

What is a Total Maximum Daily Load - What does it mean for you?

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What is a TMDL?



A Total Maximum Daily Load or **TMDL** is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards.

TMDLs can cover a wide variety of pollutants, e.g. *E. coli*, phosphorus, PCBs.

Water Quality Standards

The Michigan WQS are a set of rules developed to protect designated uses:

Rule 100. (1) At a minimum, all surface waters of the state are designated for, and shall be protected for, all of the following uses:



Designated Uses:



- Agriculture;
- Navigation;
- Industrial water supply;
- Public water supply at the point of water intake;
- Warmwater fishery;
- Other indigenous aquatic life and wildlife;
- Total and partial body contact recreation;
- Fish consumption;
- Coldwater fishery

Water Quality Standards

The WQS include rules for:

- Designated uses (Rule 100)
- Physical characteristics (Rule 50)
- Dissolved solids (Rule 51)
- pH (Rule 53)
- Toxic Substances (Rule 57)
- Microorganisms (Rule 62)
- Nutrients (Rule 60)
- Dissolved oxygen (Rule 64 and 65)
- Temperature (Rule 69-75)



Why do we develop TMDLs?

- The Clean Water Act Section 303(d) requires each state to develop a list of water bodies **not meeting Water Quality Standards**, i.e. the 303(d) or TMDL list.
- List must be updated every 2 years
 - The list is public noticed
- List must identify the year the TMDL will be developed
- A TMDL must be produced for each impaired water body

Water Quality Assessment

- The DEQ considers data and information collected and submitted by:
 - DEQ staff;
 - DEQ grantees and contractors;
 - other agencies;
 - the public (including volunteer monitoring groups)

