAC 02B .0279)(6)(b), request**

the effective date for this sub-item be changed from 2036 to "no later than 10 years after the effective date of this Rule" when permitted dischargers greater than or equal to 0.1 MGD be required to "submit to the Division a plan for limiting" their nitrogen and phosphorus discharges "to the maximum extent technically and economically feasible by 2036". Also, include language requiring DWQ to approve the plan or inform the discharger of necessary plan modifications within a reasonable timeframe (e.g., 180 days). Further, add language requiring DWQ to "incorporate the nitrogen and phosphorus loading limitations contained in the approved plan into the discharger's NPDES permit upon the next renewal of the permit, with an effective date of calendar year 2036." Finally, add a provision requiring that dischargers update the plan every five years and require DWQ to incorporate any appropriate modifications to the discharger's NPDES permit. After 2036, if further nitrogen and phosphorus reductions are needed, such modifications should be effective "no earlier than ten years following a final decision regarding the modified NPDES permit."

Response: *In light of the uncertain capabilities of future wastewater treatment technologies to meet Stage II nitrogen limits, the rule has been revised to incorporate similar provisions. Dischargers will be required to submit plans by Year 10 to describe how they will meet the Stage II limits. In the event a discharger finds the limits to be infeasible, it must document its findings and propose alternate, intermediate limits. The new rule language includes more specific requirements for the plans, including justification of intermediate nutrient limits if the treatment technology necessary to meet Stage II limits is not available or is not technically or economically feasible, and requires the continued review of treatment capabilities in such cases. The rule also states that dischargers must make continued progress toward meeting the final limits and that intermediate limits shall not be less stringent than Stage I limits or any previously approved intermediate limits.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

Donald Greeley (8/16/10)

Comment ID: **230**

Comment: **Under the Wastewater Discharge Requirements rule (15A NCAC 02B .0279)(10)(d)), strike language authorizing DWQ to establish either more or less stringent nitrogen and phosphorus limits if they are deemed appropriate.**

Response: *The Director already has the authority to establish any discharge limitations that are necessary to protect the quality of North Carolina's surface waters, and the Falls Lake rules cannot limit that authority. The nutrient limitations in the rule are calculated to restore and protect water quality in Falls Lake proper; the intent of this provision of the rule is to make it clear that additional restrictions may be established if necessary to protect waters tributary to the lake. The rule does not provide for relaxation of the proposed nutrient limitations.*

Commenters:

Joint Comments: Raleigh, Durham, Butner, Creedmoor, Granville County, and Person County

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Comment ID: **261**

Comment: **Point sources should be required to meet the Stage 2 loading targets earlier than the currently proposed date of 2036 (e.g., 2028) since these upgrades are a critical component of the strategy's success.**

Response: *The Division believes that shortening the compliance schedule for the point sources is ill advised. The Stage I limitations already require the point sources to make substantial reductions in their nutrient loads by 2016 (nitrogen load by 20%, phosphorus load by 40%), and any growth (hence, increases in wastewater flows) will make it more difficult to maintain these reductions through Stage I. Further, it is yet to be determined whether improvements in treatment technology will enable the dischargers to meet their Stage II limits once they have grown to their full permitted capacities.*

Commenters:
NC Conservation Network & American Rivers
Karen Rindge (8/13/10)

Comment ID: **280**
Comment: **Under the Strategy's Wastewater Discharge Rule (15A NCAC 2B .0279(9)(a)(ii)), if a permit holder that is expanding its allocation is required to pay for the necessary allocation before the permit is issued, then DWQ should be required to assure the discharger that the permit will be issued when payment is made.**

Response: *In such cases, the Division can acknowledge to the discharger whether or not the purchase of allocation is consistent with the Falls Lake strategy and, if so, that it intends to modify the affected permit accordingly. However, all major permit actions are subject to public review, and the Division can provide no further assurances until it has taken all public comments into consideration. It seems reasonable to continue to practice of conditioning such transactions upon Division approval of the permit modification.*

Commenters:
Dan McLawhorn-NRCA

Comment ID: **281**
Comment: **Under the Strategy's Wastewater Discharge Rule (15A NCAC 2B .0279(10)(d)), the paragraph should be rewritten to state that the "reserve" allocation (allocation that the discharger holds but cannot discharge) can be transferred to other dischargers but cannot be used to allow a discharger to exceed a more stringent limit established for a tributary under this paragraph. No additional restrictions are needed on transfers.**

Response: *This added restriction is not necessary. The more stringent 'local' limits are themselves water quality-based limitations specific to that tributary and so would not be affected by acquisition of 'lake' allocation. This is precisely analogous to the Neuse River Estuary limits and the imposition of more stringent limits to protect Falls Lake: in this case, NRE allocation cannot be used to increase limits for Falls Lake dischargers.*

Commenters:
Jim Wrenn (8/16/10)
Dan McLawhorn-NRCA

Comment ID: **282**
Comment: **Under the Strategy's Wastewater Discharge Rule (15A NCAC 2B .0279(10)(g)), allow for transfers of allocation between the Upper and Lower Falls watersheds when a facility accepts all the wastewater from another facility thus eliminating that facility.**

Consolidation of discharges within a larger facility's service area should be given priority over minor consideration of shifting a small amount of allocation from one part of the watershed to the other.

Response: *The Division recognizes that this approach has some practical advantages. However, it presents difficulties in bridging the Upper and Lower Falls subwatershed strategies, and the timeframe mandated by the General Assembly for adoption of the Falls Lake rules was not sufficient for us to resolve the issue.*

Commenters:
Dan McLawhorn-NRCA

Comment ID: **283**

Comment: **Under the Strategy's Wastewater Discharge Rule (15A NCAC 2B .0279(11)), the Commission is urged to authorize only one compliance association within the watershed. If authority is lacking to require local governments in the watershed to join an association, then the rule should specify that there will be only one association. Having one association helps facilitate transfer of technical knowledge and plant operations.**

Response: *While there are certain advantages to having a single association in the watershed, the Division does not see a compelling reason at this time to prohibit the formation of additional groups, which would serve to reduce the options (hence, the flexibility) available to the dischargers in meeting the proposed nutrient limits.*

Commenters:
Dan McLawhorn-NRCA

Comment ID: **284**

Comment: **Under the Strategy's Wastewater Discharge Rule (15A NCAC 2B .0279(11)(h)), this provision and similar ones should allow for offset payments to be made to other approved offset providers as well as to the NCEEP. An association that does not meet its permit limit for nitrogen or phosphorus should not be limited to making offset payments to only NCEEP. Instead this rule should be amended to allow offset payments to be made to any seller of offsets that has been approved by the DWQ and to allow implementation of other offset measures approved by DWQ.**

Response: *The rule, as proposed, already specifies that offsets can be purchased from either the EEP or 'another seller of offset credits approved by the Division'.*

Commenters:
Dan McLawhorn-NRCA

Comment ID: **314**

Comment: **A thorough Neuse River TMDL review is needed prior to allowing transfer or sale of excess nitrogen allocation from discharges in the Falls Lake watershed to dischargers below Falls Lake. Despite almost 10 years of work to decrease nutrient loading to the Neuse River, the estuary continues to experience loading levels that are beyond its capacity to assimilate, resulting in large fish kills. These credits may need to be retired to help improve the estuary.**

Response: *The Division is also concerned that efforts in the Neuse basin have yet to show a clear reduction in nitrogen loadings to the estuary. Recent analyses seem to verify that point sources have substantially reduced their nitrogen contributions and to indicate that these reductions are offset by increases from other source(s). Given the dischargers' success thusfar and the fact that the allocation at issue amounts to less than 3% of the point sources' estuary allocation, the Division does not propose to retire the Falls dischargers' allocations or restrict their transfer to other dischargers in the Neuse River basin.*

Commenters:
Alissa Bierma / Larry Baldwin

Comment ID: **338**

Comment: **Under Wastewater Rule, (15A NCAC 2B .0279), support the retirement of reserve allocation from the Neuse strategy, but recommend that DWQ not forbid credit sales by dischargers above the Falls Lake dam, but instead reduce all Neuse dischargers' (Neuse) credits by the same percentage. That solution will protect the estuary, and actually increase the value of the credits remaining on the market, assisting the upstream dischargers in their efforts to pay for their needed upgrades.**

Response: *See #314. In addition: The Neuse dischargers have invested many tens of millions of dollars in nutrient-related treatment plant upgrades to meet the limits established in 1997. The Division does not believe it is reasonable to reduce the existing allocations, by whatever percentage, in response to this issue.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **346**

Comment: **Under the Strategy's Wastewater Discharge Sources section (15A NCAC 2B .0279(8)(a)(ii)), support the concept of load reduction and subsequent point source credit from failing on-site septic disposal system. Language should be added to this rule section that defines a means for an applicant to establish an existing nutrient load from failing on-site septic systems, preferably through quantitative monitoring, as well as a credit ratio for removal of failing on-site septic systems. A 2:1 credit ratio is recommended to account for uncertainty in any on-site load reduction analysis.**

Response: *The timeframe mandated by the General Assembly for adoption of the Falls Lake rules was not sufficient for us to resolve this issue during the stakeholder process. There are still insufficient understanding and agreement to include such a provision at this time. Further, no rationale is provided for selecting a 2:1 credit ratio.*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **351**
Comment: **As flow increases to serve new development and redevelopment, the proposed Stage 1 limits will become unattainable without improved treatment (e.g., microfiltration). If Durham utilized its entire permitted flow, the Stage 1 limits would require achieving a concentration limit of 1.7 mg/L TN and 0.16 TP, concentrations below current treatment technology. Stage 2 limits are much lower, at 1.1 mg/L TN and 0.06 mg/L TP at full permitted flows. By comparison, mass nitrogen limits for Neuse River basin dischargers allow three to five times as much nitrogen concentration to be discharged to the lower Neuse.**

Response: *The limits established under the Neuse River Estuary strategy were, like those in the proposed rule, calculated to protect a specific waterbody and cannot be compared directly with the Falls Lake limits. In addition, the EMC recognized the reduced impact of the Falls Lake dischargers on the estuary and adopted more relaxed limits upstream of Falls Dam. Still, the Division agrees that both the Stage I and Stage II mass limits present a challenge at current flows and will become much more stringent as wastewater flows increase. It is difficult, of course, to predict how quickly those flows will increase. But the dischargers have some influence over that. In concert with their elected officials, they can determine how much growth they will allow within their service areas. They can also accelerate their implementation of reuse options as a means of reducing discharge flows. And other options may become apparent. In addition, the rules now provide some relief from the Stage II limits if the dischargers find that those are not technically and economically feasible with available treatment technologies (see also #187 and #229)*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **352**
Comment: **The fiscal impact statement erroneously states that the wastewater plant stakeholders preferred the "mass limit" approach rather than a technology-based approach. The wastewater plant stakeholders would have preferred an approach based on the limits of current technology, but DWQ determined that such an approach could not achieve the required reductions as flow increased.**

Response: *As stated in the response to comment #12, The Division recognized this dilemma when the reduction targets were first released. We originally proposed technology-based concentration limits for TN and TP for Stage I, to be followed by mass limits for Stage II. This approach would significantly reduce the point source N & P contributions in the short term but would allow time for the municipalities to more thoroughly evaluate alternative approaches tomeeting the final limits. There would be some possibility of technology improvements in that interim period as well.*

Durham and SGWASA voiced a preference for mass limits for Stage I, because it would allow them to trade among themselves in that time. Hearing no objections, we switched to mass limits, eventually settling on limits equivalent to 20% TN and 40% TP reductions.

