Nutrient Scientific Advisory Board Meeting #24 Minutes

Friday, January 11, 2013
TJCOG - 4307 Emperor Blvd, Durham NC, 27703
9:30 am -12:00 pm

Attendees
Members: Larry Band, Matt Flynn, John Cox (& Michelle Woolfolk, alt), Trish D'Arconte, Bill Hunt (& Kathy Debusk, alt), Andy McDaniel (& Brian Jacobson, alt), Josh Johnson, Michael Layne, David Phlegar

Non-Members: Andy Sachs (facilitator), Jason Robinson (DWQ), Rich Gannon (DWQ), Adugna Kebede (DWQ), Robert Patterson (DWQ), John Huisman (DWQ), Mike Schlegel (TJCOG), Haywood Phthisic (LNBA), Forrest Westall (UNRBA), Alix Matos (CardnoEntrix), Dan McLawhorn (Raleigh), Melinda Clark (Wake Co)Cy Stober (PTRC), Trevor Clements (TetraTech), Tom Davis (Orange Co.), Kyle Smith (AWCK), Sandra Wilbur (Durham)

Agenda
- Housekeeping/Admin
- Update on Jordan Watershed Modeling
- Recognition of Potential Legislation
- Existing Development Model Program
- Measures for Existing Development

Materials
- January Meeting Plan
- November Minutes
- Jordan and Falls Existing Development Rules Timelines (attached)
- Existing Development Model Program – Draft (attached)
- Potential Nutrient Loading Reducing Measures for 205J Project – Draft (attached)

Housekeeping/Admin
- November's Meeting Minutes were approved
- The Board voted to allow the designated alternates of Board members to join Board discussion, even if the Board member is present
- Forrest Westall was approved by the full Board as the Falls Lake Watershed informal, non-voting representative. The December meeting of the UNRBA Board had endorsed him without reservation for this role.
- Jason Robinson of DWQ announced to the Board that Andy McDaniel had officially been appointed by DENR Secretary Freeman as the Board's DOT representative to replace Matt Lauffer. Andy announced that Brian Jacobson of URS will serve as his designated alternate.

Update on Jordan Watershed Modeling
- Mike Schlegel of TJCOG updated the Board on the status of the Jordan Lake Watershed Model.
    - Heather Saunders Benson, who has been administering the contract, is now on maternity leave. Mike is executing her responsibilities while she is away.

  - The project's QAPP was finalized on November 8, 2012 and is available, along with other information on the watershed model on TJCOG's website: http://www.tjcog.org/jordan-jurisdictional-allocation-model-development.aspx
  - The November 20th outreach meeting was attended by about 50 people. A report is available on TJCOG's website.
- Trevor Clements of TetraTech updated the Board on the details of the data collection for the watershed model.
  - Data collection and compilation is reasonably on schedule and will go on through March in concert with working it into the model.
  - The land-use data that has been collected for the baseline period has presented some challenges
    - It took NRCS nine weeks to send 1999 data (said it would be three weeks).
    - Some data was missing and it wasn't orthorectified. TetraTech had to orthorectify it, which put them a month behind land-use data collection schedule.
  - A Board member asked if the land-use data is leaf-on or off. Trevor thinks it's off.
  - Several data requests have been sent to affected parties via email
    - Most of the local boundary information has been received for the affected parties
    - Wake County is the only entity to respond with onsite wastewater data
    - Tt needs help in getting specific local BMP information
    - A data summary should be completed in March
  - A Board member asked if the 2001 baseline would be represented by the 1999 data. Trevor said that it would. The original Jordan Watershed Model used 2001 data that was at a 30 meter resolution. The 1999 data is at a 1 to 3 meter resolution. Given this in combination with the fact that strategy baseline is actually the period 1997-2001, they believe this will provide a much better representation. The new, more accurate land-use data and results can be compared to the original watershed model.
  - Trevor explained how the model would use two sets of BMPs data, one for the baseline period and one for the current year. More than just location data is needed. (editor: this was revisited by the Watershed Model Sub-Committee the following week)
  - Trish suggested to request that local governments that do not have the requested data send in a statement indicating that.
  - Matt asked how 2001 versus 2010 data will compare to the Jordan Falls Nutrient Accounting Tool. Trevor explained some of the land-use loading assumptions made in the accounting tool will be incorpated into the model.

