



## Transmittal

*To: Wake County Stormwater Task Force Members*

*From: CDM Project Team*

*Date: September 14, 2006*

*Subject: Meeting 6 Materials*

The next Wake County Stormwater Task Force meeting is scheduled for Thursday, September 21, 2006 from 6:00 PM to 8:00 PM in the first floor conference room of the Wake County Office Building. As always, box dinners will be available starting at 5:30 PM.

Meeting #6 is the last scheduled meeting of the Issues Module. The Project Team will be presenting a summary of the issues and concerns identified by the Task Force during previous meetings. Also, we will be presenting a list of common objectives for your consideration that have been developed from your own comments and responses. These objectives represent the Project Team's best interpretation of your comments from the four case studies presented in Meeting 4 and the breakout group discussions from Meeting 5. We will be seeking your input to reach a Task Force consensus on common issues, concerns and objectives, which are included as attachments to this memorandum. This meeting will be devoted to providing the Task Force the opportunity to discuss and make any necessary additions, deletions or modifications to the objective statements. These common objective statements will serve as the basis for our identification, evaluation and comparison of the range of possible tools, strategies, and programs available to address stormwater management in Wake County, if appropriate. Unless you desire otherwise, these common objective statements will be considered a "working draft" until the conclusion of the Task Force process, and may be revisited or modified at any time as new information is presented to the group.

The enclosed materials are being provided to you in advance of our September 21, 2006 stormwater task force meeting so that you can better prepare for a productive meeting:

- Attachment A - Meeting #6 Agenda (Page 3);
- Attachment B - Draft version of the Common Objective Statements, as defined above (Page 4);
- Attachment C - Key Words analysis that was performed to identify the Task Force common issues and concerns and which represents the basis of the Common Objective Statements (Page 5-6);

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- Attachment D - A listing of responses provided by the Task Force in the case study questionnaires and breakout sessions, organized into four main Concerns - Economic, Environmental, Health and Safety, and Aesthetics/Quality of Life (Page 7-18);

Please take a moment to review the enclosed information prior to next week's meeting. If you have any questions about the information or the process, please do not hesitate to contact Brenan Buckley of CDM (787-5620 or buckleyjb@cdm.com) or Britt Stoddard of Wake County (856-2641 or bstoddard@co.wake.nc.us). We'll see you next week!

**Attachment A  
Wake County  
Collaborative Stormwater Management Evaluation  
Stormwater Task Force Meeting #6**

**Wake County Office Building  
Ground Floor Conference Room**

**September 21, 2006**

**Agenda**

- 5:30 – 6:00    Arrival, Sign-In, Dinner**
- 6:00 – 6:05    Welcome from Commissioner Kenn Gardner**
- 6:05 – 6:10    Work Plan Status (Where are we?)**
- 6:10 – 6:20    Use of Key Words in Identification of Concerns and Development of  
Common Objective Statements**
- 6:20 – 6:50    Breakout Sessions for Review of Common Objective Statements**
- 6:50 – 7:50    Breakout Session Reporting and Group Review/Discussion**
- 7:50 – 8:00    Next Steps and Feedback**
- 8:00            Adjourn**

**Attachment B**  
**Wake County**  
**Collaborative Stormwater Management Evaluation**  
**Stormwater Task Force - Meeting #6**  
**DRAFT Common Objective Statements**

*The following are draft common objective statements for the Task Force to consider:*

**Economic Concerns**

1. Reduce or eliminate losses in property value resulting from structural and nuisance flooding.
2. Reduce or eliminate property damage or loss resulting from structural flooding.
3. Reduce the costs impacts and disruptions to individuals, business and local governments resulting from structural and nuisance flooding.

**Environmental Concerns**

4. Minimize degradation of stream habitat and disruption of stream ecosystems resulting from runoff and sediment loading to streams.

**Health and Safety Concerns**

5. Reduce or eliminate hazardous conditions resulting from structural or roadway flooding that threaten public safety.
6. Reduce or eliminate the potential for illness from contact with local waters.
7. Protect local water supply sources from contamination or degradation.

**Aesthetics/Quality of Life Concerns**

8. Protect the aesthetic appearance and recreational activities associated with local waters in order to preserve a high quality of life.

