SUMMARY OF PUBLIC COMMENTS
WITH STAFF REPLIES
JORDAN NUTRIENT STRATEGY

Description

This appendix presents Division staff's summary of the written and oral public comments that were received during the 90-day public comment period. A staff reply follows each summarized comment or group of comments on an issue. We attempted to provide all commenters the ability to view staff replies to their comments.

The following page provides a linked Table of Contents. Comments are sorted first by individual rule, "General" and "Modeling/Data", then by subtopic.

The succeeding three pages provide a full list of all individual commenters grouped by type. A unique number is assigned to each commenter for reference within the body of the document.

The body of the document is structured as a table:

- The first column provides an ascending comment number, #1 - #252.
- The second, third and fourth columns refer to the subject numbering in the Table of Contents, e.g. 4, b, .0264.
- The fifth column compiles the comment*er* numbers of all of the individual commenters who made that comment or a comment within that comment group. This column reflects the frequency of a given comment/comment group.
- The final column is the summarized comment/comment group and staff's reply.

Guidance on Searching for Individual Comments

To find an individual party's comments and staff replies, first find the unique number for that party in the commenter list. Search the document for that number using the 'Find' tool under 'Edit'. In the 'Find' dialog box, click 'More', then click 'Format' and select 'Highlight'. Finally, type the unique commenter number in the "Find What" box and click "Find Next" to search for the comments.

1. G - General Comments

a) Costs, Benefits, and Need
b) Fairness
c) Statutory Authority
d) Scope of Strategy
e) Alternatives

2. M/D - Modeling / Data Issues

a) Chlorophyll a Standard
b) Data Used in Reservoir Model
c) Reservoir Model Calibration, Validation
d) Reservoir Model Interpretation, Target-Setting
e) Additional Reservoir Modeling
f) Watershed Model

3. .0262 - Goals

a) Critical Water Supply Watershed
b) Adaptive Management
c) Sources Not Addressed
d) Goals

4. .0263 - Nutrient Management

a) Applicability
b) Implementation Timeframes

5. .0264 - Agriculture

a) Funding Needed
b) Fairness
c) Technical Feasibility
d) Applicability – Livestock, Trees
e) Accounting Issues

6. .0265 - New Development Stormwater

a. Costs
b. Statutory Authority and Need
c. Applicability
d. Treatment Requirements and Offsets
e. Implementation Process

7. .0266 - Existing Development Stormwater

a) Costs
b) Statutory Authority and Need
c) Feasibility Studies
d) Equity Issues
e) Requested Additions
f) Funding
g) Technical and Compliance Issues

8. .0267 - Buffer Protection

a) Statutory Authority and Need
b) Local Implementation Issues
c) Cost
d) Administrative Issues
e) Protections
f) Definitions

9. .0268 - Buffer Mitigation

a) Statutory Authority
b) Cost
c) Equitable Options
d) Technical Criteria

10. .0269 - Trading Options

a) Fairness

11. .0270 - Wastewater

a) Cost
b) Fairness-Equitability
c) Nitrogen Compliance Date
d) Reduction Targets
e) Elements of wastewater strategy
f) Miscellaneous

12. .0271 - State and Federal Stormwater

a) DOT Issues
b) Non-DOT Issues

13. .0272 - Buffer Mitigation Fees

14. .0311 - Cape Fear River Basin
(Schedule of Classifications)

Local Government Comments

1. Alamance County (Attorney's Office)
2. Burlington, City of
3. Burlington, City of (Utilities Department)
4. Carrboro, Town of
5. Cary, Town of
6. Chapel Hill, Town of (Town Council)
7. Chapel Hill, Town of (Manger's Office)
8. Chatham County (Board of Commissioners)
9. Chatham County (Board of Commissioners)
10. Durham County (Attorney's Office)
11. Durham County (Engineering Department - TMDL Comments)
12. Durham, City of (Manager's Office)
    1. City of Durham Appendices (City Manager)
13. Durham, City of (Attorney's Office)
14. Durham, City of (Department of Water Management)
15. Greensboro, City of (Water Resources Department)
    1. June 1, 2001 Letter to US Army Corp Engineers
    2. North Buffalo Creek BMP Siting Evaluation
16. Greensboro, City of (Water Reclamation Division of the Water Resources Department)
    1. All HRCWA Special Study Data
    2. Chlorophyll-a Data Summary 2005-2007 (HRCWA, DWQ, USGS)
    3. Graph of USGS Data 1991-2007 (PowerPoint)
    4. Haw River Arm Sampling Location Map (PowerPoint)
17. Guilford County (Environmental Review Board)
18. Haw River, Town of
19. Hickory, Town of
20. Mebane, City
21. Orange County (Board of Commissioners)
22. Orange County (OWASA) (Board of Directors)
23. Orange County (OWASA) (Chairman)
24. Piedmont Triad Coalition of Governments (PTCOG) (Assistant Director)
25. Piedmont Triad Coalition of Governments (PTCOG) (Executive Director)
26. Reidsville, City of
27. Stokesdale, Town of
28. Western Piedmont Council of Governments
29. Greensboro Urban Area Metro Planning Organization (Transportation Advancement Committee)
30. NC League of Municipalities
31. Graham
    1. Assistant City Manager
    2. City Council Member (Albright)
    3. City Council Member (Cheek)
    4. City Council Member (Talley)
    5. City Manager
    6. City Manager (Retired)
    7. Mayor
    8. Mayor (Former)
    9. Mayor Pro-Tem
    10. Pretreatment Coordinator
    11. Utility Director
    12. Wastewater Treatment Plant Supervisor

Local Government's Resolutions

50. Alamance County
51. Apex, Town of
52. Burlington, City of
53. Caswell County
54. Chapel Hill, Town of
55. Chatham County
56. Elon, Town of
57. Gibsonville, Town of
58. Graham, City of
59. Guilford County
60. Haw River, Town of
61. Jamestown, Town of
62. Mebane, City of
63. Oak Ridge, Town of
64. Piedmont Triad Coalition of Government (PTCOG)
65. Pleasant Garden, Town of
66. Reidsville, City of
67. Rockingham County
68. Whitsett, Town of

State/Federal Entities

100. Ecosystem Enhancement Program
    - Cover Letter
    - Revised Cover Letter
101. Guilford Soil and Water Conservation District
102. NC Department of Agriculture and Consumer Services
103. NC Department of Transportation
104. NC Division of Forest Resources
105. NC Division of Soil and Water Conservation (DENR)
106. NC Wildlife Resources Commission
107. University of North Carolina - Chapel Hill

Business/Professional Organizations

200. Apartment Association of NC
201. Centex Homes
202. Durham Regional Association of Realtors
203. Greensboro Partnership
204. Greensboro's Builder's Association
205. High Point Regional Realtors Association
206. Home Builders Association of Burlington/Alamance County
207. L.E.A.D.S. Group, PA, The
208. National Association of Home Builders
209. NC Association of Realtors
210. NC Farm Bureau Federation
211. NC Forestry Association
212. NC Home Builders Association
213. NC Horse Council
214. Restoration Systems, LLC
215. Society of American Foresters - Sandhills Chapter
216. TREBIC
    1. Cost Impacts for New Development
    2. Comparison Chart
    3. Rule Revisions
    4. Comments Regarding Legal Authority
218. Village Project, The

Business/Professional Organizations (Continued)

219. Alley, Williams, Carmen & King, Inc (Chairman of the Board)
220. Anderson & Associates (Regional Vice President)
    1. Cover Letter
221. Chadco Builders (President)
222. Bilco Enterprises
223. Boswell Surveyors (Project Manager)
224. Builders Mutual Insurance Company (Senior Territory Manager)
225. Dodson & Chatham Construction (President)
226. Environmental Banc & Exchange
227. Fonville Morisey (Broker/Realtor)
228. Foust Backhoe (Managing Member)
229. Gaines and Company (Vice President)
230. Glen Raven (Chairman & CEO)
231. Hawks & Associates (Hawks)
232. Hawks & Associates (Broker)
233. K Hovnanian Homes - 13 identical letters (Division President, Purchasing Manager, Sales Manager, etc...)
234. L.E.A.D.S. Group, PA (President)
235.
236. Russell McPherson (Owner)
237. Wishart Norris Henninger & Pittman PA (Equity Partner)

Environmental/Private/Non-Profit Organizations

300. Comments to EMC from 12 Environmental Groups
301. Blue Ridge Environmental Defense League
302. Carolina Canoe Club, Inc - President
303. Chatham Citizens for Effective Communication, Inc
304. Haw River Assembly
305. Haw River Assembly - Southern Environmental Law Center, Environment North Carolina
306. Haw River Assembly - Executive Director
307. New Hope Audubon Society
308. NC Conservation Network
    1. Citizens Comments
309. NC Wildlife Federation - Executive Director
310. Sierra Club (Orange/Chatham Counties)
311. Southern Environmental Law Center
312. Carolina Meadows - four different letters
313. Chatham Citizens for Effective Communities, Inc (Vice President)
314. Haw River Assembly (Haw River Watch Project Coordinator)
315. Haw River Assembly (Stream Steward Project Coordinator)
316. Haw River Assembly (Board of Directors)
317. Nicholas Institute for Environmental Policy Solutions - Duke University (Visiting Senior Fellow)
318. Nicholas Institute for Environmental Policy Solutions - Duke University (Visiting Senior Fellow)

Individual - Opposition

400. Adams, George Richard
401. Coker, Seth
402. Collins, William E.
403. Dogget, Ralph
404. Finger, David
405. Fleming, Craig
406. Forrest, Steve
407. Johnson, Herman
408. Lambert, Todd
409. May, E. C.
410. McCauley, Karen R.
411. Poston, Ira G.
412. Taylor, Howard P.
413. Unknown

Individual-Support

500. Bickel, Betsy
501. Cassebaum, Anne
502. Caratensen, Pat
503. Caratensen, Patricia J.
504. Cure, Jennifer
505. Donin, Milton N.
506. Estill, Lyle
507. Fox, Larry
508. Garbutt, J.C. and Sharon
509. Girolami, Martha
510. Hill, David G.
511. Hitt, Maria
512. Holt Cathy
513. Hoppin, Jane
514. Hundley, Kathleen
515. Hutchby, Elizabeth R.
516. Johnson, Carol Bower
517. Jones, Chuck
518. Judge, Kay
519. Kahler, Lucinda
520. Long, Marina Cosi
521. Lucas, Robert and Jan
522. MacFall, James
523. McNeill, Gil
524. Miller, Beverly
525. Nowak, Richard
526. Ogden, Lynn
527. Olson, Jean
528. Parker, Robert
529. Payne, Heather
530. Peterson, Judith
531. Pettis, Mary E.
532. Pollock, Blair
533. Powell, Debbie
534. Rademacher, Kate H.
535. Ramirez-Aponte, Efrain Anibal
536. Ramsberger, Jessica
537. Reinhart, Laurinda
538. Rooney, Melissa
539. S., Josh
540. Schwerin, Tami

Individual-Support (Continued)

541. Seitzer, B.J. and Jim
542. Seaton, Jerome and Katherine
543. Simpson, Gary
544. Smith, Bill
545. Smith, Steve
546. Spina, Rita K.
547. Stein, Emmanuel
548. Stein, Emmanuel
549. Sullivan, David
550. Troxler, George W. and Carole W.
551. Vassar, Cecelia A.
552. Vickers, Robert S.
553. Waters, Liz
554. Weakley, Allison E.
555. Weiner, Gregg
556. Welch, David
557. Yell, Richard S.

Individual - Other

600. Glendinning, Tom
601. Heath, Milton
602. Miller, Syd
603. Rimer, Alan
604. Hudnell, H. Kenneth Ph.D
    1. Resume
    2. Lake Houston Solar Bee Project
    3. Paradigm shift for blue-green algae control through long-distance circulation (LDC): Empirical experience with SolarBee circulation since 2000

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(1) GENERAL COMMENTS				
1	1	a	G	7, 12, 16, 20 22, 23, 24, 25, 29, 31.2, 31.5, 31.6, 31.7, 31.12, 50, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 66, 67, 68, 201,202, 204, 208, 209, 216, 219, 221, 222, 223, 224, 225, 228, 229, 230, 231, 232, 234, 236, 237, 308	**Costs and Benefits** • The costs of these rules are too high and the results of the strategy are unknown. • Given the costs, a more thorough evaluation of all potential alternative strategies and solutions is required. • A cost/benefit analysis is needed. • These rules will affect all citizens of the watershed. They will increase taxes and/or utility rates and building costs, while stunting growth in the tax base and curtailing economic development. As much as a 15% increase in water/sewer rates. • The cost burdens of the proposed rules on local governments may adversely affect regional transportation funding priorities and thus reduce the region's competitiveness. (29) • The rules will cause local governments to reduce, delay, or eliminate funding for other various clean earth projects. • The costs will be far smaller than critics acknowledge. There will be costs, but the Jordan rules do not create those costs; they merely reallocate them from future generations to the current sources of pollution, as required by the Clean Water Act. (308) • Postponing action inflates the cost of cleanup.
				Reply: *For these rules, we have provided the fullest and most thorough estimate of costs yet for a nutrient strategy. Except for the Existing Development rule, very similar rules have been implemented in both the Neuse and Tar-Pamlico Basins, which have not experienced the economic outcomes that commenters have projected here. Our Existing Development rule cost estimate, and the estimates of commenters who provided substantiated alternative projections, were based on a worst-case scenario of structural stormwater retrofits. We believe that scenario is avoidable and that actual costs of the Existing Development rule are likely to be substantially less given the broad set of load-reducing practices available now or in the coming years, the expectation that atmospheric nitrogen deposition will decrease in coming years as a result of laws already enacted, and the increasing focus on valuing runoff as a resource instead of as a waste. The long timeframes for this rule will also allow the Division and stakeholders to practice adaptive management, jointly weighing the need for further actions after other rules have reached full implementation. We have revised our Existing Development cost estimates to reflect this more realistic view. These revisions are provided in the Fiscal Revisions (Appendix E).* *We find that most of the stormwater-related cost estimates provided in comments either did not provide supporting calculations or used faulty methods or unsupported values, resulting in substantial overestimates. The New and Existing Development sections of this appendix contain those comments and our replies.* *Comments to the effect that the strategy is not guaranteed to be successful appear to be based in the fact that no modeling can provide complete certainty or a guarantee of success. As stated in the Hearing Officers' Recommendations section of this report, the Hearing Officers found that the reservoir model is an appropriate tool to establish reduction goals, that it was applied appropriately, and note that both the Commission and the US EPA have approved the model (see Comment #51). It provides a best estimate of the reductions needed to recover the lake's full uses, and the rules accordingly address all major sources to provide the best expectation of success.*
2	1	a	G	12	**Unclear Benefits and Need** The lake is not approaching crisis. The benefits of the proposed loading reductions have not been established, nor is it clear who would benefit considering the following: • Recreational and water supply uses are being realized. • Water quality is better than predicted before the lake was built. • Recent studies show nitrogen loads in New Hope Creek and Haw River at Bynum have declined, and additional reductions are expected in the New Hope Arm from improvements made subsequent to the study at the major Durham County and OWASA wastewater

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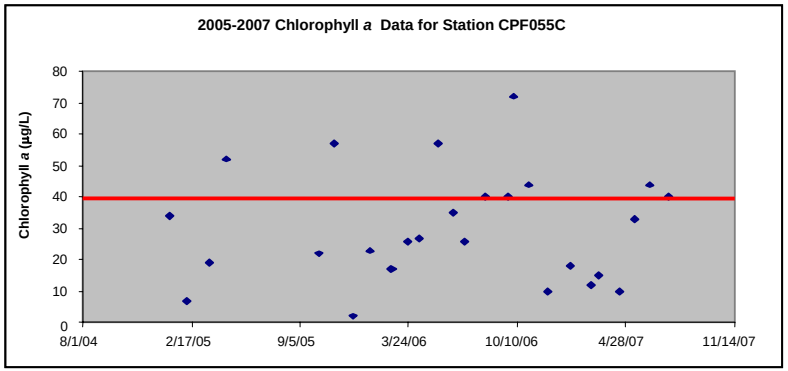
				facilities. • Jordan Lake is one of the most productive fisheries in North Carolina and the strategy would reduce its productivity.
				Reply: *The commenter is of course correct that recreation and water supply uses of the lake continue. The lake's uses have not been eliminated by the degraded water quality, but rather impaired or limited. For example, some commenters 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: direct health benefits for consumptive water users, subsistence and recreational anglers, primary contact recreators (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 Lower Cape Fear River.* *The statement that water quality is better than predicted prior to lake construction, if true, does not change the fact that the lake remains impaired. Similarly, despite the documented decreases in nutrient loading to the lake described in the comment, it remains impaired. USGS's loading decreases can be attributed (and are in the USGS publication at http://pubs.usgs.gov/sir/2005/5271/) to specific actions that cannot be expected to yield further improvement, actions such as mandated wastewater improvements, the statewide phosphate detergent ban, loss of industries, and agricultural improvements some of which were mandated. Instead, 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.*
3	1	a	G	1, 2, 12, 14, 16, 22, 23, 25, 31.4, 31.12, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 233	**Other Studies Show No Problem and Improvements** • The Haw River dischargers funded a private study of Haw Arm water quality beginning March 2005 that shows much lower chlorophyll *a* values than those presented by DWQ. • A recent USGS study showed a downward trend in nutrients at Bynum. • An October 15, 2004 technical memorandum from the Division's Modeling and TMDL Unit reported a statistically significant trend of decreasing total nitrogen concentration of 0.17 mg/L per year in New Hope Creek, a principal tributary to the Upper New Hope Arm of the lake, over a 13-year period, 1990 - 2004 based on Division ambient data. This is despite increased residential and commercial development in the subwatershed. This and other trends need to be understood to evaluate the effects of the proposed rules. • Other indicators, such as NC Trophic State Index (NCTSI) have shown a marked improvement in water quality since the 1980s. The Trophic Index includes Chlorophyll *a*, phosphorus, nitrogen and secchi data, and presents a broader assessment of overall water quality and supports the fact that Jordan Lake is meeting all its intended uses.
				Reply: *The Division, in concert with the Haw River dischargers, has identified problems with the chlorophyll-a analytical process that resulted in the disparity between the two groups' chlorophyll-a data referenced in the first comment. The Division's results are valid. The chart below summarizes Division chlorophyll a data for 2005-2007 at the most upstream station in the Haw Arm of Jordan Lake, the station most affected by Haw River inputs. Values are corrected chlorophyll a concentrations. As shown, 6 of 26 samples collected, or 23%, have chlorophyll a concentrations greater than 40 µg/L, with 3 additional samples equal to 40 µg/L. A 23% exceedence frequency clearly exceeds the 10% threshold used to interpret the standard.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				 *The second comment above refers to a 2006 USGS report, Suspended Sediment and Nutrients in the Upper Cape Fear River Basin, North Carolina, 2002–04, with an Analysis of Temporal Changes, 1976–2004. The study did find a statistically significant (p is less than 0.05) decrease in sediment, total nitrogen, and total phosphorus concentrations and loads in the Haw River at Bynum. This was attributed to decreases in cultivated land, improved land-management practices, and improved wastewater-treatment processes since the 1980s. The third comment accurately summarizes the nitrogen outcome of a Division trend analysis that used data from the ambient station B3040000 at the New Hope Creek crossing of SR 1107 near Blands. The decreasing TN trend was significant at the 95% confidence level. These encouraging indicators do not change the fact that both the Haw Arm and Upper New Hope Arm continue to substantially exceed the chlorophyll a standard and remain impaired. Those loading decreases can be attributed (and are in the USGS publication) to specific actions that cannot be expected to yield further improvement, actions such as mandated wastewater improvements, the statewide phosphate detergent ban, loss of industries, and agricultural improvements which, for animal operations, were mandated and completed. Instead, 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.* *It is also important to understand that the relationship between reduced nutrient inputs and reduced chlorophyll a levels is not linear at higher nutrient levels. In other words, the lake's algal growth may not decrease much at first despite measurable decreases in nutrient inputs. This well-known biological principle is called the Michaelis-Menten function. In aquatic ecology, this is commonly represented in the Monod model for a single nutrient limitation in the growth of microorganisms (Limnology, Wetzel, 2001), illustrated in the chart below. Here "Resource" is analogous to nutrient concentrations and "Growth Rate" is analogous to chlorophyll a concentration.*

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				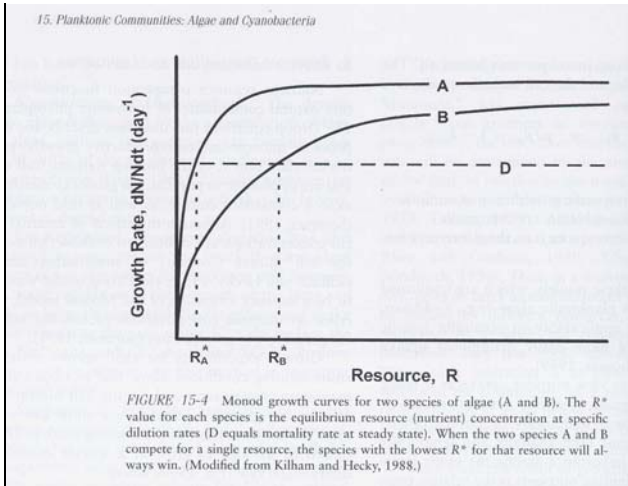 *(From Limnology- Lake and River Ecosystems, 3rd ed. Wetzel. 2001.)* *The ongoing exceedences of the chlorophyll a standard in the Haw and Upper New Hope Arms indicate that nitrogen loading to them falls to the right on the curve above such that the reductions seen, though significant, have not been sufficient to significantly reduce algal growth.* *The last comment, stating that the lake's NCTSI scores have improved since the 1980's, is not accurate. Per the NCTSI, a eutrophic lake can range from 0.0 to 5.0. Above 5.0 is considered hypereutrophic. Jordan Lake's NCTSI scores have ranged from 3.3 to 5.7 from 1983 through 2007. Three scores in that time period have been in the hypereutrophic range, two of those occurring during 2007.*
4	1	a	G	9, 300, 302, 303, 305, 307, 309, 311, 312, 314, 506	**Clear Need and Benefits** • The EMC needs to take clear and prompt action and adopt strong rules to protect an enhance water quality in Jordan Lake. It is vitally important regionally as a source of drinking water, recreation, and habitat for wildlife and aquatic species. It serves more than 1,000,000 visitors annually. The lake and Haw River are widely used by kayakers, canoeists and flatwater paddlers during both the wet and dry season. According to monitoring by the New Hope Audubon, there are 6 to 8 nesting pairs of bald eagles along the lake and as many as 32 individual eagle sightings in a single count. These waters support rare aquatic life like the Cape Fear Shiner. It is essential that any proposed set of rules not only protect the lake from future pollution but also clean up the current pollution. • The lake is in trouble. Recreational users of the Haw River and Jordan Reservoir water bodies have directly experienced increased algal growth in the lake and its tributaries. Following rain events highly turbid and sediment-laden streams have been observed. The lake as a recreational resource is rapidly becoming unpleasant due to algae and sediment build-up. A family no longer swims in lake due to repeated rashes. Many instances have been reported of excess algal growth on many streams in the watershed. Some are already designated as impaired, but others with excessive algae reports are not yet on the impaired list, such as Pokeberry Creek and Brooks Creek, the Haw River at Saxapahaw, the Haw River at Swepsonville, the Haw River in Bynum, and others. In 2006, there was an algae bloom in the Morgan Creek area of the lake that resulted in a fish kill. • During droughts it is estimated that up to 90% of the water flowing into Jordan has been through a treatment plant at least once, so the concentration of nutrients is at its highest. To continue using what is basically reuse water as a water supply, we need to make reductions to all pollutants as soon as possible. • Water users who pay to treat the water are concerned by the increase in trihalomethanes, haloacetic acids and total organic carbon on their health.