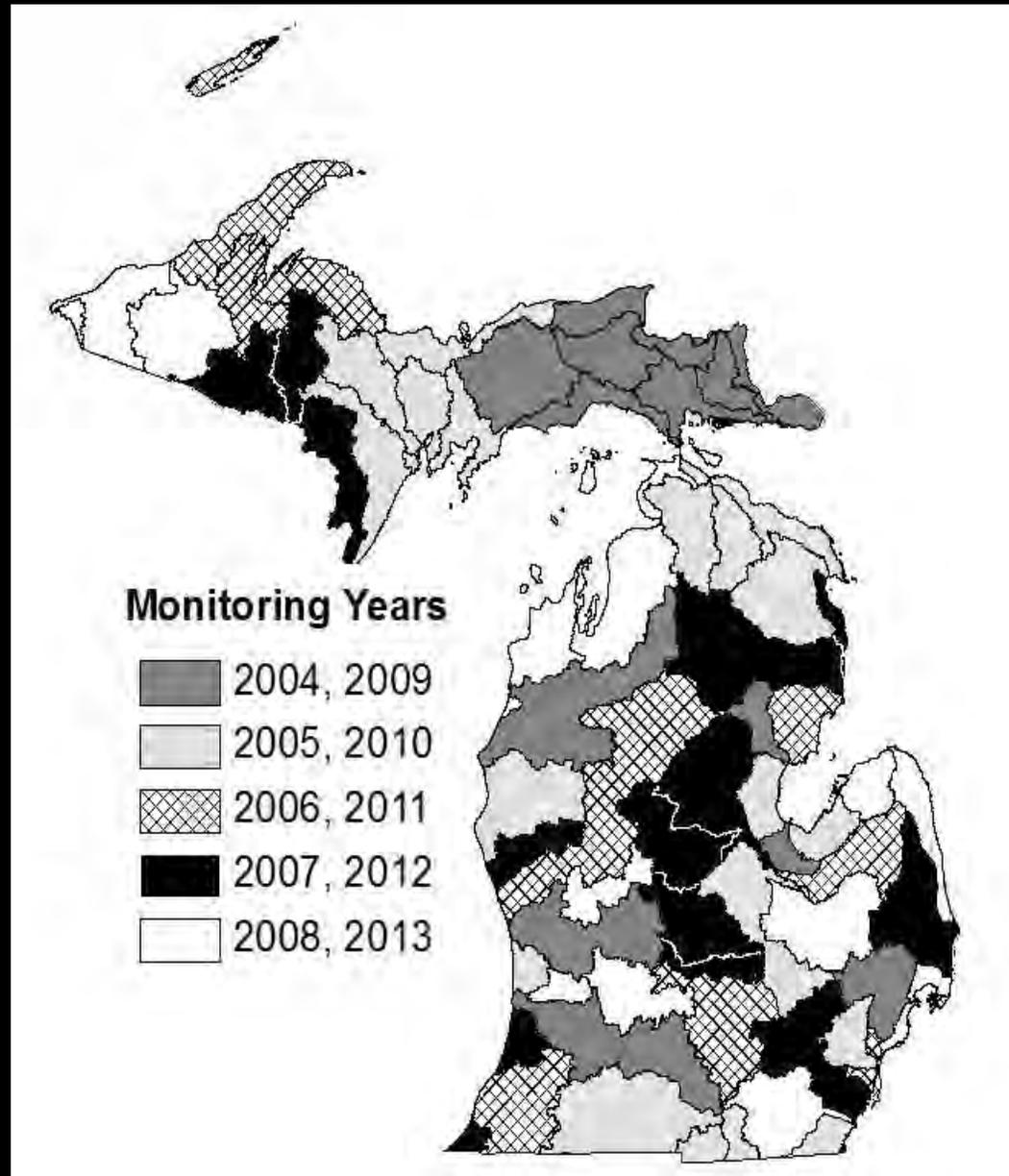


Information considered includes:

- data on fish contaminants;
- water chemistry;
- sediment chemistry;
- biological integrity;
- wildlife contaminants;
- bathing beach monitoring;
- inland lakes monitoring



5 Year Rotating Basin Surface Water Monitoring

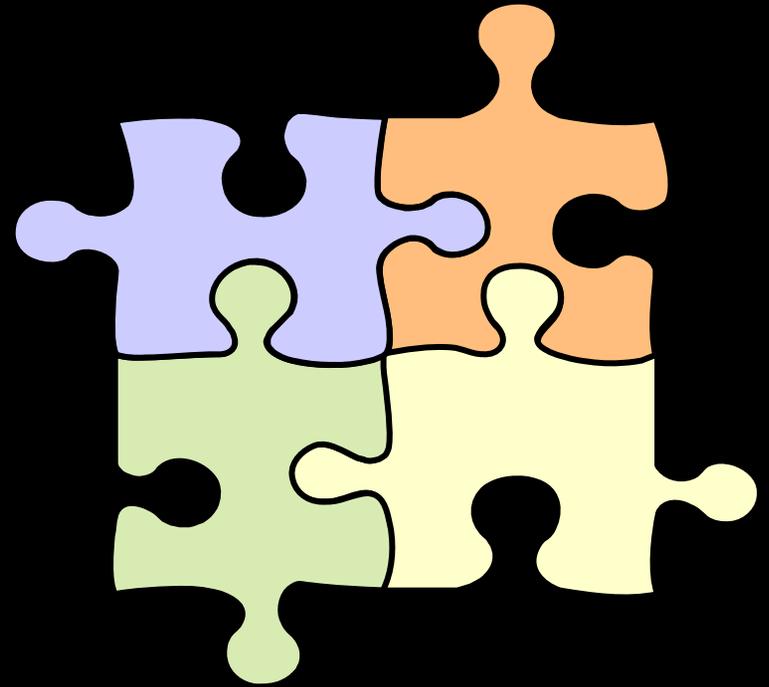


Steps to TMDL Development

- 303(d) listing
- Collect data in preparation, usually 2 years preceding TMDL development.
 - Confirm problem exists
 - Data used to determine extent of impairment and necessary pollutant reductions
- Develop draft TMDL
- Public comment
- Respond to public comments
- Finalize TMDL and submit to EPA for approval

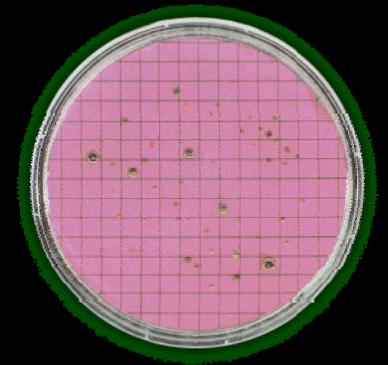
Parts of a TMDL that matter to you

- Numeric Target
- Allocations
 - WLAs
 - LAs
 - MOS
- Reasonable Assurance Activities



Numeric Target

- Based on a numeric or narrative WQS
 - *E. coli* numeric WQS = 130 cfu/100 mL as a monthly average
 - Phosphorus narrative WQS requires that nutrients be limited to prevent stimulation of aquatic plants/algae which are injurious to the designated uses



Loading Capacity (TMDL) Development

- Maximum loading (usually pounds) per day of a pollutant that a water body can assimilate and still meet water quality standards
- The load is “divied up” among point source and nonpoint sources of the pollutant, represented as:

$$LC \text{ (or TMDL)} = \sum WLA_s + \sum LA_s + MOS$$

- WLA = Wasteload Allocation (for point sources)
- LA = Load Allocation (for non-point sources)
- MOS = Margin of Safety



