Third Annual Report
Of the Nutrient Scientific Advisory Board

To the Secretary Of the
NC Department of Environment and Natural Resources

As Required by SL 2009-216

July 1, 2013

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Executive Summary

This document serves as the Nutrient Scientific Advisory Board's third annual report to the Secretary of the Department of Environment and Natural Resources, as required by Session Law 2009-216. This report was assembled by Nonpoint Source Planning staff with the Division of Water Quality with guidance from and review by the Board.

The Board has met nine times since its last annual report on July 1, 2012, and has formed three subcommittees that have each met multiple times. These activities support the Division's efforts in three areas of existing development rule implementation in the Jordan and Falls watersheds:

1. Setting Jordan jurisdictional nutrient load reduction assignments;
2. Establishing additional load-reducing measures and associated accounting methods; and
3. Developing a model local program.

Progress over the past year in each of these areas includes:

- Assisted in development and implementation of a contract through Triangle J Council of Governments to develop a watershed loading model to estimate local jurisdictions' baseline loadings. The model is to be completed in early 2014.
- Assisted in development and implementation of a contract through Piedmont Triad Regional Council to investigate and develop credit accounting for six identified nutrient measures. The project is to be completed at the end of September 2013.
- Supporting collaboration between DENR and Upper Neuse River Basin Association to fund and contract development of credit and standards for a large set of additional measures. Contracting is expected to be completed in the next few months.
- Assisted in development and implementation of draft Measures Approval Process for inclusion for informational purposes with the division's model program.
- Assisted in development of a contract to revise the stormwater nutrient accounting tool. The Piedmont Triad Regional Council is administering the contract. Deliverables are due at the end of September 2013 and include an updated accounting tool, user's manual and operator's manual.
- Assisted with development of the Existing Development Model Stormwater Program that is being presented to the Environmental Management Commission in July 2013.

Sections I though III of this document provide summaries of each of these activities. More information on the Board's activities, including previous annual reports, meeting agendas and minutes can be found at DWQ's Nutrient Scientific Advisory Board's website: http://portal.ncdenr.org/web/wq/nutrient-scientific-advisory-board

Background

Session Law 2009-216 established requirements for local governments and state and federal entities in the Jordan Lake watershed to reduce nutrient loading from existing developed lands. Given the precedent-setting nature of the requirements in this evolving area of nonpoint source water quality management, the drafters of the legislation felt it was important to include a process for evaluating current practices and providing guidance to local governments in Jordan and other watersheds that may face similar requirements in the future. Therefore, the legislation also called for the formation a Scientific Advisory Board for nutrient-impaired waters.

In July 2010, the DENR Secretary established a ten-member Nutrient Scientific Advisory Board (see Appendix B for Board membership). As specified in the legislation, six of the Board's members are representatives of local governments in the Jordan Lake watershed, while the remainder represent the NC DOT, the conservation community, and water quality science and stormwater engineering expertise. In the past year, the Board also decided to add an unofficial, non-voting member to represent local governments in the Falls Lake watershed.

The Board completed its initial two-year charge with its July 2012 report to the Secretary, which addressed the following duties, as described in the Session Law:

(1) Identify management strategies that can be used by local governments to reduce nutrient loading from existing development.
(2) Evaluate the feasibility, costs, and benefits of implementing the identified management strategies.
(3) Develop an accounting system for assignment of nutrient reduction credits for the identified management strategies.
(4) Identify the need for any improvements or refinements to modeling and other analytical tools used to evaluate water quality in nutrient-impaired waters and nutrient management strategies.

The Session Law also called for the Division to consider the findings and recommendations of the Board on these duties when developing a model program for existing development regulations. Finally, the Session Law tasked the Board to recommend a method for estimating existing development load reduction needs for each affected party in the Jordan watershed. The following sections of this report provide updates on Board continuing activities of the last year.

I. Jordan Watershed Model

Background: Section 3.(d)(2)b. of Session Law 2009-216 directs DENR to quantify existing development load reduction needs for individual local governments in the Jordan watershed. Session Law 2009-484 contains similar language for state and federal entities. Reduction needs will reflect application of the Jordan percentage reduction targets to the nutrient loading from developed lands in the affected parties' jurisdictions during the strategy baseline period, and will be adjusted for increases in loading from development since the baseline period but prior to implementation of local Jordan New Development Stormwater Programs.