Commenters:
Donald Greeley (8/16/10)

Comment ID: **353**
Comment: **Durham's consultants have estimated that once flow increases by about 50% over current flow, an investment of $80 million will be needed for the construction and installation of microfiltration or membrane bioreactor technology, even under Stage 1 requirements. To meet Stage 2 requirements, and possibly Stage 1 as flow nears the permit limits of the plant, the use of nanofiltration or reverse osmosis will be required at a cost of at least $240 million (2009 dollars). Also, while DWQ staff state that water reclamation and reuse could significantly curtail the discharge from the North Durham plant, few large usage customers exist of the type needed to establish the economies of scale necessary for a more robust reuse program**

Response: *Comment noted. The Division took these basic factors into consideration in developing its Fiscal Note and the draft rules. The rule has been revised to provide some relief if effective treatment technology is not available; see #229.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **354**
Comment: **Wastewater treatments technologies needed to meet Stage 2 treatment requirements will have environmental impacts. Reverse osmosis is energy intensive and produces brine for which there are very limited disposal options.**

Response: *Agreed. The rule has been revised to provide some relief if effective treatment technology is not available; see #229.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **355**
Comment: **The wastewater allocation system utilized in the Rules is the most equitable manner in the short term of complying with Stage 1 over the next ten years. It is consistent with prior practice by DWQ in the Jordan basin, which applied the percentage load reduction needed to a mass allocation and then divided it up in an equal proportion.**

Response: *Note that the Stage I limits have been revised, see #13 and #187.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **356**

Comment: **Proposed wastewater rules allow no latitude for the occasional wastewater treatment plant exceedances that can occur when taking a basin out of service or as a result of an occasional plant upset. Formation of an Association which can combine loads may assist in avoiding penalties for such exceedances, but may not be sufficient. Fair and reasonable language, therefore, is needed requiring penalties be substantially reduced in these circumstances to recognize the unprecedented demands being placed on Upper Falls wastewater plant dischargers.**

Response: *The rules establish annual limits for nitrogen and phosphorus. Annual limits allow for seasonal as well as shorter-term variations in plant performance to a greater degree than do monthly average or daily maximum limits. In the event that annual limits are exceeded, the Division will consider any such variability and will use its discretion before determining if formal enforcement action is warranted.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **368**

Comment: **Under Wastewater rules, concentration limits make the most sense for all point-source dischargers. Stage 2 mass limits for each jurisdiction would be established based on the concentration requirement and a percentage increase in current flow similar to Stage 1 requirements. This wouldn't give any community an undue allowance for future growth – at least not without correspondingly vigorous water use reduction and re-use programs.**

Response: *The Division considered a variety of approaches for formulating the Stage II limits. We assumed that permitted flows are reasonably representative of future growth needs and used those flows to distribute the available allocations in an equitable fashion. This is consistent with the approach used in the Neuse River Estuary and the Jordan Lake nutrient strategies.Please also see our response to comment #12.*

Commenters:
Michael Page

AGRICULTURE RULE (.0280)

Comment ID: **48**

Comment: **Rules threaten viable farm operations:**

- **The management strategy needs to keep agriculture and forestry operations viable to limit the spread of impervious surfaces.**
- **Farmer's livelihoods are threatened by these rules. The rules need to be structured, particularly Stage 2, in a way that allows farmers to maintain profitable operations.**

Response: *While the proposed nutrient management strategy calls for significant reductions in nutrient loading from Agriculture it is not our intent to eliminate it as a viable operation in the Falls watershed. This is one of the drivers behind the collective compliance approach which allows the various sources maximum flexibility to identify nutrient reduction methods and locations that are the most cost-effective. The conditional requirement to buffer and exclude all streams in Stage II is considered a minimum necessary step that would occur only if agriculture does not achieve half of its needed reductions after ten years. Staff and others consider buffers and exclusion reasonable minimum stewardship expectations anywhere, but particularly where such an acute water quality problem exists. The rule includes a 'safety valve' provision for the Commission to consider alternative recommendations from the Watershed Oversight Committee, which could for example include presentation of evidence that insufficient cost share has been available to enable all operations to install buffers or exclusion. The Hearing Officers considered this design fair and reasonable.*

Commenters:

Talmage Layton (6/30/10)
Talmage Layton (8/16/10)
Samantha Gasson
Anne Coan (6/30/10)
Anne Coan (8/16/10)
Deanna Osmond, PhD
Eddie Culbertson
Southern Orange County Farmers and Landowners Coalition

Comment ID: **49**

Comment: **A collective compliance strategy is needed for agricultural to have flexibility in meeting its nutrient reductions targets.**

Response: *The current proposed Agriculture Rule allows for the collective compliance approach similar to how it is employed in the Neuse, Tar-Pam and Jordan nutrient reduction strategies. Individual compliance would be required under Stage II implementation only if the Ag community fails to achieve the Stage I reduction objectives by 2021. Please see also our reply to the preceding comment.*

Commenters:

Michael Page
Talmage Layton (8/16/10)
Samantha Gasson
Samantha Gasson
Steven Troxler
Anne Coan (6/30/10)
Anne Coan (8/16/10)

Comment ID: **72**

Comment: **To better understand agricultural practices and their importance on water quality in Falls Lake, a study is needed comparing water quality in the Lake Michie and Little River, two subwatersheds of Falls Lake with much of Durham's agricultural land, with water quality in Falls Lake. Lake Michie is currently not Impaired.**

Response: *We understand the desire to look to other watersheds to evaluate agriculture's effects on water quality, but it is important to keep in mind that any number of variables could be contributing to a given lake's condition. Regarding the condition of Lake Michie, it is listed as Not Rated in the 2010 Integrated Report due to insufficient data to make a use support determination. While water quality conditions in Lake Michie have not been judged, immediately downstream, the Flat River is listed as impaired for turbidity and high chl-a levels. This condition is considered notably poor for a flowing stream and suggests significant nutrient sources are present in the watershed. It is worth noting that, because Lake Michie faces similar pressures to Falls Lake (i.e, increased development, loss of forests) the Strategy's nutrient reduction measures will benefit users of Lake Michie as well as Falls Lake.*

Commenters:
Eddie Culbertson
Samantha Gasson

Comment ID: **78**

Comment: **Agricultural operation animal thresholds are iniquitous:**

- **Proposed definition of commercial horse operations as five or more horses is too low, especially when compared with cattle (i.e., a commercial cattle operation is 20 or more; a commercial horse one is 5 or more).**
- **Horse pastures and barns that do not board, exhibit, breed, or raise horses for commercial purposes should not be included in the Agriculture rule.**
- **A more equitable criterion is needed for inclusion as an animal operation in the proposed Agricultural rules. For example, instead of number of animals, it should be based on nutrient production per animal unit or facility.**
- **Animal operations under the proposed rules should incorporate the concept of Animal Use Units, as defined by the Natural Resources Conservation Service, and include factors such as soil type and lot size in determining the number of animals that could be kept on a parcel of land.**
- **According to 2008 producer (i.e., farmer) surveys in the entire Neuse Basin, recommended livestock stocking levels (0.5 cows or horses/ac/yr) were generally followed. Reducing stocking rates further would have unclear results. Data were not aggregated to gage the need for livestock exclusion.**
- **Definition of a commercial animal operation should be based on number of animals per acre and not the total number of animals per operation.**

Response: *Our proposal to set livestock thresholds by number of head and to initially propose the numbers we did was based on our experience in Tar-Pamlico and Jordan watersheds, which included a legislative negotiation process that involved collaboration with the livestock research community, livestock industry and others. The process included use of the best available information to develop statistics on livestock numbers, operation size distributions, stocking rates and waste production. The concept of livestock head thresholds came from the industry. The Tar-Pamlico stakeholder group recognized that any threshold approach has shortcomings. They came to general agreement on the head threshold concept used here, with the view that stocking rates and other site-specific management considerations would be best addressed as part of implementation, where sound management practices would be recognized accordingly.*

We have subsequently developed livestock statistics specific to the Falls Lake watershed again using the best information available to help judge the appropriateness of initial proposal. According to Shaffer et al. (2010)[1] and input from researchers during the Tar-Pamlico process, annual nutrient production per head of beef cattle is essentially equal to that of horse. Using Shaffer's information combined with inventory data from the USDA's 2007 Agricultural Census and the NC Equine Industry's survey published in 2009, DWQ estimated the nutrient production of cows and horses in the Falls Basin. Of the estimated total livestock waste produced, cows contributed 60% TN and 59% of TP with horses contributing 35% TN and 34% TP of the total nutrient wasteload. Combined the population of these two animals produced 95% and 93% of the total livestock nitrogen and phosphorus waste in the watershed,. This information confirmed that cattle and horses are by far the most important livestock in the watershed and that both are significant nutrient contributors.

Differences in the horse and cattle threshold numbers that qualify an operation for inclusion in the Ag Rule stem from differences in the typical horse and cattle operation size. Statistics from the 2007 Ag Census show that, on average, horse operations are much smaller than cattle operations, 8/operation verses 55/operation, respectively. While the distribution of operation sizes varies between the two, at minimum a threshold would need to fall below the average operation size to capture a majority of that animal type. The Division estimates that a horse threshold of 5 captures over 60% of the animals while requiring about 50% of operators to register for the Agricultural Rule. Elevating this number to equal cattle (i.e., 20 head) would result in nearly 80% of horses being exempt from the rule. These numbers argue for lowering the horse threshold, if anything. Regarding cattle on the other hand, roughly 94% of cattle and 50% of cattle operations are captured with an operation threshold of 20 cattle. The Hearing Officers felt that the cost of lowering the cattle threshold was not justified to capture the estimated 6% of cattle not covered by the 20 head threshold.

As commenters have noted, many horse operations are not commercial in nature. For this reason in part, the Tar-Pamlico stakeholder group arrived at inclusion criteria for livestock that did not involve whether an operation was commercial or not, and we followed that same approach here. See estimated animals and nutrient production numbers for the Falls Lake Basin below (Table 1.)

Commenters:

Jim Wrenn (8/16/10)	Thomas Saunders	Shirley Cates
Lisa Etzel	Sue Gray	Anne Coan (8/16/10)
Valerie Foushee	Deanna Osmond, PhD	J. Russell Allen (8/3/10)

[1] Shaffer, K.A., Smyth, T.J., Crozier, C.R., and Clevland, B.R. 2010. Livestock Manure Production Rates and Nutrient Content. 2010 North Carolina Agricultural Chemicals Manual. College of Agriculture and Life Sciences, North Carolina State University.

