



Memorandum

To: Stormwater Management Task Force

From: CDM

Date: May 9, 2007

*Subject: Wake County Stormwater Task Force Meeting #12 Summary –
Draft Ideas Regarding Task Force Recommendations*

On April 26, 2007, CDM and Wake County staff facilitated the twelfth meeting for the Wake County Stormwater Management Task Force. Attendees were provided with meeting materials, including a copy of the agenda, a list of the draft ideas for consideration, a description of each draft idea/recommendation and a PowerPoint presentation. All meeting materials can be found on the Task Force website at <http://www.wakegov.com/environment/stormwater/>.

The meeting began with a welcome by Commissioner Kenn Gardner, Chairman of the Wake County Stormwater Task Force. Mr. Gardner mentioned that he would like the Task Force to hear a presentation regarding the Little River Reservoir implementation plan at the next meeting. His hope is that the Task Force may be able to provide some input on the plan before the plan is presented to the County Board of Commissioners. In addition, it was acknowledged that it would not be possible to review all of the draft ideas to be considered by the Task Force as recommendations in one meeting. Therefore, Mr. Gardner asked if the group would be willing to meet on May 11, 2007 for the next meeting. The group agreed to meet at this time.

CDM staff then provided a brief update on the process. At this point, the Task Force has completed a review of all tools. Based on comments by the Task Force at previous meetings, the results of the Task Force Voting exercises, and feedback from the Stormwater Managers group, CDM and Wake County staff have developed 11 draft ideas/recommendations for the Task Force to consider. In this meeting, the Task Force began reviewing the 11 draft ideas to be considered as recommendations. The Task Force provided comments on three of the draft ideas. Each of the three ideas is described below followed by the Task Force comments recorded during the meeting.

Draft Ideas for Consideration by Task Force

David Mason with CDM provided a brief summary of each idea prior to opening the discussion and comment period. The following is a short description of the idea followed by the comments from the Task Force.

#1 - Hydrologic and Hydraulic Modeling for Build-Out Conditions

The first draft idea to be considered as a recommendation by the Task Force is the hydrologic and hydraulic modeling of the stormwater system for build-out land use conditions. These models would be developed with the capability of predicting water quantity and water quality response of Wake County watersheds to future land-use conditions. This tool was included as a recommendation since it was identified as a high priority tool by Task Force members and Stormwater Managers. The tool will provide information on the impacts of land use changes and development plans for decision makers at every level. The meeting handouts provide a detailed description of the proposed recommendations related to modeling. Following the brief presentation of the tool, the floor was opened for comments. Comments, questions and suggestions by the Task Force are provided below:

Task Force Comments on Idea #1

1. Are we reinventing the wheel?
2. Overlap with FEMA floodplain mapping program?
3. How about data collection?
4. Scale of model?
5. Upper Neuse has models of the Falls Lake Watershed.
 - a. Look for opportunities to connect with other models/efforts.
 - b. Need monitoring to confirm/maybe higher priority?
6. What model will we use?
7. Raleigh has opportunity to collaborate on models for Crabtree Creek basin and tributaries to the Neuse River.
8. Does this represent additional information for site development?
9. Need careful definition of build-out conditions. Best guess today may not be accurate. Tie to comprehensive land use plan?

- a. What types of regulatory controls will apply to those future models?

10. Need to define objectives. Example objections for Raleigh and Holly Springs models:

<u>Raleigh</u>	<u>Holly Springs</u>
CIP Planning	Use to start discussions on detention to mitigate downstream impacts
Allow use by developers to assess impacts	Retrofit existing basins
Future condition to model updates are less frequent	New basins (flood studies to estimate local flood plains)

- a. Caution that management of the model is a challenge
- b. Tools can help show that you don not need detention.
- c. Can show increase downstream that would not have otherwise been observed.

11. Desired outcome ought to be to avoid impaired streams. Target to not impair further.

12. Makes sense in built-out areas.

13. Two distinct issues – water quality & water quantity – do not need overlap.

14. Quantity issues typically will not be further regulated, may not be true on water quality side. Up-front inventory can help identify problems.