The Session Law recommends calculating the baseline by applying the Tar-Pamlico Nutrient Export Calculation Worksheet, Piedmont Version, date October 2004, or by using an equivalent or more accurate method acceptable to the Division and recommended by the Nutrient Scientific Advisory Board (NSAB). The Division, in consultation with the Board, determined that the Tar-Pamlico Accounting Tool was not appropriate to estimate local jurisdictions' baseline loadings and that a watershed loading model would be needed to estimate the loads. See the July 2012 annual report for a fuller explanation of the basis for this decision and the activities to develop a model to that point.

Status: The Triangle J Council of Governments (TJCOG) is administering the project to develop a watershed model that will provide baseline loading estimates for affected parties. Following a solicitations of qualifications and the selection of TetraTech as the consultant, the consultant and the Subcommittee finalized a scope in August 2012. Work on the model is ongoing, and TetraTech regularly meets with the Board's Modeling Subcommittee to review progress updates and to seek feedback. TetraTech has also given several updates to the full Board. The model is scheduled for completion by the end of 2013, and peer reviews are expected to wrap-up in early 2014. The Division expects to be able to use the results of the model to assign loads by spring 2014.

More information on development of the watershed model, including the scope of work, a modeling quality assurance project plan, and progress memorandums can be found at TJCOG's website: http://www.tjcog.org/jordan-jurisdictional-allocation-model-development.aspx

II. Potential Nutrient Measures for Existing Development Stormwater

Background: Session Law 2009-216 charged the Nutrient Scientific Advisory Board to identify, evaluate and develop accounting methods for additional measures that could be used by affected parties to reduce nutrient loading from existing development. In its second annual report to the Secretary of DENR in July 2012, the Board identified the set of nutrient-reducing practices that are currently available and have creditable accounting methods, and developed an extensive list of other potentially creditable measures for further investigation. These can be found in Tables 3 and 4 of the Existing Development Model Program.

Additional potential measures will be added over time to expand the range of cost-effective options. The rate at which measures are added will depend on the resources available to digest new and existing science and to develop credit accounting methods and clear design specifications for each measure. Regulatory accountability requires a reasonable level of certainty regarding the performance of measures to justify their approval for use by regulated parties.

Status: During the last year, the Board engaged in several activities toward expanding the list of load-reducing measures that affected parties can use to meet regulations on existing development. The following paragraphs provide specifics on the Board's activities in the last year.

Development of Nutrient Measures

Background: To assist the Board and Division in investigating potential load-reducing measures, a Measures Subcommittee was formed. One of the Subcommittee's first tasks was to prioritize the potential measures. The Board selected the following six measures as the highest priority to evaluate:

- Repair of malfunctioning septic systems
- Replacement of discharging sand filter onsite wastewater systems with alternatives
- Non-standard volume stormwater pond retrofits
- Improved street sweeping
- Stream restoration
- Diversion of impervious runoff to pervious areas.

Status: In early 2013, Division Planning staff obtained a small 205J grant to fund development of the six selected measures. The Piedmont Triad Regional Council (PTRC) was selected to administer the 205J Contract, and a request for proposals for the project was distributed in April 2013. Based on recommendations by the Subcommittee, TetraTech Inc. was chosen for the project, and a sub-contract was finalized in early May. The project is ongoing, and TetraTech is regularly meeting with the Subcommittee to report progress and seek feedback. The contract is to be completed by the end of September 2013.

It is expected that the products of the contract will be the first measures to be reviewed under the Division's proposed approval process, which likely will be a several-month process and will hopefully yield creditable accounting for all six measures. The new measures will then be included in an updated version of the Division's Existing Development Model Program. The Division's proposed approval process is described in the next section.

In addition to this 205J project, there are several ongoing efforts outside of the Board to develop accounting methods and standards for additional nutrient-reducing measures:

- The Upper Neuse River Basin Association is collaborating with DENR to fund and contract development of credit and standards for a large set of additional measures. A consultant is currently being selected for this project, and it is anticipated that the project will be completed in 24 months. It is expected that the products of the project will be reviewed under the Division's proposed approval process, and will be included in future updates to the Division's Existing Development Model Program.

- Based on input from the Division, the NC Water Resources Research Institute has included the development of crediting and standards for nutrient measures as a research priority in its annual Request for Proposals for the last two years. The latest, 2014-2015 RFP is funding projects that will be completed by mid-2015.

- The Division continues to seek and evaluate other potential grant funding opportunities that would support the development of crediting and standards for additional nutrient measures.

