North Carolina Nutrient TMDLs: Integrating State and Federal Programs

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EPA Nutrient TMDL Workshop
February 16, 2011
Outline

- Nutrient Management History
- State/Federal Processes
- NC Water Quality Standard
- Nutrient Management Strategies
- Example: Falls Lake
- Future Efforts
Nutrient Management History

- Chowan River 1981
- Detergent P ban 1988
- Tar Pamlico 1991
- Lake Wylie 1996
- Neuse River 1997
- Jordan Lake 2009
- Falls Lake 2010
- High Rock Lake (soon)
Processes for NC Waters Impaired by Nutrients

State Legislation

Nutrient Management Strategy

Water Quality Model

Federal 303(d) List

TMDL
NC Water Quality Standard

- **Chlorophyll-α**
  - Adopted 1979
    - (15A NCAC 02B .0211 (3) (a))
    - (15A NCAC 02B .0220 (3) (a))
  - Applies to all waters/all places
  - 40 µg/L for all waters except trout waters (15 µg/L)
Nutrient Management Strategy

• “Implementation Plan”
• Regulatory rulemaking
• Requires:
  – Calibrated nutrient response model
  – Specific reductions for ALL sources
  – Timeline for implementation
  – Cost analysis
  – Stakeholder involvement
  – Progress evaluation reports
**Trends in Nutrient Strategies**

<table>
<thead>
<tr>
<th>Earlier</th>
<th>Later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly point sources</td>
<td>All sources</td>
</tr>
<tr>
<td>Coastal</td>
<td>Inland</td>
</tr>
<tr>
<td>Basins</td>
<td>Subbasins</td>
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<tr>
<td>Technology-based</td>
<td>Water quality-based</td>
</tr>
</tbody>
</table>

⇒ Greater stakeholder collaboration
Example: Falls Lake
% of Data Exceeding Chlorophyll-a Standard of 40 ug/L
Based on 2005-2007 Monitoring Data

Legend
- 0.0 - 10.0%
- 10.0 - 20.0%
- 20.0 - 30.0%
- 30.0 - 40.0%
- 40.0 - 50.0%
- 50.0 - 60.0%
- 60.0 - 70.0%
- 70.0 - 85.0%
Example: Falls Lake

**Nutrient Reduction Goal**

40% TN and 77% TP
Components of Falls Lake Nutrient Management Strategy

- Goals
- Definitions
- New Development
- Existing Development
- Wastewater Discharge
- Agriculture
- State & Federal Entity
- Options for Offsetting Nutrient Loads
Components of Falls Lake Nutrient Management Strategy

- Fiscal analysis
  - Estimated cost: < $1.5B
  - Estimated benefit: > $603M
- Effective January 2011
- Fully implemented by 2036
- TMDL?

http://portal.ncdenr.org/web/wq/ps/nps/fallslake
Future Efforts

• Refine accounting tools
• Identify gaps in source identification
• Update chlorophyll-\(a\) standard
• Prevent future impairments
A New Proposal: Threshold Chlorophyll-\(a\) Levels

- Are **not** water quality standards
- Exceedances ≠ water quality impairment
- Exceedances = implementation of proactive nutrient control measures
- **Prevent** impairment
Questions?

www.ncwaterquality.org