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				• The rules will reduce pollutant loading to and benefit the many impaired tributaries throughout the watershed. Improving the water quality will also increase its recreational and other uses, adding economic benefit to the region.
				Reply: *We agree with these comments. 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 provide greater infiltration of runoff, which improves baseflow conditions and sustains streams and lakes in dry times. Downstream benefits also accrue, including both water quality and water quantity.*
5	1	a	G	7, 18, 19, 25, 26, 27, 31.4, 50, 208, 212, 216, 602	**Costs Underestimated and Highly Uncertain** • The EMC needs to hold DWQ accountable for the many questionable assumptions in the Fiscal Analysis and reconsider the rules under an accurate estimate of the cost. • DWQ estimated the rules will cost more than $900,000,000 over the next five years, but true costs will likely be at least twice that and will extend for many years beyond that arbitrary point in time. • The fiscal analysis assumes no new costs to the Division, saying they would integrate tasks into existing workloads. This is unrealistic. Implementing the rules will either require new staff resources, redirection of staff from current programs, or a failure to properly implement the rules. In any case, there is a cost. • The fiscal analysis does not include an inflation rate. It does not use a net present value approach, which would be particularly useful for analyzing the cost of long-term programs. (602) • Cost calculations were derived for the watershed as a whole. Because of the different reduction requirements in each subwatershed, this likely greatly overestimates costs for the Lower New Hope, somewhat overestimates costs for the Haw Arm, and underestimates costs for the Upper New Hope Arm. Costs need to be calculated for each subwatershed or each local government.
				Reply: *The Division has been held accountable for the fiscal analysis. The Commission, DENR's Division of Budget, Planning and Analysis, the Office of State Budget and Management, the Office of the Governor, and the Fiscal Research Division of the General Assembly have all had formal opportunity to review and comment on the fiscal analysis, and we have made a number of revisions as a result of their input. We have reviewed all of the cost comments submitted, and find that most of the cost estimates provided for stormwater either did not provide supporting calculations or used faulty methods or unsupported values, resulting in significant overestimates or unsubstantiated claims. The New and Existing Development sections of Appendix E contain those comments and our replies. The claim above that the Division estimates the rules will cost over $900 million over the next five years greatly understates the timeframe. The majority of that cost figure comes from the Existing Development rule, the timeframe for which is not fixed in rule but is potentially on the order of decades, and which local governments are given latitude to propose.* *The suggestion that the true cost is likely twice the $900 million amount is based on an assumed strict use of structural retrofits. We believe that scenario is avoidable and that actual costs of the Existing Development rule are likely to be substantially less given the broad set of load-reducing practices available now or in the coming years, the expectation that atmospheric nitrogen deposition will decrease in coming years as a result of laws already enacted, and the increasing focus on valuing runoff as a resource instead of as a waste. The long timeframes for this rule will also allow the Division and stakeholders to practice adaptive management, jointly weighing the need for further actions after other rules have reached full implementation. We have revised our Existing Development cost estimates to reflect this more realistic view. These revisions are provided in the Fiscal Revisions (Appendix E)* *We agree that the Division will face costs at least in terms of workload realignment and would benefit from additional staff resources to most effectively implement the rules. The Hearing Officers are providing recommendations to the Commission to seek additional resources for local governments and the state to implement these rules.* *The comment that the fiscal calculations did not include an inflation rate is correct. Recognizing that most rules will be fully implemented within seven to eight years, we reasoned that the scale of other sources of uncertainty in the Existing Development estimates made this*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				calculation unnecessary. *We appreciate that cost estimates for each subwatershed or local government would be more informative. At the same time, the calculations we developed provide a useful picture of overall costs to affected parties. The Fiscal Analysis review process for thee rules exceeded the requirements of the rulemaking process, and passed a more stringent set of fiscal review requirements than rules prior to these have faced.*
6	1	b	G	10, 14, 15, 21, 31.7, 31.11, 31.12, 66, 67, 203, 219, 221, 223, 225, 228, 229, 203, 230, 232, 234, 236, 237, 602	**Unfair Funding Burden** • The rules are an unfunded mandate, and attempt to shift the cost from the State to local governments. • Given that the lake's nutrient problems were predicted prior to its construction, the goals cannot be attained without significant assistance, the unprecedented and underestimated costs of the existing development rule, the questionable ability to achieve existing development reductions, the additional costs of other rules to local governments despite local efforts to date, the questionable nature of Jordan Lake's impairment, and the disparity between who pays and who benefits from the lake, this is a clear case where the state must provide financial and technical assistance to local governments. This has been done in the past for far-reaching goals. Since grant programs can refuse funding given the required nature of the work, the General Assembly will have to appropriate general funds or dedicate a revenue stream for implementing these rules, and should commit at least $150 million per year for the first ten years. • DWQ staffers have noted a lack of funds for sampling, analyses, model updates, and studies of atmospheric deposition of nitrogen and algal speciation. (31.11, 31.12) *Reply:* *While we do not agree with some specifics in these comments, the Hearing Officers are sensitive to the potential costs that these rules may impose on local governments, and to the concerns stated here. While agency rules cannot mandate legislative actions, the Hearing Officers include recommendations in this report for the Commission to consider delivering a resolution on the subject to the General Assembly.*
7	1	b	G	17, 18, 19, 20, 21, 25, 26, 27, 31.3, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 204, 208, 306,308, 311	**Unfair Reduction Burdens Among Source Types, Among Local Governments, and Relative to Other Watersheds** • These are the most restrictive water quality rules ever proposed in North Carolina, and may be impracticable to achieve. It is arbitrary and unfair to impose such restrictive rules on only one watershed. • Local Governments are unfairly burdened. They bear disproportionate costs especially given they contribute less nutrients than agricultural lands. Nitrogen from urban nonpoint sources is only 45% of the load to the Reservoir, and Phosphorous from urban sources is only 34% of the load. • Equitable apportionment does not mean equal, but fair. The rules should consider the degree to which a local government contributes to the problem, their land-use pattern, the benefits the strategy will provide them, protective measures currently being implemented, etc. • Local governments should be given the option of deciding how they will achieve certain goals appropriate to their context and circumstances. (17) • The Rules are fair and equitable as they split the responsibilities among sources as fairly as possible based on modeling and provide maximum flexibility in implementation. The cost is distributed equally throughout the watershed, as is required under the TMDL legal framework of the Clean Water Act as well as HB 515, the NC Clean Water Responsibility Act. Moreover, now that EPA has approved the TMDL, the reduction allocations are set for rule purposes. We recommend the EMC state this clearly in the hearing officer's report. *Reply:* *This rulemaking action is in no way arbitrary. It follows a pattern of nutrient-driven restoration strategies begun in the Chowan River Basin in 1979 and used in the New, Neuse and Tar-Pamlico Basins that is based on evaluation of relative source contributions specific to each watershed. The rules in each case are commensurate to the water quality need. The rules are applied only to the lake's watershed based on the water quality needs of the lake.* *The rules reflect the recommendations of a stakeholder committee that considered the results of a specific evaluation of this watershed. They depart from previous rules based on the differing nature of the watershed and the experience gained in those other watersheds. Local governments are burdened in direct proportion to their nutrient contributions, and under the Existing Development rule are in fact given the option requested in the comment of deciding how they will achieve the goals appropriate to their circumstances. Local government costs are*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				disproportionate only to the extent that the means of reduction available to them are less cost-effective than those available to other sources, and to that extent the offset and trading elements of the rules allow them to find more cost-effective options. *For these reasons, we believe the rules are both equitable and fair. They do consider the degree to which each local government contributes to the problem, call on each to contribute to the restoration to the same degree, and provide flexibility in the means for doing so.*
8	1	b	G	16, 25, 31.5, 31.7, 31.8, 31.11, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 201, 204, 207, 306	**Unfair Reduction Burden on the Haw Subwatershed** • The rules are inappropriately "one size fits all". They disregard clear differences between the Haw and New Hope subwatersheds. The two arms have different development patterns and highly divergent characteristics such as an average water flow retention time of five days in the Haw and 418 in the New Hope. Except for the different load assignments, DWQ applied the rules universally with no consideration to the hydrological differences between the two watersheds. • The Haw River subwatershed has a minimal impact on water quality in the lake, yet the burden will be on the Triad to clean up the lake. The New Hope Arms are close to being built out, so the requirements will have little to no effect on the New Hope Arms, and the Department will raise the limits in the Haw to achieve the targets. • The state needs to formulate a plan that equitably distributes the economic and water quality demands on those population centers that will benefit without further depressing the upstream emerging economies of those that will suffer. • All three subwatersheds should be subject to the same and complete elements of the strategy. (306) *Reply:* *The rules clearly treat the Haw and New Hope subwatersheds differently where their differences merit it, that is by assigning different goals based on differences in the two arms of the lake, and treat them the same where their differences do not merit different treatment, that is by applying the same rules to both given both have the same major source types. The hydrologic differences and different land uses described in the comment were major factors that led to the differing reduction needs for each watershed and the different goals. Hydrologic differences should play no other role in the strategy. The Haw subwatershed's impact is directly reflected in the goals for the Haw Arm, as that subwatershed and no other controls the conditions in the Haw Arm of the reservoir. In other words, the Haw Arm is impaired to the extent that Haw subwatershed nutrient inputs are excessive, and the rules require the Haw subwatershed to reduce its inputs to that degree and no more. Similarly, we would not consider requiring Haw sources to over-reduce to improve the New Hope Arm. First, that would be an inappropriate placement of responsibility, and second, it would be ineffective hydrologically.* *The rules reflect the stakeholders' joint recommendations, which plainly call for applying the same set of rules to the entire watershed. Page 22 of the Jordan Lake Stakeholder Report, available at http://h2o.enr.state.nc.us/nps/JordanNutrientStrategy.htm, includes the following statement under General Recommendations for the NPS strategy, "Stakeholders recommended that all regulations of the nutrient management strategy be uniform and watershed-wide". We note that the rules do provide performance standards that appropriately allow for the differences in development patterns in each watershed to be recognized and accounted for.* *The entire region will benefit from restoring the lake's water quality. The Upper New Hope subwatershed is responsible for the more degraded conditions in that Arm of the lake, and is being called on to reduce its inputs in proportion to the extent of the problem in the Upper New Hope Arm. Those reductions are over four times more stringent than those faced in the Haw.*
9	1	c	G	10, 13	**Lack of Statutory Authority** • The EMC, an appointed body within the executive branch, lacks the statutory authority for the proposed rules, including requiring local governments to adopt ordinances or acquire property. The EMC lacks authority to require local governments to adopt "a particular ordinance" or "certain specified ordinances." • The EMC has exceeded its authority in enacting requirements that contradict N.C. General Statute § 153-12. • The EMC is without authority to set the policy of the State, which is the province of the General Assembly. • The EMC lacks authority to enact rules which shift the cost of regulation from the State to local governments. The attempt to shift a $656 million dollar cost from the State to the counties and cities is unprecedented and unconstitutional.

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *The GA has clearly 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, clearly 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 Jordan Reservoir, and to promulgate rules implementing such strategies to restore and protect water quality in these reservoirs.* *The comments that the rules violate N.C. Gen. Stat. § 153A-12, and that they require local governments to acquire property and adopt particular ordinances are misstatements. 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.*
10	1	d	G	4, 7, 11, 12, 200, 201, 208, 209, 212	**Atmospheric Deposition of Nitrogen and Other Sources Not Addressed** • Atmospheric deposition is a significant contributor of nitrogen to water bodies. A number of new federal rules are being implemented to reduce NOx emissions. This will also cost the taxpayers money, and the most cost-effective approaches should be weighed in making the Jordan rules. The modeling should have included this source, and the strategy should account for reductions currently expected in it. Rule .0262 (8) only acknowledges aerially deposited nitrogen as a limitation, and suggests the EMC could undertake separate rule making in the future to support the Jordan Rules. • A more thorough and multi-faceted assessment of all sources of nitrogen and phosphorus in the Jordan Reservoir basin needs to be conducted, including not only the Division of Water Quality but also the Division of Air Quality, The Division of Environmental Health, the Division of Waste Management, and the Division of Land Resources (atmospheric deposition, on-site wastewater treatment, erosion control measures, etc.). • A comprehensive examination of future development pattern scenarios from environmental, fiscal, and urban service perspectives is needed. (200)
					Reply: *The comments accurately state that atmospheric deposition is a source of nutrients to waterbodies. While a more thorough evaluation of all sources would always improve our understanding, our evaluation has provided a sound basis for taking timely action and we have identified and addressed the major sources of nutrients to the lake that require further management measures with this set of rules. In developing these rules, we have considered the adequacy of other existing regulations that address the sources mentioned in the comment. We also recognize the potential that through adaptive management we may in the future identify the need to refine the strategy to better address certain sources.* *For estimating inputs to waters of concern, atmospheric inputs can be divided into those that fall directly on the waterbody of concern and indirect deposition, which deposits on various land surfaces, and some portion of which is transported into streams and to the waterbody. Addressing the modeling comment first, in terms of direct deposition to Jordan Reservoir, the reservoir model did not include a component for direct atmospheric deposition to the lake. Modelers based this decision on the observation that those inputs would represent a sufficiently*

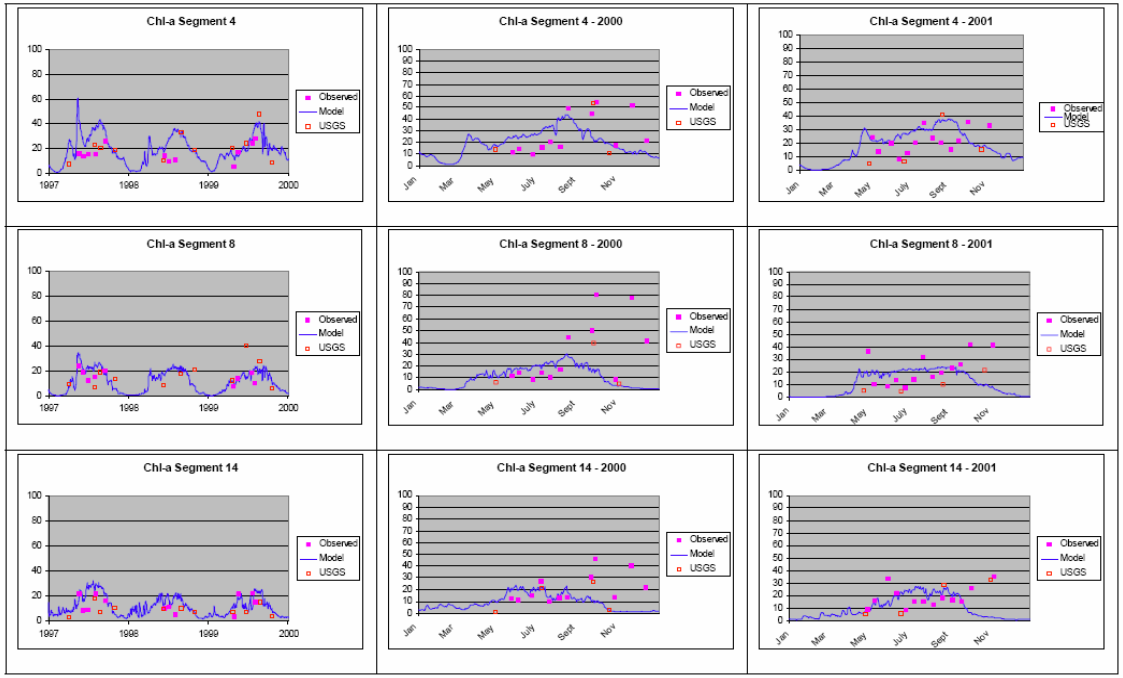
#	Sub-ject	Rule #	Commenter #	Comment / Reply
				small fraction of total inputs as to be well within the uncertainty bounds of the model. In terms of indirect deposition, the Jordan watershed model used local data and a modeling process commensurate with the state of scientific knowledge, involving a build-up rate to account for that addition (Tetra Tech, 2003). *Addressing the recommendation to account for expected atmospheric deposition reductions as part of the strategy, we agree and assert that it does. As background we first offer a summary of expected reductions in atmospheric N deposition. There are two main components to atmospheric nitrogen – reduced N, primarily ammonia, and oxidized N, generally called NOx. NOx emissions are regulated both federally, by USEPA, and in NC by the Commission through the Division of Air Quality. Both have enacted major new requirements on NOx emissions from two key source types - stationary and mobile - in the last few years. These measures should substantially reduce NOx emissions in the coming years if the federal rules are not weakened. Specifically, for point sources the laws adopted by the General Assembly in 2002, the Clean Smokestacks Act, and by EPA in 2005, the Clean Air Interstate Rule which applies to the eastern U.S., may combine to reduce NOx emissions from point sources in the southeast by as much as 60% overall by 2014. For mobile sources, the EPA recently adopted "Tier 2" vehicle emissions and fuel standards that are projected to reduce vehicle NOx emissions by up to 80% over the next 30 years as the current fleet of private and commercial vehicles phases out. While these projected reductions are large, these two sources represent less than half of all N emissions in NC, and the relationship between changes in emissions and changes in deposition is not very well understood. In addition, emissions of ammonia from concentrated animal operations comprise the great majority of ammonia emissions. These outputs are not directly regulated currently; however, the legislature enacted new law in 2007 on confined animal operations, and the Commission is currently engaged in discussions on this source.* *Altogether, we believe that some level of reduction in atmospheric N deposition is likely to occur in coming years. In terms of how reductions will be recognized in this strategy, accounting methods for agriculture and stormwater implicitly incorporate atmospheric deposition. The greatest source of N deposition to waters is runoff from impervious surfaces. We recognize in the stormwater rules that the accounting methods are to be updated periodically with the results of new data that quantifies these changes in runoff N content. This will appropriately account for reductions in this source. In addition, in practicing adaptive management, our ongoing monitoring of nutrient inputs to the lake and the lake's response will allow us to capture any unforeseen improvements and to revise requirements accordingly, especially for existing development.*
11	1	e	G	4, 7, 11, 21, 506, 604	**Alternative Solutions** • Modeling is needed to evaluate the effect of removing the Farrington Road causeway. The causeway turns the Upper New Hope Arm into a de facto stormwater forebay. It increases sedimentation and temperature and decreases dissolved oxygen, favoring algal proliferation. There are scientific reasons to believe that with increased mixing, the UNH Arm's water quality would improve without degrading the Lower New Hope Arm. A revised reservoir model could test this assumption. • Since the Upper New Hope Arm acts like a forebay in a structural BMP, the state should reclassify the arm and modify its permitted uses, or loosen the chlorophyll *a* standard as applied to the arm. (4) • Given the likelihood that local government feasibility studies under the Existing Development rule will find the reduction goals unattainable due to technical, economic, or administrative constraints, that the TMDL will not be met and that the strategy will be deemed a failure, the Commission should proceed now with a *Use Attainability Analysis* for the lake as authorized by the Clean Water Act for situations where TMDLs cannot be achieved. • The state should consider implementing vertical mixing procedures to achieve almost immediate cessation of harmful algae. Vertical mixing in and around the New Hope Creek and Haw River inputs will eliminate harmful algae in those areas and perhaps in the entire lake. (604) • Motorized craft should be banned from the lake. (506) *Reply:* *Modifying the Jordan Lake hydrodynamic and nutrient response models to simulate the removal of the road causeways is not a trivial matter since this will affect the boundary conditions of the models, particularly at the dam. These boundary conditions are based on measured flows and nutrient concentrations at the inflows and outflows of the lake with the causeways in place.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Road causeways do have the potential to affect the spatial distribution of nutrient concentrations in Jordan Lake, and removal of these causeways may improve water quality in terms of chlorophyll a concentrations in lake segments upstream. However, this proposal has the potential to cause additional impairments or worsen existing impairments in lake segments downstream of the existing causeways. While it may allow for lesser nutrient reduction targets in the Upper New Hope Arm, it may cause greater reduction targets for nutrient sources in the Lower New Hope and/or Haw River Arms. Further, segments of the Cape Fear River just 4 miles downstream of Jordan dam are currently impaired for chlorophyll a standard exceedences. While this proposal may hold merit, a strategy that could also degrade water quality downstream should be considered a secondary option better suited for a subsequent stage of adaptive management if needed. *Any proposal to reclassify a waterbody would require EPA approval. Aside from whether EPA would entertain such a thing, under the lowest possible classification, class C, the lake would retain the same impairment since the chlorophyll a standard is constant across classifications in NC. There is no classification for a water of the state that would allow the degradation that currently exists. To use the lake as a sediment basin would require that it not be waters of the state, an unsupportable change from state and federal perspectives.* *A Use Attainability Analysis is a structured scientific assessment of the factors affecting the attainment of uses specified in Section 101(a)(2) of the federal Clean Water Act. Under the Act, once a designated use is deemed to exist, it cannot be removed. (40 CFR 131.3). The designated and existing uses for Jordan Lake - water supply, primary and secondary recreation, fish and wildlife protection and propagation, and human health protection - cannot be removed.* *The proposed physical vertical mixing measures would in theory treat the lake's symptoms but would not address the ongoing and growing causes. The Division and EPA would not consider the approach of substituting receiving water treatments for source control remedies to be sound management. Such procedures are more appropriately employed by individual water users as adjunct practices for cost reduction. For this strategy, in addition to legal issues, there would be questions regarding 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.* *We do not see banning motorcraft as a useful component of a plan to address the lake's nutrient problems.*
12	1		G	29, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 204
				The rules fail to address numerous policy, scientific and economic problems, as well as substantial problems relating to data credibility.
				Reply: *We disagree with these assertions. Where specific criticisms are offered elsewhere in this document, we address them.*
13	1		G	207, 233, 407
				Jordan Lake was never intended to be a water-supply reservoir.
				Reply: *This comment, offered by several parties, is incorrect. One of Jordan Lake's original authorized purposes was in fact water supply. Public Law (PL) 88-253, 77 Stat 840, dated December 30, 1963, states in part: "The B. Everett Jordan Project is authorized for flood control, water supply, water quality, recreation, and fish and wildlife conservation." Text of this law is available on the Army Corps of Engineers website: http://epec.saw.usace.army.mil/bejdesc.txt.* *More important, regardless of this historical fact, the lake's impairment and the need to restore it are not tied solely to the drinking water use. If the lake's Water Supply classification were removed, its nutrient impairment would remain, as would the need to address the impairment. The nutrient-related standards are the same across all of North Carolina's water classifications.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
14	1		G	21	The current planned public comment period is not feasible. The timeframe, between June 15 and August 15 is not optimal because many local governments take a "summer" break.
				Reply: *Per this request, the original 60-day comment period, June 15 - August 15, 2007, was extended to September 15, 2007.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(2) M/D – MODELING / DATA ISSUES				
31	2	a	M/D	3, 16, 22, 23, 31.2, 208	**Current Chlorophyll *a* Standard Inappropriate** • We remain concerned with the use of Chlorophyll a as the primary indicator of lake health. Extensive research supports investigating other parameters. The one-size-fits-all 40 mg /L chlorophyll *a* water quality standard is unnecessarily stringent for the Upper New Hope Arm and may provide little or no protection of the public water supply and recreational uses of the Lower New Hope Arm. • Blue green algae blooms and exceedences of the chlorophyll a standard occur in other piedmont water supply reservoirs with development restrictions and some with no direct pollutant discharges. The watersheds of OWASA's WS-II University Lake and Cane Creek water supply reservoirs may be the most stringently protected in North Carolina, yet the lakes periodically exceed the chlorophyll *a* standard during the summer, and few drinking water customers or recreational users would consider either lake 'impaired'. There is no evidence that current Jordan nutrient loading is causing aquatic life impairment. It needs to be examined if a relationship truly exists between the current chlorophyll *a* standard and actual "designated use impairment' of Jordan Lake. • The Rules do not include clear criteria for compliance determination. The uncertainty of the chlorophyll *a* test as an indicator of impairment as well as the uncertainty and variability of the chlorophyll *a* test itself must weigh heavily in any compliance criteria developed for these rules. We urge the Commission and DWQ to support and carry out as expeditiously as possible the NC Nutrient Criteria Implementation Plan, which has been approved by Region IV of the US EPA. • "The selected means of monitoring Jordan Reservoir using the "chlorophyll *a"* testing procedure is flawed and biased toward failure of the 40 µg/L limit imposed by the rule." (208)
					Reply: *EPA requires states to use a numeric water quality standard as endpoint for a TMDL when such a standard exists (EPA 1999). North Carolina has a chlorophyll a standard that is used both to determine use support and to set TMDL endpoints. DWQ cannot vary from this water quality standard when developing target loads and concentrations.* *The water supply restrictions are broad water quality protection measures and do not inherently provide sufficient protection from excess nutrient loading. For example, the frequent chlorophyll a standard exceedances in University Lake and Cane Creek Reservoir suggest significant nutrient sources in the watershed. Both watersheds contain agricultural land uses that are not specifically restricted under the WS classifications. The Raleigh Regional Office reports the presence of a number of dairy operations in both Cane Creek and University Lake watersheds, and the 2005 Cape Fear River Basinwide Plan notes that cattle have been observed in tributary streams to Cane Creek. Municipal biosolids are also applied in at least the Cane Creek watershed.* *Any reconsideration of the current chlorophyll a standard will almost certainly yield a more stringent outcome. In the December 2000 EPA document entitled "Ambient Water Quality Criteria Recommendations", EPA presented nutrient criteria for lakes and reservoirs in Nutrient Ecoregion IX, which includes Jordan Lake and its watershed. This document presents EPA's current recommended criteria for total phosphorus, total nitrogen, chlorophyll a, and turbidity for lakes and reservoirs in Nutrient Ecoregion IX (Southeastern Temperate Forested Plains and Hills). The chlorophyll a value recommended by EPA in this report was 4.95 µg /L, with a range from 1.87 to 12.95 µg /L. This value is far more conservative than the current NC chlorophyll a standard of 40 µg /L.* *Regarding the recommendation to expeditiously implement NC's EPA-approved Nutrient Criteria Implementation Plan, the Division is currently on schedule to meet all milestones established in the Plan.*
32	2	a	M/D	3, 16, 208, 212	**Chlorophyll *a* Standard Technical Issues** • The chlorophyll a standard was developed using an older, spectrophotometric analytical method. The State is now using a fluorometric method that is more sensitive by a factor of about 2x. Thus it appears that the 40 µg /L limit being enforced is equivalent to what was a 20 µg /L concentration. • There are no commercially available independent standards for chlorophyll *a*. Thus there is no tool to measure any laboratory's

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				performance against a "known/certified standard." • To determine compliance with the chlorophyll standard under these rules, DWQ should use an average of replicates, not a single data point. DWQ should also monitor total nitrogen and total phosphorus.
				Reply: *The chlorophyll a standard was not developed based on any one analytical method. It was developed through consensus with researchers and managers over a yearlong process in the late 1970's. No methods comparison studies we are familiar with support the inference above of a 2-fold difference between methods.* *The Division is monitoring and will continue to monitor total nitrogen and phosphorus inputs and levels in Jordan Lake as the strategy progresses. We will also evaluate our ability to follow the recommendation to use replicates in monitoring for compliance with the chlorophyll standard in Jordan Lake.*
33	2	b	M/D	3, 31.4, 31.8, 31.10, 31.11, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 209, 211, 216, 219, 221, 223, 224, 225, 228, 229, 232, 233, 234, 236	**The Modeling is a Flawed Basis for the Strategy** • Rules are based upon a model that many experts have describes as flawed and based on unreliable science. • Problems have been identified related to data credibility. • Great expenditures are proposed based on little regard for the modeling uncertainty.
				Reply: *The Hearing Officer's believe that the lake data and model are sound and fully supports sound management decisions. We address specific criticisms where they are provided.* *The reservoir model is best judged on its ability to replicate longer-term spatial and temporal trends across parameters and how well it predicts exceedences of the chlorophyll a standard, rather than focusing on uncertainty in model predictions of individual points at individual stations. The reservoir model provides a good representation of nutrient response in Jordan Reservoir, particularly during summer, the most important season for the lake's nutrient behavior. EPA has reviewed the TMDL and modeling reports to identify any "critical flaws" in the analysis. "No such flaws were identified, and EPA concurs that the technical analysis and model selection are appropriate for this Lake Jordan TMDL" (EPA memo, 3/17/06). EPA subsequently approved the Jordan Lake TMDL in September 2007.*
34	2	b	M/D	1, 25, 211	**USGS Data Were Not Used to Determine Impairment or in the Reservoir model** Data from USGS sampling showed a much different scenario than DWQ data, illustrating that the Haw River arm is compliant for chlorophyll *a* concentrations 93% of the time, but this data was not used in the model.

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *The comment raises two potential uses of the USGS data – for the impairment determination and in the reservoir model. Regarding the impairment determination, USGS reported chlorophyll a data using the HPLC laboratory method until October 1, 2005. USGS no longer uses this method, citing lack of demand for it, aging equipment and quality assurance issues including problems with reproducibility. As a result, DWQ believes that there is risk involved in using the USGS data for determining use support.* *The USGS data were not used for modeling because they were sparse and not focused on the critical summer months, with only two summer measurements in most years. Nevertheless, we note that USGS observations were in general agreement with both Division data and model predictions. In comparing model results with measured data, error statistics were similar whether compared to DWQ or USGS data. Thus, the USGS observations provide further, if informal, validation of the model. A fuller discussion of the USGS data can be found in the Jordan Lake Nutrient Response Model Uncertainty memo (Tetra Tech, 2004). The following chart from that memo illustrates our points:*  **Figure 1. Comparison of Model Output to DWQ Observed and USGS Chlorophyll *a* (µg/L)** Observed values scaled to reflect model depth support in Segments 4 and 14, as in model calibration report.
35	2	b	M/D	3, 14, 16, 31.2, 25, 31.7, 31.8, 31.12, 233	**Reservoir model Based on Insufficient Data** • According to Michelle Woolfolk (then NCDENR Modeling Section Head) the model was never validated due to a lack of data. • Go back and use reliable data to calibrate and validate the model and clear up all the uncertainties associates with this model. • Not enough sampling. Samples were not taken every year.

<table>
<tr><th>#</th><th>Sub-ject</th><th>Rule #</th><th>Commenter #</th><th>Comment / Reply</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Reply:
Below is a summary of the monitoring data on which the Jordan Lake nutrient response model is based.
<table>
<tr><th rowspan="2">Year</th><th rowspan="2">Number of Stations Sampled</th><th colspan="3">Number of Samples per Station</th></tr>
<tr><th>Annual</th><th>Summer</th><th>Non-summer</th></tr>
<tr><td>1997</td><td>11</td><td>5</td><td>4</td><td>1</td></tr>
<tr><td>1998</td><td>7</td><td>3</td><td>3</td><td>0</td></tr>
<tr><td>1999</td><td>11</td><td>5</td><td>3</td><td>2</td></tr>
<tr><td>2000</td><td>17</td><td>12</td><td>8</td><td>4</td></tr>
<tr><td>2001</td><td>17</td><td>14</td><td>7</td><td>7</td></tr>
<tr><td colspan="2">Total Samples</td><td>39</td><td>25</td><td>14</td></tr>
</table>
As shown in the table, a total of 39 samples per station over five years at up to 17 stations were used to calibrate the nutrient response model, with 25 of the 39 at each station taken during summer. For any model, additional data is always desirable to minimize uncertainty in the results. However, available resources needed to collect the data and calibrate the model will always limit the amount of monitoring that can take place. The extent of monitoring for the calibration of the Jordan Reservoir model is at least equivalent to "typical" nutrient response modeling of this magnitude, and exceeds typical monitoring in that five years of data were collected (two years is much more common), capturing a broader range of weather and flow conditions. The comment about the model not being validated is correct. However, validation is not a necessary step.</td></tr>
<tr><td>36</td><td>2</td><td>b</td><td>M/D</td><td>3, 14, 16, 31.11, 25, 306</td><td>Lake Model Used Data Collected in Drought
• The region experienced a drought during 1999-2002, as noted in the Overview of the Division's Cape Fear Basinwide Assessment Report. Sampling done in 2000-2001 to make up for bad data in 95-00 was taken during the drought. Results of sampling during this time are not the most representative to use for model calibration.
• Those who oppose the rules criticize the fact that the model is biased toward drier conditions. Climate change forecasts for this part of the nation point to more common drier conditions due to global warming. It is appropriate to consider the model years as predictive of future conditions. (306)
Reply:
The first comment infers that the most desirable data to use in a model are those reflecting normal conditions. This is not the case. EPA guidance requires that critical conditions be evaluated in determining nutrient load reductions for TMDLs (Protocol for Developing Nutrient TMDLs, 1999). The low rainfall conditions of 1999-2001 allowed us to meet this requirement. The following data summaries for both rainfall and streamflow for the modeling period show the desirable range of data used in the model.