Table 1. Estimated Animals and Nutrient Production in the Falls Lake Basin[1]

Animal Type	Ops[2] (#)	Head[3] (#)	Avg. Head (#)	Head Nutrient Yield[4] (N Lb/Yr)	(P Lb/Yr)	Equivalent Ratio N	P	Total Annual Production N LB/Yr	P Lb/Yr	% of Total N	P	% of Total[A] N	P
Cattle	257	14,192	55.1	111.2	60.6	1.0	1.0	1,578,434	859,893	81	79	60	59
Equine	270	2134	7.9	111.3	58.0	1.0	1.0	237,557	123,687	12	11	-	-
Equine[A]	n/a	8433	n/a	111.3	58.0	1.0	1.0	938,762	488,777	-	-	35	34
Sheep/Lambs	43	741	17.3	8.3	3.8	13.4	16.1	6,165	2,786	0	0	0	0
Hogs/Pigs	23	2240	97.5	23.4	17.7	4.8	3.4	52,349	39,581	3	4	2	3
Layers, Pullets, Broilers	82	78,360	950.4	0.9	0.8	123.6	77.5	70,602	61,277	4	6	3	4
Total Livestock nutrient production								1,945,107	1,087,224	100	100		
Total livestock nutrient production[A]								2,646,312	1,452,314			100	100

[1] Estimates are based on the 2007 Agricultural Census except for rows highlighted in gray. All data has been adjusted based on the proportion of the county in the Falls Basin.

[2] County estimates for the large Hog and Poultry operations were reduced based on location data of DWQ permitted animal facilities to reduce the influence of these operations on the animal inventory. Poultry operation estimates are confined to layer operations.

[3] In several counties Cattle, Sheep, and Hogs had too few operations to disclose animal inventory. For those, animal estimates were made based on the disclosed number of operations multiplied by average inventory taken from similarly sized operations in other Falls Basin counties. For poultry, head estimates were made by combining the three poultry types (i.e., layers, pullets, and broilers).

[4] Nutrient Yield estimates were made using nutrient content data from [1] Shaffer et al. (2010). Beef cattle were used for manure nutrient content. Chicken nutrient content estimated based on the combined average for layers and broilers.

[A] Estimate with Equine from the NC Equine Survey in 2008. Annual production totals in grey reflect totals if NC Equine Survey horse estimates were substituted for the Ag Census estimate.

[1] Shaffer, K.A., Smyth, T.J., Crozier, C.R., and Clevland, B.R. 2010. Livestock Manure Production Rates and Nutrient Content. 2010 North Carolina Agricultural Chemicals Manual. College of Agriculture and Life Sciences, North Carolina State University.

Comment ID: **102**

Comment: **Limited nutrient reduction opportunities are available within the Agricultural sector.**

- **Current nutrient management and conservation practices have left agriculture with limited opportunities to further reduce NPS pollution and, consequently, they cannot meet the nutrient management strategy's proposed load reduction goals of 40% N and 77% P. Based on limited further opportunities, reductions of no more than 15% N and 10% P can be met over a 20-year time frame by agriculture.**
- **Agriculture has already achieved significant nutrient load reductions due to implementation of water quality improvements to comply with the NSW rules for the Neuse Estuary. Further nutrient load reductions from the dwindling number of agricultural operations may not be feasible. Farmers have done their part to clean water quality in the Lake and they should not carry the entire burden for cleaning up Falls Lake.**
- **An opportunity to reduce nutrients on agricultural land is through planting of vegetative buffers and it is estimated that 30% of agricultural fields are not adequately buffered. If buffers were put on all this land, N would be reduced by about 15% with less of an impact on P.**
- **Under the Agriculture rule, language is needed on economic feasibility for implementation.**

Response: *The Hearing Officers recognize that nutrient reduction objectives present challenges to the Agricultural operators as well as other regulated sources covered under the Strategy. Point sources and development have had to meet Neuse Basin requirements and voice similar concerns about their ability to meet these additional reduction needs. Nevertheless we consider it necessary for each source to make full good faith efforts toward the strategy needs. All parties will have a better sense of what can or cannot still be done after Stage I. Regarding specific estimates of the potential for additional reductions, one aspect for phosphorus that is difficult to quantify and that we believe has thus not been estimated so far is the load-reducing benefits of streambank stabilization stemming from livestock exclusion. We suspect that once these benefits can be valued, the importance of this practice will be better understood. It is encouraging to note that significant creditable implementation of exclusion and related practices has occurred since the lake's baseline period, driven by severe drought around 2007. In some cases, farmers could offset the expense of installing BMPs by selling credits to owners of PS and urban NPS. Farms could choose to retire the land for trading income, return hydric soils to wetlands for trading income, or forest some of the land for trading income along with income from timber harvesting and hunting rentals.*

Commenters:

Anne Coan (8/16/10)
Valerie Foushee
Samantha Gasson
Talmage Layton (6/30/10)
Talmage Layton (8/16/10)
Deanna Osmond, PhD
Southern Orange County Farmers and Landowners Coalition
Michael Page

Comment ID: **114**

Comment: **Community gardens should not be subject to the Ag Rule.**

- **Large, non-commercial gardens (>1 acre) should not be included under the agricultural rules because it is likely that: there are few of these operations; they have sufficient vegetative buffers; and they are transient in nature.**
- **Oppose regulating community gardens less than or equal to one acre in size. Community gardens are often encouraged to promote community enhancement and youth programs. Community gardens can replace impervious surfaces or utilize abandoned lots thereby having beneficial stormwater impacts while reducing crime and enhancing neighborhoods.**

Response: *The Hearing Officers considered comments on the relevance of "Hobby Farms" to the Agricultural Rule, and decided not to revise the rule to capture such activities beyond the methods it already employs. They retained provisions that subject commercial crop and non-tree horticultural operations to the Rule. As used in this Rule, commercial means activities conducted primarily for financial profit. A size threshold is not applied to commercial operations. Hearing Officers were comfortable with retaining the commercial criterion of "primarily for financial profit" as a delineation of which farms would be subject to the rule since this would also capture "hobby farms" that are operated for financial. And any hobby farm regardless of whether it is for profit or not, would be subject to the rule if it exceeds the animal thresholds.*

Commenters:

Valerie Foushee

Theodore Voorhees (8/16/10)

Comment ID: **191**

Comment: **Under the Strategy's Agriculture rule (15A NCAC 2B .0280(4)), the categories of agricultural operations should be expanded to include any animal husbandry activity for which the agricultural operator receives remuneration, such as boarding domesticated animals. The Watershed Oversight committee and the Department of Agriculture should undertake an inventory of all agricultural activities in the Falls Lake water supply watershed to better understand the diversity of such activities and their potential impact on water quality.**

Under the Strategy's Agriculture section (15A NCAC 2B .0280(4)), in the Note, the minimum number of animals which trigger the applicability of the rules should be adjusted to add a catch-all provision so that agricultural operations involving animal husbandry that result in more than $10,000 gross revenues from the animal operations for the preceding fiscal year are required to comply with the rules. Because no minimum lot size is provided for the agricultural operations, the otherwise allowed numbers of the animals could result in concentrations certain to adversely impact the nutrient loading of the receiving waterbodies. In addition, the Director should be given the authority to extend applicability to any agricultural operation, otherwise exempted, that is resulting in adverse impacts on the receiving waters from nutrient loading.

Response: *As commenters have noted, many horse operations are not commercial in nature. For this reason in part, the Tar-Pamlico stakeholder group arrived at inclusion criteria for livestock that did not involve whether an operation was commercial or not, and we followed that same approach here, as it does not seem to be a reliable predictor of nutrient impact.*

The Hearing Officers acknowledge that no minimum lot size or animal density requirements for livestock are included in the Agriculture Rule. Division research, however, estimates that the current livestock numbers in the Agriculture Rule result in coverage of 70-to-80% of the nutrients from livestock operations while including roughly 50% of these operations. Recognizing that the delivery of nutrients from these operations is variable, the, Hearing Officers consider the proposed use of animal numbers to be a responsible approach to defining who should be included

under the rule, while questions of stocking density and other management tools will be addressed during implementation.

In regards to the study recommendation in the first bullet, if a study of agricultural activities in the Falls Basin is undertaken, the Commission has authorized the Watershed Oversight Committee to recommend alternatives implementation measures based on the Committee's assessment of the practicability of agricultural operations meeting the Stage I objectives.

In terms of giving the Director additional authority to include any operation that creates adverse water quality impacts, the rule does include a provision that accomplishes that intent in the Applicability section, Item (4).

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **254**
Comment: **Agricultural operators within municipal limits need better control of their farming operations:**

- **Farmer's properties rights are being transferred to urban centers without their knowledge and without compensation as rules further restrict nutrient loading from agricultural uses so that urban centers can attain maximum growth.**
- **The Agricultural Rule needs to include all farms and not exclude farms in municipalities and their extra-territorial jurisdictions. Currently, these farms have no protections for their operations and are subject to the varying nutrient management rules of the municipalities in which they are located.**

Response: *The Hearing Officers recognize the importance of farming in this State and are aware that day-to-day farm operations such as animal waste management and crop applications can create disagreements, particularly in areas in close proximity to housing communities. While sympathetic to challenges such as these faced by farmers, protections for farming operations are not in the scope of these rules.*

The second bullet suggests that the rule does not apply to farms that fall within municipal ETJ's. This is not the case; the applicability criteria apply independent of location within the Falls watershed.

Commenters:
Southern Orange County Farmers and Landowners Coalition
Marilyn Kille

Comment ID: **263**
Comment: **Livestock fencing and buffers are needed on agricultural operations:**

- **Under the Agricultural Rule ((15A NCAC 02B .0280(5)(e)), support the backup measures for fencing and buffer planting should agriculture's collective compliance approach fail to achieve the required Stage 1 reductions.**
- **Proposed agricultural requirements (e.g., livestock fencing) should be shortened so that they are achieved in Stage 1.**

Response: *The Hearing Officers believe the Stage I collective compliance approach is preferable because it will afford agricultural operations subject to this Rule the opportunity to voluntarily achieve agriculture's 20% TN and 40% TP reduction goals. Under this approach, many operators will voluntarily install vegetated buffers on streams and fence livestock out of streams. The Hearing Officers recognize the importance of vegetated buffers and livestock exclusion on water quality and have maintained that they be installed on all farms subject to the Rule in Stage II if Stage I reduction goals are not been achieved. We considered this sufficient incentive to provide for*

strong follow-through by the agriculture community in Stage I, consistent with the interest expressed in the second bullet.

Commenters:
Karen Rindge (8/13/10)
Alissa Bierma / Larry Baldwin

Comment ID: **268**
Comment: **Under the Agricultural Rule ((15A NCAC 02B .0280(5)(e)), oppose the mandatory requirements for every farmer to install buffers, livestock fencing, and other mandatory BMPs on all farmland in the Falls Lake watershed. This is currently proposed for Stage 2. This should not be in the rules at all, either in Stage 1 or Stage 2. Environmentally sound farm management practice decisions are best made on the farm with technical assistance from local agricultural agencies, not by one size-fits-all state rules.**

Response: *The Hearing Officers prefer to have agriculture's Stage I reduction goals achieved voluntarily through the collective compliance approach and have maintained language in the Rule to support this position. Due to the Strategy's challenging nutrient reduction requirements needed to restore nutrient related water quality standards in Falls Lake, however, the Hearing Officers maintain that, in the event Stage I goals are not achieved, proven nutrient reduction BMPs should be installed on those farms subject to the Rule. Without substantial reductions in Stage II, the water quality goals of the overall strategy can't be met. We believe the most effective and affordable way to get substantial reductions from Agriculture is by edge of stream buffering. It is estimated that to achieve the overall reduction needed from Agrcutlrue (40% N and 77% P), essentially all farms streams would need to be buffered for at least 20 ft and all pastures' streams excluded.*

Commenters:
Michael Page
Talmage Layton (8/16/10)
Steven Troxler
Anne Coan (8/16/10)

Comment ID: **274**
Comment: **Funding mechanisms and coordination are needed to aid in implementation of the Ag Rule:**

- **Funding guarantees are needed for farmers to implement practices required under these rules. These could come from increases to programs like the Agriculture Cost Share Program or 319 grants. Due to highly competitive agricultural markets, the costs to implement the Agricultural Rules cannot be passed on to customers.**
- **Small, non-commercial equine operations are not highly prioritized for agricultural cost-share funds focused on improving water quality because of their size. Also they are not eligible for federal assistance from EQIP. As a result, they have limited financial assistance opportunities; however, because of their expansion in the Falls Lake watershed, they may bear a disproportionate amount of the cost for nutrient reduction.**
- **Coordination between local SWCDs, county governments, DSWC and DWQ needs to begin now so that additional technical assistance funding for can be secured. Current budget limitations for Agriculture Cost Share and NRCS make it difficult to fund additional staff to support the proposed rules reporting requirements, farmer sign-up,**

and developing strategies.