Recognition of Potential Legislation

- Rich Gannon of DWQ shared that DWQ staff had recently learned that there have been discussions among local government officials and staff and others about the desire for legislation to delay implementation of various parts of the Jordan Rules, including the Existing Development Rule. Rich felt that this subject probably deserves a full space on an SAB agenda, and he suggested February, but noted that today's agenda could not accommodate that full discussion. He also explained that for now, DWQ must proceed on the assumption that no revision will made to the timeline for completing the model program. Several Board members

who had been involved in developing a draft white paper that proposed several legislative changes gave a summary of the content, which will be provided by local governments to TREBIC:

- Allow all utilities in the buffer.
- DWQ to perform buffer impact authorization letters instead of local governments, unless the local governments choose to
- 401/404 programs defers to Federal Programs, the State should follow suit??
- Streamline permitting procedures
- The NSAB's membership should include representatives other than Jordan
- Delay the completion of the Jordan Model Program to allow more time to broaden the tool box of available load-reducing measures
- Delay the implementation of the Jordan Existing Development rule by two year to synchronize with the delay of the New Development Rule and Wastewater Rule (no delay currently being sought for Falls Rule)
- Do not require redevelopment projects to treat existing impervious – they said this was just a clarification
- Do not require local governments to install a certain number of retrofits annually
- Do not require BMPs to treat private property
- Change all Jordan New Development land-disturbance thresholds to 1 acre.

- Cy Stober of PTRC stated that he was the facilitator of the recent local government meeting that drafted the white paper, and people could contact him if they want to be put on the listserv. Cy offered to send the draft white paper out to the board.

Model Existing Development Program

- John Huisman of DWQ summarized a timeline that was passed out to the Board that laid out important dates of the Jordan and Falls Existing Development Rules
  - Falls implementation of its Stage 1 is much earlier – January 2014 - than Jordan's implementation of their similar Stage 2 requirements.
  - Forrest pointed out the difference in magnitude of Load Reduction Goals for the Falls and Jordan Rules. (Falls: 40%N and 77%P reductions; Jordan: 8/35%N and 5%P reductions) He also pointed out that Falls is the only watershed with specific reduction requirements 9back to baseline) by a specific date (2021).
  - John pointed out the difference in the staged implementation of the two Existing Development Rules: Falls entities just have to reduce back to baseline loading for Stage 1. Stage 2 of Falls then requires to achieve the percent reduction goals from the baseline loading. Jordan implementation is not staged this way, and once implementation begins, entities have percent reduction goals from their baseline loading.
- John Huisman went through the draft Model Program section by section.
  - Several Board members expressed interest in incoproating nutrient offset banks and the NC Ecosystem Enhancement Program in these conversations and in the Model Program. Offsite buy-down could play a large role in achieving existing development load reductions, and these entities are the experts on this, not the local governments. A Board member also commented that there likely wouldn't be many banks in the Falls watershed.
  - A Board member commented that point to non-point trading in the Falls wouldn't be likely during Stage 1, because any surplus that a point source has would potentially be saved to later meet the Stage 2 requirements.

- A Board member noted that the draft Model Program looks similar to a watershed restoration plan, and suggested that other watershed plans/stormwater programs should be integrated into the model program.
- A Board member suggested putting in an explanation of the steps in the implementation timeline so local governments can plan on how long it will take for them to complete the steps.
- A Board member suggested adding "functioning" septic systems in addition to malfunctioning septic systems. DWQ explained that it would be hard to quantify loading to streams for these, but that the required inventory collection in Falls includes all septic systems.
- A Board member asked about the requirements for local programs: Would the programs have to specify the percentage of the types of BMPs that would be used to achieve their load reduction goals, and would those percentages then be fixed? DWQ explained that they are considering requesting delegation from the EMC for future local program revisions, which would allow for local governments to more easily revise their programs after they've initially been approved by the EMC.
- A Board member suggested writing the program in the voice of a local government, as opposed to DWQ, in order to encourage the submittals to be more consistent.
- A Board member suggested breaking stream restoration into its pieces.
- A Board member suggested breaking "leaky collection systems" into "chronic" and "SSO".
- A Board member suggested distributing Raleigh onsite wastewater study to the group.