Outside of North Carolina, the Chesapeake Bay also faces major nutrient pollution problems. In recent years, jurisdictions around the Chesapeake have become increasingly interested in approaches to nutrient reduction beyond conventional stormwater practices. Towards this end, the Chesapeake Bay Program has created expert panels to evaluate a range of measures. Within the last year, these panels have begun to yield reports. A few measures have received full approval and more are in various stages of planning, development and approval. The Board and the Division are following this process and its products closely, and expect to gain significantly from the work being done there. These panels' products provide strong starting points for efforts to expand the toolbox of options for Jordan and Falls watersheds.

Measures Approval Process

Background: The Nutrient Scientific Advisory Board identified the need for a transparent approval pathway for new nutrient measures to efficiently and effectively foster the establishment of such measures. The Board suggested the use of some kind of tiered, progressively rigorous approval system to both incentivize development of new measures and provide for defensible and reliable crediting. The

Board called for a well-delineated approval process that would provide benefits to facilitate existing development compliance.

Status: Responding to these interests and with input from the Board, the Division developed a Measures Approval Process that is included for informational purposes with the Division's model program. During the last six months, the Board reviewed several drafts of the process and provided feedback to Division staff. The Division expects to release this proposed process for public comment in the near future.

The approval process utilizes three approval tiers reflecting increasing levels of certainty in credit value estimation based on the extent and quality of supporting research. Practices given Tier 1 or 2 approval would be eligible for crediting only toward existing development stormwater requirements, while the greatest-certainty Tier 3-approved practices could be used for new development applications as well. Since Tier 1 approved measures would have limited data to support their accounting, the credit balances of these measures may be adjusted in the future, while Tier-2 and 3 approved practices would have fixed credits.

Overall, the tiered approval system will provide a greater diversity of control options under Existing Development Stormwater rules while facilitating cost-effective progress by regulated parties and incentivizing establishment of new measures.

Jordan/Falls Stormwater Load Accounting Tool Revisions

Background: The Jordan / Falls Accounting Tool was developed for the Division in 2010 by NCSU's Biological and Agricultural Engineering Department to guide compliance with the Jordan and Falls new development stormwater requirements. The tool estimates nutrient loading rates from project sites, and estimates reductions for a set of approved structural stormwater BMPs. The Board and DWQ have recognized that, with revisions, this accounting tool should also be used to estimate credits for certain measures that reduce loads from existing development.

Status: A Board subcommittee was formed to assist in developing a contract, and to select and work with a consultant to revise the accounting tool. In early 2013, Division Planning staff obtained a small 205J grant for this purpose. The Piedmont Triad Regional Council (PTRC) was selected to administer the 205J contract. A request for proposals was developed and distributed in April 2013, and a subcontract was finalized with Stormwater Solutions & Services LLC in early May. The project is underway, and the consultant is meeting regularly with the subcommittee to report progress and seek feedback. The contract is to be completed by the end of September 2013. As part of the contract, the consultant will be developing a users' manual and operator's manual. Additionally, the consultant will develop an instructional video for users, and along with DWQ, will hold a workshop for users of the tool in October 2013.

The current version of the accounting tool can be found at:
http://www.jordanlake.org/web/jordanlake/implementation-guidance-archive

III. Existing Development Model StormwaterProgram

Background: The Jordan and Falls Existing Development Rules call for the Division to develop a model program to be used by affected parties when developing their local existing development programs. This model program is to be submitted to the EMC in July 2013. The Division sought the assistance of the Board in developing the model program and incorporated their recommendations into it.

Status: The Division provided an outline to the Board in November 2012 and subsequently provided draft sections for Board input at each subsequent Board meeting. In addition to input from the Board, two meetings were held, one in the Jordan watershed and one in the Falls watershed, where input was solicited from local governments and state and federal entities that will be responsible for developing local existing development programs. Affected parties were also encouraged to submit written comments to the Division.

Division staff will present the draft model program to the Commission at its July 2013 meeting. Staff will recommend that the Commission defer approval of the model program while the Division continues to collaborate with the affected parties to continue to develop a reasonably well-equipped toolbox to allow regulated parties to make well-informed decisions on how to comply with the Jordan and Falls Existing Development regulations. An updated version of the program will be brought to the Commission for approval in November 2013 to meet the legislative requirements of the Jordan regulations. The Falls Rules do not dictate an approval date, and it is expected that activities will be ongoing for up to 24 months, at which time the Division will bring an updated version to the EMC for approval.