Response: *The Hearing Officers are sensitive to these concerns. While the Commission is not able to provide funding guarantees, staff recognizes the demanding economics of agriculture. The rule includes a 'safety valve' provision for the Commission to consider alternative recommendations from the Watershed Oversight Committee, which could for example include presentation of evidence that insufficient cost share has been available to enable all operations to install buffers or exclusion. The Hearing Officers considered this design fair and reasonable.*

Regarding funding assistance for equine operations, the Division is willing to work with the horse industry to assist it in seeking grant funds to help meet the costs of implementation where existing cost share streams are insufficient or inaccessible.

Regarding the need for technical support resources, we understand that while some organizational infrastructure exists in the Falls Basin already due to the presence of the Neuse Basin Rules,, due to the magnitude of additional nutrient reductions needed, additional coordination will be needed. Staff recognizes the resource burden that the rule will place on the agricultural infrastructure and, as with the Neuse and Tar-Pamlico, intend to work with the Division of Soil and Water Conservation to seek funding to support new technical staff for the affected areas. As to whether it is realistic to assume all farmers will obtain cost share, given that the first ten years of implementation are essentially voluntary in nature, we believe it is reasonable to assume at least for this period that farmers will implement if they can obtain cost share. In addition, under the current accounting process we do not have the ability to quantify non-cost-share implementation.

Commenters:

Kelly Ibrahim / Julie Henshaw
Sue Gray
Anne Coan (8/16/10)

Comment ID: **278**

Comment: **Non-commercial farms should not be included in the Ag Rule:**

- **Oppose "hobby farms" being called farms of any kind. They are not farms. "Lifestyle acres" is a more appropriate alternative term and should be defined as land that grows crops not for commercial purposes. Agriculture is a commercial endeavor, and the agriculture rule captures commercial farms. Also, dogs are companion animals and dog kennels are not agriculture. Both "lifestyle acres" and dog kennels should be addressed under the rules for Existing Development and not Agriculture.**
- **Horse pastures and barns that do not board, exhibit, breed, or raise horses for commercial purposes should not be included in the Agriculture rule.**

Response: *While the great majority of agriculture may be commercial in nature, the statutory definition of agriculture in Chapter 106-581.1 includes livestock for both commercial and non-commercial purposes; "… and the raising, management, care, and training of livestock, including horses, … and other animals for individual and public use, consumption, and marketing." The Hearing Officers chose to retain that approach to livestock in this rule. They believe, for reasons outlined in Comment 78, that animal numbers is a sound criterion for including animals in the Agricultural Rule, and agreed that dogs do not belong on the list.*

Regarding hobby farms involving crop production, the Hearing Officers were comfortable with retaining the commercial criterion of "primarily for financial profit" as a delineation of which ones would be subject to the rule. They also recognized that ones not meeting that distinction could be addressed under local governments' existing development stormwater programs.

Commenters:

Steven Troxler
Anne Coan (8/16/10)

Kelly Ibrahim / Julie Henshaw

Comment ID: **379**

Comment: **Hobby Farms and aquaculture operations should be included in the Ag Rule.**

- **Hobby farms must be included in the agriculture rules. They are often operated as a business and should be required to control stormwater to prevent, to the extent possible, waste material from entering creeks. Hobby Farm requirements should be implemented watershed wide as part of Stage 1.**
- **Farm ponds managed as fish ponds should be considered as "Hobby Farms" since they are often fertilized to increase fish production and growth.**
- **Aquaculture operations should be included under the Agricultural Rule since they often use fertilizers or fish food to increase growth of cultured aquatic species.**
- **Education programs geared toward owners of hobby farms and kennels should be encouraged as another means of reducing nutrient loading.**

Response: *The Hearing Officers agree that hobby farms, if operated for commercial purposes, should be included in the Agriculture Rule and have incorporated language into the rules to support this position. Aquaculture operations, if they they exceed 20,000 pounds of live weight at any time, would also be included under the rule. The Division is also developing separate permitting processes that may apply in Falls watershed for aquaculture operations that have discharges.*

Education will be play an important role in the improvement of Falls Lake's water quality. Recognizing this, education elements have been included in the load reduction plans for local governments for hobby farms that are not of a commercial nature.

Commenters:

Theodore Voorhees (8/16/10) Valerie Foushee

Shari Bryant

Comment ID: **285**

Comment: **Unfair focus on agricultural emissions in Rule language:**

- **Under the Agricultural Rule (15A NCAC 02B .0280(3)), strike this item. Language already exists under Goals rule .0275 specifying that "these rules do not address atmospheric emission sources of nitrogen" and further state that the "Commission may undertake additional rulemaking in the future or make recommendations to other rulemaking bodies as deemed appropriate to more fully address nutrient sources to Falls Reservoir".**
- **Under the Agricultural Rule (15A NCAC 02B .0280(3)), the following rule language should be added to all nutrient sources and not just agriculture: "As better information becomes available from ongoing research on atmospheric nitrogen loading to the Falls watershed from these sources, and on measures to control this loading, the Commission may undertake separate rule-making to require such measures it deems necessary from these sources to support the objectives of the Falls Nutrient Strategy."**

Response: *The declaration of scope and limitations in the goals rule is worded broadly, including in its recognition of atmospheric source issues. Concentrated livestock operations are agricultural in nature and likely the largest unregulated source of atmospheric emissions of nitrogen in the state, and in staff's opinion merited more specific recognition in this rule for that purpose. The Hearing Officers are aware, however, that these sources of emissions are not well understood and that their quantification would benefit our ability to make decisions on future improvements to nutrient strategies. As a result, this language remains in the Rule.*

Commenters:

Kelly Ibrahim / Julie Henshaw
Steven Troxler

Comment ID: **286**
Comment: **The sale and purchase of nutrient reduction credits involving agricultural land should require approval from the Watershed Oversight Committee, in advance of any buying or selling of credits. This will insure informed reporting for the agriculture rule, and the ability to meet the intent of the collective compliance strategy.**

Response: *The Hearing Offers agree with this comment and have maintained language under (7)(b)(vii) of the Ag Rule requiring the WOC "approve eligible trades". Further clarification was added to the Rule requiring that the WOC develop and obtain Division approval for a nutrient trading program prior to trades occurring involving agricultural land.*

Commenters:
Kelly Ibrahim / Julie Henshaw

Comment ID: **305**
Comment: **Under the Strategy's Agriculture section (15A NCAC 2B .0280(8)(a)(iii)), to provide necessary staff flexibility for appointing members of the Local Advisory Committee, strike the language directing who NC Department of Agriculture appointments to the Committee (i.e. "whose regional assignment includes the county").**

Response: *The Hearing Officers accepted this request. The referenced clause has been deleted.*

Commenters:
Steven Troxler

Comment ID: **316**
Comment: **Environmental groups need representation on Agricultural Committees:**

- **Under the Agricultural Rule ((15A NCAC 02B .0280(7)(a)), support the inclusion of three members with environmental interests on the Watershed Oversight Committee. Inclusion of environmentalist on this Committee recognizes the value of the agriculture-environmental relationship in reducing nutrients from agricultural lands.**
- **Local Advisory Committees should include representatives including environmental interests.**
-

Response: *The Hearing Officers believe environmental interests' role is most suited for the WOC. Here they can oversee nutrient accounting, review ag reports, interact with Division, agricultural, and research staff on reviewing nutrient reduction efficiencies and developing a nutrient trading program for Division approval. The role of the LAC to register farmers, track farm BMPs, and develop local nutrient control strategies is more suited to county technical staff. Through LAC reports to the WOC, however, environmental interests will be able to offer input on matters they feel need to be addressed by LACs.*

Commenters:
Alissa Bierma / Larry Baldwin
Bob Mulder

Comment ID: **334**

Comment: **Milestones are needed under the Agricultural rule to measure progress toward achieving the reduction goal. Some suggestions include: a collective 15% reduction in nitrogen loading and 25% reduction in phosphorus loading no later than 2018; a collective 20% reduction in nitrogen loading and 40% reduction in phosphorus loading no later than 2023. Failure to meet these goals will trigger additional requirements for individual operators to buffer all cropland or pasture and exclude livestock from streams. This is two years later than the draft rule proposes, but reasonable given the substantial reductions agriculture is being asked to make; a collective 25% reduction in nitrogen loading and 50% reduction in phosphorus loading no later than 2028; a collective 35% reduction in nitrogen loading and 65% reduction in phosphorus loading no later than 2033; a collective 40% reduction in nitrogen loading and 77% reduction in phosphorus loading no later than 2038.**

Response: We understand the interest in establishing incremental benchmarks for progress over the large timeframes encompassed by each stage to improve agriculture's accountability, and we considered this recommendation closely. Ultimately we felt that the annual reports required under the rule would provide sufficient opportunity for attention to maintaining pace of implementation. In the event that Stage I reductions have not been achieved by 2021, the Hearing Officers have included a 5-year time period for agricultural to achieve its individual compliance measures of installing vegetative buffers and excluding livestock from of intermittent or perennial streams.