The following graph shows departures of the monthly average flow in the Haw River from long-term averages. While the weight of departure overall is toward drier conditions, one of five years is much wetter than average and one is about average, providing a good spread of conditions. Also, seasonal differences are as important as annual ones, and even within the dry years, wet seasons are apparent.</td></tr>
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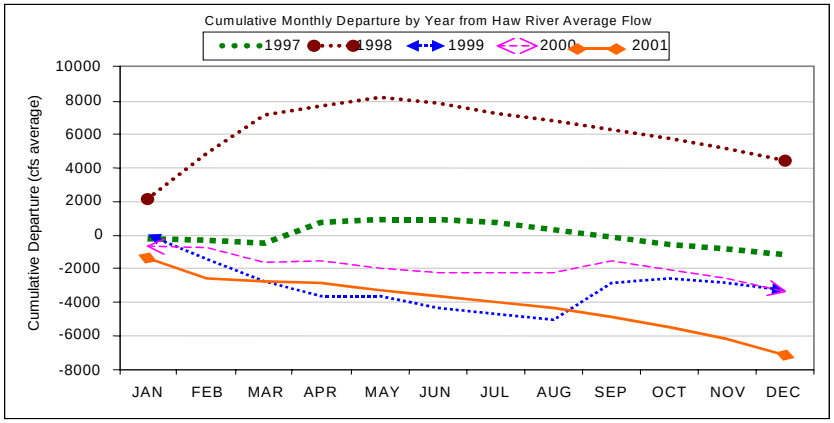
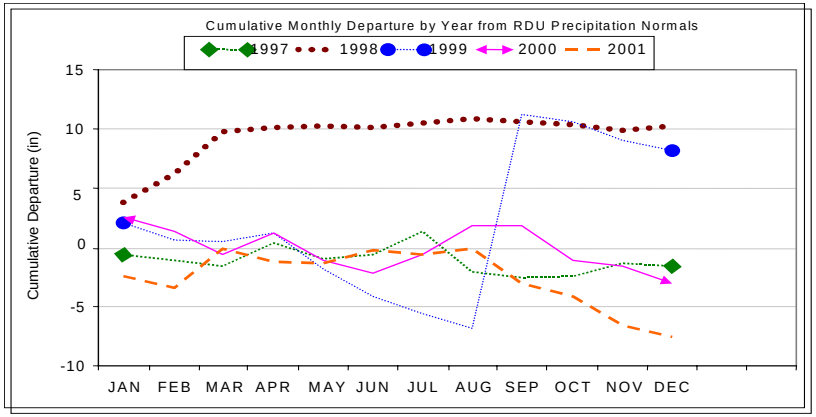
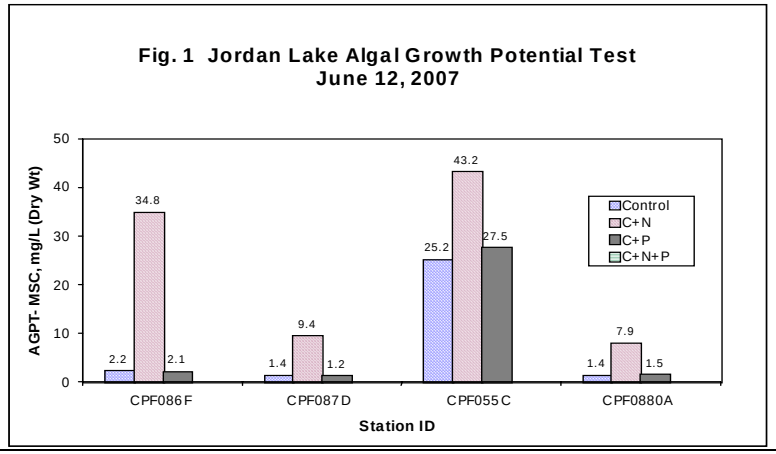
#	Sub-ject	Rule #	Commenter #	Comment / Reply
				
				Rainfall data from RDU Airport tells a similar story. The following graph compares monthly rainfall totals during the model simulation period to the long-term averages at the station, again showing cumulative departures over the course of each year.  *In sum, the model simulation period consisted of a wet year (1998) a normal year (1997) and three years that were drier than normal, although each with different characteristics (1999-2001). However, the seasonal analysis shows that inflows and precipitation were not extraordinarily low, except for local precipitation during the summer of 1999.*
37	2	b	M/D	3	**Reservoir Model Used Uncorrected Chlorophyll a Data** The chlorophyll *a* data used to develop the model was not corrected data and thus not an estimate of the real concentration. Chlorophyll *a* data (for '95-'00) provided by DWQ for the calibration of the Nutrient Response Model was not analyzed in accordance with the approved chlorophyll *a* analytical method in use by DWQ at that time. Municipalities wouldn't have agreed to fund the $410,000 if they were told of the problem.

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *The Division presented the uncorrected chlorophyll a data situation to the stakeholders, including the commenters, and the stakeholders agreed to its use in calibration. A history of the chlorophyll a data quality problems can be found in the Jordan Lake Nutrient Response Model Provisional Final Report (Tetra Tech, 2002) available at http://h2o.enr.state.nc.us/tmdl/SpecialStudies.htm#Jordan.* *A distinction should be made when discussing uncorrected chlorophyll a data. "Uncorrected" does not mean the data are "incorrect." It simply means that they are not corrected for "dead" chlorophylls (e.g. pheophytin) in the sample. DWQ used uncorrected chlorophyll a concentrations for model calibration during 1997-2000 because the corrected chlorophyll a data during that time were found to have quality issues. The mean ratio between corrected and uncorrected chlorophyll a concentrations was found to be very close to 1:1 during July-September (Tetra Tech, 2003), increasing during the remaining months. In other words, the corrected and uncorrected chlorophyll a concentrations appear to be roughly equal during the summer months. Since the nutrient load reductions proposed in the TMDL document are based on summer months, DWQ is comfortable with using the uncorrected chlorophyll a data during 1997-2000 to establish load reduction targets.*
38	2	c	M/D	25, 233	**Calibration and Validation Faulty** • Recalibration w/ 2001 data affected validation and exceeded error targets in all segments. • Non-point source reductions were not calibrated to the Jordan Reservoir model like point source reductions were. Instead they were estimated from other modeling and land use projections. Therefore, it is not clear whether the proposed rules for nonpoint sources will achieve the stated goals, and it may be impossible to know if the reduction targets will work until substantial time, funding and other resources are expended on feasibility studies and implementation. (233)
				Reply: *The model performed well overall, and the calibration exceeded error targets in that it under-predicted chlorophyll a concentrations only in the dynamic and difficult to simulate inflow segments and only for the Fall. Since the TMDL and load reduction targets are based on the summer months, under-prediction during the Fall is not a concern.* *It is standard practice to estimate NPS contributions using models and land use information. The lake is impaired and action needs to be taken in the watershed to reduce nutrients. As part of adaptive management, the Division will continue to monitor the lake to determine whether the rules are adequate to achieve the reductions needed to meet standards.*
39	2	d	M/D	1, 3, 31.11	**Reservoir Model Should Use Annual (vs Seasonal) Chlorophyll *a* Exceedence** The state made the reductions overly stringent by modeling reductions needed to exceed the standard by 10% of only the summer months. The letter from EPA Region 4 seemed to caution NCDENR that this is not how the standard was applied in other cases, but that it could be applied that way if the State chose to. The final determination was left to the State.
				Reply: *The load reductions proposed in the Jordan TMDL are based on a 10% chlorophyll a standard exceedance frequency during summer months - June through September. This is sound practice for this waterbody and is supported by EPA as described in the comment. A key part of the reasoning is that the waterbody should be able to fully meet the standard during critical conditions. Each waterbody is different. The Neuse Estuary was based on annual exceedance rather than summer months, recognizing that there were documented problems with winter dinoflagellate blooms, making winter part of critical conditions. Other TMDLs, such as Robeson Creek, are based on summer months like the Jordan Lake TMDL. The EPA memo referenced in the comment notes that "The use of non-growing season chlorophyll a data would tend to mask the growing season impact of nutrient enrichment in reservoirs such as Jordan Lake" and that considering the summer season only will be"…more likely to ensure attainment of the narrative criteria requiring that a balanced and indigenous community can thrive under the most critical conditions, which in this case occurs during the growing season for the lake." EPA guidance (Protocol for Developing Nutrient TMDLs, 1999) states that "an approvable TMDL will need to include…consideration of seasonal variation and high and low flow conditions such that water quality standards for the allocated pollutant will be met during all design environmental conditions."*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
40	2	d	M/D	31.11, 306	**Reservoir Model Margin of Safety Insufficient or Too Stringent** • The requirement for a Margin of Safety for the Jordan Lake TMDL does not appear to be met since all assimilative capacity has been allocated with no reserve. Also, the Division's goal is to not exceed the chlorophyll a standard by more than 10%. We do not agree with a design that builds in violation of the standard. (306) • Initially DWQ applied 10% exceedence criteria for determining nutrient impairment which seemed reasonable since that is the criteria in the State's basin wide plans. DWQ subsequently changed the exceedence threshold to 8%. This restrictive approach was added as a "margin of safety" to the development of these rules. (31.11)
					Reply: *A margin of safety may be implicit or explicit. The Jordan Lake TMDL includes an explicit margin of safety. It is true that all of the available mass loading was allocated to existing facilities with no additional mass allocations for future discharges or expansions. This is consistent with the stakeholders' recommendation on this subject. We then incorporated a margin of safety by reducing the maximum allowable frequency of chlorophyll a exceedances from our standard 10% to 8%.*
41	2	d	M/D	106	**Chlorophyll *a* Recommendation for Lake Fishery** We recommend a mean summer chlorophyll *a* lower limit of 15 ug/L for the middle section of the reservoir be used when determining the nutrient load reduction targets for the TMDL. This recommendation was based on a study by Maceina and Bayne (2001) that documented significant reductions in nutrients could adversely affect a largemouth bass fishery. Nutrients stimulate production and growth of the planktonic organisms that are the base of the aquatic food chain. However, excessive nutrients can be detrimental to Jordan's diverse fish species, including largemouth and striped bass, carp, and crappie.
					Reply: *DWQ does not believe that mean summer chlorophyll concentrations of less than 15 µg/L will result from implementation of these rules.*
42	2	d	M/D	14, 25	**Over-reduction of nitrogen might actually encourage undesirable algae.**
					Reply: *We do not believe that the nitrogen target represents "over-reduction." Algal growth potential tests, examination of raw data, and model results all support both the nitrogen and phosphorus reductions proposed to achieve water quality standards.*
43	2	d	M/D	16	**Reservoir modeling results are inconsistent with the conventional wisdom of freshwater P limitation.**
					Reply: *A commonly held view is that phosphorus is the nutrient that limits trophic state in freshwaters. This view is based on early statements in the limnological literature and adherence to the idea that Liebig's Law of the Minimum holds for aquatic ecosystems. However, scientific understanding has developed to recognize that Liebig's Law does not necessarily apply to whole ecosystems. It assumes equilibrium, a homogenous nutrient environment, and that all organisms have similar requirements. All of these assumptions are violated in lakes, wetlands, and streams (http://n-steps.tetratech-ffx.com/presentation_cd/NotJustPhosphorus/files/lobby.html).* *There are multiple lines of evidence that chlorophyll a concentrations in Jordan Lake are more sensitive to nitrogen than phosphorus. The first is the Jordan Lake Nutrient Response Model results. A second is the results of an Algal Growth Potential Test (AGPT). The objective of the AGPT is to assess a waterbody's potential for supporting algal biomass and to determine whether algal growth is limited by nitrogen, by phosphorus, or co-limited by both nutrients. When a waterbody supports algal growth at bloom levels without additional increases in nitrogen and/or phosphorus, the system may be subject to frequent nuisance algal blooms. For the control, a standard alga, Selenastrum capricornutum, is exposed to the test water. Other test water samples are enriched with nitrogen, phosphorus, or both. When a nutrient is added to a water sample that is growth-limited for that nutrient, the resulting mean standing crop (MSC) will generally increase to reflect the added nutrient until the nutrients approach their optimum growth ratio for the alga. A waterbody may be protected from nuisance blooms if*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				an AGPT value is consistently less than or equal to 5 mg/L. *The chart below shows the results of an AGPT done on water samples taken from various stations in Jordan Lake on June 12, 2007. For all stations, it is apparent that the addition of nitrogen (middle bar) resulted in a significantly larger increase in algal density than did the addition of phosphorus (right bar), indicating that nitrogen is limiting the growth of algae in the lake. The left bar is the control.* 
44	2	e	M/D	3, 16, 25, 31.2, 204 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68,	**DWQ Should Improve the Reservoir Model** • Tetra Tech acknowledged shortcomings of the data and model due to analytical problems and drought, and made suggestions to improve model performance, such as better spatial and temporal coverage of samples. No such sampling has been done. The project partners offered to pay for such sampling when problems with the original Division data were discovered, but the Division declined the offer to speed the project along. • DWQ stated that they have no funding available to update the model. There are no assurances that a true accounting of the improvements or worsening of Lake Jordan will be made.
				Reply: *As part of the original Jordan Reservoir modeling report (Tetra Tech, 2002), Tetra Tech did present recommendations for additional monitoring in the lake and tributaries for "further refinement of the Jordan Lake Nutrient Response Model", but also stated elsewhere that the model was well-suited to its purposes as-is. Tetra Tech acknowledged, "the [2000-2001] data provided good coverage both temporally and spatially" but that "it would be desirable to improve temporal coverage for laboratory parameters even at the expense of less spatial coverage."* *Any mathematical model of a natural system has some level of uncertainty and can be improved upon given sufficient time and financial resources. The Jordan Lake Nutrient Response Model in its current form provides a reasonable representation of nutrient response in the lake and is well suited for evaluating nutrient management scenarios such as those presented in the TMDL.* *In a series of adaptive management and modeling stakeholder meetings during 2006, modeling staff made clear the Division position that the reservoir model and its results are a sound and defensible basis for the strategy, thus the Division does not intend to remodel the reservoir at this point. The Division will continue to monitor water quality in the lake to assess progress toward recovery as part of adaptive management. We may identify the need to revisit the reservoir modeling after a period of implementation, as recognized in the adaptive management language in the goals rule.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
45	2	e	M/D	306, 311	**If pH Modeling Needed, Better Sooner than Later** • We are concerned that the Rules will not satisfy the Clean Water Act with respect to pH violations and respectfully request that a calibrated nutrient response model be developed and implemented for pH. (311) • "The 2006 303d listing of Jordan Lake for violations of pH standards means that the Phase II TMDL is already scheduled to begin in 2012. The lake is becoming more eutrophic, and more endangered each day. (306) • If the division plans to model pH too, then the modeling should be done prior to making rules. *Reply:* *The Haw River Arm was placed on the 2006 303(d) list for high pH impairment attributed to algal blooms, which can cause large day-to-night swings in pH. These proposed rules will reduce and may resolve the pH impairment. The Division will assess progress through the adaptive management process, and will only develop a TMDL for the pH impairment if needed. In that light, we would consider development of a pH TMDL at this point an unnecessary delay.*
46	2	f	M/D	103, 208, 212	**Watershed Model Has High Uncertainty** • "...the watershed model appears to be plagued by high levels of uncertainty (20%-50%) with respect to nutrient loading, as documented by DWQ's contractors (Tetra Tech 2003)" (103) • "The Problem for nonpoint sources is that the models are simply not accurate enough (probably 50%-200% range) to determine what actually constitutes a qualifying reduction… for non-point sources, monitoring requirements are primarily subjective, and really can't be differentiated from the modeled baseline values." (208, 212) Reply: *The watershed model effectively served the larger functions of identifying major nonpoint source types and estimating their relative contributions to the lake, as well as establishing delivery factors from the mouths of small watersheds to the lake. The estimate of contributions informed Division and stakeholder understanding of which sources to regulate. We intend to use the delivery factors in implementing trading aspects of the strategy. The model would not be appropriate for the purpose described in the second comment of determining what constitutes a qualifying reduction.*
47	2	f	M/D	103	**Watershed Model and Reservoir Model Not Coupled** The lake and watershed models are not coupled. This throws reduction allocations into question. The at-lake nutrient loads used to establish the TMDL are significantly different from the at-lake loads predicted by the watershed model that was used in part as the basis for the rules. *Reply:* *The watershed model was not needed to run the reservoir model. The reservoir model requires inputs of daily nutrient loads from all tributaries to the lake to predict nutrient and chlorophyll a concentrations in the lake. We used actual measured stream flow and nutrient concentration data from the major tributaries into the lake for this purpose, augmented by the FLUX model, all common practice. The watershed model could potentially have been used to determine loading for the reservoir model. However, errors in the watershed model would be passed on to the reservoir model, increasing uncertainty in the reservoir model results. The Division chose to decouple the lake and watershed models to reduce the uncertainty in the reservoir model's chlorophyll a predictions. The decoupling would not affect allocations as claimed in the first comment.* *We also note that the differences in loading estimates between the lake and watershed model were not significant. From B. Everett Jordan Lake TMDL Watershed Model Development (2003):* *...the [watershed] model provides a good approximation of the FLUX estimates of loads for the calibration period. Apparent percent differences between the model and FLUX estimates are less than or equal to 10 percent, except for phosphorus in Northeast Creek. The difference in phosphorus for Northeast Creek is primarily due to an over-estimation in 1998, and could reflect an inaccurate estimate of the point source loading component, estimated at 43 percent of the total phosphorus load for 1998.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
48	3	f	.0262	7, 208	**Distance from Lake Not Factored In** • The watershed model fails to account for the distance of locations in the subwatersheds from Jordan Reservoir, and instead forces equal reduction remedies to all areas within each subwatershed. • Section (3) states reduction goals are in terms of a percentage reduction in delivered nutrient loads to the lake. What transport factors were used, if any, to determine how much of an individual site's nutrient load is delivered to the lake? Does this transport factor apply to both percentage reductions for existing development and unit-area mass loads for new development?
				Reply: *The watershed model in fact does provide delivery factors, which account for distance from the lake. The Division used these factors in setting point source load allocations. One fortunate aspect of accounting is that the percentage reduction goals can be applied at the site level and result in the same percentage reductions at the lake, since transport removes the same fraction of a given input load in both the pre- and post-condition. The loading rate targets for new development are the percent reduction goals applied to average pre-development conditions, ensuring the percent goals are met at the lake site by site. Only when reductions are sought off-site do transport losses need to be factored in, and the trading rule requires addressing this issue. We intend to construct the existing development accounting to use transport factors produced by the watershed model at the scale of the 14-digit hydrologic unit to ensure equivalent reductions at the lake.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				(3) GOALS - .0262
61	3	a	.0262	3, 10, 15,18, 26, 27, 31.5, 31.7, 66, 67, 201, 207, 216, 233	**Critical WSW Classification Inappropriate** Classifying the entire Jordan watershed as a Critical Water-Supply Watershed could trigger a host of increased regulations now and in the future. • It will promote less efficient uses of developable land and encourage urban sprawl. Low density contributes to water pollution, perpetuates the cycle of sprawl and fragments wildlife habitats. Higher density development offers the best solution. • This is simply a tool to allow DWQ to enforce Phase II type stormwater regulations in areas that otherwise could not be regulated. • Water and wastewater treatment plant permits will be further scrutinized and any expansion request will be far more difficult as we are approaching the limits of technology for these facilities. • Giving this designation also gives the Director full authority to change the rules if he/she determines they are not aggressive enough without a public hearing process. (201)
				Reply: *As stated in the Goals Rule, the designation of Critical Water Supply Watershed, which is set out in NC statute G.S. 143-214.5(b), simply establishes the Commission's ability to impose more stringent requirements than minimum state Water Supply requirements. The more stringent requirements are this set of rules. Applying the designation will not trigger any other regulations.* *Some confusion has apparently resulted from the similarity of this term to the term, "critical area" used in existing water supply rules adopted by the Commission. Under existing Water Supply rules, new development in areas designated "Critical Area" is required to meet certain density-based stormwater treatment requirements. Phase II stormwater also uses a density-based approach. Jordan stormwater rules instead use a nutrient loading rate target approach, and should not encourage urban sprawl based on density restrictions.* *Wastewater treatment plant expansions would not face any additional difficulty as a result of the Critical Water Supply Watershed designation. Wastewater plants were required to face additional nutrient restrictions under the 1997 Clean Water Responsibility Act, SL 1997-458. These rules resulted from the choice by certain dischargers of an alternative compliance option under that legislation, which has provided additional time for compliance.* *The Critical Water Supply designation does not impart any authority to the Director to change the rules without a public hearing process.*
62	3	b	.0262	3, 7, 15, 25, 30, 31.4, 31.12. 221, 223, 225, 228, 229, 232, 234, 236, 237	**Adaptive Management Approach Too Ambitious** • DENR's idea of adaptive management is to implement, monitor at least five years, and reduce restrictions if water quality has improved. The reverse would be more progressive - incremental addition of restrictions if experience determines that measures are insufficient. • The issue is not whether to do more, but what to do that will assure reasonable progress toward protecting the lake's intended uses without causing economic hardship. The wholesale changes proposed, requiring billions of investment, are out of proportion to the problem. Before requiring these rules, the state should evaluate all possible strategies and solutions. There may be more effective, affordable, better-targeted techniques. A more conservative strategy is needed. To determine what is reasonable, questions the Commission should address include: when is the lake acceptably drinkable and swimmable; what cost is acceptable; is it possible for a lake of this configuration in this location to ever be in compliance; what conditions would precipitate recovery; could less costly, less controversial measures do the job? Adaptive management has an important role and should be used to make corrections over time. • The rules should include protective language to safeguard against additional requirements until current capital compliance improvements are paid for. (15)
				Reply: *While the lake may not be in crisis now, the Commission must take action on its demonstrated water quality impairment and ongoing violations of water quality standards, especially given the strong likelihood that it will continue to worsen over time lacking additional management action. Modeling has identified the major nutrient sources in the watershed, which include developed areas. It is clear that we*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					cannot expect to recover the lake without addressing existing developed lands; lesser measures than those proposed will only further delay the lake's recovery. Thus, responsible adaptive management in this case involves addressing the identified sources while providing maximum flexibility to achieve reductions in the most cost-effective manner, and assessing progress at intervals to determine the need to adjust course. The rules are structured accordingly. *We believe it would be inappropriate to link rule requirements to the progress in capital cost recovery, but several factors favor the interest behind the second comment: the comprehensive nature of this set of rules; the lengthy timeframes for implementation of the Existing Development rule; and the need to provide ample time for lake recovery and assessment of that following implementation. Beyond that, any new requirements would be taken through a collaborative decision-making and rulemaking process with ample opportunity for discussion.*
63	3	b	.0262	7, 12. 14, 23, 107, 308, 311	**Support Adaptive Management Approach** • We strongly recommend that adaptive management be retained and that DWQ comply with EPA guidance on the concept. Adaptive management is a process by which uncertainties in modeling or in non-point source efficiency rates can be addressed over the life of the TMDL. Some local governments have misinterpreted adaptive management as putting off real implementation of the TMDL while the state conducts another round of studies to confirm that Jordan Lake is in jeopardy. EPA will not endorse this approach. • We applaud the inclusion of adaptive management. However, it is not clear how the 5-year period in the rule will apply nor how it will integrate with current basin planning or its imminent shift to a 2-year cycle. (12) *Reply:* *The Hearing Officers have retained the adaptive management provisions and we intend to carry them out. Item (7) in the Goals Rule identifies the potential for adaptive management after no less than five years of implementation. In stakeholder meetings, Division modeling staff have stated that five years is likely an insufficient time interval in which to expect meaningful changes in lake water quality and thus to justify remodeling, especially considering that some rules will not yet be fully implemented at that point, including the existing development rule, which will only begin implementation at roughly five years and which will require years beyond that to make significant progress. A remodeling decision will be informed by implementation status and the lake's progress based on lake use support data and trend analysis.* *The minimum 5-year period stated in Item (7) would be evaluated independent of the Basinwide planning process in both its current and evolving format. We note that Basin Planning is not shifting to a 2 yr cycle; rather, use support is. Basin Plans will be updated more frequently; however, this will not impact adaptive management as it relates to management strategies.*
64	3	b	.0262	7, 30	**Data to Consider in Adaptive Management** • In using adaptive management to adjust both the loading goals and the practices as necessary, local and federal government data must also be used as an integral part of any assessment, in addition to testing done by the Division of Water Quality. • The adaptive management plan would add new lake monitoring sites, but not in the Upper New Hope. • The adaptive management plan does not call for the watershed model to be revised, which was used to model sources of nutrients. Revising the reservoir model alone would not contribute the kind of information needed for adaptive management. *Reply:* *The Division is working with researchers, local and federal governments, and other state agencies to coordinate and share data. Quality assurance and quality control procedures are being adopted by a variety of monitoring groups that will allow for better use of all data collected. The best example is the data being produced by the NPDES Discharge Monitoring Coalitions in the Neuse, Cape Fear, and Yadkin/Pee Dee River Basins (http://h2o.enr.state.nc.us/esb/coalitions.html).* *The field study plan on which the comment about insufficient stations was based was drafted for stakeholder discussion purposes. DWQ will consider this comment with any further adaptive management planning.* *The language in Item (7) calls for use of, at minimum, not only reservoir modeling but lake use support assessment and evaluation of trends in nutrient inputs or lake response. Considering this comment, the Hearing Officers have added language identifying the potential use of*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				watershed modeling and other analytical tools.
65	3	c	.0262	12	**Scope of Strategy Insufficient – Needs to Address Atmospheric Deposition** The strategy goal of reducing loads to Jordan Lake from "all point and nonpoint sources of these nutrients located within its watershed" is not met since the rules fail to address atmospheric deposition, which various publications identify as the largest single source of nitrogen to nitrogen-impaired waters. Better automobile technology exists to address this source than is being required. *Reply: Please see our reply to similar comments #10 on this topic.*
66	3	c	.0262	12	**Scope of Strategy Insufficient – Needs to Address Forestry** The proposed method of allocating load reductions is inequitable and inconsistent with the strategy goal of reducing loads to the lake from "all point and nonpoint sources of these nutrients located within its watershed". The current draft requires percentage reductions from all lands including forest such that largely forested counties will have difficulty finding sufficient reductions from existing development. To achieve equity across sources, load reductions must be based on developed land. The load from forestry should have been separated out as background in the TMDL and the other sources' load targets left unchanged. In the TMDL, point sources have an unfettered percent requirement, but nonpoint sources – development and agriculture – have to reduce much greater percentages to make up for the free pass being given forestry. The rules do not establish reduction requirements for forestry. Forestry exerts a significant load on all segments of the lake. If forestry is not regulated, then it should be allocated to background and not reassigned to other nonpoint sources. *Reply:* *These comments led us to an incorrect reference in Item (3) of the Goals rule, which we have revised. A sentence in that section now states that the reduction goals are to be met by all sources addressed in the rules (referencing Item (5)) as opposed to just local governments as previously inferred (referencing Item (6)).* *The following comments address related misunderstandings. Nowhere do the rules propose that local governments will be responsible for obtaining reductions from forest land. The existing development rule applies only to developed lands. The reduction needed from forest land will not be redistributed among local governments.* *In considering potential reductions from forestry, it is important to distinguish forests from forestry. The vast majority of forest in the watershed at any point is simply growing trees, is not actively managed, and exports nutrients at the lowest rates possible. Thus, the forest load, while sizable in total due to the large acreage of forest in the watershed, is practically irreducible. Nevertheless, loading reductions from forest harvesting activities may be possible. Thus, the forestry community is not given a free pass; we propose new restrictions for tree harvesting in riparian buffers within the buffer rule.*
67	3	c	.0262	12	**Future Municipalities Should Not be Excluded** By listing the subject municipalities, the rule limits itself from applying to future municipalities. It should be amended to include municipalities incorporated in the future and land in the watershed annexed by municipalities in the future. *Reply:* *We have revised the text of Item (6)(a) so as to capture the cases identified in the comment.*
68	3	d	.0262	102	**Goals set for Upper New Hope may not be obtainable, especially due to increased land use for equine.** *Reply:* *We agree that the Upper New Hope goals may prove challenging to meet for agriculture and existing development. Regarding agriculture, if the goal is not met after a period of implementation, that rule provides for a practicability evaluation and recommendations to the Commission.*
69	3	d	.0262	201	**Lower New Hope Goals Not Stringent Enough**

