The Feasibility of a Stormwater Retrofit At Former Duke Diet and Fitness Center

July 12, 2012
Paul Wiebke, PE and Sandra Wilbur, PE
Falls Lake Rules Highlights

1. Stormwater Rules for New Development
2. Stormwater Rules for Existing Development
3. Wastewater Discharges
4. Agriculture
5. Stream Buffers – Using existing Neuse Rules
Falls Lake: What are the costs?

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Cost ($ million)</th>
<th>Nitrogen reduction (Goal 40%)</th>
<th>Phosphorus reduction (Goal 77%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellerbe</td>
<td>$320 - $370</td>
<td>8 - 11%</td>
<td>10 - 15%</td>
</tr>
<tr>
<td>Eno</td>
<td>~ $191</td>
<td>~11 – 12%</td>
<td>~ 21%</td>
</tr>
<tr>
<td>Little Lick</td>
<td>~ $84</td>
<td>~ 10 – 11%</td>
<td>~ 20 – 21%</td>
</tr>
</tbody>
</table>

$595 to $645 million dollars!
485 acres could be treated
Potential Amenities

Possible Trail Head Parking

South Ellerbe Creek Trail

Viewing areas with seating

A Wetland Outlet

B Shallow Marsh

C Deep Marsh
Examples of Existing Smaller Constructed Wetlands in Durham

Duke Smith Warehouse Wetland
114 South Buchanan Blvd.

Note that Existing Wetlands are on Private Property
Examples of Existing Smaller Constructed Wetlands in Durham

South Point Terrace Wetland 2
Morrell Lane & Leonardo Dr.
(Off Renaissance Pkwy near NC 751)

Note that Existing Wetlands are on Private Property
1 Project Site
South Ellerbe Constructed Wetland
Costs ~$8 million

EQUIVALENT TREATMENT DEVICES

Wet Ponds
36 Project Sites
Costs ~$18 million

Constructed Wetlands
17 Project Sites
Costs ~$18 million

Bioretention Sites
500 Project Sites
Costs ~$30 million
SAVE MONEY on FALLS

9 Acres
South Ellerbe Wetland

485 Acres
Urban Downtown Development Treated

500-1000 Pounds of Nitrogen for the Falls Stage 1 Reduction could be completed

Millions
In Savings over many small projects

Public Works
Stormwater Services

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Additional Tools

- Cistern
- Permeable Pavement
- Green Roof
- Stream Restoration
- Residential Rain Gardens
- Floating Wetlands
- Tree Box Filters
- Preservation and Maintenance Practices
- Atmospheric Deposition of Nitrogen
- Algae Turf Scrubber
- Rain Catcher’s Grant
- EPA Green Infrastructure Grant
Process – What’s next?

Late 2011 to Early 2012:
- Feasibility Study and Environmental Assessment

May 2012:
- Presentation to City Council

Summer 2012:
- Public Input Meetings

End of Summer 2012:
- Bring Public Input back to City Manager

Meetings:
- July 12, 2012 City Hall Council Chamber at 6:30pm
- August 7, 2012 North Regional Library 7pm

www.durhamnc.gov/stormwater
http://www.facebook.com/durhamncstormwater