Commenters:

NC Conservation Network & American Rivers

Comment ID: **360**

Comment: **Under the Agriculture rule (15A NCAC 02B.0280(6)(c)), many current land application fields will be eliminated at a time when the proposed wastewater treatment requirements result in additional biosolids for disposal.**

- **The biosolid application rule states that persons "shall apply phosphorus in compliance with guidance established in the most recent version of North Carolina Agricultural research Service's Technical Bulletin 323, North Carolina Phosphorus Loss Assessment." The PLAT model estimates phosphorus loss from a site based on application rates, site conditions, and the crop's Realistic Expectation Yield. The majority of the lands used by the City of Durham for land application are located in northern Orange County in the Falls Basin. In reviewing the soil sample results and the applying the PLAT model, it appears that the City would lose over 80% of its permitted land for land application, basically eliminating Durham's land application program. The proposed wastewater treatment rule, however, requires additional removal of phosphorus from wastewater discharges by adding metal salts, creating additional biosolids for disposal. The Ag rule, as written, would result in much of the biosolids being disposed in landfills.**
- **The provision limiting biosolids application based on phosphorus loadings should be removed until adequate research is completed on the fate and transport of soil-bound phosphorus. Currently, there is limited research to accurately predict the bio-availability of phosphorus that is chemically bound to the plant and the ability of that phosphorus to runoff or leach from the soil. Preliminary results on sludge sample tests from City of Durham facilities through the NC Department of Agriculture and Dr. Robert Rubin (NCSU), indicate that a significant portion of phosphorus is not available at the same rate that the PLAT model estimates. If this research is verified, then the application of the PLAT model to biosolids applications would not be justified.**

Response: *The Hearing Officers intent with the regulation of residual waste application is to limit over-application to and movement of nutrients from farm fields. After discussions with researchers, Division staff agree that uncertainties are sufficiently great in the ability of PLAT to accurately predict the fate of chemically bound P found in biosolids to refrain from the requirements proposed in the public comment version of the rules until better knowledge is developed. The Hearing Officers accepted this recommendation, but added a requirements that land applicators provide soil tests and loading estimates in reports to the Division so that the Division can study the risks to streams from land applications of residuals to inform subsequent recommendations to the Commission on their additional regulation.*

Commenters:
Donald Greeley (8/16/10)

STATE AND FEDERAL STORMWATER RULE (.0281)

Comment ID: **133**

Comment: **Under the Strategy's Stormwater Requirements for State and Federal Entities section (15A NCAC 2B .0281(3)(a)), support "Land Disturbance Threshold Option B" (i.e., 5,000 square feet) for development by State and federal entities.**

Response: *The Hearing Officers found it reasonable, given the unparalleled reduction needs in the Falls watershed, to lower the disturbance to one-quarter acre capture the many small-scale development activities that occur. They considered it too fine a scale to set that threshold at 5,000 square feet, or slightly over one-tenth acre, weighing the number of people who would be affected against the cumulative gain from doing s.o*

Commenters:

J. Russell Allen (8/3/10) Alissa Bierma / Larry Baldwin
Jim Wrenn (8/16/10)

Comment ID: **134**

Comment: **Onsite State and Federal treatment requirements:**

- **Under .0281(3)(a)(ii), support "Onsite Treatment Option B (60% N, 60% P) for treatment by State and federal authorities.**
- **Under .0281(7)(c)(ii), recommend that "Onsite Treatment Option B (60% N, 60% P) be adopted in the rules for onsite treatment by the NC DOT.**
- **Under .0281(3)(a)(iv), where the language reads "At a minimum, the new development shall not result in a net increase in peak flow leaving the site from pre-development conditions for the one-year, 24-hour storm event" the City recommends adding "or the 2-year, 24-hour storm."**
- **Under .0281(7)(c)(i)), this part of the rule should be strengthened. When NCDOT is expanding an existing road that crosses, borders or intersects with Falls Lake, NCDOT should be required to design the roadway so that it achieves the nutrient reductions required of other new development projects. NCDOT should be afforded the same opportunity to buy down its nutrient loading reductions.**

Response: *We and the Hearing Officers accepted arguments made by local governments that these greater onsite requirements would be prohibitive based on application of the almost-completed new development accounting tool for the Jordan Lake watershed to a range of development scenarios, recognizing that we expect to propose use of this tool for the same purpose in the Falls watershed.*

Based on these concerns and recognition of some level of uncertainty associated with application of this new accounting tool until it is finalized and greater experience is gained with it, the Hearing Officers agreed to reduce the onsite treatment requirements to 50% of the needed load reduction for both nitrogen and phosphorus for the general development case. Please see also our reply to the preceding comment.

Commenters:

J. Russell Allen (7/20/10) Alissa Bierma / Larry Baldwin
Jim Wrenn (8/16/10)

Comment ID: **304**

Comment: **Concern over the achievability of onsite treatment requirements:**

Under the State and Federal Entities rule (15A NCAC 2B .0281(7)(c)(iii)), on-site treatment requirements should be adjusted from 50% nitrogen treatment to 40%. Also, include language "to the maximum extent technically and economically feasible". This language will afford NC DOT more flexibility in this sub-item to reduce nutrients in a manner consistent with the Falls Lake rule .0275 goal of 40% nitrogen reduction.

Response: *We and the Hearing Officers accepted arguments made by local governments that a 50% or 60% reduction in the post construction loading rate would be prohibitive based on application of the almost-completed new development accounting tool for the Jordan Lake watershed to a range of development scenarios, recognizing that we expect to propose use of this tool for the same purpose in the Falls watershed.*

Based on these concerns and recognition of some level of uncertainty associated with application of this new accounting tool until it is finalized and greater experience is gained with it, the Hearing Officers agreed to reduce the onsite treatment requirements to 50% of the needed load reduction for both nitrogen and phosphorus for the general development case. Please note that the revised rule language calls for achieving 50% of the needed load reduction onsite before using offsite offsets. It does not require a 50% reduction in net loading, which would be inconsistent with the Falls Lake Strategy reduction objectives.

Commenters:
Greg Thorpe, PhD

Comment ID: **135**

Comment: **Under the Strategy's Stormwater Requirements for State and Federal Entities section (15A NCAC 2B .0281(4)(b)), the threshold for requiring additional nutrient reduction programs on State and federal entities should be raised. Additional programs should be required of entities located within a subwatershed where chlorophyll levels have exceeded 40 ug/L in more than sixty percent of the monitoring events. This standard would provide better protection of the watershed by protecting subwatersheds.**

Response: *The intent of this comment is unclear. The requirements for new and existing development for non-DOT parties are identical to those the local governments are subject to. The commenter did not provide any additional recommendation as to what additional measures they would suggest be implemented*

Commenters:
J. Russell Allen (7/20/10)

Comment ID: **195**

Comment: **Quicker implementation of Rule needed:**

- **Under.0281(8), federal and State entities, other than NCDOT, should be put on that same schedule for existing development retrofits as private and local government properties. The 30 months allowed for the Commission to develop a model local program is too long and should be shortened to 18**

months, with appropriate time adjustments to other parts of the implementation process.

- **Under NCAC 2B .0281(9), NCDOT is likely the most capable state agency for responding to this requirement. It has long held a MS4 NPDES permit so it should be skilled at developing a Stormwater Management Program. The time for program submission should be shortened to 12 months with a submission for Commission approval within 18 months and implementation to start within 18 months from the effective date of the rule.**

Response: *Compliance dates for non-DOT parties are the same as those for local governments for parallel requirements and New development compliance dates are substantially earlier for non-DOT entities since the Division will permit those activities, eliminating the need for those entities to develop permitting programs. While we recognize the DOT is experienced in developing stormwater management plans, given the large reduction needs and the planning required to identify available retrofit opportunities, we feel the timelines proposed for implementation are reasonable*

Commenters:
J. Russell Allen (8/3/10)
Jim Wrenn (8/16/10)

Comment ID: **262**
Comment: **Additional measures needed to strengthen State and Federal Entities Rule:**

- **NC DOT should have the same nutrient reduction requirements as local governments and developers who do road improvements.**
- **Strengthen State and federal new development requirements to mirror those established under the New Development rule.**
- **Under 15A NCAC 2B .0281(7)(d), language should be stronger in requiring NC DOT to meet the same requirements as other communities in the Falls watershed. For example, under (ii), it states "schedule shall provide for proportionate annual progress towards reduction goals as practicable…". Also, under (iv) the nutrient reductions achieved by these retrofits needs to be identified.**
- **Under 15A NCAC 2B .0281(7)(e), recommend that the NC DOT discontinue all fertilizer application to any DOT highway.**

Response: *The requirements for new and existing development for non-DOT parties are identical to those the local governments are subject to. Compliance dates for non-DOT parties are also the same as those for local governments for parallel requirements. New development compliance dates are substantially earlier for non-DOT entities since the Division will permit those activities, eliminating the need for those entities to develop permitting programs. Because of the unique linear nature of NC DOT road projects and the restricted set of options they face in terms of available land for achieving project load reduction targets we feel the proposed requirements for NC DOT new and existing development load reductions are fair and reasonable.*

Commenters:
Frank Thomas
Karen Rindge (8/13/10)
Michael Page
J. Russell Allen (7/20/10)
NC Conservation Network & American Rivers

Comment ID: **302**
Comment: **Clarity needed on Strategy's accounting and crediting:**

- **Under 15A NCAC 2B .0281(7)(c)(ii), reporting requirements need to**

adjusted to eliminate use of differing accounting tools. Language of the rule should be adjusted to minimize potential confusion over which calculation method applies to NC DOT. Specifically, this sub-item should refer to Item (11) of .0281 where one accounting tool can be identified for NC DOT.

- **Under 15A NCAC 2B .0281(7)(c)(ii), please include a reference to Item (11) of this rule to identify the method that will be used for load calculation of runoff for NC DOT. This will help eliminate multiple reporting requirements.**

Response: *We agree with this comment and have revised to the rule text in Sub-Item (7)(c)(ii) to reference Item (12), formerly Item (11), of this Rule to identify the method that will be used for load calculation of runoff for NC DOT.*

Commenters:
Greg Thorpe, PhD

OPTIONS FOR OFFSETTING NUTRIENT LOADS RULE (.0282)

Comment ID: **8**

Comment: **Growth control measures provide a potential funding mechanism to assist in the Strategy's implementation and should be supported under the strategy:**

- **The Commission needs to consider regional cost-sharing measures to aid those burdened by clean-up of the Lake. For example, growth management options such as Transfer of Development Rights (TDRs) should be considered as a means to allow for those downstream communities who benefit from the Lake's uses to help fund its protection and clean-up.**
- **Growth control measures (e.g., purchase of development rights, expansion of conservation easements, etc.) are needed to keep land from getting developed and contributing to polluted runoff.**
- **The selling of development rights to farm and forest lands can be an important water quality management tool. It allows owners of these lands to recoup the development value of their property. In turn, easements are placed on the land maintaining its use. A local program in Forsyth County, NC can be considered as a model for such a program.**

Response: *We support local government efforts to explore alternative revenue streams, and are open to evaluating the potential for any new measure to produce creditable load reductions. To be clear on roles, the Commission's authority does not encompass taking action on funding proposals, but it does have a role in authorizing water quality-related activities. In that regard, the Division is actively participating with a workgroup organized by the Triangle J. Council of Governments to explore the potential for TDR's to yield creditable nutrient load reductions. In terms of funding mechanisms, legislation passed in 2010 by the NC General Assembly calls for the formation of a Falls Lake "Association" of local governments to jointly work together in implementing the rules and conduct water quality monitoring. Funding issues and potential options for achieving the load reduction objectives will be a part of this group's activities.*

Commenters:

Ellen Reckhow
Bruce Haverys
Anne Coan (8/16/10)
Samantha Gasson
Ann Prospero
Michael Schlegel
Doris Whitfield

Comment ID: **116**

Comment: **Land preservation/conservation as a creditable conservation practice:**

- **Under Options for Offsetting Nutrient Loads, (15A NCAC 2B .0282), incorporate targeted land conservation as an acceptable practice toward meeting the nutrient reduction requirements of the proposed rules. These lands act as a sink for nutrients and sediments in runoff, minimizing further degradation of the Lake and encouraging protection of both open space and riparian buffers.**
- **The State should recognize and encourage land conservation, especially permanent conservation easements, as a method for achieving nutrient reduction credits. Doing so would acknowledge the lasting water quality benefits of these activities and also encourage additional protection of both open space and riparian buffers.**
- **Support incentives to keep land adjacent to the riparian buffer protected from**

development. Natural services of these lands could be eliminated if developed and any added impervious surfaces could increase runoff and reduce water quality. Incentives to protect these lands would allow more flexibility to reduce nutrients than a regulatory approach and such incentives would give local governments another tool to improve the effectiveness and efficiencies for accomplishing environmental protection and resource conservation.

