Tribal Involvement and the 303(d) Impaired Waters Program

Jamie Fowler, US EPA Office of Water
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Objective

- Overview of the 303(d) Program:
  - Identification of Impaired Waters
  - Development of Pollution Budget Plans (TMDLs)
- Tribal involvement with the 303(d) Program
- Overview of GIS tools to facilitate analysis of impaired waters
Overarching goal of the CWA

- “to restore and maintain the chemical, physical and biological integrity of the Nation’s waters”
Statutory Context:

The CWA Restoration Framework

- Adopt Water Quality Standards
- Monitor and Assess Waters
- List Impaired and Threatened Waters
- Develop Total Maximum Daily Loads (TMDL = WLA + LA + MOS)

303(d) Program

Control Point Sources via NPDES Permits

Manage Nonpoint Sources Through Grants, Partnerships, and Voluntary Programs
How does the 303(d) Program fit into the CWA?

- CWA includes 2 basic approaches for protecting and restoring the nation’s waters:
  2. *Water-quality based approach:* designed to achieve the desired designated uses of a water and may result in more stringent NPDES permit limits.

The 303(d) program is at the core of the water-quality based approach and serves to link the water goals to the NPDES permit limits.
What are the components of a 303(d) program?

- **Lists of Impaired Waters (a.k.a., “303(d) List”)**
  - Identify waters not meeting WQS and their causes of impairment
  - Submit a list of impaired and threatened waters to EPA every two years on even-numbered years

- **Develop Total Maximum Daily Loads (TMDLs)**
  - Detailed, scientific plan that analyze pollutant loadings and sources to allocate reductions among those sources and restore the water to attain its designated uses
  - \[ TMDL = \text{Sum of WLAs} + \text{Sum of LAs} + \text{MOS} \]
  - Submit TMDL Plans to EPA on an ongoing basis
Listing of Impaired Waters

1. **States/tribes/territories** identify **waters not meeting WQS** based on “all existing and readily available information”

2. **States/tribes/territories** establish **priorities** for **TMDL development**

3. **States/tribes/territories** develop **schedule of TMDLs** to be developed within 2 years

4. **States/tribes/territories** provide **long-term plan** – Complete **TMDLs 8 to 13 years from first listing**

5. **EPA** has 30 days to approve or disapprove list submitted April 1st of each even year
   - If EPA disapproves State list, EPA has 30 days to develop list for the State
What’s the universe of Impaired Waters?

- 42,388 impaired waters
- 74,915 Causes of Impairment (waterbody/impairment combination)

<table>
<thead>
<tr>
<th>Cause of Impairment Group Name</th>
<th>Number of Causes of Impairment Reported</th>
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<tbody>
<tr>
<td>Pathogens</td>
<td>10,965</td>
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<tr>
<td>Metals (other than Mercury)</td>
<td>7,614</td>
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<tr>
<td>Organic Enrichment/Oxygen Depletion</td>
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<td>Nutrients</td>
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<td>Polychlorinated Biphenyls (PCBs)</td>
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<td>Sediment</td>
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<tr>
<td>Turbidity</td>
<td>3,131</td>
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<tr>
<td>Temperature</td>
<td>3,045</td>
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</table>
Over 46,000 TMDLs Completed

We are here →
What is a TMDL?

A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant’s sources.

*The TMDL comes in the form of a technical document or plan.*
TMDL Calculation

- TMDL = \( \sum WLA_i + \sum LA_i + MOS \)
- \( \sum WLA_i \): Sum of waste load allocations (point sources)
- \( \sum LA_i \): Sum of load allocations (nonpoint sources)
- MOS: Margin of Safety
- Completed for each waterbody/pollutant combination
The TMDL Development Process involves the following steps:

1. **Problem Identification**
2. **TMDL Numeric Targets (WQS)**
3. **Pollutant Source/Load Assessment**
4. **Linkage Between Pollutant Loading and In-Stream Response**
5. **Allocation Analysis**

The final step is the implementation, where the TMDL = WLA + LA + MOS equation is applied, followed by monitoring and implementation.
Wasteload Allocation Components

- Diffuse runoff
- Stormwater conveyance
- Point source
- Non-stormwater point sources
- Atmospheric deposition
- Background
- Groundwater inflow
- Irrigated ag return flow & ag stormwater