**Attachment C  
Wake County  
Collaborative Stormwater Management Evaluation  
Stormwater Task Force Meeting #6  
Result of Key Word Analysis -- Concerns**

*This table represents a summary of the concerns expressed by Task Force members at previous meetings*

Economics					
# of Mentions	Concerns	Source			
		Structural Flooding	Nuisance Flooding	Water Quality	Sediment
22	Property Damage	✓	✓		✓
15	Property Value	✓	✓	✓	✓
11	Repair Costs	✓	✓		
5	Business Disruption	✓			
5	Increased Insurance Costs	✓			
4	Loss of Revenue	✓			
3	Increased Cost to Clean Water	✓		✓	
2	Disruptive to Government	✓	✓		
2	Increased Taxes	✓			
<b><i>Actions - Prevent, Avoid, Eliminate, Reduce, Correct</i></b>					

Health and Safety					
# of Mentions	Concerns	Source			
		Structural Flooding	Nuisance Flooding	Water Quality	Sediment
14	Possible Health Concerns	✓		✓	✓
6	Impacts to Personal and Public Safety	✓	✓		
6	Dangerous Conditions	✓	✓	✓	
5	Sickness/Illness			✓	
3	Potentially Life-Threatening	✓			
2	Health Risk to People & Environment	✓			
2	Threats to Water Supply			✓	
<b><i>Actions - Ensure, Prevent, Eliminate, Protect</i></b>					

**NOTE: Checks in red indicate that concern was supported by work group breakout session members**

**Attachment C  
Wake County  
Collaborative Stormwater Management Evaluation  
Stormwater Task Force Meeting #6  
Result of Key Word Analysis -- Concerns**

*This table represents a summary of the concerns expressed by Task Force members at previous meetings*

Environment					
# of Mentions	Concerns	Source			
		Structural Flooding	Nuisance Flooding	Water Quality	Sediment
13	Water Quality	✓	✓	✓	✓
11	Stream Habitat	✓		✓	✓
6	Ecosystem	✓		✓	
4	Neuse River Basin			✓	
4	Pollutants	✓		✓	
2	Health Risk	✓	✓		
2	Sedimentation				✓
<b><i>Actions - Disrupt, Interrupt, Prevent, Improve, Reduce, Enhance, Restore</i></b>					

Aesthetics/Quality of Life					
# of Mentions	Concerns	Source			
		Structural Flooding	Nuisance Flooding	Water Quality	Sediment
9	Aesthetics		✓	✓	✓
3	Impaired Recreational Opportunities			✓	
2	Quality of Life			✓	✓
1	Property Value		✓		
1	Harmony in the Neighborhood		✓		
1	Healthy Environment			✓	
<b><i>Actions - Protect, Avoid, Disturb, Promote</i></b>					

**NOTE: Checks in red indicate that concern was supported by work group breakout session members**

## ECONOMICS

### Structural Flooding (Adverse Impacts) – Case Study Responses

- **Biz disruption/property damage** hazards.
- **Disruption of business/flooded houses.**
- Money **cost for repair** and not being able to be open due to the storm.
- **Damage to structures** for people with and without flood insurance.
- **Structural damage. Property loss.**
- **Loss of property**, business.
- **Loss, financial, personal irreplaceable tragedies.** Overall hassle.
- Loss of **business revenue.** Damage to streams from sediment. **Cost of repair.**
- **Property damage, business loss** potentially life-threatening, **loss of income.**
- Business and **personal property damages.**
- **Monetary issues** related to **replacing/repairing damaged property** is a big concern.
- **Damage to property structures.**
- Pollutants, stream bank failure, **loss of property value, loss of revenue.**
- **Increased insurance rates, increases in prices to cover losses. Area that depreciate in sales value** and then become empty. Health risk to people, animals, environment as whole.
- **Reduction of property values** of existing properties by allowing new development which is not properly regulated.
- Many - **property damage, increased costs,** increased stress for property owners, hazardous, impact personal and public safety, **increased insurance costs,** environment and ecological damage.
- **Property damage to affected property.**
- Affect **property value.**
- To **prevent loss of property** and overall safety.
- **Loss of revenue**
- **Energy spent on** communication of **the issues**
- **Increase insurance. Increase repair cost.** Scouring destroys vegetation which stabilized banks. Decreased H2O quality. **Increased cost to clean H2O** drains damaged
- Environmental and **Economical Impacts.**
- **Loss of income to businesses** that have to close.
- **Economic hardship** for cleanup. Possible health concerns. Sense of disenfranchisement: "the city/town/somebody doesn't care about us".
- Dangerous to people. **Economic burden.** Disruption of ecosystem/interrupts natural ability of system to flood/recede.
- Pollutants, stream bank failure, loss of property value, **loss of revenue.**
- **Economic impacts** to individuals and businesses.
- **It all costs money:** fixing = money; leaving alone = money; controls = money.