- **Forest preservation should receive nitrogen reduction credit based on the difference in loading rates between forest and developed land. For example, in the nutrient management strategy, forests are estimated to have a load of 1.7 lbs/N/ac where loading targets for new development are 2.2 lbs/N/ac. Forest preservation, therefore, creates a net reduction when compared to the new development nutrient thresholds.**
- **Conservation should be an option for achieving nutrient reduction credits. Evidence in support of this is found in the guidelines of the N.C. Wildlife Resources Commission for secondary and cumulative impacts mitigation and in the rules adopted by this Commission for Goose Creek. The WRC guidelines call for 200 foot forested buffers throughout the State and for restricting development to 10% of basins. This set of recommendations is based on the needs for wildlife. While the bigger buffers and greater density limits should not be adopted as minimum standards, credits for achieving this level of additional protection, especially in a highly stressed water supply watershed like Falls Lake, should be given corresponding amounts of credit.**
- **Language is needed in the rule that allows for further discussion and development of an approved framework for incorporating land conservation as an acceptable practice in the Falls Lake rule. An option for consideration is language on use of preservation for stream and wetland mitigation. Other potential criterion for land protection is use of watershed plan identified priority water quality protection parcels.**

Response: *Preservation of existing forested lands, particularly forested riparian buffers, clearly plays a key role in protecting surface waters from degradation by protecting existing pollutant removal functions as well as providing other important ecosystem services. The Neuse buffer protection rule, part of the Neuse Basin nutrient strategy that applies to Falls watershed, is based on recognition of these functions. It serves to protect particularly the existing nutrient removal functions, the great majority of which occur in the zone nearest the stream. We support efforts to increase the scope of protection on existing forested lands and buffers.*

Forest protection, then, can clearly play a key role in protecting undegraded waters, including water supplies, or in helping to arrest degradation. In considering whether protection of existing forest should receive nutrient reduction *credit, it is important first to reaffirm that the goal of this strategy is not to* protect *Falls Lake but to* restore *it, which requires not protection and maintenance of current functions but improvements or net increases to those functions. We would specifically recognize that the act of placing a conservation easement on a tract of forest helps protect functions provided by that forest but does not by itself achieve nutrient load reductions.*

The argument that forest preservation creates net loading reductions relative to the new development loading rate targets inappropriately compares a specific case, one involving only forest, to target values that were set by considering all developable land cover types. The new development loading rate targetswere set based on recognizing the specific mix of agriculture and forest lands that exists in the watershed, and on the assumption that those lands would be developed in the same proportions in which they exist. The targets then reduce those collective N and P loading rates by 40% and 77% respectively. If all developable land were forest, the new development loading rate targets would have been set 40% and 77% lower than the N and P export rates of forest, and the apparent reduction

suggested by the commenter through forest preservation would prove to yield no reduction progress toward the strategy goals.

Said differently, the new development rule's loading rate targets are such that while no given development in the watershed may achieve exactly 40% and 77% reductions from its individual pre-development conditions, development collectively on average will achieve those reductions, provided the assumption of proportionality is fair. A 'development' that simply preserves forest is the extreme of the spectrum that, as the commenter notes, would yield an increase in loading if it were actually developed to meet the new development rate targets. On the other extreme, a development that replaces cropland would achieve net N and P load reductions of 84% and 94%, respectively, from it's individual pre-development condition based on the export values we used to set the new development rate targets. On balance over time, all development should achieve 40% and 77% loading reductions from those developed lands relative to their pre-development conditions. Keeping forest as forest, however, does not by itself reduce loading to the lake.

As discussed in our reply to the preceding comment, the Division is working with local governments to explore the value of transferrable development rights (TDR's), including potential indirect benefits. Clearly, TDR's involving conversion of agricultural land to forest yield direct nutrient reductions for which credit can be assigned. Also clearly, where those lands are in a riparian landscape position they provide additional, treatment-based direct nutrient reductions that increase their nutrient benefits. Of course, as the strategy progresses the competition for these relatively inexpensive reductions will increase, and the agricultural community will have to weigh its ability to meet its own strategy requirements against its ability to simultaneously profit from selling away load reduction opportunities to other sectors.

Recognizing the level of interest in the potential for forest preservation to yield nutrient credit, the Hearing Officers added a provision to the goals rule, Rule .0275, committing the Division to evaluating this issue and including its findings in the 2016 report to the Commission on a range of strategy subjects. We are committed to fully addressing this issue.

Commenters:

D. Reid Wilson	Valerie Foushee	Samantha Gasson
Jim Wrenn (8/16/10)	Michael Schlegel	NC Conservation Network & American Rivers
J. Russell Allen (8/3/10)	Bill Flournoy	

Comment ID: **205**

Comment: **Land Preservation without any additional nutrient reducing measures (e.g., reforestation) should not receive nutrient reduction credits. Simply keeping the land in its current form is not grounds for granting offset credit.**

Response: *Please see our response to the preceding set of comments.*

Commenters:

Michael Page	Kelly Ibrahim / Julie Henshaw	Alissa Bierma / Larry Baldwin
Suzanne Harris (8/13/10)	Shari Bryant	

Comment ID: **139**

Comment: **Under the Options for Offsetting Nutrient Loads section (15A NCAC 2B .0282(3)(b)),**

support Option 1 and Option 2 as expressed in the Note. This will allow jurisdictions that span the Upper and Lower Falls management areas flexibility to use credits within their service areas.

Response: *While these allowances would clearly increase flexibility, the Hearing Officers were concerned that they would allow actions that would work against the reduction needs of the upper lake. They chose to retain the originally proposed geographic restrictions.*

Commenters:
J. Russell Allen (8/3/10) Jim Wrenn (8/16/10)
Michael Page

Comment ID: **319**

Comment: **Concerns over accountability and trading:**

- **Under.0282(2)(a), include a stipulation that "Load reductions eligible for credit shall not include reductions achieved to mitigate or offset actions that increase nutrient loading under regulations other than the Falls nutrient strategy". This provision will limit re-crediting of the same nutrient removal function used to "replace' the lost function of the first impact and ultimately result in a net degradation of water quality.**
- **Safeguards are needed to ensure trading functions as intended. Suggested safeguards include: land generating offsets must be protected from development in perpetuity (e.g. using a deed restriction) and managed to maintain background loading levels consistent with forested land; DWQ should institute and oversee a certification process for offset credits, and inspect and enforce against fraudulent credits; a single clearinghouse for recordkeeping related to all offset credits (not just land preservation) should be maintained. It need not be DWQ managed, but it must be open, transparent, and routinely audited.**
- **The buying and selling of nutrient credits should be monitored to prevent credits from being purchased in a watershed where the receiving stream may incur water quality or aquatic habitat degradation.**

Response: *We do not follow the inference made in the first comment. The referenced rule provision is specifically intended to avoid net degradations in water quality by precluding the potential for double-counting nutrient credit from mitigation actions that are conducted under other rules, e.g. stream, wetland or buffer rules. We appreciate the list of suggested safeguards and share concern for the need to improve content and administrative aspects of offsets and other trading actions. We will be working on these issues as implementation proceeds. Regarding the potential for localized impacts, Item (5) of the rule gives the Director has the authority to disapprove trades based on this concern. The rules also set minimum onsite treatment requirements as recognized in Item (1) in part to avoid generating such local hot spots.*

Commenters:
Alissa Bierma / Larry Baldwin NC Conservation Network & American Rivers
Shari Bryant

Comment ID: **362**

Comment: **Under the Options for Offsetting Nutrient Loads section (15A NCAC 2B .0282(5)),**

support this provision which allows offsetting nutrient loads by combining the reduction needs of point sources and existing development.

Response: *This provision has been retained in the final rule.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **369**

Comment: **The rules should clarify the accounting for transfers between sectors. For example, will the mass allocation of a WWTP increase if a house formerly using a septic system connects to that WWTP? Or, if a community overtreats one area (say, existing development), can they trade their reserve to agricultural?**

Response: *This rule is designed to provide minimum ground rules for trading between or within source types. The commenter's desire for greater clarity is understandable, however we felt it would be difficult to get into the kind of specifics described within the rule and at this stage in the process. In response to the specific questions raised, until loading from septic systems is substantiated and quantified, they cannot be included as a loading source nor given credit when eliminated. If a community exceeds its existing development reduction requirements, it could conceivably sell its excess reductions to another source such as agriculture. Clearly such scenarios highlight the need for a central authority to track and responsibly administer a trading program.*

Commenters:
Michael Page

FERTILIZER MANAGEMENT RULE (.0283)

Comment ID: **80**

Comment: **Under Fertilizer Management section (15A NCAC 2B .0283(5)(f)), it is unclear whether or not both commercial and non-commercial livestock operations need waste utilization plans to apply animal waste.**

Response: Although the Hearing Officers recognize the importance of nutrient management planning and education, they weighed the additional resources required to implement the proposed rule against expert input questioning its benefits, and determined it did not justify keeping this Rule. The comments provided by staff of NCSU Department of Soil Science pointed to results of an agriculture statistical survey conducted in the Neuse Basin that suggest that nutrient management training should not be considered behavior change, nor should requiring a nutrient management plan lead to expectations that it will be used. See NCSU Dept. Of Soil Science Comments submitted August 1, 2010 for additional details on the data collected that support these findings. The document can be accessed on the DWQ website at the following url: http://portal.ncdenr.org/c/document_library/get_file?uuid=f4558d43-2927-4eea-9fd6-718b2ef29649&groupId=38364

Additionally, given most of the applicators in the Neuse Basin have already received the training, and in light of the questions raised about the benefits, after careful deliberation, the Hearing Officers decided to eliminate this rule because the resources needed to implement it on operations between 5 and 50 acres in size were not warranted, particular given the questionable results of the .0239 rule in the Neuse Basin.

Commenters:

Lisa Etzel

Comment ID: **146**

Comment: **Concern over fertilizer application not covered under the rule:**

- **Under Fertilizer Management (.0283), homeowner's should be made to comply with improved fertilizer usage on their properties. This is a loophole in the current strategy that needs to be closed.**
- **Studies are needed to raise understanding of the role of fertilizer application by homeowners. The magnitude of this activity's affect on water quality needs to be better understood.**
- **Fertilizer usage on common or commercial areas should be banned.**
- **Large lawns and maintained grassy surfaces should be reduced or eliminated through tree planting and naturalization.**
- **Under Fertilizer Management (15A NCAC 2B .0283), it is unclear whether the rule would apply to residential apartments or condos where a hired applicator applies nutrients to at least five acres per year. It appears that the rules would apply under (2)(d), but then appears there may be an exemption under (3)(b). Larger residential developments are a potential major source of runoff from fertilizer and should be covered.**
- **Fertilizer management is needed for community or home gardens greater than one acre to reduce their nutrient contributions to Falls Lake.**

Response: *Upon review of these comments, and after careful consideration by the hearing officers, the Nutrient Management Rule will not be included as part of the Falls Lake Rulemaking package.*

Commenters:

David Schwartz
Michael Page
Jim Quinn
Mary Mitchell
Jim Wrenn (8/16/10)
Theodore Voorhees (8/16/10)

Comment ID: **153**

Comment: **With proper management, animal waste can be a resource:**

- **An animal waste collection program should be sponsored by NC DENR where manure is collected and removed from farms and taken to a suitable location to be composted for use in landscaping.**
- **Horse manure is often managed in a way that it effectively serves as a nitrogen sink, requiring additional nitrogen to get it to completely decompose. Why would you want to remove that cleansing source of material from the environment?**

Response: *Upon review of these comments, and after careful consideration by the hearing officers, the Nutrient Management Rule will not be included as part of the Falls Lake Rulemaking package.*

Commenters:

Denise Hill

Thomas Saunders

Comment ID: **158**

Comment: **Consider regulating (i.e., limiting) phosphorus in turf fertilizers as a nutrient reduction strategy along with dishwashing detergents. Some governments have taken these actions and the EMC could recommend such actions to the General Assembly (see http://portal.ncdenr.org/c/document_library/get_file?uuid=cd88055f-3615-40ca-a41b-ce2eb6c48361&groupId=38364).**

Response: *The actions suggested here would likely require specific legislative authority. Staff is developing information that would provide a foundation for proposing such legislation, potentially in the upcoming long session.*

Commenters:

Bill Holman-Phosphorus
Jeff Poupart
Karen Rindge (8/13/10)

Comment ID: **272**

Comment: **Nutrient management planning may not be beneficial:**

- **According to 2008 producer (i.e., farmer) surveys in the entire Neuse Basin, only 38% had a nutrient management plan. Under the Neuse Estuary Rules, producers should**

have attended nutrient management training. Since P fertilizer application levels remain high, it does not appear that nutrient management training changed producer behavior and that fertilizer application decisions are more often made by the producers themselves.