A complete version of the draft model program that will be presented to the Commission in July can be found on the EMC's July agenda: http://portal.ncdenr.org/web/emc/agenda/2013/home

Appendix A - Session Law 2009-216 –Nutrient Scientific Advisory Board

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2009

SESSION LAW 2009-216
HOUSE BILL 239

AN ACT TO PROVIDE FOR IMPROVEMENTS IN THE MANAGEMENT OF THE JORDAN WATERSHED IN ORDER TO RESTORE WATER QUALITY IN THE JORDAN RESERVOIR.

The General Assembly of North Carolina enacts:

SECTION 1. Definitions. – The following definitions apply to this act and its implementation:

(1) The definitions set out in G.S. 143-212 and G.S. 143-213.

(2) The definitions set out in 15A NCAC 02B .0262 (Jordan Water Supply Nutrient Strategy: Purpose and Scope) and 15A NCAC 02B .0263 (Jordan Water Supply Nutrient Strategy: Definitions).

(3) "Existing Development Rule 15A NCAC 02B .0266" means 15A NCAC 02B .0266 (Jordan Water Supply Nutrient Strategy: Stormwater Management for Existing Development), adopted by the Commission on May 8, 2008, and approved by the Rules Review Commission on November 20, 2008.

(4) "Wastewater Discharge Rule 15A NCAC 02B .0270" means 15A NCAC 02B .0270 (Jordan Water Supply Nutrient Strategy: Wastewater Discharge Requirements) adopted by the Commission on May 8, 2008, and approved by the Rules Review Commission on October 16, 2008.

SECTION 2.(a) Wastewater Discharge Rule 15A NCAC 02B .0270. – Until the effective date of the revised permanent rule that the Commission is required to adopt pursuant to Section 2(c) of this act, the Commission and the Department shall implement the Wastewater Discharge Rule 15A NCAC 02B .0270, as provided in Section 2(b) of this act.

SECTION 2.(b) Implementation. – Notwithstanding sub-subdivision (c) of subdivision (6) of Wastewater Discharge Rule 15A NCAC 02B .0270, each existing discharger with a permitted flow greater than or equal to 0.1 million gallons per day (MGD) shall limit its total nitrogen discharge to its active individual discharge allocation as defined or modified pursuant to Wastewater Discharge Rule 15A NCAC 02B .0270 no later than calendar year 2016.

SECTION 2.(c) Additional Rule-Making Authority. – The Commission shall adopt a rule to replace Wastewater Discharge Rule 15A NCAC 02B .0270. Notwithstanding G.S. 150B-19(4), the rule adopted by the Commission pursuant to this section shall be substantively identical to the provisions of Section 2(b) of this act. Rules adopted pursuant to this section are not subject to G.S. 150B-21.9 through G.S. 150B-21.14. Rules adopted pursuant to this section shall become effective as provided in G.S. 150B-21.3(b1) as though 10 or more written objections had been received as provided by G.S. 150B-21.3(b2).

SECTION 3.(a) Existing Development Rule 15A NCAC 02B .0266 Disapproved. – Pursuant to G.S. 150B-21.3(b1), Existing Development Rule 15A NCAC 02B .0266, as adopted

by the Environmental Management Commission on May 8, 2008, and approved by the Rules Review Commission on November 20, 2008, is disapproved.

SECTION 3.(b) References in the North Carolina Administrative Code to the rule cited in Section 3(a) of this act shall be deemed to refer to the equivalent provisions of this act.

SECTION 3.(c) Nutrient Monitoring. – The Department shall maintain an ongoing program to monitor water quality in each arm of Jordan Reservoir. The Department shall also accept water quality sampling data from a monitoring program implemented by a local government or nonprofit organization if the data meets quality assurance standards established by the Department. On March 1, 2014, the Department shall report the results of monitoring in each arm of Jordan Reservoir to the Environmental Review Commission. The Department shall submit an updated monitoring report under this section every three years thereafter until such time as the lake is no longer impaired by nutrient pollution.

