Overview of EPA’s Promulgated Numeric Nutrient Criteria for Florida’s Streams, Lakes and Springs

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Overview of Presentation

- DEP’s Perspective on NNC
- Nutrient Criteria Development Timeline
- EPA’s Promulgated Criteria
- Site-Specific Alternative Criteria
- TMDLs as SSACs
- Implementation and Cost Estimates
- Legal Challenges
- What’s Next?
DEP’s Perspective on EPA’s NNC

- Agree that more must be done to address nutrient impairment
  - Based on current assessments ~40% of Florida’s inland waters are impacted by nutrients
- Numeric Nutrient Criteria must be based on sound science and any policy decisions must take economics into account
- EPA relied largely on Florida data and analysis, and made substantive improvement over their initial proposal, but....
  - We still have some issues
Nutrient Criteria Development Timeline

- FDEP Started Developing Numeric Criteria in 2001
- Litigation began in 2008

**Note:** If court invalidates EPA determination, consent decree and any promulgated criteria would be invalid.
Background - EPA’s Proposal

- Promulgated rule includes:
  a) Lake, stream, and spring criteria for the protection of aquatic life
  b) Additional stream criteria for the protection of downstream lakes
    - EPA deferred “DPVs” for estuaries
  c) Provisions for Federal Site-Specific Alternative Criteria (SSAC)
Effective Date

• Criteria effective 15 months after publication in the Federal Register
  • Published on Dec. 6, 2010, so go into effect on March 6, 2012

• Federal site-specific alternative criteria (SSAC) provision of section 131.43(e) went into effect on Feb. 6, 2011 (60 days after publication in the Federal Register)
**Background - EPA’s Proposal (continued)**

- We had an approved Nutrient Criteria Development plan at the time of the “determination” letter, and continued to work on criteria through summer of 2009
- Held workshops on draft criteria and rules in Summer 2009
- We stopped all rule development when EPA signed Consent Decree
Stream Criteria

• We could not identify consistent dose-response relationships

• Based on “reference approach,” with 5 regions
  • Used DEP’s “benchmark” approach (90th percentile of minimally disturbed sites) for most of the regions, and
  • Used EPA’s “SCI” approach (75th percentile of biologically healthy sites) for West Central Region
Stream Criteria (continued)

Table B-1. EPA’s Numeric Criteria for Florida Streams.

<table>
<thead>
<tr>
<th>Nutrient Watershed Region</th>
<th>Instream Protection Value Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TN (mg/L)</td>
</tr>
<tr>
<td>Panhandle West</td>
<td>0.67</td>
</tr>
<tr>
<td>Panhandle East</td>
<td>1.03</td>
</tr>
<tr>
<td>North Central</td>
<td>1.87</td>
</tr>
<tr>
<td>West Central</td>
<td>1.65</td>
</tr>
<tr>
<td>Peninsula</td>
<td>1.54</td>
</tr>
</tbody>
</table>

- Expressed as annual geometric means, which cannot be exceeded more than once in a 3-year period
- Not clear if criteria are average for the waterbody, or apply everywhere, and we have asked for clarification
Stream Criteria (continued)

- Differences from DEP approach include:
  - EPA excluded sites that were impaired for Dissolved Oxygen (DO), which excluded many sites that drain wetlands areas, which tend to have naturally higher TN levels
  - EPA did not require biological validation of impairment, which we required in our draft rule
  - EPA did not establish requirements for SSAC process
Lake Criteria

- Based on empirical relationships

<table>
<thead>
<tr>
<th>Table C-1. EPA’s Numeric Criteria for Florida Lakes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Color(^a) and Alkalinity</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Colored Lakes(^c)</td>
</tr>
<tr>
<td>[1.27-2.23]</td>
</tr>
<tr>
<td>Clear Lakes, High Alkalinity(^d)</td>
</tr>
<tr>
<td>[1.05-1.91]</td>
</tr>
<tr>
<td>Clear Lakes, Low Alkalinity(^e)</td>
</tr>
<tr>
<td>[0.51-0.93]</td>
</tr>
</tbody>
</table>

- “Clear” < 40 PCU, and “Low Alkalinity” < 20 mg/L
- Criteria expressed as annual geometric means, which cannot be exceeded more than once in a 3-year period
Lakes Modified Criteria

• “Baseline” criteria for TN and TP apply unless DEP establishes “modified criteria”
  • To be eligible, must meet chl a magnitude for at least the 3 immediately preceding years, and must meet data requirements
    • At least one sample in May – September and at least one sample in October – April, and a minimum of 4 samples from each year
  • Must be within range shown in parenthesis, and cannot be above criteria applicable to streams receiving the lake’s discharge
Colored Lake Chl-a Response to Total Phosphorus

\[
\ln(y) = 1.128 \ln(x) + 5.729 \\
R^2 = 0.581
\]