- **Agricultural changes in fertilizer applications through improved nutrient management are unlikely to yield much reduction in nutrients. Based on a 2008 agricultural survey in the entire Neuse Basin, N fertilizer is applied at or below suggested rates, P is over applied but this over application would not cause management changes based on P loss information developed in PLAT. Phosphorus applications could be reduced but not N. Since erosion is low, conservation tillage would not affect N and would not reduce sediment attached P significantly; similarly, cover crops have very little reduction value in the Falls watershed.**
- **Consider eliminating agriculture from the Falls Lake Fertilizer Management Rule. Farmer's should already have received nutrient management training under the Neuse Basin Rules and Dr. Osmond's studies have shown a history of under fertilization of farmland. Consequently, encouraging farmer participating in this training may actually result in increased fertilization. Eliminating agriculture's coverage under this rule will allow resources to be better spent on training other categories of fertilizer users (e.g., training for those who need nutrient management training under the Neuse rules).**

Response: *Upon review of these comments, and after careful consideration by the hearing officers, the Nutrient Management Rule will not be included as part of the Falls Lake Rulemaking package.*

Commenters:
Kelly Ibrahim / Julie Henshaw
Deanna Osmond, PhD
Anne Coan (8/16/10)

Comment ID: **339**

Comment: **Nutrient management rule is needed:**

- **Under 15A NCAC 2B .0283, nutrient management plans should be required for farmers' fertilizer applications. Organizations that work with growers on adaptive nutrient management, have found that when farmers have better access to field-specific data or insurance against crop loss due to low nutrients, they will reduce the amount of fertilizer they apply. Also, since fertilizer can be expensive, reducing its use can represent an important savings for growers.**
- **Under the Fertilizer Management rule (15A NCAC 2B .0283), nutrient management plans should be submitted to DWQ. This information would help the Division during future modeling efforts and, if necessary, allow tracking farm-specific reductions if Stage 2 individual mandates come into effect.**

Response: *Upon review of these comments, and after careful consideration by the hearing officers, the Nutrient Management Rule will not be included as part of the Falls Lake Rulemaking package.*

Commenters:
NC Conservation Network & American Rivers

AMENDED NEUSE RULES

NEUSE STORMWATER RULE (.0235)

Comment ID: **168**

Comment: **Under the Strategy's Neuse Stormwater Requirements section (15A NCAC 2B .0235(4)(a)(i)), the list of Falls Basin local governments should be expanded to include all Phase II local governments and any local governments proposed in a separate rule making for addition to the list of Falls Basin local governments. Accordingly, Franklin County and the Towns of Wake Forest and Hillsborough should be added to the list. Based on the EMC's recent rule proposals for additions, the towns of Roxboro and Creedmoor should be added to the list as well.**

Response: *The purposes of amending the Neuse New Development Stormwater Rule was to clarify that local governments subject to both that Neuse New Development Stormwater Rule and the Falls New Development Stormwater Rule would be held to the more stringent requirements of the Falls Lake Stormwater Rule. It is not appropriate or necessary to add additional local governments to the Neuse Rule language as that is beyond the scope of this rulemaking process.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **169**

Comment: **Under the Strategy's Neuse Stormwater Requirements section (15A NCAC 2B .0235(4)(a)(ii)), this rule language reads "there is no net increase in peak flow leaving the site from the predevelopment conditions for the 1-year, 24- hour storm" it is recommended to add "or the 2-year, 24-hour storm."**

Response: *The purposes of amending the Neuse New Development Stormwater Rule was to clarify that local governments subject to both that Neuse New Development Stormwater Rule and the Falls New Development Stormwater Rule would be held to the more stringent requirements of the Falls Lake Stormwater Rule. It would not be appropriate to add additional rule language beyond the original amendment as this would be beyond the scope of this rulemaking process.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **170**

Comment: **Under the Strategy's Neuse Stormwater Requirements section, the time for submission of stormwater ordinance proposals is set at 12 months after the adoption date of the rule for submission of a stormwater plan and 18 months after EMC approval for the local plan to begin implementation. This set of timelines is inconsistent with the timelines provided in the new development rule for Falls Basin local governments at 15A NCAC 2B .0277(4). This rule should be amended to reconcile the difference in favor of the timelines established in**

.0277(b)(4).

Response: *The purposes of amending the Neuse New Development Stormwater Rule was to clarify that local governments subject to both that Neuse New Development Stormwater Rule and the Falls New Development Stormwater Rule would be held to the more stringent requirements of the Falls Lake Stormwater Rule. It is unnecessary to make the suggested change because the Neuse New Development Rule has been implemented since 2003 and local stormwater plans required under this rule have already been developed and approve. It would also not be appropriate to add additional rule language here beyond the original amendment as this would be beyond the scope of this rulemaking process.*

Commenters:

J. Russell Allen (8/3/10)

FISCAL NOTE

Comment ID: **53**

Comment:

- **The cost for activities required under this rule are underestimated. In part, it will likely be more expensive to develop new nutrient reducing technologies than anticipated.**
- **DWQ and OMB's have underestimated the proposed Stage 2 Existing Development Rule costs. City of Durham recently funded detailed stormwater treatment studies of Ellerbe Creek and Eno/Little River. Study results estimated higher implementation costs and much lower nutrient reduction benefits than those provided in DWQ's Fiscal Note.**
- **The Fiscal Notes assumption that sufficient opportunities exist for installation of the BMPs needed to achieve nutrient reductions is incorrect and results in underestimated costs. Cost-effective sites in Ellerbe Creek will soon be exhausted and the cost treatment curve will flatten (i.e., cost increases more steeply than nitrogen or phosphorus treatment). Using this information, the City of Durham identified cost effectiveness of the proposed Falls rules and estimates a total cost of $595 million to $645 million to implement projects that achieve nitrogen and phosphorus reductions of one-third one-quarter, respectively. Costs to implement the full 40%N and 77%P reductions were not made because the flat cost-effectiveness curve would not support reductions of this magnitude.**
- **Active, more costly, treatment systems (e.g., wastewater treatment technologies) will be required to achieve the proposed stormwater nutrient reduction levels from new and existing development due to the inability of passive stormwater treatment systems to continually reduce effluent concentrations. This runs counter to the assumptions in the Fiscal Note, resulting in its underestimate of stormwater treatment costs.**

Response: *We recognize the nutrient reductions needed for Falls Lake to meet it water quality goals are substantial. It is likely that these rules and the large load reductions needed will drive innovation in technology and techniques resulting in more cost-effective means of achieving the necessary reductions. A number of drivers, including the growing need for water conservation, the costs of conventional engineered best management practices, the growing field of alternative options and ongoing research to refine and update credit accounting to capture innovative practices are all expected to result in ultimate compliance costs significantly lower than the projections provided in this analysis suggest.*

The cost estimates calculated for implementation of each rule were developed using the most recent research and best available data and accounting tools. However, numerous assumptions and estimates are necessary to project long range costs of implementation. The Fiscal Analysis includes detailed explanations of the assumptions used and provides discussion of the uncertainties related to the cost estimates calculated for the corresponding rules. In general, the long-term nature of these rules and the rapidly evolving field of watershed restoration combine to make projection of costs more than a few years into the future increasingly speculative. The costs, as estimated in the Fiscal Analysis, represent conservative high range estimates based on current available information and technology.

Commenters:

Steve Levitas	Theodore Voorhees (8/16/10)
Paul Wiebke	Durham Chamber of Commerce

Comment ID: **197**

Comment: **Under the Strategy's Fiscal Note on Drinking Water Quality Benefits, the narrative correctly identifies Total Organic Carbon (TOC) as the contaminant of concern for water treatment. The narrative also identifies negative water quality impacts from both turbidity and dissolved oxygen (DO) impacts. Because Raleigh's intake is in the lower, deeper component of Falls Lake, the volume of the lake normally mitigates the impact of these secondary water quality problems. The majority of chemical dosage at the E.M. Johnson water treatment plant (EMJWTP) is devoted to the removal of TOC. Treatment records at the EMJWTP clearly indicate increased problems with TOC, turbidity and DO during large rain events and droughts as biomass and its resulting poor water quality is washed out of the upper lake into the lower lake and the City's water treatment intake. This data supports the conclusion in the Fiscal Note that improvements in the upper lake can have treatment process cost reductions.**

Response: *We agree with the general sentiments of these comments*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **198**

Comment: **Under the Strategy's Fiscal Note on Evaluation of Replacement Cost for Falls Lake, the approach employed to assign a value for the water supply function of Falls Lake only accounts for a portion of its value, and the low end of the range ($420 million) does not reflect the actual facilities required or the appropriate cost for those facilities. At a minimum, an acknowledgment should state that the cost value does not reflect operation and maintenance costs and therefore only a portion of the true cost value. Because of pumping requirements to transport the water, electrical costs alone associated with the use of Kerr Lake could exceed $4.5 million annually. The Lake Gaston project has similarities to the project under study, but is sufficiently different that it is not an appropriate surrogate for the current project.**

Response: *We agree with these comments and appreciate the further explanation of potential costs associated with using Kerr Lake as a replacement for Falls Lake. Due to time constraints during the development of the fiscal note we were unable to do a complete analysis of the full costs associated under such a scenario and therefore had to use several assumptions in our calculations that introduced additional uncertainty in the overall costs calculated. We have made note comment and will keep it in mind during future considerations for any additional cost calculations needed.*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **199**

Comment: **Under the Strategy's Fiscal Note on Evaluation of Replacement Cost for Falls Lake, the cost of the required construction components are currently well above the estimate for the same or similar items strictly based on an application of the Consumer Price Index for North Carolina. If a low end range, or less conservative estimate must be reported in the Fiscal Note, this cost should be developed with a conceptual level understanding of the specific project components and with current and accurate cost indices that reflect the true cost of construction.**

Response: *Please see our response to comment #198*

Commenters:
J. Russell Allen (8/3/10)

Comment ID: **252**
Comment: **To properly value the recreational benefits of Falls Lake, consider using the benefits transfer method. Here, one can use the nearby Jordan Lake where the impact of tourism has been studied, to help valuate recreational activity at a site where data is lacking (i.e., Falls Lake).**

Response: *We appreciate this comment and will investigate this benefit calculation method for possible use in future fiscal calculations.*

Commenters:
Jessica Robinson (8/16/10)

Comment ID: **253**
Comment: **Valuation of Falls Lake benefits should be considered in its current state as well as the future benefits of a cleaned-up Falls Lake.**

Response: *In our efforts to calculate the benefits of Falls Lake we did attempt wherever appropriate to estimate the current benefits and future benefits of the lake achieving and maintaining water quality standards. As we point out in the Fiscal Note, benefits are not as readily estimated in monetary terms as are costs. Many benefits are "non-market" in nature and are thus more difficult to monetize. We identified a number of benefits we believe are associated with successful implementation of the strategy, and assigned dollar values to as many as possible.*

The bulk of the benefits estimated were based on the assumption that the strategy reductions are met, resulting improvements in raw water quality would help lower current drinking water treatment costs through reductions of chemical treatment needed and could also avoid potential future costs of expensive treatment upgrades. We would also expect improved conditions for primary contact recreation which include swimming, fishing, boating, and skiing. Improvement in the water quality would also likely have a positive impact on local property values in general, increasing with greater proximity to the lake, and would serve to enhance the greater local economy through increased desire to live near a healthy sustainable natural resources. Also, by adding ecosystem services to the Goals statement, the State will have the foundation for advancing benefits assessments as more information and tools become available for valuation and quantification of services.