SECTION 3.(d) Control of Nutrient Loading From Existing Development. – The Department shall require implementation of reasonable nutrient load reduction measures for existing development in each subwatershed of the Jordan Reservoir, as provided in this act. The Department shall determine whether nutrient load reduction measures for existing development are necessary in each subwatershed of Jordan Reservoir and require implementation of reasonable nutrient reduction measures in accordance with an adaptive management program as follows:

(1) Stage 1 Adaptive Management Program to Control Nutrient Loading From Existing Development. –

a. Municipalities and counties located in whole or in part in the Jordan watershed shall implement a Stage 1 adaptive management program to control nutrient loading from existing development in the Jordan watershed. The Stage 1 adaptive management program shall meet the requirements set out in 40 C.F.R. § 122.34 as applied by the Department in the NPDES General Permit for municipal separate storm sewer systems in effect on July 1, 2009. The Stage 1 adaptive management program shall include all of the following measures:

1. A public education program to inform the public of the impacts of nutrient loading and measures that can be implemented to reduce nutrient loading from stormwater runoff from existing development.
2. A mapping program that includes major components of the municipal separate storm sewer system, including the location of major outfalls, as defined in 40 Code of Federal Regulations §122.26(b)(5) (July 1, 2008) and the names and location of all waters of the United States that receive discharges from those outfalls, land use types, and location of sanitary sewers.
3. A program to identify and remove illegal discharges.
4. A program to identify opportunities for retrofits and other projects to reduce nutrient loading from existing developed lands.
5. A program to ensure maintenance of best management practices implemented by the local government.

b. The Department shall accept local government implementation of another stormwater program or programs meeting the standards set out in this section as satisfying one or more of the requirements set forth in sub-subdivision a. of this subdivision. The local government shall provide technical information sufficient to demonstrate the adequacy of the alternative program or program elements.

c. A Stage 1 adaptive management program to control nutrient loading from existing development shall be implemented as follows:

1. No later than December 31, 2009, each local government shall submit its Stage 1 adaptive management program to the Commission for review and approval.

2. Within six months following submission of a Stage 1 adaptive management program, the Department shall recommend that the Commission approve or disapprove the program. The Commission shall either approve the program or require changes based on the standards set out in sub-subdivision a. of this subdivision. If the Commission requires changes, the local government shall submit revisions responding to the required changes within two months and the Department shall provide follow-up recommendations to the Commission within two months after receiving revisions.

3. Within three months following Commission approval of a Stage 1 adaptive management program, the local government shall begin implementation of the program. Each local government shall report annually to the Department on implementation of its program.

(2) Stage 2 Adaptive Management Program to Control Nutrient Loading From Existing Development. –

a. If the March 1, 2014 monitoring report or any subsequent monitoring report for the Upper New Hope Creek Arm of Jordan Reservoir required under Section 3(c) of this act shows that nutrient-related water quality standards are not being achieved, a municipality or county located in whole or in part in the subwatershed of that arm of Jordan Reservoir shall develop and implement a Stage 2 adaptive management program to control nutrient loading from existing development within the subwatershed, as provided in this act. If the March 1, 2017 monitoring report or any subsequent monitoring report for the Haw River Arm or the Lower New Hope Creek Arm of Jordan Reservoir required under Section 3(c) of this act shows that nutrient-related water quality standards are not being achieved, a municipality or county located in whole or in part in the subwatershed of that arm of Jordan Reservoir shall develop and implement a Stage 2 adaptive management program to control nutrient loading from existing development within the subwatershed, as provided in this act. The Department shall defer development and implementation of Stage 2 adaptive management programs to control nutrient loading from

existing development required in a subwatershed by this subdivision if it determines that additional reductions in nutrient loading from existing development in that subwatershed will not be necessary to achieve nutrient-related water quality standards. In making this determination, the Department shall consider the anticipated effect of measures implemented or scheduled to be implemented to reduce nutrient loading from sources in the subwatershed other than existing development. If any subsequent monitoring report for an arm of Jordan Reservoir required under Section 3(c) of this act shows that nutrient-related water quality standards have not been achieved, the Department shall notify the municipalities and counties located in whole or in part in the subwatershed of that arm of Jordan Reservoir and the municipalities and counties shall develop and implement a Stage 2 adaptive management program as provided in this subdivision.

b. The Department shall establish a load reduction goal for existing development for each municipality and county required to implement a Stage 2 adaptive management program to control nutrient loading from existing development. The load reduction goal shall be designed to achieve, relative to the baseline period 1997 through 2001, an eight percent (8%) reduction in nitrogen loading and a five percent (5%) reduction in phosphorus loading reaching Jordan Reservoir from existing developed lands within the police power jurisdiction of the local government. The baseline load shall be calculated by applying the Tar-Pamlico Nutrient Export Calculation Worksheet, Piedmont Version, dated October 2004, to acreages of different types of existing development within the police power jurisdiction of the local government during the baseline period. The baseline load may also be calculated using an equivalent or more accurate method acceptable to the Department and recommended by the Scientific Advisory Board established pursuant to Section 4(a) of this act. The baseline load for a municipality or county shall not include nutrient loading from lands under State or federal control or lands in agriculture or forestry. The load reduction goal shall be adjusted to account for nutrient loading increases from lands developed subsequent to the baseline period but prior to implementation of new development stormwater programs.