**Structural Flooding (Expected LOS) – Case Study Responses**

- Expectation = **No structural flooding anywhere.**
- Expectation = **No structural flooding for 50-100 year/24 hour storm**
- Structural flooding **should not occur less than 100 year storm.**
- **By a return interval?** And disclosure.
- **25 year storm, no structural flooding.** But for something like Crabtree, event his is not feasible.
- **Prevention of real/personal property damage.**
- **No structural flooding in 100 year storm.**
- **Prevent increased flooding** of structures.
- If this happens once every 10 years let it go - If it happens every year or so it **needs to be addressed.**
- **To not continually impact citizens, business owners** with hardships which can be avoided.
- The problem should be corrected because in the long term it is **going to cost us money through increased taxes and insurance.**

**Nuisance Flooding (Adverse Impacts) – Case Study Responses**

- Obviously **property values**, hazards.
- **Property less in value.**
- Mostly superficial concerns. **Affects property value** supposedly; not aesthetically pleasing.
- Someone **loses a sale of the house** typically most-homeowners are poor maintainers of drainage ways and costly.
- **Property damage/de-valuation** safety issues for people, wildlife domestic animals.
- **Property damage**, erosion, ill-will.
- **Property damage - property value. Threats to**
- **Loss of property's value.**
- **Property values/hazards.**
- To **avoid loss**; to promote harmony in the neighborhood.
- **Cost of repair**

**Nuisance Flooding (Expected LOS) – Case Study Responses**

- Expectation = **no nuisance flooding** and **match \$** to resolve.
- Technical assistance provided that, if correctly followed, will **eliminate problem.**
- Any citizen who buys a home can be **assured that the home will not flood** (unless homeowner causes it himself).
- Avoid loss; promote harmony in the neighborhood.

**Water Quality (Adverse Impacts) – Case Study Responses**

- Loss of stream habitat, decreased water quality, **increased cost to provide clean drinking water, increased cost to meet increased regulations.**

**Water Quality (Expected LOS) – Case Study Responses**

- Prioritize high impact solutions and **quick low cost fixes.**
- Very high. All measures should be taken to **reduce the pollutant loads** where possible, **almost regardless of cost.**
- I'm not sure it should be - **is it worth it?**

**Sediment (Adverse Impacts) – Case Study Responses**

- Fish kill. **Loss of property.**
- **Loss of property.**

## **ECONOMICS**

### **Structural Flooding – Work Group Discussion**

- **Property damage**
- **Economy impact.**
- **Property damage**
- **Insurance issues (cost/availability).**
- **Cost to tax payers.**
- **Destroys tax base.**
- **Disruptive to government.**
- **Retrofit costs.**

### **Nuisance Flooding – Work Group Discussion**

- **Reduced property value**
- **Consumes a lot of resources** for stormwater program/other depts.
- **Not sufficient funds** for ongoing maintenance and rehab

### **Water Quality – Work Group Discussion**

- **Property values** (economics)
- **Cost**
- **Property values (economics)**

### **Sediment – Work Group Discussion**

- **Loss of property** if stream erodes.
- **Property values** at degraded streams/unmaintained ponds.
- Risk/**damage to existing infrastructure** (sewer lines, etc.).
- **Loss of property** if stream erodes.

## ENVIRONMENT

### Structural Flooding (Adverse Impacts) – Case Study Responses

- Increase insurance. Increase repair cost. Scouring destroys vegetation which stabilized banks. **Decreased H2O quality**. Increased cost to clean H2O drains damaged.
- **Environmental** and Economical **Impacts**.
- Dangerous to people. Economic burden. **Disruption of ecosystem**/interrupts natural ability of system to flood/recede.
- Loss of business revenue. **Damage to streams** from sediment. Cost of repair.
- **Pollutants**, stream bank failure, loss of property value, loss of revenue.
- Increased insurance rates, increases in prices to cover losses. Area that depreciate in sales value and then become empty. **Health risk to** people, animals, **environment as whole**.
- Many - property damage, increased costs, increased stress for property owners, hazardous, impact personal and public safety, increased insurance costs, **environment and ecological damage**.