15. City of Raleigh – modeling was most useful tool over the last 20 years.

16. Assessment of stream health – how much further can we go before impacts?

17. Better use of time and money. May not tell us anything we do not already know?

18. Some see benefit in connecting models to some adjacent watersheds.

19. How long does it take to get up and running?

- a. Hydrology longest
- b. Data collection/surveying also long

20. Towns on East would like to be proactive.
21. Monitoring is your Water Quality tool for now.

Action Items for H&H Modeling:

- Need better detail of the recommendation.
- Can modeling be tied to landuse acquisitions?
- Little River would be great to model.
- Focus on growth conditions.

#2 – Collaboration on Phase II Public Education Programs

The second draft idea to be considered as a recommendation by the Task Force is the collaboration on the Phase II public education programs. The goal of this recommendation would be the development of common public education materials along with countywide theme or slogan to satisfy Phase II requirements. While CWEP provides a portion of this function for many of the County’s municipalities, the program is not a “do-it-all” solution. Collaboration on these elements can be the most cost effective method for achieving compliance with the Phase II program. Also, a common, county-wide message would be more effective in reaching the public. The meeting handouts provide a detailed description of the proposed recommendations related to public education. Following the brief presentation of the tool, the floor was opened for comments. Comments, questions and suggestions by the Task Force are provided below:

Task Force Comments on Idea #2

1. Suggestion that surveys should be performed to see where the public education program is.
2. Where would NCDOT fall in the education programs that they may already have in place for staff/public?
3. Frequency of campaigns or distribution of materials?
4. Certification process – do these already exist in these industries?
5. Need behavioral change – mass media in not enough
6. Define goals: behavior change or meeting minimum standards?

7. Education of service providers (engineers, installers, etc.).
8. Message must be easy to digest for the typical customer.
9. Work with consumer stores to educate their customers. Ex: Lowe's for fertilizer.
10. What do citizens expect? Survey can be used to define this.

#3 – Enhance Sediment and Erosion Control Programs County-wide

The third draft idea to be considered as a recommendation by the Task Force is the enhancement of sediment and erosion control programs county-wide. The goal of this recommendation would be provide adequate staff and resources to effectively enforce existing regulations. Also, the proposal includes a modification of the existing threshold to trigger the need for a permit. Lastly, the proposal includes the consideration of limiting total disturbed area on the site. This proposal was developed in response to voting responses provided by the Task Force during the tools discussion. The meeting handouts provide a detailed description of the proposed recommendations related to sediment and erosion control. Following the brief presentation of the idea, the floor was opened for comments. Comments, questions and suggestions by the Task Force are provided below:

Task Force Comments on Idea #3

1. Believe existing staff from other departments can help cover the single family residential lots. Easy to cross-train other department staff. New permit for smaller lots may be overkill.
 - a. Would require cooperation from other departments who are overwhelmed.
 - b. Inspectors may not be there frequently enough if relying on other departments.
2. Designer of system should be required to monitor and send reports that system is adequate and maintained.
3. Could send existing reports to community.
4. Fines get some attention and could help fund program. (Note: fines go to school system now)
5. Concern that self-reporting and low staff numbers are not sustainable and will not fix problems.

6. For single family residential properties, process should be simple without a permit. Just do the right thing. Get one inspector – find most egregious and fine them. Continue to inspect and fine repeat offenders.
7. Slope of land and style of construction important factors.
8. Cary requires permit for 1/10 acre if site is deemed erosive.
9. Mud on tires – big problem. Raleigh - \$1K/day fine.
10. Outcome supposed to provide protection of stream – do ordinances really protect the stream? Suggests we should look to other communities to see what works.
11. When blowouts, do any local governments fix problems and back change the development. Does not happen locally. Difficult for municipality to assume this responsibility.
12. Don't penalize the good guys.
13. Risk-based assessment for sediment and erosion control plans, activities, and enforcement.
14. Balance between restrictions on disturbed area and sediment and erosion control goals. Requires multiple mobilizations of equipment and increased cost for development.
15. Need for creative thinking/partnership with the development community. How can we reduce erosion?
16. Garner – one acre of disturbance trigger is adequate if silt fence and construction entrance are required on single family residential lots. No permit is required on smaller sites.

