Caroline County Pilot
Watershed Implementation Plan
(WIP)

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February 3, 2011
Caroline Count Pilot

- Volunteered in Winter 2009/2010
- Pulled out our WRE & Past Watershed Plans
- Gathered key stakeholders
- Initially excluded “interest groups”
- Contractor collected/compiled data
About Caroline County...

**LAND USE**

- **Agricultural:** 78% (155,000 acres)
- **Residential:** 14% (28,000 acres)
- **Public (exempt):** 6% (11,200 acres)
- **Commercial:** 1% (2,562 acres)
- **Industrial:** 0.3% (507 acres)
Caroline County Segmentsheds (13)

Acreages

<table>
<thead>
<tr>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,580</td>
</tr>
<tr>
<td>23,506</td>
</tr>
<tr>
<td>22,893</td>
</tr>
<tr>
<td>21,966</td>
</tr>
<tr>
<td>20,956</td>
</tr>
<tr>
<td>18,311</td>
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<tr>
<td>16,447</td>
</tr>
<tr>
<td>13,703</td>
</tr>
<tr>
<td>10,870</td>
</tr>
<tr>
<td>8,234</td>
</tr>
<tr>
<td>6,793</td>
</tr>
<tr>
<td>5,636</td>
</tr>
<tr>
<td>4,942</td>
</tr>
</tbody>
</table>
Caroline County Phase I Pilot WIP

Established Target Sectors State-wide
- Major/minor point sources
- Urban & Agricultural Land
- Forests
- Septic Systems
- Atmospheric Deposition

Focus Sectors for Caroline County
- Agricultural land
- Septic Systems
- Minor Point Sources
- Developed Land
Caroline County TN Targets  
(Draft July 2010)

<table>
<thead>
<tr>
<th>Source Sector</th>
<th>Current Load (million lbs)</th>
<th>Initial Target Load (million lbs)</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minor Municipal</strong></td>
<td>0.024</td>
<td>0.014</td>
<td><strong>39%</strong></td>
</tr>
<tr>
<td>Urban</td>
<td>0.046</td>
<td>0.037</td>
<td><strong>20%</strong></td>
</tr>
<tr>
<td><strong>Agriculture</strong></td>
<td>1.293</td>
<td>1.130</td>
<td><strong>13%</strong></td>
</tr>
<tr>
<td>Septic</td>
<td>0.091</td>
<td>0.062</td>
<td><strong>32%</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.63</td>
<td>1.41</td>
<td><strong>13%</strong></td>
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</table>
WIP Assessment of Loads and BMPs

- Nonpoint Source Nutrient Load by Land Use
- Nonpoint Source BMPs Implemented to date (urban and ag)
- 2009 Point Source Nutrient Loads (WWTPs)
- Estimated Nitrogen Loads from Septic Systems

Same basic process used in preparation of WRE
What we learned

About the Agricultural Sector

- MDA restricts access to BMP data (privacy).
- SCD staff know from experience which programs and farms offer the best potential for reductions.
- SCD has limited staff to install, track, and report BMPs for about 100,000 acres of farmland.
- Data on BMPs is kept in individual farm files.
- Voluntary are not all tracked
What we learned

About minor treatment plants

• 3 minor plants
• Relatively high avg daily concentrations of TN & TP
  - One had avg TN concentration of 40 mg/l (2007)
• All three have Inflow & Infiltration (I&I) problems
• One has sewage lagoon overflows during heavy rain
• No BRF funding available for minor plant upgrades
What we learned

About septic systems

- Approximately 11,100 systems
  - about 1,200 located in Critical Area.
- To date 43 BAT replacement systems have been installed using BRF
- Caroline County’s share of BRF for first half of FY2011 (July-Dec 2010) is $97,000; 6 upgrades.
- Using BRF, it will take 266 years to complete upgrades
Other things we figured out

• The County has no direct regulatory authority over our three major pollutant sectors

• No county-wide system in place to track, monitor and report activities across sectors

• Most of our 10 towns will need assistance with planning, implementing, maintaining and reporting BMPs.
Where does that leave us?

- County does have input in all three sectors.
- County is a logical hub for tracking, monitoring, and reporting data for WIP.
- County is a logical facilitator of cooperative planning effort between sectors and agencies.
Caroline County
Phase II WIP Strategies
for
Non-Point Source Nutrient Reductions
Caroline County WIP Strategies

*DRAFT*

- Establish a County-based BMP monitoring, tracking and reporting program with partners.
- Use data to drive accountability
- Assess where regulatory changes may be needed if milestones are not achieved.
Caroline County WIP Strategies
*DRAFT*

Non-Point Source Agricultural Strategies:

- Assess segmentshed agricultural loads and identify priority farms in each shed.