c. Based on findings under sub-subdivision a. of this subdivision, the Department shall notify the local governments in each subwatershed that either:

    1. Implementation of a Stage 2 adaptive management program to control nutrient loading from existing development will be necessary to achieve water quality standards in an arm of the reservoir and direct the municipalities and counties in the subwatershed to develop a load reduction program in compliance with this section.
    2. Implementation of a Stage 2 adaptive management program to control nutrient loading from existing development is not

necessary at that time but will be reevaluated in three years based on the most recent water quality monitoring information.

d. A local government receiving notice of the requirement to develop and implement a Stage 2 adaptive management program to control nutrient loading from existing development under this section shall not be required to submit a program if the local government demonstrates that it has already achieved the reductions in nutrient loadings required by sub-subdivision b. of this subdivision.

e. Within six months after receiving notice to develop and implement a Stage 2 adaptive management program to control nutrient loading from existing development, each local government shall submit to the Commission a program that is designed to achieve the reductions in nutrient loadings established by the Department pursuant to sub-subdivision b. of this subdivision. A local government program may include nutrient management strategies that are not included in the model program developed pursuant to Section 3(e) of this act in addition to or in place of any component of the model program. In addition, a local government may satisfy the requirements of this subdivision through reductions in nutrient loadings from other sources in the same subwatershed to the extent those reductions go beyond measures otherwise required by statute or rule. A local government may also work with other local governments within the same subwatershed to collectively meet the required reductions in nutrient loadings from existing development within their combined jurisdictions. Any credit for reductions achieved or obtained outside of the police power jurisdiction of a local government shall be adjusted based on transport factors established by the Department document Nitrogen and Phosphorus Delivery from Small Watersheds to Jordan Lake, dated June 30, 2002.

f. Within six months following submission of a local government's Stage 2 adaptive management program to control nutrient loading from existing development, the Department shall recommend that the Commission approve or disapprove the program. The Commission shall approve the program if it meets the requirements of this subdivision, unless the Commission finds that the local government can, through the implementation of reasonable and cost-effective measures not included in the proposed program, meet the reductions in nutrient loading established by the Department pursuant to sub-subdivision b. of this subdivision by a date earlier than that proposed by the local government. If the Commission finds that there are additional or alternative reasonable and cost-effective measures, the Commission may require the local government to modify its proposed program to include such measures to achieve the required reductions by the earlier date. If the Commission requires such modifications, the local government shall submit a modified program within two months. The Department shall recommend that the

Commission approve or disapprove the modified program within three months after receiving the local government's modified program. In determining whether additional or alternative load reduction measures are reasonable and cost effective, the Commission shall consider factors including, but not limited to, the increase in the per capita cost of a local government's stormwater management program that would be required to implement such measures and the cost per pound of nitrogen and phosphorus removed by such measures. The Commission shall not require additional or alternative measures that would require a local government to:

1. Install or require installation of a new stormwater collection system in an area of existing development unless the area is being redeveloped.
2. Acquire developed private property.
3. Reduce or require the reduction of impervious surfaces within an area of existing development unless the area is being redeveloped.

g. Within three months after the Commission's approval of a Stage 2 adaptive management program to control nutrient loading from existing development, the local government shall complete adoption and begin implementation of its program.

h. Each local government implementing a Stage 2 adaptive management program to control nutrient loading from existing development shall submit an annual report to the Department summarizing its activities in implementing its program.

i. If at any time the Department finds, based on water quality monitoring, that an arm of the Jordan Reservoir has achieved compliance with water quality standards, the Department shall notify the local governments in the subwatershed. Subject to the approval of the Commission, a local government may modify its Stage 2 adaptive management program to control nutrient loading from existing development to maintain only those measures necessary to prevent increases in nutrient loading from existing development.