Commenters:
Jessica Robinson (8/16/10)

Comment ID: **266**
Comment: **The proposed rules will drive up land prices in the watershed as developers compete with mitigation providers. This rising cost of land should be reflected in the fiscal note.**

Response: *Land value was considered in calculating the costs associated with implementing the New Development Stormwater Rule. We used different per-acre land costs for each development type. Municipal residential and commercial/industrial values were provided by the Raleigh/Wake County chapter of the NC Homebuilders' Association from development sites in Cary and Raleigh respectively. County residential was a rural land value provided by NCDOT for the Jordan nutrient rules fiscal analysis in 2007 and inflated this value using the NC Consumer Price Index. It is unclear what the commenters means by citing concerns of competition between developers and mitigation providers. While competition for nutrient offset credits may in fact increase, it is not possible for us to speculate how this could affect the cost of a unit of nutrient offset credit and it is unclear what impact, if any this would have on the cost of developable land that is not considered a*

candidate for use as a mitigation or restoration project.

Commenters:
Frank Thomas

Comment ID: **273**
Comment: **The Fiscal Analysis underestimates Farmer's cost of implementing the Agriculture Rules. Currently, the Fiscal Analysis assumptions have adequate funding for every farmer that requests cost-share assistance to receive 75% of BMP implementation costs. That amount of funds is not available now from either federal, State or local sources, nor is it likely to be. Also, farmers who actually are fortunate enough to be the one-in-five who receive NC Agriculture Cost Share Funds when requested frequently do not receive the full seventy-five percent. This is due to District and applicant caps, or the required use of the average cost tables that can underestimate the actual cost of labor and supplies.**

Response: *As with any fiscal calculation, it was necessary to use qualified assumptions in our cost calculations. We note these assumptions in the fiscal note and recognize that there is a given level of uncertainty in the estimates. We note in the fiscal document that the analysis provided for estimating the costs for implementing the Agriculture Rule calculates both total subsidized and unsubsidized costs to farmers. With the subsidized costs shown under the capital costs category under private parties reflecting 75% cost share payments that are available from state and federal programs. The unsubsidized capital costs are captured as opportunity costs under the State and Federal category. A full explanation of the Agriculture Rule cost estimates and assumptions is provided in chapter 5 of the fiscal analysis*

Commenters:
Anne Coan (8/16/10)

Comment ID: **341**
Comment: **The Fiscal Analysis overestimates the cost for implementing the Falls rules on several fronts. First, polluted runoff from existing development has been a hidden cost up until now (e.g., water treatment, decreased recreation, reduced property values, declining estuary health). Second, low-cost opportunities exist to assist local government in meeting their nutrient reduction obligations more economically (e.g., phosphorus fertilizer ban and pet waste ordinances).**

Response: *We agree with the general sentiments of this comment. As note in the Fiscal Analysis, projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values projected below.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **342**
Comment: **The Fiscal Analysis underestimates the value of cleaning up Falls Lake. Many benefits are difficult to capture in monetary terms: improved quality of life, more attractive landscapes, better tasting water, or the ability to take one's children fishing in a local stream. Even items which clearly provide a financial benefit, such as improved health, increased property**

values, or additional tourism, can be a challenge to measure. The Fiscal Analysis does an excellent job identifying benefits that would flow from implementation of the rules.

Response: *We agree with the general sentiments of this comment. As we point out in the Fiscal Note, benefits are not as readily estimated in monetary terms as are costs. Many benefits are "non-market" in nature and are thus more difficult to monetize. We identified a number of benefits we believe are associated with successful implementation of the strategy, and assigned dollar values to as many as possible.*

Commenters:
NC Conservation Network & American Rivers

Comment ID: **343**
Comment: **Consider examination of Philadelphia's "Green City-Clean Water" initiative to better quantify the benefits of the environmental improvements called for in the Falls rules. These include: increased recreational opportunities: $524.5 million (from increased user days); Enhanced water quality/aquatic habitat: $336.4 million (from surveys of willingness to pay showing approximately $10-15 per household per year); improved residential property value: $574.7 million (average 3.5% increase); Reduced cost of poverty: $124.9 million (from providing jobs for local unskilled, unemployed workers and the attendant social service, crime, and health costs avoided); reduced heat-related deaths: $1,057.6 million (in avoidable deaths); improved air quality: $131.0 million (health benefit from increase in trees); saved energy: $33.7 million (reduced need for heating/cooling because of increase in trees, reduced energy needed to transport and treat stormwater); reduced damage from SO2, NOx, and CO2 emissions: $67.5 million (avoided energy use).**

Response: *We appreciate this comment and will investigate these benefit estimations and evaluate how we can learn from this approach in future fiscal calculations.* Also, by adding ecosystem services to the Goals statement, the State will have the foundation for advancing benefits assessments as more information and tools become available for valuation and quantification of services

Commenters:
NC Conservation Network & American Rivers

Comment ID: **359**
Comment: **There is no science showing that nitrogen and phosphorus or algae produced by those nutrients causes bacterial contamination. However, there are references to bacterial contamination in the fiscal analysis and other documentation. Reducing nitrogen and phosphorus from point and nonpoint sources will not reduce bacterial contamination. It is conceivable that failing septic tanks near the reservoir could be contributing to such bacterial contamination but at this point that is only speculative. Since the proposed rules do not directly require any reduction in septic, any supposed benefit in reduced bacterial contamination that might flow from septic cannot be assumed.**

Response: *It is not clear what statements in the Fiscal Analysis the commenter is referring to. Bacterial contamination is not the focus of the Falls Nutrient Management Strategy. Any reference to it, if any, would likely be as a secondary benefit through the possible reductions in failing septic systems. As noted by the commenter, the rules do not directly require any reductions from septic systems, but we do identify this source as one possible way to address nutrient load reductions from existing development.*

Commenters:
Donald Greeley (8/16/10)

Comment ID: **373**

Comment: **Different discount rates were used in different portions of the fiscal analysis with no explanation, though they had the effect of minimizing the future cost of complying with the proposed rules and unduly inflating the value of Falls Lake as a drinking water reservoir. Additionally, comparing the cost of compliance with the rules to the cost of a completely new reservoir is misleading.**

Response: *We do not agree with this comment. As discussed in the Fiscal Analysis a seven percent discount rate was used in calculating the estimated costs of implementing each rule. We were required to use a seven percent discount rate by economists at the North Carolina Office of State Budget and Management. We explain in the rules that the replacement cost calculated for*

Commenters:
Michael Page

Comment ID: **396**

Comment: **What are the respected municipalities individual estimated costs to comply with the proposed rules for Existing Stormwater and Wastewater Discharge?**

Response: *The fiscal note does not provide a breakdown of costs by municipality. It estimates the aggregate costs for local governments as a whole. This estimate costs to local governments to implement the Existing Development Stormwater can be found in Chapter 3 of the Fiscal Analysis. This estimate costs to local governments to implement the Wastewater Rule can be found in Chapter 4 of the Fiscal Analysis.*

Commenters:
John Konanc

Comment ID: **399**

Comment: **Per capita, the average City of Durham resident already pays $159 for stormwater and sewer service, more than the Fiscal Note's benchmark of NC resident's willingness to pay for improved water quality (i.e., $135). Further, under the proposed rules, current Stormwater bill per household ($59) would likely need to increase 600% to $420/household. This level of rate increase would not be supported by rate payers and would have severe impacts on institutions like schools and hospitals.**

Response: *While we are sensitive to concerns over the costs of implementing these rules, we note that the costs estimates represent a worst case scenario. Given the long range nature of the strategy and anticipated improvements in technology, projection of costs for points 10 years and further into the future involves a great deal of uncertainty. There is good reason to believe that costs will ultimately be less than the values currently estimated.*

Commenters:
Theodore Voorhees (8/16/10)

Comment ID: **400**

Comment: **Assumptions in the Fiscal Note that chlorophyll a levels in Falls Lake will increase 1% annually are baseless. Current Lake trends reported by Ecological Associates and by the City of Durham for the upper part of the lake indicate that water quality has been holding steady or improving.**

Response: *We disagree with this comment and note that in the fiscal note we utilized a sensitivity analysis to develop a range of costs and benefits using high and low range assumptions. A 1% increase in Chl-a was used a low end assumption to depict scenarios of slow degradation in the absence of rule implementation. Given the Falls lake is currently listed as impaired throughout the entire lake with various levels of Chl-a standard exceedances and given the variable nature of nutrient input, and lake response, an assumption of a 1% increase in Chl-a in the absence of implementing nutrient reductions is a reasonable assumption to make for a low end estimate. It should also be noted that*

It is unclear what "trends" the commenter is referring to given no statistical trend analysis of chl-a or nutrient loading was provided with the comments submitted. There is not enough water quality data to perform such a trend to support the claim that water quality in the Upper lake is improving. We also note that if in fact the Upper Lake is holding steady at double digit chl-a standard exceedance, this would not be a valid argument for delaying implementation.

Commenters:
Theodore Voorhees (8/16/10)

Comment ID: **402**
Comment: **Local government's level of preparedness is overestimated in the Fiscal Note. City of Durham watershed planning efforts, cited in the Fiscal Note for their preparedness to administer these rules, has needed outside resources (e.g., partnerships with UNRBA, grant funding) to develop the two watershed plans referenced in the Fiscal Note. Local governments will need to hire additional engineers and support staff along with increasing stormwater utility rates in order to fund the projects necessary to meet Stage 1 Existing Development Goals. This cannot be done quickly.**

Response: *We are sensitive to the resource needs of local governments to implement the Falsl Lake Rule requirements. It is for this reason we collaborated with them during the rulemaking stakeholder process and took into consideration their concerns regarding the implementation timelines for individual rules and incorporated their recommendations into the proposed rule.*

Commenters:
Theodore Voorhees (8/16/10)

NEUSE RIVER BASIN (.0315)

No Comments were received on this rule.