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					The rule shows baseline target reductions of 6,836 lb N/yr and 498 lb P/yr in the Lower New Hope Arm, but in the Fiscal Analysis, the reduction requirement is 0%. Why the difference? The Lower New Hope is certainly impaired and is shallow and has long retention times – should we not treat this problem?
					Reply: *The mass loads cited in the comment are the estimated baseline loads to which the Lower New Hope Arm is being held under its 'no increase' goals rather than reduction requirements. The retention times in the Lower New Hope reflect the physical nature of its watershed and configuration and would not be considered for management alterations.*
70	3	e	.0262	102	**BMPs put in after January 1, 1997 should be credited as reductions.**
					Reply: *BMPs installed before or during the baseline period contributed to the conditions from which reduction needs have been established. While those BMPs were beneficial, crediting them toward the reduction needs would be inappropriate.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				(4) NUTRIENT MANAGEMENT - .0263
81	4	a	.0263	4, 7, 102, 230, 308	**Broaden Applicability and Increase Stringency of Rule** • Don't exempt property owners who apply nutrients to their own property from requirements, especially if they exceed 10 acres of application area. • All hired applicators should be subject regardless of property size they apply to; remove the ten-acre threshold. • Require submittal of written nutrient management plans to DWQ, even if there aren't resources to check up or enforce against plan violations. This will provide the information base for DWQ and the EMC to evaluate the need for future oversight, or to provide for better land application as part of adaptive management. (308) • Help local governments educate homeowners on proper fertilization methods and soil testing before applying nutrients. The NCDA&CS Agronomic Division provides free soil testing for homeowners. *Reply:* *The Hearing Officers did not subject homeowners to this rule given the untenable resource demands that would create for the Division. However, the Existing Development stormwater rule requires local governments to educate homeowners on fertilizer use. The Hearing Officers also determined that the hired applicator threshold should be dropped from ten acres to five acres. We are sympathetic to the request to assist local governments in implementing those homeowner education requirements and intend to do so.*
82	4	a	.0263	11, 308	**Require Certification of Applicators** • Training or completing and implementing a nutrient management plan is insufficient to modify over-application behavior. A statewide licensing and certification program is needed so that a person hiring an applicator can readily check that the applicator has been properly trained. The rule needs to require residential, commercial, or industrial landowners who apply nutrients to their own property and to take training, receive certification, and implement management plans. • All operators of spray, drip irrigation, and surface discharge wastewater systems, including single family systems, should be required to be certified, either through DWQ or DEH, to ensure among other things that waste is not applied when soils are saturated. *Reply:* *We agree that more comprehensive requirements such as requiring training and plans, as well as continuing education, and subjecting residential and commercial landowners could yield meaningful nutrient improvements. In drafting the rule, we evaluated these options but determined that the Division does not have the staffing resources to implement most of them. The Hearing Officers considered options for strengthening the rule in keeping with these comments without placing significant new resource demands on the Division. Their resulting changes include: adding commercial lands to those subject where ownership in the watershed exceeds 5 acres; and lowering the acreage threshold on lands treated by a hired applicator from 10 to 5 acres. We believe the latter change should capture the great majority of lands fertilized by hired applicators while not subjecting the small fraction of acres fertilized by casual hired help. We believe the recommendation to establish a statewide certification and training program has merit, however it is outside the scope of this rulemaking.* *Operators of land application systems are required obtain and abide by permits that address water quality and health-related aspects of their systems, including the soil saturation issue raised by this comment. See next comment.*
83	4	a	.0263	3, 7, 11, 31.11, 210, 301, 308	**Subject or Don't Subject Biosolids Applicators** • The nutrient management rule should cover all municipal biosolids application. Farmer applicators are clearly covered now, but it is unclear whether biosolids-applied lands that are not farms are subject. Biosolids are subject to other rules that were not developed with the goal of watershed nutrient management. Industrial waste disposal also needs to be evaluated for nutrient load within the watershed. • Biosolids are addressed in the new 15A NCAC 2T regulations. If there are shortcomings with biosolids management, they should be addressed in those rules, not in the Jordan Rules. • Beneficial reuse of wastewater residuals should not be negatively impacted beyond the existing requirements for biosolids and compost application in the 2T rules.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					• Training alone is insufficient for municipal wastewater sludge application; the rule should require NM plans for this activity.
					Reply: *The Division's recently adopted 15A NCAC 02T rules regulate application of wastewater residuals regardless of how the receiving land use is characterized. The rules were amended in 2007, one result of which was to strengthen nutrient criteria used to set nitrogen application rates. With the ensuing 5-year permit revision cycle, all such permits under these rules statewide will be held to a realistic yield expectation (RYE)-based nitrogen application rate. This is the same crop needs-based rate approach to which animal waste application is held. The Division of Waste Management permits septage application under rules 15A NCAC 13B .0815-.0829. Application rates are nitrogen-based and well within RYE-based limitations for the crops and soils in the watershed.* *The Hearing Officers determined that it would be valuable to take the additional step of requiring applicators of wastewater residuals and septage to not only meet nitrogen rate standards, but also those for phosphorus. They added provisions to the rule to address this.*
84	4	a	.0263	4	**Unrealistic Homeowner Requirement** • Requiring homeowners to bear the responsibility for verifying that nutrient applicators they hire have met the requirements of Section .0263 (5)(a) is cumbersome and unrealistic.
					Reply: *We agree with this point. The Hearing Officers have added an exception for homeowners to the requirements on those who hire applicators.*
85	4	b	.0263	4, 210	**Implementation Timeframes** • The nutrient management-training time frame should be shortened from five years to at least three years. (4) • Consider phasing in the training for the different categories of applicators. This would spread and ease the trainers' workload. (210)
					Reply: *We agree with this recommendation. The Hearing Officers have shortened the rule compliance timeframe to 3 years, the shortest feasible timeframe that would still allow the Cooperative Extension Service sufficient time to structure and carry out training.*
86	4	c	.0263	105, 210	**Potential Unintended Consequences** • Because farmers mostly under-apply nutrients in this watershed, requiring the education afforded by the rule may well cause them to *increase* the amount of fertilizer they apply. To avoid unintended consequences, a more detailed study of this, including Neuse and Tar outcomes, should be conducted before imposing this requirement on agriculture.
					Reply: *We understand the real potential concern raised here. It is difficult to predict the outcome, given too that many under-apply based on economic considerations that this rule would not affect. Staff with the Cooperative Extension Service believe that the net educational opportunity afforded on all aspects of farm stewardship favors proceeding with the rule.*
87	4		.0263	7	Please provide a definition for "nutrient management consultants" (3)(e).
					Reply: *The Hearing Officers have restructured the rule to center around the application of fertilizer to types of lands instead of around persons who apply to those types of lands. In the process, they have eliminated requirements on consultants, whom as third parties they decided were not essential to subject to this rule.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				(5) AGRICULTURE - .0264
91	5	a	.0264	105, 210	**Additional Funding Needed** Proposed local committees that are expected to carry out farmer sign-ups, strategy development, accounting and reporting were largely supported in the Neuse and Tar-Pamlico by new staff that required new funding support, the sources of which have become less available since then. Also, assuming there will be adequate money for assisting farmers with cost-sharing of 75% of the cost of BMPs is unrealistic. The strategy should include a call for greater funding for both BMP implementation and technical assistance through the Agriculture Cost Share Program, EPA 319 programs, and other potential funding sources.
				Reply: *The Hearing Officers agree with these concerns and recognize the resource burden that the rule will place on the agricultural infrastructure and, as with the Neuse and Tar-Pamlico, intend 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 six 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..*
92	5	b	.0264	3, 15, 18, 26, 27, 31.3, 50, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 105, 201, 210, 202	**Equity - Agriculture Is Overburdened or Underburdened** • Other land uses have not demonstrated the same level of commitment and responsibility to natural resource stewardship as that of the agricultural sector. Commercial and residential development has consumed vast areas of former farmland and forestland with little, if any, BMPs installed to control stormwater. The rule presents an undue burden on agriculture. • Since agriculture contributes the majority of nutrients to the lake, it should be burdened more. To be fair, reasonable, or equitable, local governments shouldn't be asked to pay so much. • Agriculture is eligible for cost sharing from the NC agriculture Cost Share Program, and only has to pay $2.5 million over a five year period. This is not fair and balanced. (201)
				Reply: *It is fair to say that farmers began implementing water quality-oriented practices in significant numbers with the advent of state and federal cost share and technical support programs geared to those objectives in the late 1980's and early 1990's, while stormwater quality controls for development have largely not been implemented in much of this watershed to date with the exception of Water Supply Watersheds where high density development cannot be avoided. However, we also note that agricultural implementation has relied in good part on the availability of that cost share, which is not available for new or existing development. In any case, while greater stormwater treatment prior to the baseline period would likely have lessened the reduction need quantified in this strategy, the rules include requirements for both new and existing development to meet the strategy goals, which is far more costly for existing development than it is for agriculture.* *Regarding relative contributions, the watershed model developed for the TMDL estimates agriculture's total nitrogen contribution as less than, comparable to, or greater than those of point sources or developed lands, depending on the subwatershed. Considered on a per-acre basis, agricultural land may export more or less nitrogen than developed land, depending on the type of each. To a significant extent, the relative contributions of a given land use type are inherent to it. Thus, we believe that holding all land uses to a single export rate is not feasible. We believe the most equitable approach is to require the same proportional reduction from each source type. We also recognize that cost is an important factor, and have attempted to establish compliance timeframes that provide for manageable cost rate burdens.*
93	5	b	.0264	3, 31.3, 201	**Rule Is Too Lenient** The agricultural rule needs more teeth. They have eight years before implementation is required, and no consequences for non-compliance, while other rules, such as new development, have a 30 month compliance timeline. Agriculture only has to implement a standard BMP once, then gets a bye whether it is effective or not. This is unlike the wastewater rule, which gives the Director the ability to establish more stringent limits if it is found that the initial ones are ineffective.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					Reply: *The compliance timeframes cited apply to very different levels of implementation. The eight years given agriculture is the maximum time within which agriculture is to achieve the full strategy reduction goals from its lands, while the 30 months for new development is simply the timeframe by which local governments are to begin requiring subsequent development projects to treat their stormwater. Agricultural BMPs face the same compliance expectations as new development BMPs. The Director's ability to establish more stringent limits on wastewater discharges is tied to a finding of localized water quality degradation. This local "hot spot" provision, while unlikely to be used in our experience, is considered a reasonable precaution given the nature of point sources, which involve substantial and continuous nutrient inputs in discrete locations.*
94	5	b	.0262	12	**Crediting Pre-Baseline Reductions Undermines Strategy** The wide latitude as to when BMP implementation occurred/occurs for determining farmer compliance, including before or during the baseline period, differs from the Existing Development rule, lessens the probability that agriculture will achieve any reductions, and undermines the nonpoint source strategy as a whole. In addition, farmers can generate trading credits with any BMPs other than the listed standard BMPs, so credit can be unrelated to reductions after the baseline or to the goals, further undermining the strategy.
					Reply: *While we proposed crediting good stewardship practices regardless of timeframe for purposes of individual compliance, we also required aggregate compliance by the agricultural community based on meeting the reduction goals relative to the baseline. This model, which was used successfully in Neuse and Tar-Pamlico, relied on the belief that sufficient improvement needs remain in the watershed beyond the level of standard BMPs to meet the goals. Nevertheless, we agree with the potential for the problem raised in these comments from the standpoints of both individual compliance and generation of trading credit, particularly regarding the Upper New Hope subwatershed. Thus, the Hearing Officers agreed to remove the Standard BMP option entirely, and to base trading credit on actions beyond aggregate compliance with the goals.*
95	5	b	.0264	101, 102, 105, 210	**Give Credit for Pre-Baseline Reductions** • Give credit for practices installed since 1997 by crop and animal operations, including buffers and no-till. • The rules give little consideration to the benefits of agricultural practices installed in the watershed over the last 20 years through the Agriculture Cost Share Program and federal assistance programs, or the many BMPs installed without any financial assistance.
					Reply: *To achieve the overall reduction goals relative to the baseline period, one principle we followed in designing the strategy was to require each source type to achieve those reductions relative to its loading during the baseline. We did not see alternatives that would involve judging the relative value of varying levels of historical source management across and within source types as tenable. We saw the most equitable approach to be holding all sources to the same relative improvement compared to the lake's baseline. In doing so, improvements made* during *the 1997 – 2001 baseline period contributed to the reduction need determined by the reservoir model, while only improvements made* following *the baseline period - 2002 and later – would produce reductions creditable toward that need. All of the rules reflect these accounting concepts.*
96	5	c	.0264	21, 102, 105, 210	**Upper New Hope Target May Be Unachievable** The agricultural community is concerned that their reduction targets may not be achievable in the Upper New Hope subwatershed: there is little agriculture to begin with; most operations used field borders and nutrient management for years prior to the baseline; steeper topography near streams means buffers largely exist already; and operators have reduced fertilizer use due to cost increases. A special study is needed first to determine how many farms are actually left in the subwatershed.
					Reply: *Agricultural interests shared this concern in stakeholder meetings held in 2006. We addressed this concern in the rule by providing the Watershed Oversight Committee the ability to evaluate the feasibility of achieving the goals in a given subwatershed and presenting its findings to the Commission at the end of the 'voluntary' implementation period at six years. The Hearing Officers felt this was a reasonable approach. We agree that a characterization of agriculture in the subwatershed is needed, and expect initial accounting to accomplish this.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
97	5	c	.0264	210	**Give More Compliance Time** The implementation schedule for agriculture should be extended at least two years due to the hardships created by the current drought. *Reply:* *We appreciate the hardships faced by the agriculture community as a result of drought and other environmental extremes and uncertainties. The timeframes required for the Hearing Officers to review and evaluate the comments on this involved set of rules has resulted in a year's delay in effective date of these rules (2009) from the previously targeted date (2008). The Hearing Officers have also agreed to extend the implementation schedule by one year, in part to provide sufficient time to develop new accounting tools. These actions combined effectively provide the agricultural community two additional years beyond that expected during the public comment period.*
98	5	d	.0264	213	**Equine Operations Merit Special Consideration** • Many equine operations that would be affected by the rules are not considered agriculture by the Department of Revenue or IRS, such as recreational operations, and there is currently no cost share or financial assistance available for these operations. • Due to the projected increase in horse populations in the watershed, the Watershed Oversight Committee should include a pasture-based livestock representative with specific background in the equine industry. We would also like to encourage development of other equine BMPs that are simple and cost effective to implement for all equine operations, including those under the threshold. *Reply:* *We appreciate the non-conforming nature of some equine operations. Officially, the General Assembly modified the definition of agriculture in 2005 to include equine operations of any kind. Our understanding from the Division of Soil and Water Conservation is that many livestock practices cost-shared by the NC Agricultural Cost Share Program apply to horses, that equine operations are eligible for and do utilize such cost share. We are prepared to work through more specific issues with equine stakeholders during implementation.* *We appreciate the commenter's interest in seeking workable solutions for the range of equine operations and in seeing all operations make responsible contributions. Given the growing presence of equine operations in the watershed, the Hearing Officers agreed to add an equine representative as requested here. We believe this will help in expanding or improving the set of practices available to horse operations.*
99	5	d	.0264	4, 101, 213	**Raise or Lower the Livestock Thresholds** • Livestock thresholds should be raised to .0200 levels - 75 horses, 100 cattle, 250 swine, 1,000 sheep and 30,000 poultry with a liquid waste system. • The 5-equine threshold is too low in comparison to other species, and should be raised to at least 11. The NC Horse Council was not part of the stakeholder decision process, which is not based on science. The Tar-Pamlico threshold was 20 horses. (213) • Livestock thresholds need to be lowered, or they will allow too many small farms to operate without necessary nutrient practices. (4) *Reply:* *The objectives of this strategy are very different from those of the state's confined livestock regulations or ".0200" rules. The .0200 rules are* non-discharge *rules for* intensive, feedlot *livestock operations for* general *water quality* protection *purposes, and* require setbacks *from waterbodies. The Jordan agriculture rule, on the other hand, is designed to restore nutrient-related water quality degraded by the cumulative inputs of agriculture, including pasture-based animal operations that 'discharge' via runoff and where open livestock access to streams is not prohibited. Based on Census of Agriculture data, the .0200 threshold for cattle, which produce the great majority of livestock waste nitrogen in the watershed, would capture less than half, about 44%, of the cattle in the watershed, clearly inadequate for the purposes of this rule. The horse threshold is based on what little science is available on this under-characterized sector of livestock, and it was also independently suggested by local agricultural agency staff who participated in stakeholder meetings held during 2006. According to the available data, the statewide 1996 NC Equine Survey, the equine threshold of 11 head recommended in the comment would capture only about 19% of horses. While the Jordan watershed could differ from statewide conditions, best available information supports the threshold proposed in the rule.* *The Hearing Officers reviewed watershed livestock numbers and waste nitrogen production, and adjusted the swine thresholds to 20 or down*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					from 150 to 20 for swine not kept in a feedlot. The proposed thresholds capture the great majority of livestock nitrogen in the watershed. In addition, the Hearing Officers added a clause to the rule ensuring that the Division may require a sub-threshold operation to comply with the rule if it causes or may cause water quality problems.
100	5	d	.0264	105, 210	**Add Tree-Harvesting Exemption** Under (4) APPLICABILITY, please include the allowance for tree harvesting within the riparian buffer that was developed and incorporated into the definition of agriculture in the Tar-Pamlico agriculture rule. The aim of this addition is to ensure that rule requirements do not present a disincentive for landowners to participate in conservation programs that encourage establishment of riparian buffers.
					Reply: *We support the intent expressed in this comment and believe the language that was added to the Tar-Pamlico agriculture rule was not necessary to meeting this intent. The agriculture rule provides no disincentive to establishing forested buffers. Nor does the buffer rule, since it allows for continuation of existing, ongoing uses such as agriculture within the buffer. The Tar-Pamlico language allowed for harvesting of trees grown under an agricultural incentive program or an approved farm plan the expressly called for returning the land to another agricultural pursuit, both of which would be allowed under the buffer rule as part of ongoing agricultural activity.*
101	5	e	.0264	7, 105	**Improvements Needed to Standard BMPs** • Please provide a definition for "sufficient level of farm stewardship" in Section (7), as it establishes a standard for compliance. (7) • Under (7) STANDARD BEST MANAGEMENT PRACTICES (b), we request that the Soil and Water Conservation Commission be listed in place of the Watershed Oversight Committee, as the Commission has the statutory authority to approve BMPs. For the same reason, under (8) WATERSHED OVERSIGHT COMMITTEE (b) ROLE (vi), replace approve with recommend standard BMPs. (105)
					Reply: *The Hearing Officers agreed to completely remove the Standard BMPs section from the rule, along with attendant references to it elsewhere in the rule. The provision was not utilized in the Tar-Pamlico Basin, presents challenges in the Jordan subwatersheds in terms of defining acceptable levels of stewardship relative to the different goal percentages, and could potentially yield difficulties in reaching the goal in the Upper New Hope subwatershed.*
102	5	e	.0264	101	**Accounting - Give Credit for Ponds** Structural practices such as ponds should be counted as nutrient practices given their sediment and nutrient trapping capacity.
					Reply: *Ponds were not recognized for reduction credit under the Neuse and Tar agriculture rules primarily for lack of a cost-shared, water quality-oriented pond practice. Challenges in establishing and implementing a pond practice include quantifying the benefits and the engineering workload. The Technical Review Committee of the Soil and Water Conservation Commission has discussed the potential for establishing such a practice. If producers in the Jordan watershed see ponds as a useful practice, we would support development of acceptable design criteria and associated nutrient crediting.*
103	5	e	.0264	210	**Accounting Issue – Acres Leaving Agriculture** There needs to be a mechanism to adjust acreage taken out of agriculture from baseline acres. Experience in the Neuse and Tar-Pamlico shows this.
					Reply: *The comment appears to recognize the need to adjust agriculture's reduction requirements downward for lands that remain under agricultural control over time compared to the baseline. We agree with this need to ensure an accurate representation of the contributions that agriculture can make and accurate accounting that avoids potential double-counting of reductions as land is converted to developed uses. The Hearing Officers agreed that this should be addressed during the development of the accounting method.*
104	5	e	.0264	105, 210	**Accounting Issue – Annual Changes vs. Average Baseline** Agricultural accounting in the Neuse compares annual changes to an average baseline, which has caused issues in the upper Neuse.

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Agriculture is dynamic and does not operate on a calendar year basis. Cropland rotations play a key role. If an average baseline is used for Jordan, we recommend reporting the average agricultural activity from 2002 to date or using 1997 as a steady, baseline year.
				Reply: *We agree with the need to address this issue and expect the Watershed Oversight Committee to do so in developing the accounting process.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(6) NEW DEVELOPMENT - .0265				
111	6	a	.0265	7, 18, 26, 27, 50, 200, 202, 204, 209, 212, 216, 218, 219, 221, 223, 225, 228, 229, 232, 234, 236, 237	**Negative Economic and Environmental Impacts** • New development requirements will have a negative impact on the region's economy. Developers will incur significant costs, the requirements include limits on density and increased BMP installation, and they will drive up the cost of homes and property, increase sprawl and place the region at a significant economic disadvantage. Low density contributes to water pollution, perpetuates the cycle of sprawl and fragments wildlife habitats. Higher density development offers the best solution to managing growth and protecting water by minimizing impervious surface area, conserving scarce resources, and leaving more land for open space. • Most counties would be forced to rezone remaining land to large, multi-acre lot sizes. (202) *Reply:* *While this rule, like any, imposes new requirements, there is significant overlap between these requirements and those of Phase II and Water Supply stormwater programs, such that additional costs of this rule beyond the other two will likely be modest overall, especially for single-family residential development, and very unlikely to cause the scale of economic impacts projected in these comments. Our estimate of new costs, as provided in the fiscal analysis completed as part of this rulemaking, is an initial annual cost to developers in the range of $450,000/yr, distributed across all new development in the watershed. We would expect Phase II requirements to result in greater costs overall, and the combined impact of the two programs to be unlikely to approach the scale projected in these comments. Previous nutrient strategies have resulted in no such impacts. We found cost estimates provided in other comments to be inaccurate, as detailed in various replies below.* *The comment that the rule requires density limits is inaccurate; it does not require any density controls. The related statement that counties will be forced to rezone to multi-acre lots has no factual basis. Using the Piedmont version of the Tar-Pamlico export accounting method, which is used for compliance with the Tar-Pamlico stormwater rule and is applicable to this watershed, in the 80% of the Jordan watershed occupied by the Haw subwatershed, only residential lot sizes of 0.4 acres or smaller would produce sufficient nitrogen loading to require any action under this rule, by exceeding the loading rate target of 3.8 lb N/ac-yr. This lot size is below most if not all county residential lot sizes, meaning that this rule will have little to no impact on residential development in counties in the Haw subwatershed.* *The following analysis further addresses the more general concerns raised over economic impacts. The loading rate requirement in the Haw compares closely to the 24% impervious threshold above which a BMP is required under Phase II stormwater requirements. Residential development would need lot sizes smaller than approximately 0.1 acre to incur any additional requirement beyond Phase II requirements under this rule, which it could satisfy by paying a fee to offset its additional loading or by installing a second onsite BMP. This means that in the Haw, only high density urban residential development would face any requirement beyond what Phase II requires, and those requirements could be met by paying for offsite reductions. The Upper New Hope subwatershed has the most stringent nitrogen loading rate target in this rule, 2.2 lb N/ac-yr. Residential development with lot sizes smaller than approximately 2.5 acres would exceed this loading rate. Such development with lot sizes from 2.5 acres down to approximately 0.33 acres would not exceed the residential offsite threshold of 4.0 lb N/ac-yr and thus could pay an offset fee for its loading above 2.2 lb N/ac-yr, provided offsite reduction options are available. Such developments would not need to install a single BMP onsite. In sum for the Upper New Hope, all county residential development and a significant portion of municipal could potentially meet rule requirements without onsite BMPs. Whether offsite options are available or not, it is highly improbable that any county in the Jordan watershed will find it reasonable to downzone to multi-acre lots or at all, and we find the projected economic impacts to be groundless or based on inaccurate information.*
112	6	a	.0265 (NewD)	25, 216, 220	**Costs in Guilford, Alamance Alone Many Times the DWQ Fiscal Estimate for the Entire Watershed** The true cost of the Jordan Lake Nutrient Strategy Rules to new development in Guilford and Alamance County alone, including commercial and residential development, buffer protection and lost opportunity costs, and in excess of NPDES Phase II requirements is approximately $22,522,358 per year. This figure is more than the Division's estimate for the entire Jordan watershed, by a factor on the order of 100, and does not account for the costs of impacts from sprawl that these rules will drive.