SECTION 3.(e) Model Stage 2 Adaptive Management Program to Control Nutrient Loading From Existing Development. – No later than July 1, 2013, the Department shall submit a model Stage 2 adaptive management program to control nutrient loading from existing development to the Commission for approval. The model program shall identify specific load reduction practices and programs and reduction credits associated with each practice or program and shall provide that a local government may obtain additional or alternative load-reduction credits based on site-specific monitoring data. In developing the model program, the Department shall consider the findings and recommendations of the Scientific Advisory Board established pursuant to Section 4(a) of this act and comments submitted by municipalities and counties identified in 15A NCAC 02B .0262(7) (Jordan Water Supply Nutrient Strategy: Purpose and Scope). The Commission shall review the model program and either approve the program or return it to the Department with requested changes. The Department shall revise the model

program to address changes requested by the Commission. The Commission shall approve a final model program no later than December 31, 2013.

SECTION 3.(f) Additional Measures to Reduce Nitrogen Loading From Existing Development in the Upper New Hope Creek Arm of the Jordan Reservoir. – If the March 1, 2023, monitoring report or any subsequent monitoring report for the Upper New Hope Creek Arm of Jordan Reservoir shows that nutrient-related water quality standards are not being achieved, a municipality or county located in whole or in part in the Upper New Hope Creek Subwatershed shall modify its Stage 2 adaptive management program to control nutrient loading from existing development to achieve additional reductions in nitrogen loading from existing development. The modified Stage 2 adaptive management program shall be designed to achieve a total reduction in nitrogen loading from existing development of thirty-five percent (35%) relative to the baseline period 1997 through 2001. The Department shall notify local governments of the requirement to submit a modified Stage 2 adaptive management program. Submission, review and approval, and implementation of a modified Stage 2 adaptive management program shall follow the process, timeline, and standards set out in sub-subdivisions e. through g. of subdivision (2) of Section 3(d) of this act.

SECTION 3.(g) Enforcement. – The Department shall enforce the provisions of this act as provided in G.S. 143-215.6A, 143-215.6B, and 143-215.6C.

SECTION 3.(h) Collective Compliance. – Local governments that are subject to regulation under this act may establish collective programs to comply with the requirements of this act.

SECTION 3.(i) Report. – The Department shall report annually to the Commission regarding the implementation of adaptive management programs to control nutrient loading from existing development in the Jordan watershed.

SECTION 3.(j) Additional Rule-Making Authority. – The Commission shall adopt a rule to replace Sections 3(c) through 3(i) of this act. Notwithstanding G.S. 150B-19(4), the rule adopted by the Commission pursuant to this section shall be substantively identical to the provisions of Sections 3(c) through 3(f) of this act. Rules adopted pursuant to this section are not subject to G.S. 150B-21.9 through G.S. 150B-21.14. Rules adopted pursuant to this section shall become effective as provided in G.S. 150B-21.3(b1) as though 10 or more written objections had been received as provided by G.S. 150B-21.3(b2).

SECTION 3.(k) No Change to Existing Regulatory Authority. – Nothing in this act shall be construed to limit, expand, or modify the authority of the Commission to undertake alternative regulatory actions otherwise authorized by State or federal law, including, but not limited to, the reclassification of waters of the State pursuant to G.S. 143-214.1, the revision of water quality standards pursuant to G.S. 143-214.3, and the granting of variances pursuant to G.S. 143-215.3.

SECTION 4.(a) Scientific Advisory Board for Nutrient-Impaired Waters Established. – No later than July 1, 2010, the Secretary shall establish a Nutrient Sensitive Waters Scientific Advisory Board. The Scientific Advisory Board shall consist of no fewer than five and no more than 10 members with the following expertise or experience:

(1) Representatives of one or more local governments in the Jordan Reservoir watershed. Local government representatives shall have experience in stormwater management, flood control, or management of a water or wastewater utility.

(2) One member with at least 10 years of professional or academic experience relevant to the management of nutrients in impaired water bodies and possessing a graduate degree in a related scientific discipline, such as aquatic science, biology, chemistry, geology, hydrology, environmental science, engineering, economics, or limnology.

(3) One professional engineer with expertise in stormwater management, hydrology, or flood control.

(4) One representative of the Department of Transportation with expertise in stormwater management.

(5) One representative of a conservation organization with expertise in stormwater management, urban landscape design, nutrient reduction, or water quality.

SECTION 4.(b) Duties. – No later than July 1, 2012, the Scientific Advisory Board shall do all of the following:

(1) Identify management strategies that can be used by local governments to reduce nutrient loading from existing development.