### Structural Flooding (Expected LOS) – Case Study Responses

- Lower overall costs. **Increased H2O quality**.
- **Prevent water pollution** unsafe conditions and negative economic effects.
- Business and customers **expect safe environments**.

### Nuisance Flooding (Adverse Impacts) – Case Study Responses

- **Environment**. Property damage. Mosquitoes breeding.
- **Water quality**. Cost of repair.
- Property damage/de-valuation **safety issues for** people, **wildlife** domestic animals.

### Nuisance Flooding (Expected LOS) – Case Study Responses

- NONE

### Water Quality (Adverse Impacts) – Case Study Responses

- **Illness, environmental degradation**.
- The water quality problems of Pigeon House Branch are a danger to people if they come into contact with the stream. It also **degrades tributaries to the Neuse and contributes to water quality problems there**.
- This **can't be good for people downstream on the Neuse River**, can it?
- **Water quality**, especially downstream.

- **Loss of stream habitat, decreased water quality**, increased cost to provide clean drinking water, increased cost to meet increased regulations.
- **Environmental degradation**, human health problems.
- Illness, death, impaired recreational opportunities, **extinction of species**.
- **Loss of living things; loss of water (useable)**; loss of quality of life; loss of human health.
- Health; **stormwater quality**; excessive workload for stormwater mgt.
- **Colony generation**; health.
- General health, **environmental**.
- **Lack of aquatic habitat/low bio diversity**; safety/health issue to the public.
- Health issues for people; **poor stream quality**; impacts downstream.
- **Water quality**.
- **Contaminants in the Neuse basin**.
- **Less biology in the streams**; less recreational activities involving water.

**Water Quality (Expected LOS) – Case Study Responses**

- **Improve water quality, improve quality of life in stream** and down stream.
- **Promote healthy environment**.
- **Improve quality of water going into Neuse**.
- **Meet state thresholds**.

**Sediment (Adverse Impacts) – Case Study Responses**

- **Increased 303d listings**
- **Poor stream health**.
- **Environmental problems**.
- Visually unpleasant and **contaminated water ways**.
- **Poor stream and water quality** for all uses and all people.
- **Death of marine life**, erosion, **poor water quality**.
- **Poor water quality** from too much sediment; **decreased biological health of stream**.

**Sediment (Expected LOS) – Case Study Responses**

- Aesthetics, **environmental concerns**, siltation of streams.
- **Curb environmental effects**.
- **Improvements** would benefit the **overall health of the environment**.
- **Reduced sedimentation**/more violations issued.
- **No violations of turbidity** standard in streams.

## **ENVIRONMENT**

### **Structural Flooding – Work Group Discussion**

- **Environmental impact.**

### **Nuisance Flooding – Work Group Discussion**

- **Environment Impacts**

### **Water Quality – Work Group Discussion**

- **Protection of water supply**
- **Healthy aquatic habitat**
- Level that **enhances and restores human and aquatic life** now and in the future

### **Sediment – Work Group Discussion**

- **#1 Pollutant** - Don't want it to get worse!
- **Loss of topsoil** from farms.
- **Water quality/quantity**
- **Supporting stream uses/aquatic habitat.**

## **HEALTH AND SAFETY**

### **Structural Flooding (Adverse Impacts) – Case Study Responses**

- **Dangerous conditions** potential for injuries.
- Economic hardship for cleanup. **Possible health concerns.** Sense of disenfranchisement: "the city/town/somebody doesn't care about us".
- **Dangerous to people.** Economic burden. Disruption of ecosystem/interrupts natural ability of system to flood/recede.
- Property damage, business loss **potentially life-threatening**, loss of income.
- Increased insurance rates, increases in prices to cover losses. Area that depreciate in sales value and then become empty. **Health risk to people, animals, environment as whole.**
- Many - property damage, increased costs, increased stress for property owners, hazardous, **impact personal and public safety**, increased insurance costs, environment and ecological damage.