Chl-a typically < 20

Chl-a typically > 20

Range of Uncertainty
Lake Modified Criteria (continued)

- Differences from DEP approach
  - We planned to implement modified criteria on annual basis
    - If chlorophyll a criterion met, the TN and TP criteria would be the measured values, as long as they were below the upper range
    - Easy to implement in 303(d) context, but harder to implement in permitting context
  - EPA’s requirement for data in all three years greatly limits number of lakes eligible for modified criteria
Lake Downstream Protection Values (DPVs)

- DPV can be allowable load or concentration at the point of entry into the lake
  - If DPV not met at point of entry, then streams in watershed do not attain DPV and would be listed as impaired
Lake DPVs (continued)

• Provides three options to determine DPV
  1. Can use BATHTUB, WASP or other scientifically defensible model
  2. If downstream lake meets applicable nutrient criteria, then DPVs are ambient in-stream levels
  • Assessed on annual basis
  3. If do not model and lake criteria not attained, then the DPVs are set at lake criteria
  • No assimilation in lake or in stream
**Concerns with Downstream Protection Values**

- DEP believes that DPVs are neither legally nor technically necessary, and will present an undue burden on DEP to develop
  - Not needed because stream criteria based on reference approach are inherently protective
  - Limits State’s/Stakeholder’s flexibility on how best to address impairment of downstream waters
  - SAB Panel draft report noted they appear to ”unnecessarily restrict” TMDL Allocation process
Springs Nitrate Criterion

• Set at 0.35 mg/L as an annual geometric mean, not to be exceeded more than once in a three-year period
  • Based on dose-response relationships with periphyton and lab studies
Federal SSAC Provision

- Includes provision that allows EPA to establish site-specific chlorophyll a, TN, TP, or nitrate-nitrite numeric criterion where that SSAC is demonstrated to be protective of the applicable designated use(s)
  - Must be consistent with 40 CFR 131.11, including protection of downstream waters
**SSAC Steps**

1. Entity seeking SSAC must compile the supporting data and analyses, develop expression of the criterion, and prepare the needed documentation.

2. Entity must provide copy of all materials to DEP so that DEP can provide comments to EPA.

3. Regional Administrator will evaluate submittal and if adequate, will prepare Technical Support Document and publish a public notice and take comment on the proposed SSAC.

   - Approval is an agency action that can be challenged.
Allowable SSAC Approaches

• Regulation describes three approaches
  • Can use approaches that EPA used to develop stream and lake criteria and apply these methods to a smaller subset of waters
  • Can “conduct a biological, chemical, and physical assessment of waterbody conditions”, or
  • Use another scientifically defensible approach that is protective of designated use

• EPA has prepared draft guidance
Impact of Criteria on Nutrient TMDLs

• While not specifically addressed in rule, the preamble notes that:
  • No TMDL will be rescinded or invalidated as a result of the rule
  • Rule does not have the effect of withdrawing any prior EPA approval of a TMDL in Florida
  • Neither the CWA nor EPA regulations require TMDLs to be completed or revised within any specific time period after a change in water quality standards occurs

But….., NNC “trump” if more stringent
Impact of Criteria on Nutrient TMDLs (continued)

• Preamble also provides discussion about nutrient TMDLs as potential candidates for SSAC
  • EPA-established or approved TMDLs may provide sufficient information to support a SSAC
  • Federal SSAC procedure must be followed for determining whether any specific TMDL target should be adopted as a SSAC

• We feel that nutrient TMDLs should “trump” NNC, and have raised several issues related to translating TMDLs into SSACs

  Most notably load versus concentration
Implementation

- Regulation does not address implementation
- EPA plans to work with DEP and stakeholders to address questions about implementation of criteria
  - EPA hosted webinars to answer and solicit questions
- Preamble notes that can use compliance schedules, variances, and use changes
Economic Analysis

- EPA significantly underestimated costs to implement the criteria ($130 Million)
  - We think costs more likely to be between $1.7 and $4.8 Billion ANNUALLY
  - EPA cost estimates too low because they only estimated incremental costs, assuming our draft criteria were adopted, AND presumed many dischargers would receive some type of relief
- Our estimates include treatment to meet NNC
  - Reverse Osmosis and/or Deep Well Injection
Legal Challenges to EPA’s NNC

- Several parties challenged the regulation, alleging:
  - Determination is arbitrary/capricious (was a litigation strategy)
  - EPA violated a fundamental precept of the CWA that States have the primary responsibility for adopting water quality standards
  - “Reference” approach for streams is not valid because it does not link nutrients to impairment
  - Criteria are impossible to achieve, and many pristine waters and waters with naturally high nutrients will be deemed impaired
  - EPA failed to follow required administrative procedures
What’s Next?

• Lawsuits will take years
• DEP still evaluating the criteria and will need to brief new leadership team
  • Not clear what State rulemaking will be done
For More Information

http://www.dep.state.fl.us/water/wqssp/nutrients