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *We have reviewed the set of calculations supporting these comments and appreciate the independent effort undertaken by the commenter. We found several key assumptions to be unsupported, leading to a gross overestimate of costs. These include the following: a failure to calculate and deduct costs associated with compliance with Phase II stormwater requirements despite the claim that the estimates do so; an estimate of new development acres almost double that derived from NC Census growth rates; an assumed uniform residential lot size across the entire watershed – both cities and counties - of 0.16 acres, roughly seven times smaller than average lot sizes in counties and only a small fraction of residential development in cities based on data we obtained from local governments and land use data compiled for the Jordan watershed model; and the use of BMPs that are two to five times less cost-effective than other available and suitable choices. More specifically, the commenter's assumptions and our replies are as follows:* • *The commenter states that its cost estimates are those in excess of Phase II stormwater requirements, however the supporting calculations make no deductions for any costs resulting from Phase II. This is a major factor. Based on housing density information we collected from local governments in the watershed, Phase II requirements now in place will result in the great majority of residential stormwater costs that this rule would otherwise impose (see our reply to the previous comment).* • *The commenter estimated a minimum 2,166 acres of new development per year in Alamance and Guilford Counties, based on one year of data from the City of Burlington only. This compares to our estimate of approximately 2,500 acres per year for the entire Jordan watershed based on growth rates projected for watershed counties through 2020 by the NC Census. The commenter's assumption almost doubles his cost estimate.* • *An assumed density for all residential development of 0.16-acre lots. Based on this assumption, the commenter determined that 2 BMPs were required on every development. As we discuss above, data we obtained from local governments indicated far less dense development patterns overall, with the average density used by the commenter being so high as to comprise almost none of development in unincorporated areas and only a small percentage of municipal development. According to data we obtained from local governments in developing the fiscal analysis, average density for residential development in Guilford County for 2005-2006, which was considered representative, was 1.0-acre lots. As stated above, this would require no treatment under this rule, compared to the two BMPs estimated by the commenter. Further, the land use data for the entire watershed compiled for the Jordan watershed model shows that residential development with lot sizes of 0.25 acres and less comprises only 8% of all residential development. Development with a lot size of 0.16 acres or less would make up an even smaller fraction. Based on the full available data, the scenario chosen by the commenter to represent the watershed does not, and instead greatly overestimates development intensity. Just as important, where development of this density occurs, it is required to treat under Phase II, however the commenter deducted none of the Phase II costs in his estimate. Altogether, the commenter's lot size and treatment assumptions result in a gross overestimate of this rule's costs.* • *Given the need for all development to treat stormwater based on a uniform .16-acre lot size, the calculations assumed the use of wet detention as the first BMP. Wet detention is significantly less cost-effective than other BMPs. By our calculations, it is approximately five times more expensive than constructed wetlands and twice as expensive as grass swales. Since it is difficult to project the BMP types that will be chosen across all individual developments, our fiscal calculations weighted the suite of eligible practices toward the most cost-effective but factored in other BMPs given that other considerations also influence selection. By comparison, we find the commenter's approach of choosing one (unrepresentative) lot size for all development and one (poor cost-effectiveness) BMP type for all treatment needs to be narrow and poorly supported. This assumption not only yielded unnecessary cost for the BMP, but also led to the determination that a second BMP was needed on every residential development, roughly doubling the initial overestimate. Given the commenter's development scenario, we found that a single constructed wetland was sufficient to lower the nitrogen export rate below the offsite threshold instead of two less cost-effective BMPs. Thus, assuming treatment is needed, the commenter's treatment assumptions resulted in an additional gross overestimate of costs for two reasons. Finally, given the commenter's scenario, Phase II would require a BMP, making it entirely possible that this rule would result in no additional cost for residential development if the scenario were representative.*
113	6	a	.0265 (NewD)	212	**Haw Residential Costs High, Not Reflected in Fiscal Note** "A 28-acre single family detached subdivision in the Haw River arm containing quarter-acre lots would require an additional 11 acres of land (including the 50 foot buffers) to accommodate the BMP series necessary to meet the nitrogen loading limit. Those 11 acres represent 44 lots

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					of lost opportunity. Lost opportunity extends beyond land cost and includes jobs and income, sales and property tax base. At least some of this loss should have been factored into the fiscal note."
					Reply: *We find the treatment claims in this comment to be grossly overstated. We are unable to comment on the logic or calculation used as none was provided; however our own assessment of the development scenario given shows little to no reduction required. The worst-case reduction need would be so small as to be avoidable with minor site design modifications, or could be met by offset payment or a single BMP of less than one acre. We calculated the treatment needs for the scenario given using the Piedmont version of the Tar-Pamlico export accounting method, which is used for compliance with the Tar-Pamlico stormwater rule and is applicable to this watershed. Without treatment, the development generated approximately 4.1 lb N/ ac-yr of nitrogen export, marginally over the 3.8 lb rule requirement. With minimal design modifications, the developer could reduce export to 4.0 lb/ac-yr, the threshold at which he would have the option to pay an offset fee for the small 0.2 lb N reduction need, and would not be required to install any BMPs onsite. As an onsite option without paying the offset, even the least efficient BMP, grass swales, would reduce loading to approximately 3.3 lb N, substantially exceeding the treatment need at minimal cost, since swales could also address site runoff conveyance needs. In addition, the developer could potentially sell the excess reduction credit.*
114	6	a	.0265 (NewD)	201, 216	**Economic Impact on the Affordable Housing Market** • The rules will have a negative affect on the affordable housing market. Based upon a home today for $150,000 in GSO with a 5% down payment, a 95% LTV 30 year fixed conventional loan, a $0.35 per thousand tax increase and a 25% HOA increase, there will be a $93.95 per month increase ($645,000 annually) or 8.0%. This does not include as much as a 15% increase in water and sewer rates. With our current debt to income ratios already at a level above 40%, this increase could have eliminated as much as 10% of the buyers that have purchased from Centex Homes in the past two years.
					Reply: *The comment estimates an affordable housing cost impact, but provides no supporting information for the two assumptions on which the cost difference hinges – an assumed tax rate increase and an assumed homeowner's association rate increase – leaving us no basis for evaluation.*
115	6	a	.0265 (NewD)	4, 201, 208, 209, 212	**Opportunity Costs not included in DWQ Fiscal Analysis** • The Fiscal analysis does not account for lost opportunity costs for new development, unlike it does for agriculture and timber harvesting. A1/4-acre lot may be $240,000, and a BMP may cover up to an acre. Lost opportunity costs not only account for lost land sales, but also jobs and income and property tax. • Indirect Costs, which include lost tax revenue, gross receipts and other funds associated with land taken out of the private supply to install BMPs, and land development and building that does not occur because interested developers choose to locate elsewhere where requirements are less stringent and lower densities encourage more vehicle miles traveled. • Environmental costs associated with sprawling land use that is encouraged, particularly in less developed portions of the watershed, which include water quality impacts from riparian buffer and surface water alteration and removal and insufficient replacement, continued and expanded air quality impacts (e.g. atmospheric nitrogen) from increased vehicle miles traveled, reduction in land available for agriculture, forest, open space, and wildlife. Fracturing the forests for low-intensity land uses is known to result in significant reduction in biological diversity of plants and animals.
					Reply: *While the rulemaking process required calculation of direct, accounting costs and not opportunity costs, we estimated opportunity costs where they appeared to be important. For new development, we captured much of the opportunity cost of sacrificing land to BMPs by including the cost of that land in the calculations.* *The other potential indirect and environmental costs described in these comments may have merit. However, they are beyond the scope of North Carolina rulemaking requirements to quantify. To the extent that they may occur, any stormwater regulation would incur them, and Phase II stormwater regulations would likely precipitate the great majority of any such costs.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
116	6	a	.0265 (NewD)	7, 201, 208, 212	**Discrepancies in BMP Costs in DWQ Fiscal Analysis** • "The NCDENR estimate of capital expenditures only allowed $1,314 dollars for each of the 646 additional BMPs built during the first five years ($848,000 total capital expenditures divided by 646). However, the Fiscal Note shows that the average per BMP capital cost based on a proportional estimate of the BMPs likely to be used (pages 42-43, Table 4.9 of the Fiscal report) is $44,953 per BMP. Total direct capital costs would appear to be 646 times this value, or over $29,000,000 for the first five years. Possibly, the State capital cost estimate for the BMPs has been amortized over 30 years (this is unclear in the Fiscal Note), but even then, a $1,314 per BMP allotment over each five-year period will not come close to recovering the principle outlay of $44,913 per BMP within 30 years, let alone interest payments. Also, while amortization of capital costs postpones payment, it does not reduce the total costs incurred. Amortization would cause costs to increase drastically for each five year period over the next 30 years, as continuing payments for old BMPs cumulatively accrue on top of new BMP construction. DWQ must explain why the cost per BMP allotted for this rule is so far below the standard estimates in Table 4.9 of the Fiscal Note." • In the Fiscal Analysis, urban BMPs efficiencies are lower than those assigned to comparable agricultural BMPs (filter strips, buffers, etc.) The urban BMPs need to be revised upward. (7) *Reply:* *The first comment revealed a misstated value in the fiscal report and the recognition that the text did not fully explain the process used. Table 4.12 includes a column for cumulative number of BMPs and rows for each of the first 5 years after effective date. In the "5-Year Total" row at the bottom, we incorrectly totaled the already-cumulative BMP numbers. The correct value for this row would be the same as the fifth year's value, 361 BMPs, instead of the 646 we reported. Using the correct number results in a final average cost per BMP of approximately $2,350. This differs from the weighted average cost of $44,953 shown in Table 4.9 because the larger figure is an intermediate value in the calculation that has not been further weighted by effectiveness. BMP effectiveness is incorporated subsequently in Table 4.9, and projected proportions are applied to the load reduction need shown in Table 4.8 to arrive at numbers of each type of BMP. The final average cost value of $2,350 reflects that the vast majority of BMPs used are the most cost-effective options - grass swales and bioretention, which are near and below this value. As it happens, we did not show the resulting numbers of BMPs of each type in these tables, but we did in the Existing Development calculations in Table 5.8. The proportions are the same, so the distribution can be seen there.* *Regarding the second comment, developed land converts a much greater fraction of rainfall to surface runoff than does agricultural land. This runoff passes through filtering practices more rapidly than the subsurface flows leaving agricultural land, and with poorer nutrient removal. The efficiencies we used in the fiscal analysis for both stormwater and agricultural BMPs were established in close consultation with the experts in those fields based on research findings. Both types are used for compliance accounting in the Neuse and Tar-Pamlico strategies and are posted on those websites.*
117	6	a	.0265 (NewD)	4, 208, 212, 216	**Cost Totals Inaccurately Reported in DWQ Fiscal Analysis** • The new development costs are only for five years. They need to account for accumulating costs in all subsequent years. DWQ estimates that 646 additional BMPs would be required over the 2.5 years of actual implementation that would occur in the first 5 years after effective date. The following 5-year period, and every 5 years thereafter, should then require twice that number, or 1,292 BMPs. None of this is accounted for in the total cost summary. Costs will likely increase because the rules will likely be made more stringent after five years. • The State's five-year estimate for operation and maintenance is too low. It should be doubled for a five-year span in which the new regulation is continuously in effect. Even then, the $72,000 a year would equate to only about two man-years allocated per year for all additional operations and maintenance. • Costs not in the fiscal analysis include monitoring and enforcement costs to developers and citizens. *Reply:* *The first two comments reflect a misunderstanding of the rulemaking requirements for fiscal estimates. The process required calculation of costs to affected parties for the first 5 years after effective date. We provided this. It does not require estimating five years of full*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					implementation costs. For activities that continue indefinitely, such as new development, new costs occur indefinitely and there is no way to report a total cost. For these activities, annual costs are meaningful and were provided. We have no intent to make the rules more stringent after five years. Regarding the second comment, our O&M costs use formulas developed by stormwater experts at North Carolina State University and are sound estimates.
118	6	a	.0265 (NewD)	7	**Trading Credit Inconsistent in DWQ Fiscal Analysis** The Fiscal Analysis states that credits generated by new development from over-treating phosphorus could not be used to cover nitrogen reduction needs. However, for existing development, it asserts that local governments could trade excess phosphorus reduction credits to meet nitrogen reduction needs, contradicting the methods used for calculating costs for new development. That credit value is used towards reducing the estimated costs for existing development retrofits. By their calculation, this comes to $5.4 million per year." *Reply:* *The fiscal note does not suggest that reduction credit for one nutrient could be used to reduce the cost of meeting reduction needs for the other nutrient. The cost reduction using phosphorus credit in the existing development rule is based on the assumption of finding another source that seeks phosphorus reduction credit. Nevertheless, the commenter raises a valid objection to an inconsistency in the fiscal note. After developing the calculations for several rules, it became apparent that of the two nutrients, phosphorus would seldom if ever be in short supply for any source, so we stopped calculating cost reductions from trading phosphorus credit. We did not return to the existing development rule, the one rule where we had included this trading cost reduction, which totaled approximately $10.8 million, and remove it. While this is a large sum, it amounts to less than 2% of the total projected cost for existing development.*
119	6	a	.0265 (NewD)	4, 12, 13	**Local Staff Needs Underestimated in DWQ Fiscal Analysis** • The fiscal analysis assumes that since all municipalities in the watershed are subject to Phase II requirements or implement WSW programs, they will not incur significant additional costs to implement this rule. The Phase II and WSW stormwater programs do not have nutrient reduction requirements. Local governments will need new programs and resources to address the nutrient reduction requirements, including for monitoring and enforcement activities. Durham expects at least twice the number of BMPs with this rule, requiring twice the application review and compliance time, and significant staff time for buffer rule implementation. • The Fiscal Analysis also assumes no significant new costs to counties based on most development falling within planning jurisdictions of cities. Durham does not have an ETJ, and a lot of growth is occurring in Chatham County outside any ETJ. (12) • The pay rate of $36/hour used to quantify the cost of local governments contracting assistance in preparing ordinances is absurdly low. Attorneys and consultants qualified to assist in this arena bill upwards of $200/hr. (4, 12) *Reply:* *We appreciate these comments. Actually, our fiscal analysis lumped local administration of new development stormwater programs together with buffer implementation, given their interrelated natures, and placed the costs in the buffer rule chapter. Based in part on experience in the Neuse and Tar-Pamlico Basins, we reasoned that only five small but growing municipalities would require new staff, and estimated those costs to total $375,000/yr. For counties, the assumption of little development falling within ETJ's was one of two that we felt supported the assumption of no significant new costs to counties. The other was that all counties contain Water Supply Watersheds and implement stormwater and buffer programs for those purposes. In addition, Chatham County has undertaken a more stringent and involved buffer program than required by these rules.* *However, given these comments and the fact that we were unable to survey all local governments on this issue during fiscal note development, we have increased our estimate of the number of positions as detailed in the Fiscal Revisions (Appendix E) of this report. We believe the last comment is fair, and we have also revised our estimate of local government costs for regulatory development assuming a pay rate of $100/hr.*
120	6	b	.0265 (NewD)	7, 10, 11, 201, 209, 212, 216	**Lack of Statutory Authority** • The Environmental Management Commission lacks the statutory authority for the new development rule. G.S. 143-214.7 authorizes the EMC to develop a model stormwater management program that may (or may not) be implemented by units of local government.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					• The EMC is not authorized to require compliance with the Water Supply Watershed Program (WSWP) and also require nutrient controls. (212) • Local governments do not have the statutory authority to establish a local nutrient offset program nor collect fees for it. • Local governments do not have the authority to require new development to increase treatment to offset existing development, nor is it fair or equitable.
					Reply: *The Commission has clear authorities for the rule, which are cited in the history note at the end of the rule. The authority to require local programs in the Water Supply statute N.C. Gen. Stat. § 143-214.5 exists in addition to the permissive language of the Stormwater statute § 143-214.7. The laws requiring the protection of water supply watersheds in N.C. Gen. Stat. § 143-214.5 and the restoration of impaired drinking water reservoirs in S.L. 2005-190 are not mutually exclusive and do not require the EMC to select one approach or the other.* *The Commission believes that local governments have the power, pursuant to their general police power and the power to regulate the subdivision of land, to carry out the objectives and purposes of these rules, including requiring new development to achieve load reductions in excess of those required to meet unit-mass loading rate targets in order to comply with these statutes and rules protecting water quality. In addition, the rules neither require that local governments implement nutrient offset programs nor require overtreatment. Instead, these are options that a local government might consider in developing its program.*
121	6	b	.0265 (NewD)	3, 15, 25, 31.2, 31.6, 211, 212	**Phase II Alone Is Sufficient** • Study the impacts of Phase II stormwater rules before adding new development rules. The Phase II stormwater runoff control measures will have significant costs, and should result in improved water quality. • The state must first prove that existing stormwater programs, like Phase II and Water Supply Watershed, are not protecting water quality before it makes new rules. (212)
					Reply: *While there is no procedural constraint for the EMC to prove the inadequacy of other stormwater programs, we note that Water Supply and Phase II regulations are designed for general water quality protection, would not be sufficient to achieve the specific water quality restoration needs of this strategy, and would be rightly faulted as inequitably lenient.* *The option for local governments to request that their implementation of other stormwater programs should satisfy requirements of this rule is primarily intended to allow similar elements of other programs, such as compliance monitoring and enforcement, to suffice here without duplicative efforts, and is a provision requested by the local governments.*
122	6	b	.0265 (NewD)	218	**Require Growth Management Planning** The strategies proposed are important, but the state needs to spur local governments to take a more muscular approach to managing new development. This should include a regional or watershed approach requiring concentration of new development in areas that are appropriate for it and where the runoff is intensively managed, while development in areas that are ecologically sensitive or otherwise inappropriate is strictly curtailed (e.g., 20-acre minimum lot size or greater). Reliance on site-level BMPs is only a band-aid for several reasons. The altered hydrology and human activities that new development brings have far-reaching impacts.
					Reply: *The comment raises valid concerns, although we consider the site-level controls required here to be protective. The comment recommends growth management controls, which we did not pursue.*
123	6	c	.0265	212	**Add Exemptions** • No exemption is provided for development projects that commenced prior to the local government effective date of the rules. • Expansions to single-family residences should be exempt from the rules. If the EMC ignores atmospheric deposition, then they should ignore minor additions of impervious that won't contribute to loading in the lake.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					Reply: *Local governments make vesting decisions, not the Division. Because the requirements of securing vested rights are already statutorily established and are case-specific, we believe that including language relating to vested rights is unnecessary. We also note that property owners and developers do not have an automatic vested right to develop property under regulations that existed prior to new local rules. This will depend on many factors, including whether the local government has issued a valid permit or approval, whether the property owner has made substantial expenditures in good faith on as a result of a valid permit or approval and whether compliance with the new regulations will result in a detriment to the owner or developer. Also, as provided in N.C. Gen. Stat. 153A-344.1, there are some exceptions to statutorily vested rights, e.g., where the enactment of new State of federal laws or regulations precludes development as originally planned, in which case a county is permitted to modify affected provisions by ordinance after notice and hearing.* *Sub-Item (3)(a) of the rule already limits its scope on residential activities to development that disturbs one acre or more for single-family residential and duplex development. See replies to comments in the Modeling/Data section on atmospheric deposition.*
124	6	d	.0265	308	**Add Ability to Require Treatment on Redevelopment** We recommend that .0265(3)(a)(iv) be amended to provide explicit, permissive authority for local governments to require retrofits during redevelopment. These may be among the best sites on which to require modest retrofits to help meet existing development needs. *Reply:* *The Hearing Officers agreed with the intent of this comment and added a provision as suggested.*
125	6	d	.0265	7, 15, 18, 26, 27, 208, 212, 216, 233	**Loading Rate Targets Unfair** • The reduction targets are not feasible. Up to 3 BMPs will be needed at some new developments, even before a buy-down can be used. This is often infeasible and cost prohibitive on already constricted sites. Better or different removal efficiencies just do not exist. • New commercial/industrial development will be required to install a minimum of two BMPs just to reduce loading to the level that allows buy-down of the remaining load reduction need. • Concerns raised by the stakeholders in 2004 and 2005 regarding the basing of loading targets on a flawed model were never addressed. • Local governments could abuse the ability to require excess loading reductions from new development to generate credit toward existing development needs, imposing more stringent requirements on selected builders at any time in the permit process. Any requirement to achieve excess reductions should be made known to builders before their initial planning for a stormwater permit has begun. *Reply:* *We listened to stakeholder concerns and have crafted the requirements to be fair and achievable. We find the 3 BMP claim inaccurate, and the 2 BMP claim to generalize an uncommon scenario. The offsite thresholds avoid the need for more than 2 BMPs onsite under any circumstance, using the approved accounting method for the Tar-Pamlico stormwater rule, which is appropriate for this watershed. A final accounting method for rule compliance has not been adopted but will be in collaboration with the local governments. As an example, using the most efficient BMP, a constructed wetland, commercial/industrial development with up to 80% impervious would still require only one BMP onsite to bring loading down to the offsite threshold of 8.0 lb N/ac-yr. This should include a significant portion of commercial/industrial development. Residential development intensities are much lower and require commensurately less treatment, as detailed in other replies.* *The watershed model values used to set the loading rate targets - loading rate values for agriculture and forestland and acres of these uses - are sound and consistent with other sources. Limitations of the model are discussed in the Modeling/Data section.* *We assume that local governments would establish loading rate requirements in a uniform and predictable manner in policy or ordinance.*
126	6	d	.0265 (NewD)	4 , 7	**Make A Local Offset Program the Only Choice** • Section (3)(a)(iv) must be clarified such that if there exists a local government option for mitigation then it shall be the only offset option developers may use, as opposed to utilizing EEP, even when it is more expensive than EEP. This is needed to ensure that local

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				governments can recoup the costs of local programs. • According to (3)(a)(vi) developers may use a local offset option. EEP legislation only restricts offset payment and buffer mitigation payment to the same river basin as the impact. Do local governments have the authority to restrict these offsetting measures to within their jurisdictions or to the same Jordan subwatershed as the impact?
				Reply: *We understand the desire to ensure that a local offset program will be successful, and the desire we infer from the comment for offsets to be installed locally. Session law SL 2007-438, adopted during the comment period, requires EEP to transition to a fee-based program based on actual costs of providing credits. It also allows for private operators to provide credits. The Hearing Officers have revised the rule to comport with this legislation, to recognize the private option, and to require all options to meet the provisions of the trading rule. These changes may address the commenter's concerns by allowing for local offsets at market rates.* *Regarding the second comment, a local government may design its offset program to limit offset locations to within its jurisdiction, and is obligated to credit only offsets within the same subwatershed. The rule section cited by the comment includes the stipulation that the local program meet the requirements of the Jordan trading rule, rule 15A 2B .0269, which requires that offsets be within the same subwatershed, and that they account for spatial differences between excess loading and offset relative to Jordan Lake.*
127	6	d	.0265	308	**Revise EEP Offset Reference** We recommend that the buy-down option at .0265(3)(a)(vi) drop the reference to Rule 2B .0240, the bad policy nutrient offset program. The provision already references the Jordan trading rule .0269. Let this suffice, perhaps requiring EEP to compete on a level playing field.
				Reply: *The comment is valid. Rule .0240 was obviated by SL 2007-438, and the Hearing Officers have revised this rule accordingly. Session law SL 2007-438, adopted during the comment period, requires EEP to transition to a fee-based program based on actual costs of providing credits. It also allows for private operators to provide credits. The Hearing Officers have revised the rule to comport with this legislation. They also agree with the desire to provide equitable conditions to all who provide offsets, including the EEP, and have revised this rule and others such that all offset options shall meet the trading criteria in .0269.*
128	13	d	.0272	100	**EEP Offset Recommendations** • The Upper and Lower New Hope arms are geographically small with limited, more costly buffer project potential (at most 29 and 56 acres of 50-ft buffer opportunities, respectively) that is further dependent on willing landowners. EEP requests that the rule recognize these limitations and allow for reductions to be achieved in other parts of the watershed. A built-in contingency for meeting requirements outside of preferred watersheds when necessary will provide a higher level of compliance confidence that would allow EEP to move ahead. This process could apply to all entities (not just EEP) that may provide reduction services. • EEP recommends that Scenario C of RTI's fee analysis report - all stormwater retrofits - be used to establish fees in the Upper and Lower New Hope and possibly other small subwatershed management areas. EEP recommends Scenario B – a mix of buffer restoration and BMP retrofits - for the Haw subwatershed. • If EEP provides a BMP to meet reduction requirements, it should be clearly stated that the reduction is not expected to last in perpetuity, as such a condition would require perpetual fee charges to the applicant or an alternative source of perpetual funding.
				Reply: *While we appreciate the dilemma, the segmented hydrologic nature of the lake dictates that each subwatershed account for reductions independently. The Hearing Officers have ensured that in all cases where EEP is given as an option, that option is contingent on EEP acceptance of payments. They have also added opportunities for private sellers to the rules to expand the set of offsite options.* *Recognizing that the transition process called for in Session Law 2007-438 to a cost-based system should be complete by the time any reductions are required under these rules, the Hearing Officers revised the various rules that include EEP to eliminate the reference to the superceded rule .0240. They believe this approach addresses EEP's interests as inferred from the second recommendation above.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					The third comment raises a real issue that to some degree is common to all structural treatment practices. The Hearing Officers believe that this issue should be addressed by the process called for in Session Law 2007-438.
129	6	d	.0265 (NewD)	7	**Revise References to Criteria or Standards of Practice** • Revise .0265 (NewD)(3)(a)(i) by adding the following underlined language "Stormwater BMPs and/or offsets are employed such that nitrogen and phosphorus loads contributed by these proposed new development activity shall not exceed certain unit-area mass loading rates, based on BMP efficiencies published by the Division of Water Quality." • For the same reason, revise the reference to a water quality standard at (3)(a)(iii) by deleting the following language: ~~"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"~~ *Reply:* *The first comment raises the point that there was no standard reference cited in the rule for BMP nutrient removal expectations. The NC Stormwater BMP Manual provides this and we have added reference to it in the rule. Beyond that we would not want to mandate the use of BMPs in all cases since less intensive development could meet the loading targets without BMPs.* *The second statement recommended for deletion establishes the intent behind the flow control requirement that follows. We believe that to be useful and have retained the sentence.*
130	6	e	.0265 (NewD)	12, 30	**Implementation Timeframes Unrealistic** Timeframes of six months after model approval for local governments to submit programs and another 9 months for DWQ review are unrealistic and should be changed to one year each, or at least the same amount of time for each of these two steps. *Reply:* *These timeframes are modified from the Neuse and Tar-Pamlico River Basins based on our experience there. Example documents from the very similar Tar-Pamlico rule, including the model program and all local programs and ordinances are available on the Tar-Pamlico website at http://h2o.enr.state.nc.us/nps/tarpam.htm for local governments that wish to begin planning now.*
131	6	e	.0265 (NewD)	1, 7, 30	**DWQ should have already developed a model program.** • "Annual reports are required from regulated parties, with no details in the rules regarding exactly what regulated parties need to track and what/how to report it. Will instructions or guidance on annual reports be included in the State's model stormwater program and ordinance and/or the "tool" developed for nutrient reduction calculation?" • A greater effort should be given to developing a model program, calculation tools and methods, etc., before the codification and implementation of this rule. *Reply:* *We appreciate local governments' desire to have specific implementation tools in hand at the outset, and would have provided these if resources allowed. Annual reporting specifics will be developed in collaboration with the local governments as part of model development. Tar-Pamlico implementation provides the most recent example; minimum reporting requirements are included in the model, which is available on the Tar-Pamlico website at http://h2o.enr.state.nc.us/nps/tarpam.htm , at the local programs link.*
132	6	e	.0265 (NewD)	4	**Consolidate Reporting with Other Regulatory Requirements** Local governments that are subject to the NPDES Phase II permit, or other State-mandated stormwater programs that require an annual report should be allowed to prepare one annual report that responds to the initiative of all programs. *Reply:* *We agree with the efficiency that this recommendation targets, recognizing that the report will need to include nutrient statistics that Phase II would not require. We intend to work with the local governments to establish streamlined suitable reporting.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
133	6	e	.0265 (NewD)	212	**Accounting Requirements Unrealistic – Atmospheric Deposition** It is impossible for local governments to accurately track nitrogen loading within their jurisdiction, since a significant portion of the loading (as much as 30%) is from atmospheric sources.
					Reply: *Regardless of the sources of nitrogen deposited on the land, local governments will report changes in loading to surface waters resulting from new development activity, as they do under the Neuse and Tar-Pamlico stormwater rules. As under these other rules, they will use an export method that they will participate in the development of, that synthesizes actual runoff data, and that will be updated periodically to reflect changes in that data. Local governments will not be expected to track atmospheric deposition. Please refer to Comment #10 for a larger discussion of atmospheric deposition.*
134	6	e	.0265 (NewD)	105, 210	**Add Repercussions for Non-Compliance** The rules need to specify ramifications if local governments choose not to complete or adequately address any step in the developing, adopting, and implementing local stormwater programs (agricultural rules have accountability built into every item). There is also no timeline specified as to when local governments have to achieve the initial goals (agricultural has to achieve the goals within 5-8 years).
					Reply: *We consider the stormwater and agricultural accountability requirements as parallel and sufficient. Stormwater programs for both new and existing development are required to meet a step-wise process of development, review, and approval that parallels the agricultural strategy requirements. We see one significant difference between agriculture and stormwater. Because individual local governments are identified 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 giving 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. In terms of setting timelines for reaching the goals, once local new development stormwater programs are in place, each new development project will be required to meet the reduction goals for its site.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(7) EXISTING DEVELOPMENT - .0266				
141	7	a	.0266	5, 12, 15, 18, 25, 26, 27, 28, 30, 31.1, 31.2, 31.7, 50, 201, 204, 212, 216, 218, 219, 221, 223, 225, 228, 229, 232, 234, 236, 237, and all resolutions	**Rule Far Too Costly, Feasibility Questionable** • To meet the 35% requirement using stormwater retrofits, more than two square miles of the City of Durham will be occupied by stormwater BMPs. Associated land acquisition will remove roughly $174 million in land from the City's tax roles, which will have a severe impact on revenues to support other essential public needs. Costs to retrofit Durham are estimated by City staff as ranging from $334 million to $680 million, depending on BMP mix. This equates to $6,750 to $13,800 per household, 18 times the city's fund balance, 75% of Durham's total General Obligation bonded debt for the last 20 years, it would be the single largest debt-financed public improvement in City history, and it addresses only the Jordan side of the city, with similar requirements anticipated for the Falls side. Given the questionable benefits, unprecedented cost, and apparent lack of any reasonable limits on what local governments may have to do under the rule, it needs to be scaled back. Specifically, the rule should be revised to require feasibility studies on government-owned lands only, and should require retrofits on other lands only as grants or other funding is made available to fully fund them. Alternatively, funding needs to come from all lake users or the state as a whole. (12) • Preliminary estimates from Town staff are that the implementation cost of this rule in today's dollars would result in a $45 million dollar impact upon our taxpayers, which equates to a $13,000 assessment on the average single-family residential homeowner in the Upper New Hope Watershed in Cary. This is an impossible figure for any family to bear. • The retrofit requirements are not feasible. The provisions are onerous and unprecedented in North Carolina, and place an unfair burden on local governments. We strongly request reconsideration of the existing development rule in the Upper New Hope watershed. • The rule is too costly and its effectiveness is questionable and unprovable, as well as undecided within the framework of DWQ's accounting methodology, which hasn't even been finalized yet. • Alternative measures are questionable and unproven. • Implementation would disrupt our citizens' quality of life as existing infrastructure would have to be completely retrofitted and privately owned developed property likely condemned and demolished to construct retrofits. Such work also could not occur without significant short-term impacts to affected land and wildlife. Homeowners could be displaced. • The rule attempts to shift the cost of regulation from the State to the local governments.
				Reply: *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 that 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 (see Comment #10). 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. While we believe that Durham has significantly overestimated the costs of this rule, the Hearing*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Officers are sensitive to the costs these rules may impose, and to the general concerns stated here. While the rules cannot require that the General Assembly provide funding, we include recommendations in this report that the Commission consider delivering a resolution on the subject to the General Assembly. Regarding the suggested alternatives, it would be insufficient to limit the rule to retrofitting of public lands. Requirements tied to availability of grant funding would be unenforceable and probably not approvable by the Rules Review Commission. *The second comment did not provide any methods or supporting calculations for its cost estimate. A simple check calculation, dividing the worst-case scenario cost of $530 million by the number of households in the watershed, yields a total cost per household of roughly one-tenth that stated above, approximately $1,400. The number of households over an assumed 30-year implementation period ranged from 306,000 to 486,000. Also, we assume the cost would be significantly lower than this given that businesses would likely be included in a stormwater utility fee structure. Assuming a compliance period of potentially decades, the rule is affordable based even on this worst-case calculation, which again we expect will not be required.*

142	7	a	.0266	12	**Fiscal Analysis Greatly Underestimated Costs**
					The fiscal analysis is fundamentally flawed, underestimates existing development costs by at least 3.8 times, and should be revised to accurately reflect costs of meeting the rule. Durham estimates costs for the city to range from $333 million to $680 million, and for the watershed to be over $2 billion. Unit costs of retrofitting are two to five times higher than DWQ's estimate. Corrections needed are:
					• Retrofit construction costs, per the Center for Watershed Protection (CWP), 2007, are the following multiples of new development: 1.5 bioretention, 2.3 wet ponds, and 7 stormwater wetlands.
					• Area requirements for retrofits included only pool surface area plus 15% for interior slopes, and do not account for site constraints or provide for maintenance or access.
					• Land costs in Durham range from $92,000 for low density residential to $374,000 per acre for high density residential vs. the average value of $78,000 used in the Fiscal Analysis.
					• Planning costs per CWP, 2007, should be 35% - 40% of construction costs vs. the 25% used in the Fiscal Analysis. Given the complexity and sheer numbers of retrofits needed, the demand for experienced engineers will increase costs for them.
					• Current estimates are that stormwater retrofits have a life expectancy of 20 years or less. Reconstruction costs have not been included for the 30-year full implementation period in the Fiscal Analysis.
					• Developed land area is greater than indicated in the Jordan watershed model.
					• The cost of lost tax revenue is not accounted for.
					• BMP options all present problems:
					  o Riparian buffer restoration will be difficult and more expensive than estimated given the likely need to reconstruct stormwater-piping systems.
					  o Constructed wetlands require the right hydrologic setting, which is much more difficult to find or provide in a retrofit scenario. EPA prohibits the most technically feasible option, instream. These should not be the basis for the fiscal analysis.
					  o Because bioretention requires very small drainage areas, the number of bioretention systems required would be staggering. Their maintenance would require an army.
					