Measures for Existing Development

- Jason Robinson of DWQ opened up the discussion about a 205J project that will be administered by PRTC. A draft description of the project and 13 candidate measures were provided to the group. A sub-contractor will be asked to develop credit accounting as well as cost-effectives for a number of measures. DWQ staff culled the 13 candidate measures from the SAB-generated tables in its second annual report. Staff considered these 13 the best overall current candidates based on their sense of cost-effectiveness, feasibility and potential for near-term establishment. However they should be culled further for the set to provide a subcontractor, and staff is seeking SAB input for this purpose. The same sub-contractor, or a different sub-contractor will also revise or redo the JFSLAT tool as part of the project, and inocporate the appropriate new load reduction measures into the tool.
- Cy Stober of PRTC gave a brief discussion on the timeline of the project.
    - Contract to be executed by March 1.
    - Contractor will report on the viability of establishing credit-accounting and cost-effectvieness for a specificed number of measures, prioritize the measures, and select a specific amount to fully report on by April 30.
    - DWQ will approve these first measures by May 31 to include in Model Program that has to be submitted to the EMC in mid-June. The model program will then go before the EMC in July (pending any new legislation).
    - The remaining measures will be be reported on by the end of the contract on September 30.
    - The new accounting tool will be completed by the end of the contract on September 30.
        - John Cox was going to look more into the legislation about using Schueler's updated Simple Method (2h .1000).
- Cy laid out basics of the project budget, which totals $80,000. :

- Composition of a BMP subcommittee that was formed at an earlier meeting was revisited in anticipation of its key role providing input to this project. The revised subcommittee was identified as Kathy Debusk, Josh Johnson, Dave Phlegar, John Cox, Trish D'Arconte, Forrest Westall, and Brian Jacobson.
- Rich noted that Dr. Hunt had not yet had input on overlap of his work with this list and implications, but staff will meet with him for this purpose (Dr. Hunt had to leave the meeting before this item began).
- Rich also noted that the Falls ED rule requires DWQ to provide credit accounting for malfunctioning septic systems and discharging sand filters in the model program, so depending on the extent of any additional work needed to Raleigh's Hazen & Sawyer product toward this end, these 2 measures would be necessary first focus for the 205j work.
- A board member suggested that a system for crediting retrofit treatment of less than the entire 1" water quality volume would be useful.
- Forrest stated that he is seeking the UNRBA's approval to do more work to support expanding the tool box.
- A board member stated that stream restoration should be a high priority.
- A board member stated that impervious disconnection should be a high priority.

Potential Future Agenda Items

- Watershed Model Update
- Legislative Update
- Continue with Existing Development Model Program discussion
- Continue with Load-Reducing Measure 205j Project Discussion

Future Meeting Dates

- Unless specifically rescheduled, the first Friday of each month, 9:30 – 12:00 at TJCOG.
- February 1, 2013.

JORDAN & FALLS EXISTING DEVELOPMENT RULE TIMELINES (1/10/13)

Date		Jordan	Falls
2013	Jan		LGs complete inventories
	↓		
	Jun		
	Jul	DWQ Seeks EMC Approval of Model Stage 2 Program	DWQ Seeks EMC Approval of Model Stage 1 Program[1]
	↓		
	Dec	EMC Approves Model Stage 2 Program (Final Date)	
2014	Jan		LGs & S/F Submit & Implement Stage 1 Local Programs
	Feb		
	Mar	DWQ to Submit 1st Monitor'g Report to ERC, Notify UNH LGs & S/F[2]	
	↓		
	Sep	UNH LGs & S/F Submit Local Stage 2 Programs to DWQ[2]	
	↓		
2015	Feb		
	Mar	DWQ Seeks EMC Approval of UNH Local Stage 2 Programs[2]	DWQ Seeks EMC Approval of Stage 1 Local Programs
	Apr		LGs & S/F Begin Submitting Annual Reports
	May		
	Jun	UNH LGs & S/F Implement Approved Local Stage 2 Programs[3]	LGs & S/F Adopt EMC Approved Stage 1 Local Programs
2016	↓		
	Jun	UNH LGs & S/F Begin Submitting Annual Reports (no specific month)[2]	
2017	↓		
	Apr	DWQ Submit 2nd Monitor'g Report to ERC, Notify LNH&Haw LGs&S/F[2]	
	↓		
	Sep	LNH & Haw LGs & S/F Submit Stage 2 Local Programs to DWQ[2]	
	↓		
2018	Mar	DWQ Seek EMC-Approval of LNH & Haw Stage 2 Local Programs[2]	
	↓		
	Jun	LNH & Haw LGs & S/F Implement Approved Stage 2 Local Programs[3]	
2019	↓		
	↓		
2020	Jan	DWQ to Submit 3rd Monitoring Report to ERC	
	↓		
2021	Jan		LG's & S/F Submit & Implement Stage 2 Local Programs
	↓		
2022	Jan		
	↓		
2023	Mar	DWQ Submit 4th Mntr'g Report to ERC, Notify UNH LGs&DOT to Revise Prgms[2]	
	↓		
	Sep	UNH LGs Submit Revised Stage 2 Local Programs to DWQ[2]	
2024	↓		
	Mar	DWQ Seek EMC-Approval of UNH Stage 2 Local Programs[2]	
	↓		
	Jun	UNH LGs Implement Approved Revised Stage 2 Local Programs[3]	