- Conduct on-site assessments to identify opportunities for new or additional BMPs.

- Coordinate water control structure installations in PDAs with BMPs for roadside ditches.

- Establish erosion and drainage control standards for all ditches.
Non-Point Source Developed Land Strategies:

- Incorporate standards for environmental site design in County/municipal codes.

- Retrofit stormwater systems on County and municipal properties.

- Expand TDR Program to reduce new development on septic systems.

- Establish Drainage Ditch District with controls similar to Critical Area.
Caroline County WIP Strategies

*DRAFT*

Septic Strategies:

- Target priority septics in Critical Area for BRF upgrades to insure biggest bang for the buck.
- Establish septic districts with regular inspection and pump-out cycles
- Assess septic failure areas for potential for establishment of small or innovative community systems
- Assess feasibility of connecting rural subdivisions to public systems (denied access policy).
Caroline County Phase II WIP Strategies for Point Source Nutrient Reductions
Point Source Strategies:

- New regional ENR treatment plant for the northern portion of the County
  - Will reduce nitrogen load from 17,000 lbs/yr to 5,000 lbs/yr

- Concentrated Animal Feedlot Operations (CAFO) permits now required for medium to large operations
  - approximately 89 in County
Caroline County WIP Strategies  
*DRAFT*

<table>
<thead>
<tr>
<th>Upper Choptank Watershed (164,000 acres) 8 Segment Sheds (13 total)</th>
<th>Reduction</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>SECTOR</td>
<td>Nitrogen (lbs)</td>
<td>Phosphorus (lbs)</td>
</tr>
<tr>
<td>Total Agricultural Reductions</td>
<td>741,049</td>
<td>54,520</td>
</tr>
<tr>
<td>Total Urban Reductions</td>
<td>51,509</td>
<td>10,669</td>
</tr>
<tr>
<td>Total Septic Reductions</td>
<td>32,886</td>
<td>N/A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>825,444</td>
<td>65,189</td>
</tr>
<tr>
<td>% Reductions Non Point Sources</td>
<td>46%</td>
<td>53%</td>
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<table>
<thead>
<tr>
<th>Caroline County 13 Segment Sheds</th>
<th>Reduction</th>
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<tbody>
<tr>
<td>SECTOR</td>
<td>Nitrogen (lbs)</td>
<td>Phosphorus (lbs)</td>
</tr>
<tr>
<td>Total Agricultural Reductions</td>
<td>189,412</td>
<td>20,110</td>
</tr>
<tr>
<td>Total Urban Reductions</td>
<td>51,509</td>
<td>10,669</td>
</tr>
<tr>
<td>Total Septic Reductions</td>
<td>17,935</td>
<td>N/A</td>
</tr>
<tr>
<td>TOTAL</td>
<td>258,856</td>
<td>30,779</td>
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## Estimated Costs of Nutrient Reductions

<table>
<thead>
<tr>
<th>Non Point Source</th>
<th>Cost ($)</th>
<th>TN Reduced (lbs)</th>
<th>TP Reduced (lbs)</th>
<th>TN Cost/lb</th>
<th>TP Cost/lb</th>
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<tbody>
<tr>
<td>Agricultural</td>
<td>$11,482,679</td>
<td>189,412</td>
<td>20,110</td>
<td>$61</td>
<td>$571</td>
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<tr>
<td>Urban</td>
<td>$34,735,000</td>
<td>51,509</td>
<td>10,669</td>
<td>$674</td>
<td>$3,256</td>
</tr>
<tr>
<td>Septic</td>
<td>$16,640,000</td>
<td>17,935</td>
<td>0</td>
<td>$928</td>
<td>n/a</td>
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<tr>
<td>**Point Source</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>NCWS WWTP</td>
<td>$25,000,000</td>
<td>9,342</td>
<td>784</td>
<td>$2,676</td>
<td>$31,885</td>
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<tr>
<td>TOTAL</td>
<td>$87,857,679</td>
<td>268,197</td>
<td>31,563</td>
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</tbody>
</table>
Commissioner Response

Consequences

Unfunded State Mandate

Concern over targeting specific property owners
Contact Information

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