					The City of Durham estimates costs for the entire Jordan watershed at over $2 billion, over 3 ½ times the estimate in DWQ's fiscal analysis. Durham's estimated cost per pound of nitrogen is more than five times higher than that in the Fiscal Analysis. Costs per pound estimated by RTI for the General Assembly in 2007, which appear to exclude the cost of land, are more than double those in the Fiscal Analysis.

				Reply: *We appreciate the thorough analysis of projected retrofitting costs provided by the City of Durham. We again note that these comments assume a worst-case scenario of meeting the goals entirely through the use of structural stormwater retrofits and associated land purchase, while the rule allows for a wide range of more-cost effective load-reducing practices. We have revised the fiscal calculations as discussed in the Fiscal Revisions (Appendix E) of this report to provide a more realistic range of costs while also increasing our worst-case estimate recognizing valid concerns raised in these comments.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				The most significant point made here brings in retrofit construction cost multipliers that were not available at the time of our fiscal analysis. These were released in August 2007 from a nationally recognized source, the Center for Watershed Protection. While our fiscal note recognized the likelihood that retrofits would be more costly than the same practices on new development, we found no sources at the time on which to base an estimate, and our cost estimates included that qualifier. Our cost revisions in this report use a uniform multiplier of two on construction costs for retrofits, and we raise the planning cost from 25% to 32% of construction costs. *We do not understand the comment on land costs. Our calculations used an average land cost that is based on cost figures for a range of land uses provided by the City of Durham, incorporating an adjustment for true land value over taxable value, and weighted based on the assumption that retrofits will be located on different land uses in proportion to their acres in the watershed. The costs provided in the Durham data for land uses that merit retrofitting range from a low of $25,000 per acre as opposed to the $92,000 cited in the comment. Lacking more certain assumptions about the distribution of retrofits, we believe the value we used is reasonable. In applying this value to the entire watershed, our calculation may err on the high side, if anything, given relative property values across the watershed relative to those in Durham City/County.* *We considered the indirect cost of lost tax revenue to be beyond the scope of our analysis, which substantially exceeded state rulemaking requirements and any rulemaking cost analysis done to date that we are aware of.* *We understand that various BMP options may all present problems. In surveying local governments, each projected using different types of BMPs. As no clear pattern emerged, to project BMP use for the entire watershed we relied heavily on relative cost-effectiveness.*
143	7	a	.0266	7, 15, 30, 204, 216, 602	**Fiscal Analysis Underestimated Costs** • The fiscal estimate of $1.7M for conducting planning studies (Table RP.3) is too low and needs to be revised. • The $528 million dollar estimate may be based on assumptions that are too conservative. (15) • The fiscal analysis underestimates the cost. Estimates provided by the cities of Cary, Durham, Greensboro, and Chapel Hill, and extrapolated for the whole basin suggest total costs well over $2 billion. (30) • The selection of BMPs has a large effect on the cost of implementing this rule. We will not know likely BMP selection until local governments have completed feasibility studies and implementation plans. Therefore, we will not have a better idea of total cost until three years after this rule has been adopted. (602) • The DWQ estimate of $403 million only includes one year of actually buying land and installing systems. (216) *Reply:* *These cost comments did not provide supporting rationale or calculations, thus we cannot evaluate the claims. We agree with the point that feasibility studies or technical analyses can provide a better understanding of potential costs. Costs of the rule have been revised, as discussed in Comment #142 above, and presented in the Fiscal Revisions (Appendix E) of this report. The last comment is incorrect; our estimate of total cost involved 30 years of buying land and installing BMPs as opposed to one year.*
144	7	a	.0266	7, 12, 308, 317	**Fiscal Analysis is Worst-Case Overestimate of Costs** • Retrofit reductions can be achieved with lower costs than the Fiscal Analysis suggests. We think estimates in the analysis have been misunderstood, and that local governments have good options for achieving the required reductions at much lower costs. Even the structural BMP costs are overestimated – land purchase can be minimized, existing stormwater ponds can be retrofitted, sand filter costs are overestimated. Retrofit cost estimates have also not accounted for collateral benefits, such as energy savings from green roofs. • The fiscal analysis considers too narrow a list of retrofit BMPs. It omits any mention of non-structural approaches such as street sweeping, rooftop runoff management, or locally adopted limits on the use of lawn fertilizers. Ordinances limiting lawn fertilizer application are one of the cheapest, most effective ways for local governments to reduce the loadings. We recommend that the rules explicitly state that they do not preempt authority of local governments to regulate local fertilizer application. • Could improvement of existing BMPS to treat nutrients / increase treatment be considered for credit? Could repair of broken/poorly-functioning BMPs to restore nutrient treatment capacity be considered?

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				• DWQ's new BMP manual is still too conservative on nutrient crediting of BMPs, specifically bioretention and cisterns. (12) • A strategy similar to that being used by Raleigh - partnering with local land trusts and other local governments to cost share acquisition of conservation easements and fee simple purchases - could help protect Jordan Lake.
				Reply: *We agree that there are opportunities to implement structural retrofits at lower costs than we estimated, and that options exist besides structural retrofits for much more cost-effective reductions, options such as those identified in the rule, and that these options need to be recognized and explored by local governments. The fiscal analysis used structural retrofits as a conservative approach, lacking well-established cost figures for alternatives, but it identifies the potential for lower-cost solutions.* *We agree that fertilizer ordinances could be a very cost-effective reduction measure. We believe local governments are empowered to adopt such ordinances and did not see the need to add the suggested language. The Hearing Officers supported the concept of improving existing ponds for credit and added that to the list of options in the rule. The DWQ Stormwater BMP Manual reflects state-of-the-art in stormwater BMP research. As continued research provides more information on pollutant removal efficiencies the Division will make appropriate adjustments to the manual.* *Land conservation actions such as those recommended above, to the extent that they involve conversion to lower-loading land uses, are clearly an option available to local governments.*
145	7	a	.0266	12, 25	**Fiscal and Rule Emphasis on Retrofits Problematic** • The fiscal analysis focuses on retrofits, and we understand that retrofitting is expected to be the core strategy to meet the rule. The rule does not focus on locating retrofits on public lands, nor on cost-effective BMPs, nor on high-loading land uses, and provides no exclusion for forest or low-density development. • Retrofitting existing development is likely physically impossible and/or impractical to implement in densely developed urban areas. (25) • Given that DWQ based the fiscal analysis on constructed wetlands, the rule should acknowledge the necessity of putting them instream to make them feasible. (12)
				Reply: *The comment that retrofits are expected to be the core strategy is inaccurate. The rule is not prescriptive as to what practices to use. The fiscal analysis used structural retrofits for a conservative estimate of costs, and should not be interpreted as our endorsing specific practices. Again, the rule encourages local governments to explore a range of measures. It provides maximum flexibility to find the most cost-effective strategies and the latitude to identify more cost-effective options that emerge over time. It recognizes a suite of potential alternative load-reducing practices, including source reduction measures. In terms of a strategy, it would make sense for local governments to prioritize evaluation of public lands, especially those with good combinations of development and open space such as schools. To clarify, the rule does not require reductions from undeveloped lands like forest; only the developed portions of counties (or cities) will be included in reduction target calculations. High-loading land uses would make good priority areas since a given practice removes more load per time from these lands. As another potential tool to improve cost-effectiveness, the Hearing Officers have added language at Section (3)(a)(vii) to allow local governments the option of monitoring water quality to identify high-loading source areas and treat them for proportionately greater credit. In terms of retrofits, clearly many locations will prove unsuitable for retrofitting for various reasons. We believe that there will be feasible opportunities for land-based constructed wetlands, and would support instream designs where other regulatory concerns are addressed, such as in degraded urban conveyances.*
146	7	a	.0266	7	**Fiscal Analysis Did Not Include Cost of Feasibility Studies** The calculation methodology assumes no costs until the fifth year (pg. xxi and 69). However, local governments will need to start feasibility studies immediately upon Rule adoption, and will need to go through the lengthy process of writing and adopting new ordinances. Calculations also assume that DWQ will be the entity developing regulations, monitoring and record keeping, and inspection and enforcement, in addition to installation, operation, and maintenance of BMPs, when in fact these responsibilities are also the responsibility of the local governments (pg. 70).

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *This is a valid criticism. Initial planning and technical analysis costs would be additional to the planning costs associated with implementation, and should have been included, even if they take the form of opportunity costs for existing staff. We have addressed this issue in revised calculations in the Fiscal Revisions (Appendix E) of this report. We do not agree with the last point, since we did include O&M and regulatory transaction costs for the local governments but not for the Division.*
147	7	a	.0266	602	**Fiscal Analysis Took Inappropriate Credit for Trading** BMPs that reduce nitrogen also reduce phosphorous, but credit for one nutrient cannot be traded for a needed reduction in the other. Phosphorous credits only have value if there are phosphorus buyers. The assumption that phosphorous over-treatment resulting in $7.6 million of revenue potential is questionable.
				Reply: *We agree with this point. To be clear, the fiscal note does not suggest that reduction credit for one nutrient could be used to reduce the cost of meeting reduction needs for the other. The cost reduction using phosphorus credit in this rule is based on the assumption of finding another source that seeks phosphorus credit. However, based on our calculations, the commenter raises a valid concern over this assumption. After developing calculations for several rules, it became apparent that of the two nutrients, phosphorus would seldom if ever be in short supply for any source. At that point, we stopped calculating cost reductions from the trading of phosphorus credit. We did not return to the existing development rule, the only rule where we had included this trading cost reduction, which totaled approximately $10.8 million, and remove it. Thus, the total cost estimate for the rule should be raised by this amount. While this is a large sum, it amounts to less than 2% of the total projected cost for existing development.*
148	7	a	.0266	7	**Fiscal Analysis Used Inconsistent Loading Rate Values** For calculating existing development retrofit costs for DOT, DWQ used an areal loading value supplied by DOT of 3.17 lb N/ac/year (pg. 29). No other entities were allowed to supply their own areal loading values.
					Reply: *The Division has not indicated opposition to recommendations from local governments or other stakeholders on any aspect of the fiscal calculations. DOT had and provided research results specific to its roads in North Carolina that were more specific than other available road export values. We agreed to substitute them on that basis.*
149	7	b	.0266	10, 11, 13, 16, 25, 602	**Rule Lacks Statutory Authority for Several Things, and Requires Unconstitutional Takings** • The rule requirements are unprecedented, and the Commission lacks statutory authority to require local governments to develop and implement such stormwater management programs. G.S. 143-214.7 authorizes the EMC only to establish and enforce a statewide stormwater program, which must be applied evenhandedly throughout the State. Also, local governments are *authorized but not required* to adopt a program. • The EMC lacks statutory authority to require local governments to conduct feasibility studies from which the local government is to propose a plan for reducing or otherwise off-setting nutrient contributions from existing developed lands. • The EMC lacks statutory authority to mandate the retrofitting of existing developments or of existing infrastructure. • Local governments will be required to condemn private property, and unconstitutional taking. Local governments do not have statutory authority to condemn property for water quality purposes and the EMC lacks authority to require that they do so.
					Reply: *The Commission has clear authorities for the rule, as cited in the history note at the end of the rule. The authority in the Water Supply statute N.C. Gen. Stat. § 143-214.5 to require local programs is not mutually exclusive with the permissive language of the Stormwater statute § 143-214.7, and they must be taken together. Neither are the laws requiring the protection of water supply watersheds in N.C. Gen. Stat. § 143-214.5 and the restoration of impaired drinking water reservoirs in S.L. 2005-190 mutually exclusive.* *The feasibility study is simply a tool to assist the local governments to identify areas within their jurisdictions best suited for load-reduction activities and for identifying the type of activities they may implement. We note that the Hearing Officers have revised the rule, replacing the*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					requirement to conduct feasibility studies with the requirement to provide reduction plans and supporting technical analysis. *Nothing in the rule requires retrofitting nor takings of private property. The rule identifies a range of load-reducing options.*
150	7	b	.0266	10, 11, 212	**Rule Violates Vested Rights** • The rule conflicts with N.C. Gen Stat. § 153A-344.1 "Vesting Rights". • No exemption is provided for development projects that commenced prior to the local government effective date of the rules. • All development that occurred after the arbitrary 2001 baseline period is subject to the provisions of this rule. The EMC does not have the authority to require retroactive development requirements.
					Reply: *Local governments make vesting decisions, not the Division. Because the requirements for securing vested rights are statutorily established and are case-specific, we believe that including language relating to vested rights is unnecessary. We also note that property owners and developers do not have an automatic vested right to develop property under regulations that existed prior to new local rules. This will depend on many factors, including whether the local government has issued a valid permit or approval, whether the property owner has made substantial expenditures in good faith on as a result of a valid permit or approval and whether compliance with the new regulations will result in a detriment to the owner or developer. Also, as provided in N.C. Gen. Stat. 153A-344.1, there are some exceptions to statutorily vested rights. Regarding the last comment, Section (1)(a) of this rule recognizes the potential for projects to be vested under the new development rule, in which case those lands would be considered existing development and included in estimates of load reduction need under this rule. This rule, however, imposes no requirements on the developers or owners of such lands, nor on development that occurred anytime before or after 2001, and is not in conflict with vesting statutes.*
151	7	b	.0266	30, 31.2, 31.6, 212, 308	**Phase II Will or Will Not Suffice In Lieu of Rule** • With adaptive management in mind, it would be more productive to drop the existing development rule and concentrate on improving local stormwater program capacity, including Phase II stormwater rules and water supply watershed programs. Retrofitting and other innovative stormwater control measures will be a natural result of improved institutional capacity of these local programs. • The Hearing Officer's report should rebut the argument that Phase II addresses existing development. A few local governments have spread a great deal of misinformation about the Phase II program, arguing that the retrofit rule should be delayed to allow Phase II to have a chance to 'solve' the problem of runoff from existing development. The Phase II post-construction standards only apply to new development. (308) • "How can the EMC require local governments to submit technical information demonstrating the adequacy of the "alternative" requirements when the EMC has failed to provide any clear, substantiated data showing the adequacy (or inadequacy) of existing state programs or of programs, like NPDES Phase II, that have not been fully implemented? It is not local governments' responsibility to evaluate the adequacy of state programs or of state program implementation." (212)
					Reply: *While there is no procedural requirement for the EMC to prove the inadequacy of other stormwater programs, Water Supply and Phase II regulations provide general water quality protection, and by design would not achieve the specific water quality restoration needs of this strategy. Dropping this rule and proposing to rely on those programs would be negligent and rightly faulted as inequitably lenient. The design of this rule provides great latitude for local governments to develop reasonable measures for load reduction from existing developed lands.* *The option for local governments to request that their implementation of other stormwater programs should satisfy requirements of this rule is primarily intended to allow similar elements of other programs, such as mapping, illicit discharge detection, and public education, to suffice here without duplicative efforts, and is a provision requested by the local governments.*
152	7	b	.0266	102, 105, 210, 308	**Rule is Necessary** • Under the Clean Water Act, failure to allocate reductions to existing development would mean that reduction from point and new

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				nonpoint sources would have to be correspondingly more stringent. Not only would these increased reductions be tremendously expensive; they might well be technically infeasible. In short, North Carolina cannot comply with the Clean Water Act unless the Jordan rules retain an effective existing development provision. • The existing development rule must be retained, as developed lands are a significant portion of all loading. Previous nutrient management strategies have not included such a rule and have yielded limited water quality improvements as a result. • To accomplish the goal we must finds ways to reduce pollution from existing sources. We must reduce the pollution that rushes into creeks after every rain from yards, roads, and parking lots. The rule allows local governments tremendous flexibility in choosing methods and timelines. This will provide a model for other watersheds across the state with nutrient-impaired waters. • Developed lands lose infiltration and treatment capacity. Treating existing development would help the lake. These things should be modeled. Consider comparing the Corps of Engineers design for the lake to current and projected land use conditions.
				Reply: *We agree that this rule is necessary for recovering the lake. It is clear in this watershed that existing developed lands represent a substantial 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.*
153	7	b	.0266	7, 11	**Authority Issue - Local Ability to Regulate Onsite Wastewater Unclear** Onsite wastewater systems are considered to contribute a large amount of nutrients in the Division's reckoning of nutrient allocations by land use type. It's not clear if local governments have the authority to require regular inspection and/or maintenance of onsite wastewater systems or must rely on the county or state environmental health programs to enforce these provisions.
				Reply: *The premise of the comment is mistaken. The TMDL document establishes that the Division has not set allocations for individual types of nonpoint sources. We used the watershed model developed by Tetra Tech during the TMDL process to estimate contributions of the major nonpoint source types. We also stated in a series of stakeholder meetings that the watershed model's loading rates for the various residential land use types are not representative of 'delivered-to-stream' loading rates, and we do not expect to use them as part of implementation accounting. In terms of the role of onsite wastewater, there is relatively little research on its nitrogen contributions to streams in the state generally, and less that is specific to the watershed. Stronger compliance requirements may be helpful, but definitive understanding is not yet available.*
154	7	c	.0266	7, 12, 15	**Insufficient Research Foundation for Feasibility Studies** • While the rule provides for alternatives to retrofitting, cost and performance data on these alternatives are highly site-specific or do not exist. Thus, it will be difficult to give these meaningful consideration in a Feasibility Study. DWQ must assist local governments in funding research to advance state-of-the-art in nutrient removal. • Will a draft version of the accounting tool be available early enough for local governments to use in their calculations and studies?
				Reply: *Cost and performance data on many of both stormwater and wastewater practices do exist. That said, we agree with the need to better quantify nutrient benefits tied to some non-structural activities, and with the limitations this may place on initial technical analyses. We intend to work through these issues with the local governments in the short term and to steer available research funding to address these issues to the greatest extent possible. An accounting tool will be available in time for local governments to use it in their analyses. To help with this, the Hearing Officers have revised implementation dates such that the Division will seek Commission approval of the accounting tool and model within 18 months after effective date, and will have collaborated with local governments on its development. Local governments will then have two years to complete technical analyses and develop load reduction programs.*
155	7	c	.0266	7, 10, 31.1, 212	**Feasibility Studies Should Precede Rule Implementation, State Should Perform** • Local governments are charged with conducting feasibility studies following implementation of the rules. Feasibility studies on managing stormwater from existing development should take place before implementation. • What funding sources is the State making available for performing the feasibility studies?

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				• The Division should do the feasibility studies.
				Reply: *To be clear, feasibility studies were required following effective date but before implementation as opposed to 'following implementation'. We note that the Hearing Officers have revised the rule to require plans and supporting technical analysis as opposed to feasibility studies. While it may seem ideal to have the state do analysis in advance of the rule, local governments will be best situated to conduct technical evaluations of options. We could not reasonably expect local governments to voluntarily conduct them in advance of pending regulations.*
156	7	c	.0266	7, 308, 602	**Meaning of Feasibility Study Unclear** • Feasibility studies are to determine the extent to which the loading goals may be achieved. Is this equivalent to the standard engineering definition of "maximum extent practicable" or an extent of currently technologically feasible? • What happens if a Feasibility Study determines that the reduction goals cannot practicably be met? Will the jurisdiction have to buy credits to meet its goals? Will they need to undertake the full set of BMPs whether or not it is practicable or actually reduces exports? • Does feasibility include some measure of financial cost? • How will the State judge the adequacy of proposed implementation rates and schedules? • There are no benchmarks for progress or a suggested timeline for meeting load reduction requirements. • An approach built around flexibility creates a strong incentive for local governments to pursue better technologies as they become available, benefiting the entire state as well as residents of the Jordan Lake watershed.
				Reply: *The Hearing Officers have revised the rule to require load reduction plans to achieve half of the loading goals within ten years and to provide supporting technical analyses, as opposed to requiring feasibility studies and setting no specific timeframes. They have added several criteria for the technical analysis, including the term, "practicable". Since a range of potential activities exists to reduce loading from existing development, some with uncertain cost-effectiveness until accounting is developed, practicability in this case may differ from technological feasibility.* *Given the range of potential load-reducing activities, we would anticipate that technical analyses could evaluate activities in part based on current uncertainty associated with cost or effectiveness, and would design implementation plans that are adaptive in nature. The goals may not be entirely achievable assuming certain activities, but the practicable extent of implementation of those activities may yield substantial reductions. It would seem premature to declare goals unachievable given the range of potential tools, the timeframes envisioned for compliance, and the uncertainties that will be addressed as implementation proceeds. The option mentioned of buying nutrient credits is a potential tool that would depend on availability and cost, both of which are time-dependent, so the use of a given option would influence anticipated compliance timeframes. Obviously BMPs that do not reduce nitrogen export should not be considered. We have avoided setting rigid compliance timelines. We need to recognize that currently less certain measures may prove very effective and reduce timeframes.*
157	7	d	.0266	11, 21	**Uniform Percent Reductions Inequitable** • "Treating the high density sites and low density sites to the same percent reduction standard costs the same for the same flow rates; however, the load reductions are greatly different. It is neither environmentally effective nor fiscally responsible to implement a single reduction percentage goal for areas with vastly different impervious surface coverages." A 35% reduction for rural watersheds with relatively low nutrient loadings will not be as effective as a 35% reduction applied to an urban watershed. • While stormwater retrofits may be a logical approach in urban areas where loading rates are higher, it does not seem practical or equitable to hold rural areas to the same percentage reduction goal, when protective measures are already in place. • "The proposed reductions for nitrogen and phosphorus are represented as percentage loading reductions. This "one size fits all" approach does not acknowledge the very different loading rates and land use patterns between urban and rural portions of this area; nor does this approach take into consideration the resultant difficulty in achieving a percentage-based reduction by jurisdiction." • It is unreasonable to require reductions on low loading rates land areas while specifically allowing higher loading rates. We recommend that existing development reduction requirements be set at either 4 and 6 pounds of nitrogen per acre per year loading rate or 35%