Wrap-Up and Path Forward

As stated above, the next Task Force meeting will be held on May 10, 2007. At this meeting, the Task Force will continue the discussion of the draft ideas/recommendations. In addition, the Task Force will hear a presentation on the Little River Reservoir implementation plan and will have an opportunity to provide comments and suggestions.

Tool: Hydrologic and Hydraulic (H&H) Modeling of the Stormwater System

A representation of watersheds within Wake County capable of predicting the water quantity and quality response of local streams/rivers for existing and future land-use conditions and for various design storm events (1-yr, 2-yr, 10-yr, 25-yr, and 100-yr, 24-hr design storms).

What problems identified by the Task Force (Objectives) does this tool address?

Used to address a wide variety of concerns (10 of the 14 Task Force objectives), including structural/roadway flooding, nuisance flooding, water quality, and sedimentation issues.

What is the minimum regulatory requirement, if any, for this tool?

As a function of their NPDES Phase I permit, the City of Raleigh is the only jurisdiction in Wake County required to develop H&H models. No such requirement exists for the remaining jurisdictions.

How is the H&H modeling tool currently applied within Wake County?

The City of Raleigh, Town of Holly Springs and the Town of Cary have developed H&H models for portions of their jurisdiction. In each case, the models are used primarily to predict existing and future flood impacts and potential streambank erosion issues. In some cases, such as Raleigh, average annual pollutant loading is predicted for existing and future land use scenarios.

What is a potential Task Force recommendation for implementation of the H&H modeling tool at the conclusion of this process?

A two-phased approach is recommended. The first phase would include a “screening level” modeling effort while the second phase would include a “long-term” modeling effort. The following is a brief description of the two modeling efforts and the expected applications:

Screening Level Modeling - The County land area will be subdivided based on 14-digit Hydraulic Unit Code (HUC) boundaries. An H&H model for each subbasin would be developed using existing GIS topographic information and assumptions regarding hydraulic conditions to identify potential high-priority areas in the County or areas susceptible to significant changes in runoff volume under future, build-out conditions. High priority areas would be identified through a ranking methodology that considers public health and safety, environmental impacts, and private property impacts.

Long Term Modeling - The “Long Term” modeling effort will include refinements for high-priority watersheds identified in the Screening Level Modeling. The refined models will include detailed field surveys to record topographic data and hydraulic structure characteristics. Future, build-out conditions will be determined from parcel data, land use data and zoning data. Once completed, the “long term” models will be updated annually (at a minimum) in order to maintain an accurate prediction of

existing and future land use conditions as development occurs.

Model Applications - Voting results from Meeting #9 of the Stormwater Task Force recommend that models be used to review and approve proposed development projects. Under this scenario, the developer or municipal/county staff person would incorporate the proposed development into the most current model. The model would be used to predict potential impacts from the new development. Results of the model could be used to require on-site or off-site improvements to mitigate the predicted impacts. In the case of off-site improvements, the developer would fund only their representative share of the improvement based on contribution of runoff or % of drainage area.

Other options for model applications included the following:

- Develop capital improvement plan of infrastructure capacity needs
- Use to develop future conditions floodplain maps for entire county, including areas previously unmapped by the FEMA floodplain program
- Identify areas prime to streambank erosion

Is there an opportunity for collaboration on the implementation of this tool?

All jurisdictions may participate collaboratively on the development of this tool. The collaborative benefits include economies of scale in the cost of developing the models and the inclusion of knowledge across political boundaries to a model that only considers watershed boundaries.

Is this tool a new service?

For Raleigh, Holly Springs and Cary, this service represents an expansion of these jurisdictions existing models and services. For the remaining jurisdictions and the County, the tool will be a new service.

What is the expected outcome of this potential recommendation?

An asset management tool capable of identifying existing and future capital needs for stormwater. It will also provide the communities with a tool to assess the impacts of future projects and development as they relate to flooding (elevation and extent of floodplain), streambank erosion, and water quality conditions.

What information or decisions are necessary to implement this recommendation?

A decision regarding the following items will be necessary to implement this recommendation:

TO BE DETERMINED...

