Integration of TMDL and Nonpoint Source Programs: Saginaw Bay - Bad Axe Creek (MI) TMDL/319 hybrid

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Project Overview

• U.S. EPA and Michigan Department of Environmental Quality (MDEQ) collaborative effort

• Integration of Total Maximum Daily Load (TMDL) and Nonpoint Source Implementation efforts

• Hybrid document which includes elements of an approvable TMDL with a Watershed Implementation Plan (Section 319 Nine Elements)

• Contains sufficient detail so that management actions and shovel-ready Best Management Practices (BMPs) can be easily identified and quickly adopted by state and federal partners.
Saginaw Bay

- Saginaw Bay watershed is the state’s largest watershed (~ 8,700 mi² & 7,000 miles of streams)
- Saginaw Bay has been identified as a priority watershed under GLRI
- Goal of reducing phosphorus loads to the Bay

Courtesy of Tetra Tech
Bad Axe Creek subwatershed

- Small subwatershed of the Pinnebog River Watershed
- Watershed Area ~ 29.5 mi$^2$
- 70% Agricultural, 11% Developed, 9% Wetlands, 7% Forest, 3% other
- Designated uses impaired by phosphorus and bacteria

Courtesy of Tetra Tech
319 Plan Elements (full coverage)

Element A: Identification of causes and sources

Element B: Load reductions from management measures

Element C: Description of management measures

Element H: Criteria to assess progress

Element I: Monitoring to evaluate effectiveness
319 Plan Elements (less coverage)

Element D: Estimate of technical, financial and regulatory assistance needed

Element E: Public information, education and participation

Element F: Schedule for implementation

Element G: Interim implementation milestones
Watershed Implementation Plan Development

- Watershed Implementation Plan (IP) developed prior to TMDL (typically the TMDL is developed first followed by IP)
- Aim was to work with stakeholders early on and identify implementation practices which were accepted by locals and readily adopted (i.e., shovel-ready projects)
- Stakeholder Engagement efforts - Working with Huron County Conservation District
- Draft TMDL calculations were developed as part of the IP
Watershed Implementation Plan Development continued...

• Assessing the benefits of a variety of water quantity and quality control strategies
• Selection of optimal combination of Best Management Practices (BMPs) to minimize costs
• Aim to be consistent with community goals
• Meet the reduction targets of TMDL calculations necessary to attain water quality standards/targets
TMDL Targets and Source Discussion

• **Bacteria Water Quality Standard**
  - Total Body Contact– 130 *E. coli* per 100 mL as 30-day geometric mean
  - Partial Body Contact– 1000 *E. coli* per 100 mL as a geometric mean of 3 samples.

• **Phosphorus Target** – 60 µg/L total phosphorus as growing season average (June 1 to September 30)

• **Point Sources**: WWTP, MS4, CAFOs, wastewater lagoons

• **Nonpoint Sources**: Agricultural surface runoff, subsurface tile drainage, septic systems, runoff from livestock areas
Watershed Implementation Recommendations

- Using a suite of agricultural BMPs (systems approach) in critical areas
- Aligning the recommendations of the hybrid document with goals/language of MI’s 319 Request for Proposals – ensuring transferrable ideas
- Ranked BMPs; #1: Nutrient management/residue management, #2: Cover Crops, #3: Water quantity management, #4: No-till and or reduced tillage, and #5: Riparian buffers/filter strips
Advantages which Michigan has for this particular project

- NPS field inventory completed by the State (enable the identification of critical areas)
- Fairly robust existing water quality data set and flow data within the watershed
- Easily identifiable Point and Nonpoint source information
- Active stakeholder group with demonstrated action/buy-in for implementation efforts
Project Benefits/Next Steps

• Better integration between TMDL and NPS staff leading to more collaboration on future hybrid projects

• Better approach for watersheds with stakeholders interested in addressing water quality impairments but with no capacity or funding to develop complete nine-element plans (pending EPA approval)

• Future hybrid projects could (EPA underlined for emphasis) serve as implementation plans under MI’s proposed statewide E. coli TMDL
QUESTIONS

Courtesy NBC