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					reduction of the existing load. • "An in-stream nutrient level goal for each sub-watershed of Jordan Lake, and a corresponding nutrient delivery model to sustain the goal, may be a more effective method to equitably address reductions."
					Reply: *These comments recognize the principle that treatment of higher-loading rate lands is more efficient than the same treatment on lower-loading lands. We have designed the rule to give local governments the flexibility not only to find the most efficient means of reducing their loads, but also to look to other local governments or sources for more cost-effective means. In addition, the Hearing Officers added to the rule the option for local governments to monitor instream to identify disproportionately high-loading lands which they could treat for commensurate credit.* *The suggestion that different jurisdictions should be held to different percentage reduction requirements is problematic from an equity standpoint. 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 in fact provides a fairer solution than the last alternative recommended above of imposing one uniform loading rate value on all developed lands, which itself 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. The Hearing Officers added definition on this point.* *It is not clear what the last comment envisions. Instream load goals at the lake for each subwatershed are in fact what the reservoir model established. The watershed model provides delivery factors from each 14-digit hydrologic unit, and we expect to use these for trading purposes.*
158	7	d	.0266	12	**Stormwater Goals Are Inequitable Compared To Wastewater Goals** Why is 3.0 mg/l nitrogen considered "limits of technology" for wastewater while you mandate that stormwater at much lower concentrations then be treated using limited, passive treatment technology?
					Reply: *Pollutant concentrations in untreated wastewater are many times higher than those typically found in stormwater. As a result, the types of treatment processes used for the two and the nutrient removals they achieve will differ considerably. The percent removals and the mass reduction of pollutants – and the cost of those – are much higher for wastewater treatment plants than for stormwater BMPs. Thus, it is misleading to compare the BAT concentrations given for wastewater and stormwater treatment systems.*
159	7	d	.0266	5, 7, 11, 15, 17, 212	**Load-Reductions Already Made Are Not Recognized** • Rules need to take into account existing development that already has nutrient reducing Best Management Practices. One way that this could be accomplished is by requiring equivalent maximum loading rates on a per acre basis for existing development. • Language is needed to acknowledge efforts made by jurisdictions that have implemented stormwater and buffer requirements for many years prior to these regulations and would be consistent with language contained in .0264(7) for agriculture. (7) • The rules actually punish governments that currently implement programs that exceed existing requirements by giving them no credit for any nutrient reductions in place after the 2001 baseline. (212) • Since obtaining our Phase I stormwater permit in 1994, we have implemented numerous load-reducing initiatives and actions, including buffer protection, stream and buffer restoration, street sweeping, eliminating illicit discharges, and others throughout the baseline to present, for which we will not receive credit. (15) • We have implemented the Neuse Rules throughout the city and have done several other things, so it's an unfair burden and erroneous to require us to do existing development retrofits. (5)
					Reply: *We agree with the general desire expressed in these comments. As discussed with many of the local governments during rule development, the accounting will be designed to provide them the ability to credit load-reducing actions implemented since the baseline. We consider it an*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				unavoidable inequity that the rule cannot credit beneficial actions taken during or prior to the baseline. Fortunately, Cary's jurisdiction-wide Neuse rule implementation began shortly after 2001 and would be creditable. The Hearing Officers have removed the language referenced in the agriculture rule that would allow crediting of pre-baseline BMPs toward individual compliance.
160	7	d	.0266	6	**More Stringent Local Programs Not Accommodated** Provide advice on how to allow local governments whose requirements now exceed those in the rules to use their current tools to achieve the commendable goals of the Nutrient Strategy. To do so, the proposed rules will have to include a level of flexibility, which they do not appear to contain as drafted.
				Reply: *We do not see how the rule would preclude current, more protective ordinances from continuing to operate.*
161	7	e	.0266	5, 214, 226	**Need EEP Buy-Down or Ability to Use Private Sellers** • A provision is needed that allows jurisdictions to buy down a portion of their target reductions, which would be consistent with the new development rule. (5) • The rule should allow local governments to use private market mechanisms and third-party sellers to achieve nutrient reductions.
				Reply: *We considered the option to pay offsets to the NC EEP, but in combination with other rules that provide that option we determined that this would place an unrealistic burden on that program. Functionally, the rule should provide full opportunity for the same services as EEP provides by allowing both the use of private credit generators and a wide range of activities including restoration of ecological communities such as streams and buffers.* *The Hearing Officers agree with the requested private seller option and have added language to this effect in Item (3).*
162	7	e	.0266	316	**Add Ability to Target High-Loading Streams** The rule should allow local governments the option of targeting reductions to specific streams where loading is highest to give more "bang for the buck" if they have the resources to do so, allowing greater flexibility and efficiency. This will also create opportunity for education and upstream restoration, as well as benefiting the lake.
				Reply: *The Hearing Officers agreed with this reasoning and added language to provide for this option, based on monitoring to identify such high-loading catchments.*
163	7	f	.0266	1, 4, 5, 12, 15, 26, 28, 31.2, 50, 66, 105, 210, 216, 233, 308	**Funding Issues and Potential Funding Sources** • The rules will require retrofitting existing development and imposing higher standards on new development that will significantly drive up costs necessary for compliance. This could result in increased taxes and/or utility rates, including water, sewer, and stormwater fees for citizens, and higher fees to do business in the watershed. • Local governments may not have to divert retrofit costs from other civic priorities. Many jurisdictions within the watershed already have stormwater authorities that charge fees, and most others will eventually establish them to address Phase II. (308) • We wish to make local governments aware that local soil and water conservation districts stand ready to assist them with technical and financial assistance for retrofitting through the newly authorized Community Conservation Assistance Program (CCAP). (105, 210) • Funding assistance will be needed to assess existing development to achieve the requirements of Section 0266 (3)(a)(iv). • The rule states that a local government may seek supplemental funding through grant sources such as the North Carolina Clean Water Management Trust Fund. This is not true, and should be removed from the rules. Meetings with the CWMTF established that no funds are available for implementation of the proposed Jordan Lake rules. Typically, grant money is not available for compliance activities required by regulation. If the rules are less specific there may be more opportunities for funding by outside resources. Even if available, at current levels grants would be woefully inadequate.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					Reply: *Stormwater utilities are perhaps the most obvious means of local funding. As the last comment points out, some already exist and others will likely need to be established to address Phase II. The longer utilities are in place, the greater the proportion of their funds that will likely become available for the purposes of this rule as more pressing flooding and decaying infrastructure needs are addressed. Compatibly, the rule provides the opportunity for local governments to assess those needs and propose reasonable compliance timeframes.* *We appreciate the Division of Soil and Water Conservation's efforts to forward this program and agree that it could be very useful to local governments in addressing this rule. The Hearing Officers are sensitive to the potential magnitude of costs these rules may impose, and to the general concerns stated here. While the rules cannot require that the General Assembly provide funding, we include recommendations in this report that the Commission consider delivering a resolution on the subject to the General Assembly.* *Given uncertainties on availability of the Clean Water Management Trust Fund monies for this purpose, the Hearing Officers removed the referenced language.*
164	7	f	.0266	216	**Government-Subsidized Reductions Should Not be Tradable** The EMC should specify that sellers who have received state or federal funds to establish or maintain certain land uses or buffers that produce excess load reduction cannot sell those credits to buyers.
					Reply: *This issue has been raised in the past at the national level but we are not aware of specific federal policy positions or legal actions. Within our state, the ability for parties to profit after being assisted by state or federal funds exists with wastewater dischargers in the Neuse, and would exist for that source in this watershed, along with agricultural producers.*
165	7	g	.0266	7	**Technical Issue – Nested Treatment Credit** • When stormwater infrastructure is shared or crosses boundaries between local jurisdictions, which entity bears the responsibility for nutrient reduction? There is no clear guidance on this in the rule. While it would probably be highly beneficial and reduce inefficiency for DOT or UNC to enter into joint agreements with local governments, it is similarly unclear whether this is allowable. • Installation of a new stormwater BMP upstream of an existing nutrient BMP has the potential to lower the nutrient removal credit for the downstream BMP. What is the minimum separation distance between BMPs in order to be considered separate? Or are nutrient treatment loads for BMPs in series, even if separated, calculated only using the drainage area flowing to them that doesn't already pass through a BMP? This is likely to be an extraordinarily complex calculation of BMP nutrient removal. How is treatment capacity managed under this scenario?
					Reply: *These are challenging issues on which we will need to develop thoughtful policy approaches that receive full review from stakeholders. We expect to address such issues during development of accounting tools.*
166	7	g	.0266	208	**Technical Issue - BMP Credit is Subjective** Determining whether required reductions are being met is based on BMP evaluation, which is subjective in nature. Construction and post development BMPs are really designed to remove sediment, not nutrients.
					Reply: *These rules deal with post-construction runoff only. A wealth of research data in North Carolina and nationally supports the nutrient removal efficiencies the Division has established in close collaboration with stormwater experts at North Carolina State University.*
167	7	g	.0266	4	**Technical Issue - Need Details on Tracking Reductions** The rule does not provide clear information on how required water quality improvements will be tracked.
					Reply: *The comment seems fair if 'clear' is read as 'specific'. The rule requires the Division to develop the accounting requirements collaboratively*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					with local governments and requires annual reports from the local governments once implementation begins. This process will provide the desired specifics.
168	7	g	.0266	1	**Timing Issue - Model Should Precede Rule Implementation** The state should develop the model local stormwater program before the rules are implemented. *Reply:* *We agree with the desire to have a model as early as possible. We are moving forward to the limits of available resources.*
169	7	g	.0266	3	**Compliance Issue - Drop Annual Reporting** "Do not require annual reports for the individual components of the proposed rules. Much of the information will be included in other documentation (monthly wastewater discharge reports, Phase II annual reports). The generation of multiple annual reports will be a burden to local government staff as well as State staff. These reports will probably not be read or used by NCDENR staff unless additional people are hired. We propose that information and documentation be retained on site and be available for inspection." *Reply:* *We disagree that annual reports are unnecessary or will not be used, but we support the idea of consolidating reporting to the greatest extent possible and will work with the local governments on this. We note that developed lands load reduction estimates and related information are not required under any other regulatory program and would be new information to incorporate in reports.*
170	7	g	.0266	105, 210	**Compliance Issue - Need to Add Local Accountability for Noncompliance** Agriculture rules have accountability built into every item, and agriculture has to achieve the goals within 5-8 years. There is no discussion of ramifications if local governments choose not to complete or adequately address any step in the process of developing, adopting and implementing the stormwater management programs. There is also no timeline for achieving the stormwater nutrient reduction goals. The rules need to specify these things. *Reply:* *We see stormwater and agricultural accountability as essentially parallel. Stormwater programs for both new and existing development are required to meet a step-wise process of development, review, and approval that parallels the agricultural strategy requirements. We see one significant difference between agriculture and stormwater. Because individual local governments are identified 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 giving 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. In terms of setting timelines for reaching the goals, once local new development stormwater programs are in place, each new development project will be required to meet the reduction goals for its site. For existing development, the rule allows local governments to propose timeframes for achieving the goals because, unlike agriculture, which essentially retrofits each year and which has cost share funds available, the process for obtaining large-scale loading reductions from developed lands is much less well-established and potentially costly.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(8) BUFFER PROTECTION - .0267				
181	8	a	.0267	208, 212	**Lack of Statutory Authority, Ambiguity, and Arbitrariness** • The EMC does not have the authority to require local governments to enforce buffer requirements. Therefore, local governments can't be forced to make on-site determinations, and they do not have to submit their ordinances to the Division for review. • N. C. General Stat. §143-214.23(a) restricts local governments from implementing more stringent riparian buffer requirements in the Jordan watershed. • DWQ's "Identification Methods for Origins of Intermittent and Perennial Streams" cannot be used to make stream determinations that directly or substantially affect the rights or duties of any person because the document has not been adopted as a rule pursuant to GS CH. 150B, Art. 2 (208). • The requirements that a variance cannot be granted unless it "is in harmony with the general purpose and intent of the State's riparian buffer requirements and preserves its spirit" and unless "the public safety and welfare have been assured, water quality has been protected, and substantial justice has been done", with the possible exception of "water quality" and "public safety", are ambiguous. Who decides these things and by what statutory authority? • Applicants may be granted a variance if DENR and local governments determine that the applicant cannot "secure a reasonable return or make reasonable use of the property." These terms are not defined, which can yield arbitrary decisions. • Variance should be granted based on the specific and unique characteristics of the land and not on the purchase date of the property. • Only local governments that voluntarily implement the riparian buffer requirements may grant minor variances. Local governments cannot be forced to grant variances if they choose not to implement the State's riparian buffer requirements. • For the "No Practical Alternatives" review, local governments and the Director are ill equipped to determine whether the "project purpose can be practically accomplished in a manner that would better minimize disturbance" and whether the use "can be practically reduced in size or density, reconfigured or redesigned to better minimize disturbance". Also, local governments and the Director are only justified in making the determination relative to the buffer – not the entire project. The EMC does not define "practically accomplished", which will surely result in arbitrary and capricious application. • The EMC must specify under what circumstances additional conditions may be imposed and must specifically state the conditions that may be added to the Authorization Certificate. • By what statutory authority does the EMC propose using the preservation of "substantial justice" as a factor in determining whether to grant a request for a variance? Who determines whether a variance is "in harmony with the general purpose and intent of the State's riparian buffer requirements and preserves its spirit?" Language is ambiguous.
					Reply: *The Commission has authority to delegate responsibility for riparian buffer requirements to local governments with the authority to regulate land use. The EMC has determined that the riparian buffer requirements set forth in these rules are necessary to prevent further degradation water quality in the Jordan Reservoir. Pursuant to delegation by the EMC, local governments are required to implement and enforce these requirements.* *DWQ's "Identification Methods …" establishes guidelines used by Division staff to make stream determinations. The manual includes non-binding interpretive statements that explain methodologies used to identify the origins of intermittent and perennial streams.* *For major variances, the EMC would rule on the variance criteria cited. For minor variances, local governments will. Additional conditions on Authorization Certificates are a case-by-case determination dependent on site issues and constraints.* *The date of the purchase of property is one factor frequently used in determining whether application of a rule would result in "unnecessary hardships." Persons who buy property after the effective date of the Rule have notice of the requirements or limitations set forth in a rule.* *G.S. § 153A-340(c) and G.S. § 160A-388(d) grant local governments "the power to vary or modify any of the regulations or provisions so*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					that the spirit of the ordinance shall be observed, public safety and welfare secured, and substantial justice done." Local governments have traditionally used these factors when determining whether to grant a variance under zoning ordinances and subdivision regulations. *The factors used in determining whether to grant a variance from this rule are modeled on those traditionally used by local governments. Local governments should not have difficulty determining whether a variance is in harmony with the general purpose of the buffer requirements because the purpose of the rule is plainly stated.*
182	8	a	.0267	212	**No Need for Rule** The EMC hasn't proven that the buffers currently required by other stormwater programs such as the NPDES Phase II aren't working.
					Reply: *While there is no procedural constraint for the EMC to prove the inadequacy of other buffer programs, we find that the buffer requirements of this rule better address the nutrient reduction needs of this strategy than the setbacks included in Phase II and Water Supply rules, which are designed for general water quality protection. The buffers proposed here are virtually the same as those used in the Neuse and Tar-Pamlico, both of which are nutrient strategies for restoration.*
183	8	a	.0267	102, 210	**No Authority to Address Pesticide Use** Section 16 states that use of pesticides is allowed in the buffer for forestry. We do not believe that this language can be used because the authority to regulate pesticides lies with the Pesticide Board and not the EMC.
					Reply: *The Hearing Officers have removed the pesticide application limitations from the rule.*
184	8	b	.0267	7, 11, 12, 30 102, 201, 210	**State vs. Local Implementation, Costs** • Oversight for riparian buffers should remain under state authority, because of cost issues, expertise. • $1.5 million dollar cost estimate for implementation of comprehensive protection and mitigation programs by local governments is likely an order of magnitude too low, especially considering requirements to regulate agriculture and forestry. • This rule is significantly more demanding than Phase II or WSW buffers in terms of inspection and enforcement costs, increased plan review costs, and increased public education and outreach. • Durham adopted a buffer ordinance for intermittent and perennial streams before the Neuse rules. This rule is far more complex and proscriptive than Durham's current buffer rule and will require significant additional staff time. • Landowners modifying Zone 2 will often not be negotiated without guidance and assistance. • We recommend some form of incentive for local governments to agree to take on the buffer permitting program, such as postponement of existing development requirements until further assessments reveal a critical need for them. • The TMDL states that DWQ will protect riparian buffers, while the rule states that local governments are responsible for this.
					Reply: *The Hearing Officers evaluated this issue at length and ultimately revised the rule to shift certain aspects of implementation to the Division. The report provides additional discussion of their deliberations. As revised, the rule requires the Division to address state, federal, local, forestry and agricultural activities as well as implementing the rule in jurisdictions where there is no local Phase II, Water Supply Watershed, or local initiative program. This should reduce the magnitude of impacts to local governments. We have revised our estimate of local implementation costs as described in our reply to Comment #119. Also, while agency rules cannot mandate legislative funding, the Hearing Officers include recommendations in this report for the Commission to consider delivering a resolution on the subject to the General Assembly.* *The Hearing Officers agreed on the need to require local governments to address existing development independent of buffer or other strategy requirements. A statement in the TMDL proposing Division implementation would reflect an earlier version of the strategy.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
185	8	b	.0267	104, 211	**Forestry Will Face Inconsistency, Uncertainty Between Local Governments** • The rule allows local governments to meet or exceed baseline standards as they choose. We're concerned this will result in forestry operations being over-regulated in some counties and under-regulated in others, creating confusion among landowners and operators and inevitably increasing operation costs. It is critical that regulations be appropriate, fair and uniform across a region. We suggest a single standard for forestry-related practices. The rule needs to include a preemption on local regulation as was done in the state water supply watershed regulations. • We want to ensure that on-site determinations made by DFR's stream identification-certified personnel remain valid and the preferred method for forestry operations. We recommend that local governments be required to accept these determinations. *Reply:* *The Hearing Officers considered this input and revised the rule to require the Division to address state, federal, local, forestry and agricultural activities as well as implementing the rule in jurisdictions where there is no local Phase II, Water Supply Watershed, or local initiative program. The rule revision eliminates the latter issue since the Division will continue to accept DFR determinations.*
186	8	b	.0267	12	**Keeping Appeals Local Could Allow Political Influence** The rule requires appeals of stream calls to be handled locally. If the process becomes politicized, DWQ will still have to accept the results. *Reply:* *The Hearing Officers considered this input and revised the rule to send all appeals of stream or buffer calls to the Division, as well as giving the Division the ability to review Authorization Certificates.*
187	8	b	.0267	30	**Insufficient Time to Develop Local Programs** Six months is not enough time for local governments to develop a local program including all of the necessary local ordinances. We recommend 12 months. *Reply:* *The Hearing Officers accepted the timeframes proposed. The buffer rule is fully detailed and serves as a model ordinance for local adoption. Given the length of the state rulemaking process, local governments have substantial lead-time to otherwise plan for implementation.*
188	8	c	.0267	104	**Costs - Forestry Significantly Impacted** Contrary to complaints that forestry is not regulated in these rules, the forestry community will be significantly impacted, including a 50% increase in unit costs for logging in Zone 1, a total capital increase in harvest costs between years 2 through 5 of approximately $750,000, and annual opportunity costs in unharvested timber of approximately $1 million. *Reply:* *We agree that a key aspect of forestry - harvesting and other activities within riparian buffers - will face significant new restrictions under this rule.*
189	8	c	.0267	104	**Fiscal Analysis – Forestry Statements Inaccurate** • The statement in the fiscal not on page 82 states: "Forest Harvesting: The rule restricts timber harvesting in the first 30 feet of buffer, or Zone 1, to half of existing trees, with a minimum return frequency of 15 years…" This statement has oversimplified and over-generalized the restrictions in Zone 1, and in doing so, have made it appear as though the regulations are even stricter than what is set forward in the rules language. (See page 53 of 81 of the rules.) The Fiscal Analysis language should be changed. • The word "certified" should be removed from the following sentence on page 88 of the Fiscal Analysis: " Selective harvesting in the buffer requires that loggers have a certified forest management plan or specified alternative, but this is not expected to involve new regulatory costs." DFR does not "certify" forest management plans. The statement should also be edited to more accurately reflect rule text. *Reply:* *While we appreciate the commenter's clarifications, we do not see substantive misrepresentation of the harvesting restrictions in our description. We do not plan to release a revised edition of the fiscal note in which such changes could be made.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
190	8	c	.0267	602	**Fiscal Analysis – Pay Rate for Ordinance Preparation Low** "The pay rate of $36/hour (FA Chapter 6, p.87) used to quantify the cost of local governments contracting assistance in preparing ordinances seems rather low." *Reply:* *We have revised the calculations as provided in Appendix E to address several issues including this comment. We used a rate of $100/hr.*
191	8	d	.0267	11	**Administration - Widen No-Disturbance Zone for Implementation Certainty** The rules should be revised to adopt a 50-foot no-disturbance buffer instead of only Zone 1 being no-disturbance The allowances for Zone 2 become difficult to enforce after initial development, especially in subdivisions. *Reply:* *The rule expressly recognizes elective local authority to adopt more stringent requirements such as the one suggested here. The Division prefers to retain the 2-zone requirements used in the Neuse and Tar-Pamlico and that we find suitable in this watershed.*
192	8	d	.0267		**Administration - Provide Effective Date for Existing Uses Exemption** An effective date should be established for existing uses in section 6 to minimize potential removal of buffers before the rule is in effect. *Reply:* *The rule does establish reference dates from which existing, ongoing activities may continue in Section (6) for both local and Division implementation. To establish a reference date for such activities that pre-dates rule effective date would imply a prohibition on changes to those activities for that time period preceding effective date, which would violate statute.*
193	8	d	.0267	12, 103, 318	**Administration - Allow or Do Not Allow Better Maps** • The rule does not allow the use of digital stream maps, yet the paper maps will likely lead to errors. Either the state should implement the rule as in Neuse and Tar until it has adequate digital maps, or local governments should be allowed to transfer Soil Survey and USGS streams onto local, spatially accurate maps for buffer determinations. This will improve reviews. (12) • Remove .0267(4)(a)(iii), which allows for other mapping approved by the Commission. It is ambiguous, inconsistent with buffer rules in other watersheds, and should be established through a separate rule-making process. (103) • The maps of streams and surface waters used by state agencies, local governments, developers and others are outdated and inaccurate. I recommend that DWQ and EMC recommend funding of the plan to improve mapping and digital representation of surface waters as adopted by the NC Geographic Information Coordinating Council in January 2005 as part of its Jordan Lake Water Supply Nutrient Strategy." (318) *Reply:* *Language in Section (4)(a) is designed to allow for more accurate maps to be used. It allows either alternative recommended in the first comment, pending Commission or Division approval respectively. This option, including the public approval process, is an improvement on previous watersheds. Rulemaking would be unnecessary to achieve this.*
194	8	e	.0267	201, 212	**Protections - Diffusion of Flow from Conveyances is Unnecessary Over-regulation** The rule calls for diffuse flow from man-made conveyances prior to entering zone two. This is just another way of asking for a level spreader, which is technically a buffer prior to a buffer. This is unnecessary and should be removed. *Reply:* *The importance of diffuse flow to buffer function is well-established in the scientific literature, a common requirement of buffer programs, and our experience in the Neuse and Tar-Pamlico strongly affirms this need. While diffuse flow could be accomplished by additional buffer width, there are more reliable methods where concentrated flows are involved, and we consider it more flexible and efficient to instead*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				establish a performance expectation and allow for site-specific adaptation.
195	8	e	.0267	103, 201	**Protections - Stormwater BMPs in Buffer – Make More or Less Stringent** • Constructed wetlands or bioretention should be allowed in Zone 1 without mitigation; costs of these BMPs are significant enough. (201) • The rule allows for the destruction of existing buffers to accommodate a variety of stormwater BMPs, which are not as effective at controlling nutrients as buffers and are detrimental to wildlife habitat and bank stability. This provision should be eliminated. (103) • The Fiscal Analysis does not account for additional costs associated with maintaining structural BMPs in flood prone buffer zones. (103) *Reply:* *The stormwater rule generally will result in new costs to developers. We do not see that as justification for exempting stormwater BMPs from buffer requirements.* *The second comment fails to recognize the limitations and offsetting actions required for BMPs in the buffer. The rule allows stormwater BMPs in Zone 2 only after demonstration of no practical alternatives, which involves avoidance and minimization steps. We see this allowance as consistent given that Zone 2 may be cleared and regraded in any case as long as it is revegetated. The rule allows stormwater BMPs in Zone 1 only after demonstration of no practical alternatives and at a buffer mitigation ratio of 3:1.* *Regarding the last comment, it is arguable there will be any significant costs for this scenario. BMPs may or may not be flood-prone. The number of BMPs likely to pass the required alternatives analysis is likely to be quite small over time. Estimating the additional cost for such BMPs would be difficult.*
196	8	e	.0267	104, 210, 211	**Protections - Loosen Forestry Provisions in Zone One** • There may be times during planned riparian plantings where it could be beneficial to site prepare and plant an area right alongside a stream, particularly if the tree were needed for shade over the channel. We recommend softening the prohibition to allow approval by the Division of Forest Resources. • The harvesting of trees with exposed primary roots should be allowed. Not doing so could lead to erosion, and if the tree falls into the stream, massive amounts of soils may also. (210, 211) • Modification of the prohibition on tracked or wheeled equipment in zone one may be appropriate. It's been shown that this type of equipment can be used without causing erosion. Manual felling of trees is dangerous to loggers. *Reply:* *The Hearing Officers considered these comments. They did not agree with some of the logic given above; however, they did recognize more limited situations and revised the exposed roots clause to allow for cutting of trees with exposed roots if the activity is listed as exempt under Vegetation Management in the Table of Uses. They did not alter the prohibition on soil-disturbing preparation in Zone 1. We note that provisions in Section (14)(a) allow tree planting throughout the buffer. They revised the rule to allow tracked vehicles except in the first 10 feet, where there are no practical alternatives, and only in compliance with forest practice guidelines.*
197	8	e	.0267	211	**Protections - Arguments Against Forest Harvesting Restrictions** • Unintended Consequences; each additional regulation to forestland causes private owners to consider selling their land, which will be converted to development, which will contribute more nutrients to the watershed. • Nutrient transport to streams from properly managed forestland is generally at background or natural levels. • Forestry operations are already regulated under the NC Sedimentation Pollution Control Act to meet mandatory performance measures to prevent accelerated erosion and sedimentation of streams. Data from DFR shows a 94% statewide compliance rate. • Forest nutrient uptake is limited except in young, rapidly growing forests. Therefore, buffers should be managed to maintain such vegetation.

