Watershed Planning: Emerging Regional and National Issues

WCRSA
Strategic Planning Technical Committee
March 24, 2008

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Regulatory Basis For Watershed Planning

- Stage 1: Standard Setting
- Stage 2: Monitoring
- Stage 3: Assessment
- Stage 4: Watershed Planning
- Stage 5: Implementation

Clean Water Act Framework for Restoring Polluted Waters

- Adopt Water Quality Standards
- Monitor & Assess Waters
- List Impaired Waters
- Develop TMDLs (TMDL=WLA+LA+MOS)
- Implement TMDLs (Point Source/Nonpoint Source)

- We can’t set standards without monitoring
- We can’t monitor without good standards
- We can’t assess without good monitoring data
- We can’t plan without good assessments
- We can’t implement programs without good plans
TMDLs: EPA’s Role

- **Are subject** to public review

- EPA actions on TMDLs
  - EPA has 30 days to review and approve or disapprove TMDLs
  - If EPA disapproves, it has 30 days to establish TMDLs

- EPA expects States to develop TMDLs for impaired waters within **8-13 years** of initial listing
As Nutrient Criteria For Moving Waters Are Developed, EPA Anticipates Many Additional Nutrient Listings!

Land-Use Change and Increased Impervious Surfacing Cause Sediment Impairments, Others…

TMDLs Are Implemented Through A Combination of Regulatory and Non-Regulatory Mechanisms

TMDLs Can Be Modified To Reflect Changing Conditions But They Do Not Expire!
Implementing TMDLs: Federal Laws and Regulations

- CWA 303(d): State shall incorporate TMDLs into its “continuing planning process” (303(e) & 40 CFR 130.7)

- Permit limits are consistent with the requirements & assumptions of wasteload allocations [40 CFR 122.44(d)(1)(vii)(B)]

- Comply with minimum control measures based on an approved total maximum daily load (TMDL) [40 CFR 122.34(e)(1)]
Regulating Stormwater

Greenville County NPDES Storm Water Program Annual Report 07
Sustainable Infrastructure

EPA’s Four Pillars Approach

- Better Management of Water and Wastewater Utilities,
- Rates that Reflect the Full Cost Pricing of Services,
- Efficient Water Use, and
- Watershed Approaches to Protection.
Sustainable Infrastructure

The Clean Water and Drinking Water Infrastructure Gap Analysis

<table>
<thead>
<tr>
<th>No Revenue Growth Scenario: 2000 - 2019</th>
<th>Total Payment Gap (20 years) (Average in Billions of Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital:</td>
<td>Clean Water</td>
</tr>
<tr>
<td>O&amp;M:</td>
<td>$122</td>
</tr>
<tr>
<td>Total:</td>
<td>$148</td>
</tr>
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<td></td>
<td>$271</td>
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</tbody>
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EPA 816-F-02-017
Chemical addition to wastewater with aluminum- or iron-based coagulants followed by tertiary filtration can reduce total phosphorus concentrations in the final effluent to very low levels (TP at or less than 0.01 mg/l).

The monthly residential sewer rates charged to maintain and operate the entire treatment facility ranged from as low as $18 to the highest fee of $46.

Recently published studies report that the longer solids retention times used in biological nutrient removal (BNR) processes also removes a significant amount of other pollutants contained in municipal wastewater, including toxics, pharmaceuticals, and personal care products.

The treatment processes and quality of the final effluent produced by tertiary filtration for phosphorus removal typically meet state criteria for wastewater reclamation.
Green Infrastructure

- Green infrastructure is an approach to wet weather management that is cost-effective, sustainable, and environmentally friendly.

- Green Infrastructure management approaches and technologies infiltrate, evapotranspire, capture and reuse stormwater to maintain or restore natural hydrologies.

- At the largest scale, the preservation and restoration of natural landscape features (such as forests, floodplains and wetlands) are critical components of green stormwater infrastructure.
Green Infrastructure

A porous pavement parking lot (Source: Invisible Structures, no date)

A rain barrel is used to collect rooftop runoff using a gutter/downspout system

Green Roof - Chicago

A stormwater wetland detains stormwater, removes pollutants, and provides habitat and aesthetic benefits (Source: The Bioengineering Group, Inc., no date)

Rain Garden - Suburbia
Efficient Water Use

Water and Energy

- An estimated 3% of national energy consumption, equivalent to approximately 56 billion kilowatt hours (kWh), is used for drinking water and wastewater services. Assuming the average mix of energy sources in the country, this equates to adding approximately 45 million tons of greenhouse gas to the atmosphere.

- ENERGY STAR estimates that $4 billion is spent annually for energy costs to run drinking water and wastewater utilities. If the sector could reduce energy use by just 10% through cost-effective investments in energy efficiency, collectively it would save about $400 million annually.

- If one out of every 100 American homes retrofitted with water-efficient fixtures, we could save about 100 million kWh of electricity per year and avoid adding 80,000 tons of greenhouse gas to the atmosphere.
Efficient Water Use

New England:

Cleaner Environment Through

Innovative Energy Management

How to Reduce Energy Use & Increase Savings for Water & Wastewater Treatment Plants in New England

March 6, 2008 • 8:30 am - 4:00 pm
600 Suffolk Street • Lowell, Massachusetts
University of Massachusetts Lowell • Wannamancit Building

This Workshop will help utilities:
• Develop energy management programs
• Prioritize energy improvements
• Set measurable energy goals to reduce consumption
• Manage energy to reduce operating costs
• Follow through on priority management goals

“Rising energy costs can be a major challenge for water utilities in New England. The good news is that there are many opportunities to save money and help the environment by focusing on energy-saving techniques. EPA’s new Energy Management Workbook has valuable information and tips for how utilities can minimize energy use and cost, without sacrificing performance.”

— Robert Varney
U.S. EPA New England Administrator

Ensuring a Sustainable Future:
An Energy Management Guidebook for Wastewater and Water Utilities

JANUARY 2008
Growing Toward More Efficient Water Use: Linking Development, Infrastructure, and Drinking Water Policies

www.epa.gov/smartgrowth
Watershed Approaches

- Watershed-Based NPDES Permitting
- Source Water Protection
- Water Quality Trading
- Green Infrastructure
- Wet Weather Integration
- Onsite/decentralized Wastewater Management
- Smart Growth
Watershed Approaches: Reedy Basin

- EPA/SCDHEC
- Collaborating With Stakeholders
  - Local Governments
  - Universities
  - NGOs

Clemson Center For Watershed Excellence

Greenville County

Upstate Forever
Watershed Approaches: Working With NGOs

Upstate Forever: Recipient of EPA’s 2008 Implementation Targeted Watershed Grant ($800K)

"Market-Based Mechanisms for Promoting Low-Impact Development, Mitigating Legacy Stormwater Discharges, and Restoring Urban Floodplains in the Saluda-Reedy Watershed, SC"

Grantee will use economic incentives to promote low impact development, stormwater mitigation banking and floodplain restoration banking

Upstate Forever: 2007 Finalist - Regional Environmental Priority Projects Grants ($70K)

“GIS-Based Identification of and Development of Protection Strategies for Critical Watershed Areas in the Mountains of South Carolina”

Grantee will develop and promote protection initiatives in Greenville, Pickens, and Oconee County Headwaters
Questions?

Thank you for your time!

LINKS

http://www.epa.gov/smartgrowth/index.htm

http://www.epa.gov/waterinfrastructure/index.html

http://www.epa.gov/owow/tmdl/

EPA Region 4 Is Proud to Support WCRSA’s 20-Year Planning Efforts!

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