Using Phosphorus & Biology together: Developing Phosphorus Site-Specific Criteria

An overview of DRAFT rule concepts

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Background

- DNR is currently working on a group of rules related to how we classify and assess our waterbodies
- Two parts of the rules:
  Biological Criteria & Site-Specific Criteria for Phosphorus
- SSC is a tool for implementing the P criteria

Overview

- What is an SSC?
- SSC are based on biological criteria & P Response Indicators
- Different types of SSC: Examples
- SSC Process
What is a Site-Specific Criterion? (SSC)

- An alternative criterion that can be developed for waterbodies where the statewide TP criterion is over- or under- protective. Goal: To set a criterion at an appropriate level of protection.
  - There’s a wide range of waterbody responses to TP levels, based on physical/chemical factors

★ TAKEAWAYS:
  SSC are based on protecting the receiving water.
  - Protect Fish & Aquatic Life uses & Recreation uses
  - Demonstrated using biological metrics

SSC are NOT based on economics, and they’re not for everyone

Using Biology to Assess Waters

The biology can tell us two different things:

- How’s the overall biological health?
  → Biological criteria (biocriteria)

- Is the biology showing a response to phosphorus?
  → Phosphorus response indicators
### Biocriteria & Phosphorus Indicators

#### Biological Criteria (community level):

<table>
<thead>
<tr>
<th>Streams/Rivers:</th>
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</thead>
<tbody>
<tr>
<td>• Bugs</td>
</tr>
<tr>
<td>• Fish</td>
</tr>
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<table>
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<tr>
<th>Lakes:</th>
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<tr>
<td>• Plants</td>
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<td>• Phytoplankton?</td>
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#### P Response Indicators (P-specific):

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<tr>
<td>• Bugs (nutrient-specific metrics)</td>
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<tr>
<td>• Primary Productivity</td>
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<tr>
<td>• algal biomass</td>
</tr>
<tr>
<td>• Diatom Nutrient Index</td>
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<td>• chlorophyll a</td>
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<td>• Primary Prod. (Chl a)</td>
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<td>• Plants (TP-sensitive plants)</td>
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### Using Biology to determine SSC eligibility:

There are two main types of SSC:

- **Less-stringent SSC** (raise the TP criterion)
- **More-stringent SSC** (lower the TP criterion)

Which one you do depends on 2 questions:

1. Is waterbody meeting its statewide TP criterion?
2. Is the waterbody meeting its biological criteria & TP indicator thresholds?
Compare TP & Biology

<table>
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**NOT ELIGIBLE**

Phosphorus: Exceeding 75 ug/L TP
Biology: Algae problem
Compare TP & Biology

- **Not eligible**

**CASE A:** Setting a Less-stringent (higher) SSC target

- Needs to go on the Impaired Waters List
- Needs clean-up/ restoration; see if biology rebounds
- May need a Use Attainability Analysis (UAA)

**Biology**

- **Not Met**
  - TP Criterion Exceeded: Not eligible for an SSC
  - TP Criterion Attained: CASE B. May be eligible for a more stringent SSC

**Biology Met**

- TP Criterion Exceeded: CASE A. May be eligible for a less stringent SSC
- TP Criterion Attained: CASE C. Not eligible for an SSC except for ORW/ERW waters

**Phosphorus:** Exceeding 75 ug/L TP

**Biology:** Algae problem
CASE A: Setting a Less-stringent (higher) SSC target

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Most Likely for Less-Stringent SSC

Reservoirs (lake-like)

Lake statewide criteria (ex. 40);
If TP=60 but biology is good, may be set too low

CASE A: Setting a Less-stringent (higher) SSC target

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Most Likely for Less-Stringent SSC

Reservoirs (lake-like)

High Natural Background TP (geology, etc.)
-Exceeds 40 but biology good
-may be set too low
CASE A: Setting a Less-stringent (higher) SSC target

If TP exceeds criteria but biology is good, and downstream uses are also protected, ➔ set the SSC at current ambient TP.

- Current ambient is protective of biology
  - Discharges capped at current discharge levels
- Document factors leading to lower sensitivity
  - high natural background TP, lake color, etc.
- Safeguard: continued monitoring for declines; revoke SSC if needed

CASE B & C: Setting a More-stringent (lower) SSC target

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**Most Likely for More-Stringent SSC**

- Impoundments (river-like)
  - Stream/River statewide criteria (ex. 100); if TP=80 but biology is poor, criteria may be too high
  - Other waters attaining TP but problems with algae, plants, bugs
CASE B & C: Setting a More-stringent (lower) SSC

**CASE A.**
- Biology Not Met
- Not eligible for an SSC
- May be eligible for a less stringent SSC

**CASE B.**
- Biology Met
- TP Criterion Exceeded
- May be eligible for a more stringent SSC

**CASE C.**
- TP Criterion Attained
- Not eligible for an SSC except for ORW/ERW waters

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### SSC Process

**A. Preliminary Action Plan**
- Review existing data
- Submit preliminary plan & meet with DNR

**B. Monitoring/Modeling**
- 2 yrs monitoring data needed

**C. Data Analysis & Selection of SSC Target**
- Includes verifying downstream protection

**D. Submittal, Review, & Approval**
- DNR review & Public comment
- EPA approval
- Codification

**Most Likely for More-Stringent SSC**
- Impoundments
- Stream/River statewide criteria (ex. 100);
  If TP=80 but biology is poor, criteria may be too high
- Other waters attaining TP but problems with algae, plants, bugs

"Outstanding/ Exceptional Resource Waters"
- Set lower for protection
Timeline for requestor & DNR

• Will take multiple years if need monitoring, modeling, and/or codification
• Cyclical schedule for submissions, reviews, and approvals
• Conscious of permitting timeline needs
  • More frequent cycle for the first 5 years? Every 2-3 years after that?

Discussion? Questions?

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