[1]Includes load reduction goals for affected parties

[2]If March monitoring report shows arm is not meeting water quality standards

[3]Implement 3 months after EMC approval

DRAFT OUTLINE

Falls / Jordan Model Local Stormwater Program for Existing Development
&
Guidance for Affected Parties

I. Introduction

- Purpose of document - DWQ's interpretation of rule & session law language and vision of how to implement requirements in a manner that is both functional and most useful for affected parties. If adopted in its entirety, either with or without any optional provisions, this Model Program is designed to ensure that affected parties comply with the Falls existing development stormwater rule requirements or the Jordan existing development session law requirements
- Layout organization of document
- Applies to both watersheds except where differentiate specifically

II. Falls & Jordan Existing Development Requirements Explained

- Abbreviated summary of Falls rule and Jordan session law requirements in easy to understand non-rule language
- Include references to full text of rules and session law (copies of rules to be included in appendix)

III. Elements of Affected Parties' Programs

(*Required for Falls / Recommended for Jordan)*

A. Local Programs Must Include the Following Minimum Information for Commission Approval:

- Implementation schedule including annual implementation expectations
- Identify types of activities affected party plans to implement
- Identify Types of existing development affected
- Prioritization of practices
- Magnitude of reductions expected to be achieved from each activity
- Costs/efficiencies of each activity (to extent possible)
- Duration of anticipated loading reductions
- Anticipated funding mechanisms and steps taken or planned to secure funding

B. Evaluation of Feasibility & Load Reduction Potential of Proposed Activities Relative to the Following Factors:

- Extent of physical opportunities for installation
- Landowner acceptance
- Incentive & education options for improving landowner acceptance
- Existing potential funding sources and magnitudes
- Practice cost-effectiveness ($/pound nutrient removed)
- Increase in per capita cost of SW management program to implement ED program
    - Implementation rate without the use of eminent domain
    - Need for and projected role of eminent domain

C. Supporting Elements Required for Program Review & Approval

- Extent of load reducing opportunities from the following types of land:
    - Lands owned/controlled by the affected party
    - Each land use type of privately owned ED including redevelopment
    - Lands other than those on which the affected parties' load reduction need is based

D. Extent of Load Reduction Proposed from the Following Stormwater & Ecosystem Activities:

- *Load-Reducing Practices with DWQ-Approved Accounting*
    - Bioretention
    - Constructed wetland
    - Sand filter
    - Filter strip
    - Grassed swale
    - Infiltration device
    - Extended dry detention
    - Rainwater harvesting system
    - Treatment of redevelopment
    - Overtreatment of new development
    - Removal of impervious surface
    - Riparian buffer restoration
    - Reforestation with conservation easement or other protective covenant

- *Load-Reducing Practices in need of DWQ-Approved Accounting*
    - Retrofitting treatment into existing stormwater ponds
    - Off-line regional treatment systems

E. Evaluation of the Load Reduction Potential From the Following Wastewater Activities:

- Creation of surplus relative to an allocation established under Falls point source rule
- Expansion of surplus allocation through regionalization

- Note: DWQ Will provide specific guidance in model program on acceptable methods for calculating estimated surplus allocation and the criteria it must meet to be used for credit.