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					Reply: *The Hearing Officers considered the forest harvesting restrictions an important and necessary component of the nutrient strategy. We also find it more plausible that factors other than the buffer restrictions would be primary considerations in a landowner decision to sell property in a developing area. We agree that undisturbed forestland exports nutrients at the lowest levels. It has also been shown that forest harvesting can greatly increase nutrient export, particularly if improperly managed. We note that DFR compliance data on Streamside Management Zones is substantially lower than the 94% overall rate. A body of research disagrees with the last comment, and we note that the harvesting provisions restrict but do not prohibit tree removal anywhere in the buffer. The Hearing Officers find the forest harvesting provisions reasonable.*
198	8	e	.0267	210, 211, 305	**Protections - Require or Do Not Require Pre-Harvest Notification** • We oppose the preharvest notification requirement for forestry and agriculture that was in early discussions of the rules. • Logging operations, especially on the scale that often precedes residential development, can be a significant source of phosphorous and sediment to streams. We believe the earlier proposed pre-harvest notification should be re-instated in the rule. (305) *Reply:* *While we believe that preharvest notification would add accountability to forest stewardship, we did not consider these rules as the appropriate venue for establishing that accountability, which should be statewide in nature, and did not include it here.*
199	8	e	.0267	7, 103	**Table of Uses – Detail Revisions Needed** • In the Table of Uses, Vegetation Maintenance includes the removal of "understory nuisance vegetation" as defined in a DENR document, *Exotic Plant Guidelines*. However, the referenced document does not define the term. Please provide a definition or change to "invasive exotic species" which is defined in the cited reference. (7) • In "Vegetation Management" in the table of uses, add an exemption for hand clearing. This is often used as a minimization method under Clean Water Act Sections 404 and 401 actions. (103) • "Wildlife passage" is considered an Allowable Use. It is not defined, but does not seem to be an impacting activity. (7) *Reply:* *The first comment is correct. The Hearing Officers have revised the term to "invasive exotic vegetation". (Amy/John – review) The second recommendation would open buffers to hand clearing by anyone for any purpose, which would be inconsistent with the intent of the rule. Clearing associated with 404/401 activities is addressed in the table under wetland, stream and buffer restoration, or would be part of impacts allowed by other items and permitted under 404/401.* *The Hearing Officers added the word "structure" to "wildlife passage" to apply to passage structures that increase the impact footprint of road crossings.*
200	8	f	.0267	103, 212	**Changes Needed to Definitions** • The definition of "stream restoration" includes a definition of stream. Does this definition differ from any existing definition? Why is 'stream' not defined on its own? (212) • Define "dynamic equilibrium". (212) • The terms "bridge", "footprint", and "stormwater management facility" should be defined in conjunction with the DOT. (103) • Change the definition of "temporary road" to allow for it to be restored within 24 months. As the definition is currently written in .0267(2)(u) it allows for only six months. (103) *Reply:* *The Hearing Officers eliminated the definition for "stream" from the definition of "stream restoration". They did not consider it necessary to define dynamic equilibrium. We believe the three terms for which definitions are requested are sufficient in their current context and as currently interpreted, as discussed with DOT staff. The Hearing Officers removed the 6-month stipulation in the temporary roads definition, and added requirements for restoration directly following completion of construction to the temporary road use listing.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(9) BUFFER MITIGATION - .0268				
201	9	a	.0268	212	**No Statutory Authority** • The EMC does not have the authority to require local governments to enforce the State's riparian buffer requirement or to implement a local mitigation program under N.C. Gen. Stat §143-214.23 or any other statute. • There is no authority for the EMC to arbitrarily apply multipliers to riparian buffer impacts to determine the area of mitigation. • NC Gen. Stat. §143-214.20 and §143.21 state that donation of real property or moneys shall be used in the same river basin as the buffer that was lost. The EMC does not have the authority to require that mitigation be located in the same watershed, much less a specific distance from the reservoir.
				Reply: *Regarding statutory authority to require local buffer programs, see our reply to the first comment under the Buffer Protection Rule.* *Multipliers are used in setting mitigation area requirements to address the many uncertainties, approximations, and temporal losses associated with offsetting functional values lost from one natural ecosystem by recreating another. The use of multipliers is within the Commission's charge to ensure protection and recovery of water quality, and is a common practice in mitigation programs across the country for similar reasons.* *The third point is accurate only in that the cited statute restricts mitigation alternatives to the same river basin as the buffer impact. The same statute also requires the mitigation to achieve equivalent or greater water quality protection, which is a reasonable basis for restricting the location of mitigation activities when location matters to a specific water quality need, as it does in this set of rules.*
202	9	b	.0268	7	**Fiscal Analysis Underestimates Mitigation Program Administrative Costs** Costs for mitigating riparian buffer impacts are supposedly rolled into those for buffer protection in the fiscal analysis, but they are not explicitly mentioned in the buffer protection cost estimates. In our experience, costs associated with plan review, inspection, record keeping, and maintenance, even for projects not undertaken by the Town, are significant.
				Reply: *In the fiscal note we considered mitigation approvals as part of buffer permitting. We did not explicitly state that, and we understand from this and other comments that local governments believe we have underestimated all local program costs including these. Prompted by this input, we have revised our estimates as described in Appendix E.*
203	9	c	.0268	212	**Allow Use of Any Approved Mitigation Bank** The EMC should add a provision in the rule that allows the purchase of credits from an approved private mitigation bank.
				Reply: *The Hearing Officers agree with this recommendation and have added the option.*
204	9	c	.0268	212, 214, 216	**Hold EEP to Private Seller Requirements** All providers of nutrient offsets, including EEP, should be explicitly subject to the provisions of .0269.
				Reply: *The Hearing Officers agree with this principle and have revised this and other rules accordingly.*
205	9	c	.0268	212	**Government-Subsidized Restoration Should Not be Tradable** The rules should not allow parties that receive state or federal funds to establish or maintain certain land uses or buffers that produce excess load reduction to sell those credits.
				Reply: *This issue has been raised in the past at the national level but we are not aware of specific federal policy positions or legal actions. Within*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				our state, the ability for parties to profit after being assisted by state or federal funds exists with wastewater dischargers in the Neuse, and would exist for that source in this watershed, along with agricultural producers and local governments addressing existing development. This may be a question for individual funding programs to address.
206	9	d	.0268	212	**Appraised Value of Donated Land Inappropriate Determinant of Mitigation Ratio** The use of appraised land value does not reflect the "value" of land donated for mitigation. Land placed in permanent conservation easements will discharge only the baseline amount of nutrients into perpetuity and meets avoidance and minimization goals. The mitigation formula must reflect this benefit and give credit for removing land from production and permanently reducing the nutrient load.
				Reply: *The property value is not the controlling factor in assuring the nutrient offset under the land donation option. The controlling factor is the requirement that the land contain at least as much restorable buffer acreage as otherwise required by the mitigation ratios. The requirement that the appraised value at least equal the fee that would be required under the offset payment option provides a fallback, but were it actually needed to recover funds to put toward restoration elsewhere, transaction costs would be significant. The difference between appraised value and sale price would likely only cover a portion of those transaction costs. The perpetual load reduction that results from buffer restoration on the donated land is no different from that on land restored through an offset payment, a reduction that is necessary to offset the perpetual loss of buffer function elsewhere that led to the requirement.*
207	9	d	.0268	103	**Revise Restoration Design Criteria** • In Section (4) Location of the Mitigation, add "or as determined by the DWQ as an ecologically acceptable area." to the end. • In Section (8)(d)(ii) & (g), the NCDOT recommends modifying these two sections to allow 320 trees/acre at three years and 260 trees/acre at five years. By forestry and current wetland restoration standards, this is a reasonable request.
				Reply: *We have considered the comments and prefer the current wording in both cases. We do not see a need for the first addition, and we stand by the proposed tree density requirement as reasonable and representative of natural communities.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(10) OPTIONS FOR OFFSETTING LOADS - .0269				
211	10	a	.0269	21, 100	**Trading Needed for Local Governments, Agriculture** • Local governments need more flexibility to meet requirements: buy-down opportunities with EEP; time to assess whether trading will be feasible; an emphasis on trading vs. in-lieu payments; a trading ratio of 2:1 or greater to ensure actual reductions. (21) • With such a limited number of traders for nutrient credits, it is essential that agriculture participates and remains an active player in trading. Enhanced outreach by the state and localities may be necessary to ensure high rates of participation by agriculture. (100)
					Reply: *The Hearing Officers agree with the concept of trading, including private sellers. They have revised both the agriculture rule and this rule to clarify the potential for agriculture to either sell or buy credits, and have added the option to use private sellers to the new development, existing development, state and federal, wastewater, and buffer mitigation rules.*
212	10	a	.0269	214, 216	**Allow Private Sellers of Credit Throughout Rules** There are several areas throughout the rules needing amendment to fully enable private nutrient offset markets in these rules - New Development, Existing Development, Buffer Mitigation, & Wastewater. Also, a policy of preference for private providers of nutrient offset credits and riparian mitigation, as compared to payment to a state fund should be implemented. Market forces should be allowed to set the price of mitigation.
					Reply: *Altogether, the Hearing Officers support trading concepts and have added provisions to each of these rules to allow for private offsets. They did not support stating a preference for private offsets.*
213	10	a	.0269	12	**Constrain EEP Offset Projects to the Same Local Government Jurisdiction** Offset payments to EEP should be put into projects in the same subwatershed, ideally within the same jurisdiction.
					Reply: *Under the public comment version of the rules, NC EEP restoration projects would be constrained to the same subwatershed as the excess loading. The EEP has stated that it could not reasonably administer a requirement to provide restoration within the same jurisdiction. However, under the new development rule, local governments have the option to establish their own offset programs, and developers the option to find offsets privately, and all offset options would be required to meet the conditions of the trading rule, including the requirement to address differences in instream loss to the level of the 14-digit hydrologic unit.*
214	10	a	.0269	7	**Inequitable to Save DOT Costs at Expense of Local Governments** The "co-mingled drainage treatment" scenario for DOT in the fiscal note refers to the treatment by DOT of runoff from both DOT and non-DOT land for cost-effectiveness. It proposed that DOT may sell treatment credits at higher rates than it costs to DOT to local jurisdictions for treating their runoff (pg. 130). This is a significantly lower estimate of costs for DOT ($71 million) compared to the estimate for putting a BMP on every outfall on all of their existing roads in the watershed ($595 million) (pg. 129). This suggests that DOT may transfer much of the BMP costs to local governments, but this cost to governments is not included. DOT's lowest cost alternative ($58 million) was to use only EEP offsets. There is concern whether there are a sufficient number of sites in the Upper New Hope Arm that meet the EEP project criteria to offset all the miles of DOT roads in the UNH arm.
					Reply: *The difference in cost to DOT between the 'co-mingled drainage' scenario and the 'every outfall' scenario is not a cost that would be shifted to local governments. It is partly an efficiency gain from a given practice treating a substantially larger drainage area and thus accruing more reduction credit for a given mobilization cost, and partly a conservative estimate by DOT in assuming that every outfall in the Haw watershed would require treatment to meet the 8% reduction target.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				The comment that restoration sites in the Upper New Hope Arm may be insufficient to meet DOT road needs appears to be well founded - initial evaluation by NC EEP supports that assessment. The fiscal document recognizes this potential in suggesting that ultimate costs could well reflect a combination of the different approaches discussed here.
215	10	a	.0269	103	**Changes Needed to Allow DOT Participation** • Remove Section (2)(a), as it would prevent the DOT from implementing cost effective nutrient load reductions via trading. • Replace "sell" with "trade" throughout.
					Reply: *We consider Section 2a an important element of the rule and do not believe that it will be counterproductive to rule intent. However, the Hearing Officers have revised the language in this section to clarify its intent. We see the term 'trade' as ambiguous, while it will be important to hold specific parties to certain requirements established in the rule.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(11) WASTEWATER - .0270				
221	11	a	.0270	1, 15, 19, 30, 52, 53, 56, 57, 58, 60, 61, 62, 64, 65, 68, 205, 206, 219, 232	**Costs are Prohibitive** • Modify the rules to address multiple shortcomings, including cost. Local governments must spend $211M over 10 years to upgrade wastewater treatment plants. Costs for the treatment plant improvements are prohibitive. • Treatment plant improvements will be too costly and unattainable without significant grant assistance to all municipalities. (219)
					Reply: *But for the proposed strategy and rule, the larger dischargers would have been subject to nutrient limits in 2003. Thus, the incremental costs for additional improvements required under this rule are a truer measure of its fiscal impacts. The 1997 Clean Water Responsibility Act (HB515) requires that all wastewater dischargers to Nutrient Sensitive Waters meet annual mass limits equivalent to 5.5 mg/L TN and 2.0 mg/L TP for the permitted flow at NSW designation. HB1366 (also 1997) provides that dischargers could develop the necessary models and determine the nutrient limits necessary to protect their receiving waters. In 1998, the EMC approved the dischargers' request to model the Jordan Lake watershed. The resulting nutrient limitations are proposed in this rule. The nitrogen limits are slightly lower than those in the HB515, and the phosphorus limits are lower still. The point source dischargers would already have faced the bulk of the improvement costs even without the proposed strategy.* *The cost of wastewater treatment plant improvements required to meet the proposed nutrient limits is considerable. Dischargers in the Neuse River Basin have demonstrated that these improvements can be attained through a combination of the available local, state, and federal funding opportunities. The group compliance approach provides interested dischargers with a degree of flexibility in meeting their individual limits. And the nature of mass limits allows, in effect, some phasing in of the limits.*
222	11	b	.0270	11, 18, 26, 27,31.10, 66, 67	**Point Sources Underburdened or Overburdened** • Reduction requirements put an inequitable burden on point sources. • Require greater reductions from the point sources; this would yield more effective and reliable reductions. (11)
					Reply: *The CWRA requires that all sources contribute to the nutrient reductions in an equitable manner. The DWQ interprets this to mean that point and nonpoint sources should be subject to the same percent reduction requirements.*
223	11	b	.0270	12	**Effluent Requirements For Wastewater And Stormwater Are Not Equitable** 3.0 mg/L TN is BAT for wastewater, but stormwater *influent* is 1.2-2.6 mg/L.
					Reply: *Pollutant concentrations in untreated wastewater are many times higher than those typically found in untreated stormwater and are continuous in nature. As a result, the types of treatment processes used for the two and the nutrient removals they achieve will differ considerably. The percent removals and mass reduction of pollutants – and associated costs – are much higher for wastewater treatment plants than for stormwater BMPs. Thus, it is misleading to compare BAT concentrations for wastewater with stormwater treatment systems.*
224	11	b	.0270	18, 26, 27, 31.3	**Inequitable Requirements for Point Sources vs. Agriculture** Point sources are targeted for more nutrient reductions in the future. If farmers implement standard BMPs, they are not subject to additional requirements; but the wastewater treatment plants may be subject to more stringent limits in the future.
					Reply: *The point sources as a whole are not targeted for future nutrient reductions. The rule does note the possibility of future changes as might be required to implement a new TMDL or similar action; such changes would require revisions to the rule through the rulemaking process. The rule also allows the Director to establish more stringent requirements for any discharge where necessary to protect local water quality from the impacts of excess nutrients, a situation with sufficiently greater potential for point sources to merit recognition in rule.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
225	11	b	.0270	66, 67	**Apply the strategy statewide so as to not give other areas an economic advantage.**
					Reply: *The requirements vary significantly by type of facility and subwatershed, and are specific to the needs of Jordan Reservoir.*
226	11	b	.0270	31.6	**Division Should Have Required Graham to Add Nutrient Removal During Upgrade** The Division knew about nutrient issues in Jordan Lake but did not require the City of Graham to include nutrient removal when the City upgraded its treatment plant in 2002-2003. It would have been more cost-effective to include those improvements then than later.
					Reply: *The timing of the City's upgrade relative to the development of the strategy was unfortunate. The Division did not have sufficient information by 2002-2003 to determine whether discharge limits would be necessary to protect water quality in the lake, nor to project what those limits might be. That understanding emerged in 2004-2005. It is unlikely that the City of Graham or any other discharger would have accepted nutrient limits at an earlier date based merely on the Division's speculation. The City and numerous other stakeholders were intimately involved in the development of the nutrient-sensitive model and the strategy and so were aware of any new developments at the earliest possible time.*
227	11	c	.0270		**Compliance Date for Nitrogen - Revise or Do Not Revise**
				9, 51, 54, 55, 300, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 501 513, 548	Restore the compliance date for nitrogen from 2016 to 2011: • Implementation will benefit the public health and welfare. • The Clean Water Responsibility Act (CWRA; HB515) requires wastewater dischargers to Nutrient Sensitive Waters (NSWs) to meet nutrient limits within a specified timeframe. • The original Jordan timetable called for rules by 2003. • Already allowed a 5-year extension; need to restore water quality to protect recreational fishing, prevent fish kills, avoid unhealthy balance in fish and aquatic species. • EPA requires reasonable assurance in TMDL that allocations will protect water quality and will be implemented expediently. • When EPA approves a TMDL, the allocations from the TMDL must be the basis for any state rules. • Further delays will result in further impacts to the lake. • Point source controls are the most reliable and quantifiable reductions required in the rules and will yield results more quickly. • Knew the lake would be nutrient sensitive when it was built, so have had ample opportunity to prepare for nutrient controls. • Many decisions to delay treatment plant improvements have been made since the CWRA was passed in 1997. Greensboro has avoided making improvements in the past. Should look at incremental costs of improvements, not at the total costs. Also, future pH TMDL for the Haw will only require further reductions. • During droughts, up to 90% of stream flow has gone through treatment and nutrient concentrations are the highest.
				3, 30, 31.5	Preserve the 2016 compliance date for nitrogen: • It takes into account the considerable costs and the time and effort necessary to make wastewater treatment plant improvements. • It is offset by moving the phosphorus compliance date up to 2009. • The 2016 date allows time to complete necessary improvements and is consistent with the timelines for Agriculture. Burlington will be able to meet its nitrogen limit with a compliance date of 2016. (3) • It allows a more thoughtful and productive solution and will help avoid spikes in utility rate increases. (601)
				31.5, 31.9, 31.12, 31.12	Given the considerable costs involved, take a phased approach and require plant improvements at the next major upgrade or expansion. • Point sources are small part of the nutrient problem • Graham upgraded its plant in 2002 and will be paying off $8.9M until 2017 • Will have to divert funding from other environmental needs to pay for more treatment plant work

#	Sub-ject		Rule #	Commenter #	Comment / Reply
					• 2002 speculative limits provided by DWQ did not include the new nutrient limits
				23 25	We prefer the 2016 compliance date but there may be merit in ramping up the nitrogen reduction requirements between now and 2016. Give local governments (especially small ones) time to phase in implementation. *Reply:* *The NC General Statutes specify that the Commission shall establish a compliance date that allows, after rulemaking, "a maximum of three years to plan, design, finance, and construct" treatment plant improvements necessary to meet the established nutrient limits; and can extend the schedule by a maximum of two additional years if it finds it necessary (NCGS 143-215.1B(b)). The rule is revised to establish the nitrogen compliance date as the fifth full calendar year after its effective date.* *The proposed compliance dates for meeting N and P limits allow considerable time for local governments to design and construct the necessary treatment plant improvements. In addition, the mass limits, by their nature, provide some relief to the affected facilities: a plant operating at 50% of its design capacity can discharge at twice the concentration and still meet its mass limit. (4 MGD design x 5.3-mg/L equiv. conc. = 2 MGD actual x 10.6 mg/L actual conc.)*
228	11	d	.0270	3, 16, 216	**Phosphorus Reduction Requirements Are Excessive** • 67% reduction in Haw Arm, from 2.0 to 0.67 mg/L. • Neuse & Tar-Pam strategies require 2.0 mg/L as quarterly average. • Director can further reduce limits. • Actual reduction requirements for Burlington plants approach 30-40%. (3) • The 5% phosphorus reduction translates to 66.5% at Greensboro's discharges (from 2.0 mg/L down to 0.67 mg/L), and the 5% TN reduction to about 70%. (16) *Reply:* *These comments are based solely on concentration comparisons, reflecting a common misunderstanding of how the nutrient targets affect individual facilities and are misleading as a result. In the Goals rule, the strategy percent goals are converted to annual mass loads for point sources for each subwatershed. The wastewater rule is designed so that subwatershed discharges meet those mass load reductions from baseline as a whole. Any individual discharger is not required to meet the strategy percent reduction on its mass load. Since mass load is a function of both flow and concentration, requirements for individual facilities are based on a single equivalent concentration, or level of treatment, at full permitted flow for all similar discharges in a subwatershed. Some facilities in a subwatershed will have to make more extensive improvements than others at some point before reaching full permitted flow. Those that have already taken steps to improve treatment levels will not be penalized but instead will be that much closer to or at their mass load target. The stakeholders considered this approach most equitable and requested it, and the Division agrees with them.* *Impacts to Haw dischargers overall are as follows. In the case of P limits, the apparent 66.5% decrease in concentration is offset by an allowed 85% increase in flows, from 53 MGD in the 1996-2001 baseline period to 97 MGD of permitted flow in 2004. The net result is the phosphorus load reduction target of only 5% across all Haw dischargers.* *To address the comments specifically, of the eight largest Haw dischargers, accounting for 98% of subwatershed point source loads, only two treatment plants – Greensboro's Buffalo Creek and Burlington's Eastside – must actually reduce their N loads below baseline by the N compliance date. And only three – these two and Graham – must reduce their P loads. Eventually all Haw facilities must improve their N and P concentration levels to meet their mass loads before they reach permitted flows, but most have many years of growth room beyond the compliance dates.* *More specifically, new limits for the four Greensboro and Burlington plants, which account for 90% of Haw point source nutrient loads at*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				baseline, equate to the following changes in mass load compared to baseline loads: • *Greensboro T.Z. Osborne WWTP: 23%* increase *in nitrogen, 7%* increase *in phosphorus.* • *Greensboro North Buffalo Creek WWTP: 50% decrease in nitrogen, 49% decrease in phosphorus.* • *Burlington Southside WWTP: 5%* increase *in nitrogen, 13%* increase *in phosphorus.* • *Burlington Eastside WWTP: 38% decrease in nitrogen, 11% decrease in phosphorus.* *To illustrate how concentration reductions can differ so greatly from mass requirements, the P limit at Greensboro's T.Z. Osborne plant was 2.0 mg/L during the baseline period when its flow averaged 18.6 MGD. The proposed mass limit is 80,900 lb/yr, equating to 0.67 mg/L at a permitted, future flow of 40 MGD. While comments correctly figured a 66.5% reduction in concentration, they failed to recognize 115% increase in flow allowance, equating to an overall 7% increase in mass, from a baseline 75,870 lb/yr to 80,900 lb/yr.* *To address the comment comparing Jordan requirements to Neuse and Tar-Pamlico, phosphorus was of secondary concern in those basins. The quarterly average concentration limits there ensured that phosphorus was subject to some level of control. Water quality studies in the Jordan Reservoir show that phosphorus plays a more significant role there, warranting more stringent controls.* *The rule provision for more stringent point source limits simply preserves the Director's ability to protect against localized water quality impacts, or "hot spots," should they occur. It does not authorize broader reductions in point source targets, which are established separately in the Goals rule, 02B .0262, nor in the discharge limits derived from those targets.*
229	11	d	.0270	16	**The nutrient caps are forever and don't allow for future growth.** *Reply:* *The first part of the statement is essentially correct while the second part is incorrect. The proposed nutrient allocations are mass limits that cap nutrient loadings to surface waters indefinitely. However, as their wastewater flows increase, it will be necessary for individual permittees to either provide more effective treatment or implement alternate disposal methods (reuse, land application, etc.) in order to meet those limits. Also, as described in replies above, most facilities have substantial growth room within their existing permits due to flow limits well beyond current flows.*
230	11	d	.0270	3	**Changes To Limits Should Go Through Rulemaking** • Changes to limits due to local water quality impacts should go through rulemaking. • Any changes in allocations should go through rulemaking. *Reply:* *In the first case, the provision maintains the Director's authority to apply more stringent limits where necessary to protect local water quality. More stringent limits do not, in this case, require rulemaking. Note that allocations and limits are related but distinct. An allocation is the highest allowable load a facility may discharge (or deliver). A permit limit sets the actual limitation on a discharge; it may be lower than the allocation but not greater. If more stringent limits are applied under this provision, the discharger would still hold its full allocation but some portion would then be held in reserve - unavailable for use at that discharge point.* *Any change to the wasteload allocations in Sub-item (3)(c) of the rule (except as provided elsewhere within the rule) must go through rulemaking.*
231	11	e	.0270	23	**Add Flexibility to Optimization Requirements** Allow flexibility so that point sources aren't penalized for early upgrades and have a chance to evaluate efficacy and cost-effectiveness of treatment units (including filters) in various operating modes. *Reply:* *The intent was simply to clarify operational requirements in HB515. We agree that it should better define optimization as it applies to both N & P removal.*

#	Sub-ject		Rule #	Commenter #	Comment / Reply
232	11	e	.0270	23, 25, 225	**Add Flexibility - Allow Group Compliance, Allocation Trading, Private Sellers of Offsets** • Keep the group compliance option. • Allow trading so large local governments can make improvements first and cover for the smaller ones. • Sub-item (6)(a)(ii) should stipulate to what entities offset payments are to be made, and these should include private sellers consistent with 02B .0269.
					Reply: *The Hearing Officers retained the group compliance option. The trading provisions and group compliance allow use of the strategy contemplated in the second comment.* *The provisions for new and expanding facilities have been revised to allow discharges to either make offset payments to the Ecosystem Enhancement Program or implement other similar offset projects. The mechanism and process for the latter must be established before this option is available to the dischargers but all options must meet requirements of the trading rule.*
233	11	f	.0270	405	**Unintended Consequence – More Onsite Wastewater** The strategy will promote more on-site treatment systems in large areas of the watershed, though most agree that wastewater treatment plants would be more reliable and more protective of water quality.
					Reply: *This may be an unintended result of the strategy in the longer term. In the short term, however, it will likely occur with or without the strategy. It is not unusual for developments in areas of rapid growth to rely more heavily on on-site systems. The Division will observe wastewater treatment and disposal trends and address undesirable trends as necessary.*
234	11	f	.0270	11	**Require operator certification for all treatment systems, both discharging and nondischarge, including single-family residences.**
					Reply: *The Division will consider the merits of expanding operator certification requirements to these facilities, but will do so separately from the proposed rulemaking.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(12) STATE & FEDERAL STORMWATER - .0271				
241	12	A	.0271	103	**DOT Not Included in Process, Not Shown to Be Significant Source** • The nutrient response model and the other technical analyses that are the basis for the rules failed to include quantification of DOT's nutrient loads. • The technical analysis that the rules are a product of did not include the participation of the DOT, contrary to, at a minimum, the spirit of NCGS §143-215.1(c5), which requires the model to be developed in conjunction with the affected parties.
					Reply: *The first statement is true enough since nutrient response models, by design, do not distinguish specific sources contributing to the load entering the lake, since the other analytical tool, the watershed model, estimated loads from a typical set of land uses that did not include state-owned roadways and facilities, and since DOT was not identified at the outset for explicit inclusion given that the focus was on wastewater dischargers. Nevertheless, current, approved export estimation methods, such as the Tar-Pamlico export method, indicated that DOT's loads would be significant.* *The second comment refers to a section of statute that is specific to wastewater dischargers. It calls for the model as an elective substitute for specific discharge concentration limits, a context that would not prompt inclusion of runoff sources. As mentioned above, DOT was not identified at the outset for explicit inclusion given that the focus was on wastewater dischargers.*
242	12	A	.0271	103	**Limiting DOT to Stormwater Treatment Makes Compliance Difficult** DENR is focused on stormwater treatment as its selected means by which DOT must demonstrate compliance with the rule, making it very difficult for the DOT to pursue cost effective and environmentally effective nutrient reduction source control solutions.
					Reply: *The existing development portion of the rule, the more costly requirement in the near future, does not mandate stormwater treatment but instead calls for load-reducing activities, providing full latitude for source reduction practices. The new roads portion called for stormwater treatment, like its counterpart rule for local governments, since source controls could not be expected to yield the needed reductions. However, recognizing the many challenges faced by linear public transportation infrastructure facilities for achieving cost-effective reductions, the Hearing Officers have revised the new development requirements to allow compliance with the treatment requirements of the buffer protection rule to suffice for new roads.*
243	12	A	.0271	103	**DOT Compliance Cost Unreasonable and Disproportionate** The cost of compliance, as high as $600 million according to DWQ's Fiscal Analysis, is unreasonable and disproportionate. According to DWQ's Fiscal Analysis, the DOT only contributes approximately two percent of the total nitrogen load and three percent of the total phosphorus load in the Jordan Reservoir Watershed.
					Reply: *The $600 million scenario for existing roads was developed by DOT staff. It represented a worst-case scenario that we believe is quite avoidable. Our low-cost scenario, still conservatively estimated using stormwater retrofits, was $58 million. As indicated above, the rule allowed for any quantifiable load-reducing activities, opening the door for potentially much more cost-effective measures.*
244	12	a	.0271 (S/F)	103	**Replace DOT Requirements with Fair, Reasonable and Proportionate Ones** Remove .0271 (c) & (d) and base requirements on a fair, reasonable, and proportionate quantitative analysis that include DOT's contribution, and allow for more cost-effective nutrient reductions. Credit towards compliance should also be integrated with other programs, including DOT's statewide NPDES Stormwater Permit (NC000250).

#	Sub-ject	Rule #	Commenter #	Comment / Reply
				Reply: *The Hearing Officers agreed to revise the rule to allow compliance with the requirements of the riparian buffer rule to satisfy new road requirements, and to call for a minimal annual rate of retrofit implementation on existing roads, both based on discussions with DOT staff.*
245	12	A	.0271 (S/F)	103	**Technical Changes on DOT Issues** • Replace the purpose statement in Section (1)(a) with "To achieve and maintain Nonpoint source nitrogen and phosphorus load reductions from state-maintained road and industrial facilities, and from lands controlled by other state and federal entities in the Jordan watershed." • A definition of "development", in consultation with the DOT, should be included in this rule. • Section (2), after "requirements of those programs, such as…" add "projects and activities falling below a lower threshold of significance as defined through a Division-approved Stormwater Management Program. • Define "vested projects" and " built-upon area " through consultation with the DOT.
				Reply: *The Hearing Officers have revised the Purpose language consistent with revisions made to the DOT sections. We expect to work with DOT during its Plan development to establish the specifics sought in the definition recommendations.*
246	12	A	.0271	29	**Rules do not contain clear estimates of the cost of compliance for transportation agencies such as the NCDOT.**
					Reply: *The cost estimates in the fiscal note are clear and provide a range that reflects the potential compliance options in this developing field.*
247	12	B	.0271	107	**Provide Non-DOT Entities the Full Range of Load-Reducing Options** • The rule allows for the NCDOT to achieve nutrient reductions by eliminating illegal discharges. However, this isn't an option for other state and federal entities. We request this be added. • We request that all permitted entities be allowed to use NPDES stormwater requirements to help meet the mandates of this Rule as currently provided for DOT in Item (7).
					Reply: *Removal of illegal discharges was listed as the last item in the non-DOT Section (3)(b)(iv) in the public comment version. We also note that this list is expressly not inclusive, thus parties may propose any other activities that can be quantified as nutrient-reducing.* *The Hearing Officers agree with the second point and have revised the language in Item (7) to provide all parties this option.*
248	12	B	.0271	7	**Make State/Federal Requirements the Same as for Local Governments** The requirements and schedule for the state and federal agencies need to be identical to those for local government. The state agency implementation schedule appears to lag local government by 18 months. Further, comparable requirements to those contained in .0266 (ExD)(3)(c-e) for local governments appear to be missing for non-DOT agencies.
					Reply: *Compliance dates for non-DOT parties are the same as those for local governments for parallel requirements. The Hearing Officers revised existing development compliance dates to parallel their revisions to those for local governments. 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. The comment is correct that we did not propose education, mapping and illegal discharge requirements for non-DOT state entities. This was in part considering diminishing returns from many small entities compared to Division administrative burden, in part given that local governments will cover education, and in part given that existing development reduction needs may well drive mapping and illegal discharge programs in any case.*

#	Sub-ject	Rule #	Commenter #	Comment / Reply
(13) BUFFER MITIGATION FEES - .0272				
251	13		.0272	100	**Increase Fee to Cover Actual EEP Costs** The fee proposed (70 cents per square foot) in insufficient to cover actual costs EEP to produce buffer restoration. We recommend the fee be set at 96 cents per square foot, noting that it may need to be revised as our program determines if recent guidance from DWQ (50 foot policy of Oct 10, 2007) will further increase program costs.
					Reply: *The Hearing Officers have revised the fee per this recommendation.*
252	13		.0272	212	**No Statutory Authority to Revise Fee Automatically** "The EMC is attempting to increase fees paid to the Ecosystem Enhancement Program on an annual basis using the Civil Works Construction Cost Index System. No statutory authority exists for an "automatic" fee increase."
					Reply: *We will seek the RRC's interpretation on how the APA statutes apply to this provision.*
(14) CAPE FEAR RIVER BASIN (SCHEDULE OF CLASSIFICATIONS) - .0272				
					We received no comments on this rule.