Tool: Collaboration on Phase II Public Education Programs

Development of common public education materials and programs to satisfy the minimum public education requirements of the NPDES Phase II stormwater permit.

What problems identified by the Task Force (Objectives) does this tool address?

Public education programs can be tailored toward multiple audiences, including municipal, residential and non-residential groups. As such, the public education tools can be used to address a wide variety of topics which include structural flooding, nuisance flooding, water quality and sedimentation. As developed within this recommendation, this tool addresses 10 of the 14 Task Force objective statements.

What is the minimum regulatory requirement, if any, for this tool?

Per the NPDES Phase II rules, the minimum regulatory requirement for the majority of jurisdictions in the County is the establishment of an education program, an informational website, and materials targeted at various audiences. For public involvement, each jurisdiction must hold a public meeting to review their stormwater plan, establish a volunteer community involvement program, and set-up a citizen’s group for stormwater.

How is this tool currently applied within Wake County?

At varying degrees, each jurisdiction in Wake County provides education to the public on stormwater management. Most jurisdictions also participate in the Clean Water Education Partnership (CWEP), which is an organization aimed at providing mass media, brochures and a website to local partners.

What is a potential Task Force recommendation for implementation of this tool at the conclusion of this process?

Task Force voting results were used to develop proposed activities to enhance existing public education efforts within the County. It was recommended that these public education programs be coordinated with the Clean Water Education Partnership (CWEP) and other local agencies where appropriate. Responsibilities for developing some of the following materials could be delegated to individual municipalities to “spread the burden” and then shared among the participants. In addition, the overall program designed to distribute the information should identify a theme or catch phrase that can be used to publicize the program throughout the County.

It has been recognized that each jurisdiction’s NPDES Phase II permit has a unique time-schedule for implementation of public education activities. Therefore, prior to implementation of the following education campaigns, consideration will be given to the permit schedules of all jurisdictions such that proposed activities align with the permit schedules of individual jurisdictions as needed.

Public Education Tools for Municipal Audiences

Three education efforts were identified by the Task Force as priority activities for public education for municipal audiences. These activities would be targeted for the Streets Dept., Facilities/Vehicle Maintenance Dept., Building Inspections and Public Utilities. Mandatory workshops and staff-level communication would be the desired delivery methods. Workshops would be held twice per year.

1. Inter-department cross-training to identify, report, and address stormwater management concerns
2. Training for the inspection, installation, and maintenance of sediment and erosion control devices
3. Training for hazardous and non-hazardous materials management

Public Education Tools for Residential Audiences

Three education efforts were identified by the Task Force as priority activities for public education for residential audiences. These activities would be targeted for adults, homeowners & associations and high-school aged children. Desired delivery methods will include TV/radio spots, presentations to home owners associations, website postings, and school curriculum materials. Messages would be distributed twice per year.

1. Self-performed lawn care management education – fertilizer application, yard waste disposal, etc.
2. Drainage system signage and stenciling to increase awareness
3. Methods and benefits of reducing the volume of runoff from property

Public Education Tools for Non-Residential Audiences

Three education efforts were identified by the Task Force as priority activities for public education for non-residential audiences. These activities would be targeted for contractors, employees, developers and property owners. Desired delivery methods will include a certification process, mandatory training, and trade group materials. Messages would be distributed twice per year.

1. Mandatory certifications for sediment and erosion control installers
2. Lawn care management practices for commercial landscape management companies
3. Strategies to reduce or control runoff volume from impervious surfaces

Public Education Performance Measurement

In addition to the suggested recommendations above, it was determined that any public education program should also have procedures to measure the performance of the program in the long term. As such, the Task Force recommended the development and implementation of a County-wide Stormwater Survey. An initial survey (preferably by phone) would be conducted to gauge existing public behaviors, understanding, and awareness of stormwater issues. The survey would also include an evaluation of desired services.

Initial survey results would be used to craft additional public education campaigns that address the findings of the survey. Thereafter, additional surveys would be performed every 2-3 years to assess the effectiveness of current programs and changes in public perception/behaviors.

Is there an opportunity for collaboration on the implementation of this tool?