- *Load-Reducing Practices in need of DWQ-Approved Accounting*
  - Connection of DSFs & malfunctioning septic systems to central sewer or replacement
  - Removal of illegal discharges
  - Improvement of wastewater collection systems

F. Other Measures Affected Parties' May Propose:

- *Load-Reducing Practices in need of DWQ-Approved Accounting*
  - Redirecting runoff away from impervious surfaces
  - Soil amendments
  - Stream restoration
  - Improved street sweeping
  - Source control (pet waste & fertilizer ordinances)

IV. Methods to Quantify Load Reduction Requirements

- Description of Watershed Modeling for Jordan
- Description of method used to develop Stage I jurisdictional loads for Falls
- Stage I Load reduction assignments -(**Falls only)**

V. Methods to Quantify Nutrient Reduction Credits

- Jordan/ Falls Stormwater Nutrient Accounting Tool for BMP retrofit credit accounting
- Methods to account for DSFs, malfunctioning septic & leaking collection systems
- Methods to account for load reduction credits from various activities
  - Include process for approving design standards & associated credit for candidate nutrient load-reducing measures
  - DWQ intends to request delegation of authority for future revisions and additions to approved measures to the Director
  - Include DWQ's February 2012 document "Interpretive Guidance on Assigning Existing Development Nutrient Loads"

VI. Guidance to Affected parties

- Overview Nutrient Management Strategy (Jordan / Falls)
- Rule requirements - Specific details of Jordan / Falls Requirements
  - Narrative interpretation of rule requirements, and information to answer any staff questions raised. Goal is to provide guidance that makes rules functional for local implementation.

- Implementation Timeline
    - Falls / Jordan
- Model Local Ordinance (Fertilizer Ordinance, Pet Waste ect)

VII. Annual Reporting

Upon implementation of a local program, affected parties shall provide annual reports to the Division documenting their progress in implementing those requirements within three months following the anniversary of the program implementation date. Annual reports shall include:

- Summary of existing development load reducing activities implemented for that year including:
    - Types of activities implemented
    - Types of existing development affected
    - Magnitude of reductions expected to be achieved from each activity
    - Costs/efficiencies of each activity (to extent possible)
    - Duration of anticipated loading reductions
    - Maintenance issues
- Summary of total annual expenditures
    - Local Government Funds
    - State & Federal Grants
    - Others

X. Appendix

- Example ordinances
- Accounting tool documentation

Potential Nutrient Load-Reducing Measures for 205J Project

The tables on the following pages list load-reducing measures that a contractor will be asked to investigate. The measures were selected as priorities from a larger list that appears in Tables 7a-7e of the Nutrient Scientific Advisory Board's (NSAB) 2nd annual report to DENR's Secretary in July 2012. The measures were selected by DWQ using input from the NSAB that included the regulated entities' desire to implement particular practices, the cost-effectiveness and feasibility of the practices, and the amount of available information and research on the practices.

A contractor's first task will be to report on the viability of establishing credit-accounting and cost-effectiveness for all of the load-reducing measures in the tables and prioritizing all the measures. Based on this prioritization, the contractor shall then select a minimum of _x_ practices for development of credit accounting and design basics within the remainder of the contract. For these they will produce a report that addresses the items in the list below by September 2013. Of those _x_ practices, the contractor shall select a minimum of _y_ measures to develop by April 2013. The Division intends to include these y_ measures in the Jordan/Falls Existing Development Model Program that DWQ will bring to the EMC for approval in July 2013 following our DWQ internal approval process. That approval will encompass a nutrient load reduction credit method and values, and some level of design specifications. Staff is currently developing the elements of an approval process and intend to bring this the NSAB's February meeting.

The contractor will be responsible for reporting during the contract to DWQ and the NSAB's BMP Subcommittee at appropriate points to be determined.

The contractor shall address and report on the following items for a minimum of _y_ measures by March 2013, and the remainder of at least x_ measures by September 2013:

- Summary, with annotated references of current science linking the practice to nutrient loading reductions:
    - Original empirical studies with data summaries
    - Methods/models used to establish relationships between the practice, the different variables, and the loading changes
- Summary of current management applications with annotated references
- Options and recommendations on optimum technical method; simplicity versus accuracy
- Limitations and improvement needs
- Management options for local governments and other regulated entities, associated needs, and recommendations for the most feasible method of:
    - Quantifying baseline
    - Estimating and tracking changes over time
    - Implementing and assuring long-term gains, e.g. (as applicable):
        - Legal instrument, easement, overlay district, etc.
        - Ordinances
        - Outreach and education
        - Compliance and enforcement