Load Allocation Components
Pie represents the total TMDL loading and each slice of the pie represents an allocation within that TMDL.
TMDLs are Expressed as:

- Mass (e.g., pounds per day)
- Toxicity (e.g., toxic units)
- Energy (e.g., heat in temperature TMDLs)

*Emphasis TMDLs expressed as daily loads*
TMDL Implementation

- TMDLs **not** self implementing under 303(d)

- **Point Sources:**
  - Permit limits consistent with WLA are enforceable under CWA through National Pollutant Discharge Elimination System (NPDES)
  - Issued by EPA or States w/ delegated authority

- **Nonpoint Sources:**
  - No federal regulatory enforcement program
  - Primarily implemented through State/Tribal/local NPS management programs (few w/ regulatory enforcement)
Tribal Lands and Impaired Waters: A GIS mapping application

- Geographic Information System (GIS) application developed to facilitate analysis of waters not meeting water quality standards on and near Tribal lands

- Data layers include:
  - May 2008 compilation of 303(d) impaired waters
    - Reflects only waters that have been assessed – approx. 28% nationally
  - Tribal lands & federal land ownership, e.g. Forest Service
  - Watershed boundaries & “hydrologic” Tribal buffers
  - Locational aids, e.g. cities, towns, major rivers & lakes

- Summary statistics
Identify Impaired Waters on Tribal Lands – Oneida Reservation, WI
Identify Impaired Waters Entering Tribal Lands

San Ildefonso Pueblo, NM
Federal Land Ownership Layers Help Identify Upstream Neighbors
Top 10 Pollutant Causes of Impaired Waters on Tribal Lands

1,463 Impairments on Tribal lands
(approximately 65,000 nationwide)
Top 10 Pollutant Causes of Impaired Waters – Length of Impaired Rivers on Tribal Lands

- >24,300 miles of impaired waters on Tribal lands
- Note similar ranking to # of impaired waters; dissolved oxygen & turbidity reversed in rank; Toxic inorganics replaces sediment in top 10
Top 10 Pollutant Causes of Impaired Waters – Area of Impaired Lakes on Tribal Lands

- >1,300,000 acres of impaired lakes on Tribal lands
- Mercury dominates impaired lake acreage on Tribal lands
Pollutants on Tribal Waters – Comparison by # of Impairments, # of Impaired River Miles, & # of Impaired Lake Acres
Tribes & EPA Regions
## Top 3 Pollutant Causes of Impairments on Tribal Lands - by EPA Region

(Top cause in each region shown in blue)

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<th>R2</th>
<th>R4</th>
<th>R5</th>
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<td>896</td>
<td>10</td>
<td>138</td>
<td>54</td>
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Summary and Information

Free GIS tool shows locations & pollutant causes of water quality problems on & near tribal lands

Common pollutant concerns across several EPA regions suggests collaborative opportunities

Potential for Priority-Setting:
• Pathogens dominate the total # of impairments & impaired river miles
• Mercury #1 cause of impaired lakes

Contact Dwight Atkinson for a copy of the program:
atkinson.dwight@epa.gov (202)566-1226
How Can Tribes Get Involved?

Clean Water Act Process

- Adopt Water Quality Standards
- Monitor & Assess Waters
- List Impaired Waters
- Develop TMDLs
- Implement TMDLs (Point Source/Nonpoint Source)

Tribes:

- Comment on proposed water quality standards
- Submit monitoring data to state
- Comment on list of impaired waters
- Participate in state TMDL development; Develop 3rd party TMDLs
- Review point source permits; Implement nonpoint source controls; Monitor water quality response; Review TMDL
For more information...

**TMDL Home Page**
http://www.epa.gov/owow/tmdl/

**303(d)/305(b) Integrated Reporting Guidance**
http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/guidance.cfm

**Draft Handbook for Developing Watershed TMDLs**
http://www.epa.gov/owow/tmdl/pdf/draft_handbook.pdf

**Draft TMDL to Stormwater Permits Handbook**

**TMDL Program Results Analysis**
http://www.epa.gov/owow/tmdl/results

- Contact Information: fowler.jamie@epa.gov