### **Structural Flooding (Expected LOS) – Case Study Responses**

- To **ensure dangerous conditions don't exist.** To provide a safe plan for impact to the overall system.
- To prevent loss of property and **overall safety.**
- **Safety.** Return to a more "natural" (or mimicking "natural" state).
- **Prevent** damage, **threats to life.**
- Business and customers **expect safe environments.**
- In an emergency - people **should not be fearful of loss of life.**
- LOS - **Eliminate public health and safety hazards.**

### **Nuisance Flooding (Adverse Impacts) – Case Study Responses**

- Obviously property values, **hazards.**
- Eyesore, **slight danger.**
- Property damage/de-valuation **safety issues for people**, wildlife domestic animals.

### **Nuisance Flooding (Expected LOS) – Case Study Responses**

- NONE

**Water Quality (Adverse Impacts) – Case Study Responses**

- **Sickness**, poor retain development.
- **Illness**, environmental degradation.
- The water quality problems of Pigeon House Branch are a **danger to people** if they come into contact with the stream.
- **Illness**.
- Environmental degradation, **human health problems**.
- **Illness, death**, impaired recreational opportunities, extinction of species.
- Loss of living things; loss of water (useable); loss of quality of life; **loss of human health**.
- **Health**; stormwater quality; excessive workload for stormwater mgt.
- Colony generation; **health**.
- **General health**, environmental.
- Lack of aquatic habitat/low bio diversity; **safety/health issue to the public**.
- **Health**, economic, aesthetics.
- **Health issues for people**; poor stream quality; impacts downstream.
- **Not safe for people** and wildlife.
- **Serious health risks** could occur.
- It's a **big health hazard**, both human and environmental.
- **Health reasons**, economics, aesthetics.

**Water Quality (Expected LOS) – Case Study Responses**

- All **waters safe to touch** without potential for disease spreading.
- **Lower possibility of health, welfare and safety problems**.

**Sediment (Adverse Impacts) – Case Study Responses**

- **Poor** stream and **water quality for all** uses and all **people**.

**Sediment (Expected LOS) – Case Study Responses**

- NONE

## **HEALTH AND SAFETY**

### **Structural Flooding – Work Group Discussion**

- **Public Health/danger.**
- **Water supply**

### **Nuisance Flooding – Work Group Discussion**

- **Public Health and Safety**

### **Water Quality – Work Group Discussion**

- **Human health**
- **Protection of water supply**

### **Sediment – Work Group Discussion**

- **Public Health** - What else is in the sediment?

## AESTHETICS/QUALITY OF LIFE

### Structural Flooding (Adverse Impacts) – Case Study Responses

- NONE

### Structural Flooding (Expected LOS) – Case Study Responses

- NONE

### Nuisance Flooding (Adverse Impacts) – Case Study Responses

- Mostly superficial concerns. Affects property value supposedly; **not aesthetically pleasing.**
- **Mostly visual problems** and disturbance of landscaping.

### Nuisance Flooding (Expected LOS) – Case Study Responses

- To avoid loss; to **promote harmony in the neighborhood.**
- People shouldn't have to deal with this in a **civilized society**

### Water Quality (Adverse Impacts) – Case Study Responses

- Illness, death, **impaired recreational opportunities**, extinction of species.
- Loss of living things; loss of water (useable); **loss of quality of life**; loss of human health.
- Health, economic, **aesthetics.**
- Less biology in the streams; **less recreational activities involving water.**
- It is very **unsanitary.**
- Promote **healthy environment.**

### Water Quality (Expected LOS) – Case Study Responses

- NONE

### Sediment (Adverse Impacts) – Case Study Responses

- Fish spawning, **aesthetics.**
- **Visually unpleasant** and contaminated water ways.
- **Aesthetics**, environmental concerns, siltation of streams.
- Water is pretty **important to life.** Streams and river health is important to life and **quality of life** in this area. See NY Hudson River Valley.
- There may be a large problem with public perception since it **takes very little sediment to create an eyesore** in a creek, so even with containing 99% of the sediment, the visual impact might be significant.

**AESTHETICS/QUALITY OF LIFE**

**Structural Flooding – Work Group Discussion**

- NONE

**Nuisance Flooding – Work Group Discussion**

- **Aesthetics (looks bad)**

**Water Quality – Work Group Discussion**

- **Protection for future generations**
- **Recreation**

**Sediment – Work Group Discussion**

- **Aesthetics**
- **Happens every time it rains**
- **Disenfranchisement of customers**