Table 1: Programmatic Measures

Measures	Specific Interests / Potential Issues	Leads on Current Work
Urban Tree Canopy (UTC)	Sustainable and trackable demonstrated canopy cover increase program	• Annette Lucas of DWQ in early stages of drafting LID Chapter • http://www.forestsforwatersheds.org/urban-tree-canopy/ • http://www.cwp.org/your-watershed-101/urban-watershed-forestry.html • http://www.forestsforwatersheds.org/storage/stormwater%20credits.pdf • USDA - Urban Watershed Forestry Manual - Part 1: Methods for Increasing Forest Cover in a Watershed
Fertilizer Ordinance	Establish presumptive standards of implementation associated with load reduction • Sustained • Periodic surveys of practice • Compliance presence	• Chesapeake Stormwater Network expert panel produced final report on December 6, 2012 (report not yet available on web): http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/urban-fertilizer-management/ • "Reduced additions to river phosphorus for three years following implementation of a lawn fertilizer ordinance" -December 14, 2011: http://www.tandfonline.com/doi/pdf/10.1080/07438141.2011.629769
Improved street sweeping	• Frequency • Type of Sweeper • Particle Size	Chesapeake Stormwater Network expert panel released memo in March 2011 and will reconvene in 2013: http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/urban-street-sweeping/

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Table 2: Urban Stormwater Measures

Measures	Specific Interests / Potential Issues	Leads on Current Work
Divert Impervious Runoff to Pervious Areas / Impervious Disconnection	• Interest: Potential for development of a matrix of design parameter minimums tied to assumed reductions: o Impervious to pervious ratios o Dimensions o Soil type o Slope o Landscape position, etc. • Issues: o "Available" infiltration capacity o Infiltration load reduction assumptions	• Annette Lucas of DWQ in early stages of drafting LID Chapter • Durham's research through their Raincatchers grant with NCSU BAE
Soil Amendments	Matrix of design minimums versus assumed load reductions: • Depth • Medium • Infiltration rates • Surface area, etc.	• Annette Lucas of DWQ in early stages of developing LID Chapter • VA DCR Stormwater Design Specification #4 - Soil Amendment Paper - March 1, 2011 • "Infiltration Through Compacted Urban Soils and Effects on Biofiltration Design" - University of Alabama, Birmingham, Robert Pitt
Volume Pond Retrofits	Over/undersize wetlands, wet ponds: • Water quality volume • Littoral shelf • Forebay, etc.	DWQ-SPU currently gives full TSS removal-credit on a case-by-case basis
Infiltration Devices, including Infiltration Basins	Develop effluent concentrations and volume reduction assignments to incorporate into J/F Tool	Existing chapter in DWQ's BMP manual with design criteria and flat nutrient removal efficiencies for infiltration devices
Floating Wetlands		Chesapeake Stormwater Network expert panel to convene in 2013: http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/floating-wetlands/

Table 3: Wastewater Measures

Measures	Specific Interests / Potential Issues	Leads on Current Work
Remedy Malfunctioning Septic System	• Loading relative to: o Higher nutrient removal types o Community onsite sewer o Nutrient-removing non-discharge alternatives	"A Review of Onsite Wastewater Systems Performance and Nutrient Trading Policy to Support the Falls Lake Nutrient Strategy Development" – City of Raleigh Public Utilities Department, Hazen & Sawyer – January 2013
Remedy discharging sand filter	• Loading varied by hydrologic characteristics of receiving conveyance • Loading relative to: o Higher nutrient removal types o Community onsite sewer o Nutrient-removing non-discharge alternatives	"A Review of Onsite Wastewater Systems Performance and Nutrient Trading Policy to Support the Falls Lake Nutrient Strategy Development" – City of Raleigh Public Utilities Department, Hazen & Sawyer – January 2013

Table 4: Ecosystem Restoration Measures

Measures	Specific Interests / Potential Issues	Current Work Being Done
Urban Stream Restoration	• Bank stabilization and erosion prevention • Nutrient absorption in the floodplain via re-connection and/or restoration.	Chesapeake Stormwater Network expert panel produced final report on December 17, 2012 (report not yet available on web): http://chesapeakestormwater.net/bay-stormwater/baywide-stormwater-policy/urban-stormwater-workgroup/urban-stream-restoration/

Table 5: Agricultural Measures

Measures	Specific Interests / Potential Issues	Completed or Ongoing Work
Cropland Conversion to Trees/Grass	Literature-based export coefficient comparison	
Exclusion	• Waste deposition loads vs. stocking density • Channel recovery	Pasture Point System Method with export coefficients and DWQ Draft Buffer Credit Yield