(2) Evaluate the feasibility, costs, and benefits of implementing the identified management strategies.

(3) Develop an accounting system for assignment of nutrient reduction credits for the identified management strategies.

(4) Identify the need for any improvements or refinements to modeling and other analytical tools used to evaluate water quality in nutrient-impaired waters and nutrient management strategies.

SECTION 4.(c) Report; Miscellaneous Provisions. – The Scientific Advisory Board shall also advise the Secretary on any other issue related to management and restoration of nutrient-impaired water bodies. The Scientific Advisory Board shall submit an annual report to the Secretary no later than July 1 of each year concerning its activities, findings, and recommendations. Members of the Scientific Advisory Board shall be reimbursed for reasonable travel expenses to attend meetings convened by the Department for the purposes set out in this section.

SECTION 5. No Preemption. – A local government may adopt and implement a stormwater management program that contains provisions that are more restrictive than the standards set forth in Sections 2 and 3 of this act or in any rules concerning stormwater management in the Jordan watershed adopted by the Commission. This section shall not be construed to authorize a local government to impose stormwater management requirements on lands in agriculture or forestry.

SECTION 6. Construction of Act. –

(1) Except as specifically provided in Sections 2(c) and 3(j) of this act, nothing in this act shall be construed to limit, expand, or otherwise alter the authority of the Commission or any unit of local government.

(2) This act shall not be construed to affect any delegation of any power or duty by the Commission to the Department or subunit of the Department.

SECTION 7. Note to Revisor of Statutes. – Notwithstanding G.S. 164-10, the Revisor of Statutes shall not codify any of the provisions of this act. The Revisor of Statutes shall set out the text of Section 2 of this act as a note to G.S. 143-215.1 and may make notes concerning this act to other sections of the General Statutes as the Revisor of Statutes deems

appropriate. The Revisor of Statutes shall set out the text of Section 3 of this act as a note to G.S. 143-214.7 and may make notes concerning this act to other sections of the General Statutes as the Revisor of Statutes deems appropriate.

SECTION 8. Effective Date. – This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 23rd day of June, 2009.

s/ Walter H. Dalton
President of the Senate

s/ Joe Hackney
Speaker of the House of Representatives

s/ Beverly E. Perdue
Governor

Approved 5:30 p.m. this 30th day of June, 2009

Appendix B - Nutrient Scientific Advisory Board Membership

Session Law 2009-216 (4)(a) calls for establishment of the Board and stipulates a membership of five to ten members with the expertise or experience quoted below. Names and affiliations of the members currently occupying the applicable seats are provided in the footnotes.

Table 1 - Nutrient Scientific Board Members

	NSAB Position	Member	Organization
1	Local Government Representative[1]	John Cox	City of Durham
2	Local Government Representative[1]	Trish D'Arconte	City of Chapel Hill
3	Local Government Representative[1]	Michael Layne	City of Burlington
4	Local Government Representative[1]	David Phlegar	City of Greensboro
5	Local Government Representative[1]	Josh Johnson	Cities of Mebane and Graham; Towns of Elon And Gibsonville
6	Local Government Representative[1]	Matt Flynn	City of Cary
7	Professional or Academic Representative[2]	Lawrence Band	UNC
8	Professional Engineer[3]	Bill Hunt	NCSU BAE
9	NC DOT Representative[4]	Andy McDaniel	NC DOT
10	Conservation Organization Representative[5]	Grady McCallie	NC Conservation Network
11	Falls Lake Watershed Representative[6]	Forrest Westall	Upper Neuse River Basin Association

[1] R*epresentatives of one more local government in the Jordan Reservoir watershed. Local government representatives shall have experience in stormwater management, flood control, or management of a water or wastewater utility.*

[2] *One member with at least 10 years of professional or academic experience relevant to the management of nutrients in impaired water bodies and possessing a graduate degree in a related scientific discipline, such as aquatic science, biology, chemistry, geology, hydrology, environmental science, engineering, economics, or limnology.*

[3] *One professional engineer with expertise in stormwater management, hydrology, or flood control.*

[4] *One representative of the Department of Transportation with expertise in stormwater management.*

[5] *One representative of a conservation organization with expertise in stormwater management, urban landscape design, nutrient reduction, or water quality.*

[6] *This member was added to the Board in January 2013 at the request of the Board members. It is not a legislatively required position, and therefore in an unofficial member with no voting rights.*

(1-5 from Section 4.(a) of Session Law 2009-216)