At present, 11 of the 13 jurisdictions in Wake County are required by permit to implement a public education campaign. Currently, these jurisdictions have already developed a level of collaboration through participation in the Clean Water Education Partnership. These relationships can be expanded to include the service defined above.

Is this tool a new service?

No, this is an existing service required by State law of all municipalities

What is the expected outcome of this potential recommendation?

A collaborative effort to provide common stormwater public education materials to residents living in Wake County.

What information or decisions are necessary to implement this recommendation?

A decision regarding the following items will be necessary to implement this recommendation:

Tool: Enhance Sediment and Erosion Control Programs County-Wide

Provide adequate staff and resources to enforce current regulations and modify existing regulations to prevent stream quality impacts associated with sediment from construction activities.

What problems identified by the Task Force (Objectives) does this tool address?

The Task Force recognized that stricter enforcement of existing rules would provide the most benefit for improving local sediment and erosion control programs. However, minor changes to the existing rules were also suggested. As proposed in this document, this tool can address nine of the 14 Task Force objectives.

What is the minimum regulatory requirement, if any, for this tool?

North Carolina sediment and erosion control standards require a permit for all construction activity that disturbs more than one acre. Sediment ponds and traps are required to treat runoff from disturbed areas. These devices are generally designed to capture 75% of most soil particles leaving the site.

The State also required a minimum level of maintenance for sediment and erosion control devices. Devices must be inspected at least once weekly or after every rain event of ½ inch. Sediment must be removed when accumulation reaches one half of design depth. Per NPDES Phase II rules, a maintenance log must be kept on site for review by inspectors.

How is this tool currently applied within Wake County?

Raleigh, Cary, Holly Springs, Apex and Wake Forest operate their own program while Wake County operates the program in the unincorporated area and the remaining jurisdictions in the County. Five of the 13 jurisdictions require a permit for smaller disturbed areas (ranging from ¼ to ½ acre). In addition, most jurisdictions in the County require silt fence on all single family lots, regardless of size (note: this is not a minimum requirement of the State).

What is a potential Task Force recommendation for implementation of this tool at the conclusion of this process?

Task Force voting results were used to develop recommended changes to existing sediment and erosion control regulations and enforcement procedures:

Standards

1. It is recommended that the minimum threshold for a permit should be reduced from one disturbed acre to ¼ acre of disturbed land (note: 13 of 19 voters suggested that an erosion control permit should be required for land disturbance of ¼ acre or smaller).

2. It is recommended that elected officials in jurisdictions that have local erosion and sedimentation control programs consider the effectiveness of measures aimed at preventing erosion rather than controlling sedimentation, including, but not limited to, phased construction and limits of disturbance.

Enforcement

1. It is recommended that all sites be inspected once per week (note: 12 of 18 voters recommended an inspection frequency of once per week or greater). As an alternative, inspection time-tables can be based on stage of construction (i.e. more frequent inspections early with less frequent inspections after site is stabilized)
2. Stop work orders should be the primary method of enforcement for erosion and sediment control violations (note: recommended by 9 of 18 voters).

Education

1. Education materials on sediment and erosion control will be provided to the public. The materials will inform the public on the purpose of the program, local requirements, and enforcement procedures to help define an expected level of service for the program.
2. Training programs will be developed and presented to local S&E contractors. The programs will review local standards, maintenance requirements, and best management practices for S&E control.

Is there an opportunity for collaboration on the implementation of this tool?

Collaboration on sediment and erosion control regulation and enforcement currently exists within the County. Wake County collaborates with seven municipalities within the County to enforce a uniform sediment and erosion control program.

Is this tool a new service?

No, this is an existing service required by State law of all municipalities

What is the expected outcome of this potential recommendation?

Reduce the sediment loading to streams through stricter enforcement of existing sediment control regulations and modifications to existing rules.

What information or decisions are necessary to implement this recommendation?

A decision regarding the following items will be necessary to implement this recommendation:

- It has been estimated that an inspector could provide enforcement for approximately 30 permits per week if weekly inspections were required. At the current active permit amount (1,660 permits), approximately 55 inspectors would be required to inspect all permits on a weekly basis. Currently, 25 inspectors are employed county-wide.