Point Sources (WLA)

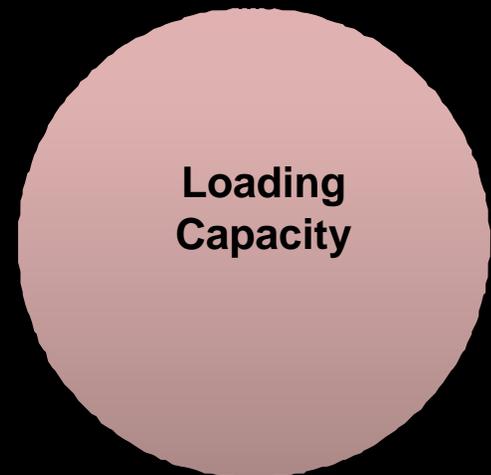


Nonpoint sources (LA)



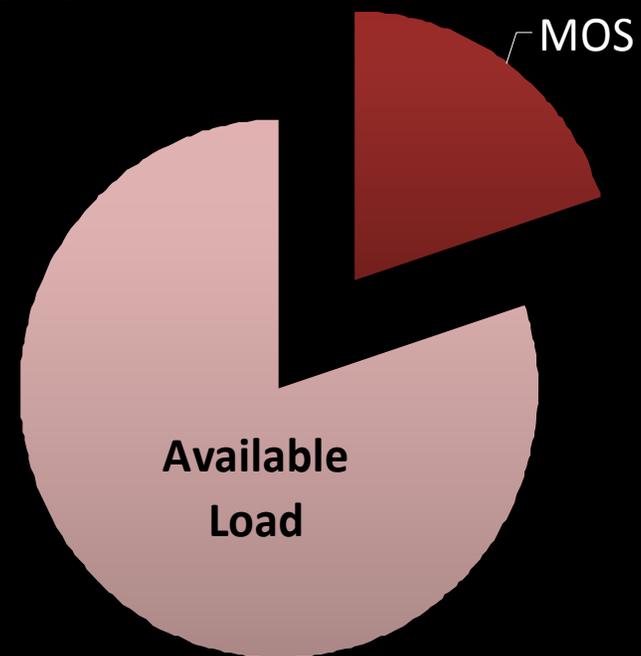
Estimating the Loading Capacity (the maximum daily load)

- Loading capacity (LC)
 - The amount of pollutant that can be discharged to a water body while still meeting WQSs



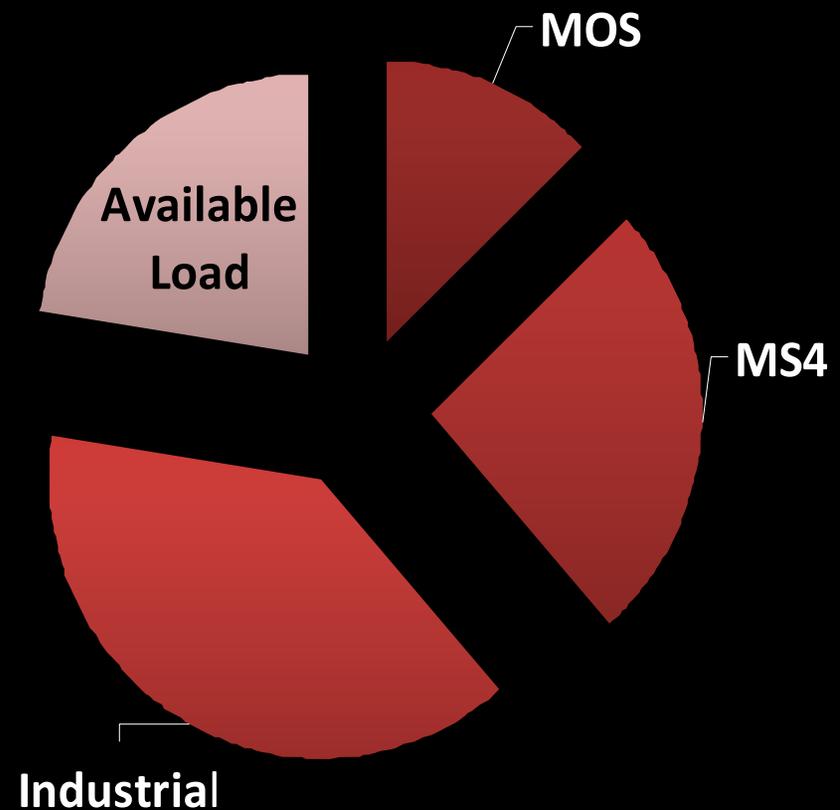
Example Margin of Safety

- Accounts for the uncertainty with the flow estimation and load calculations



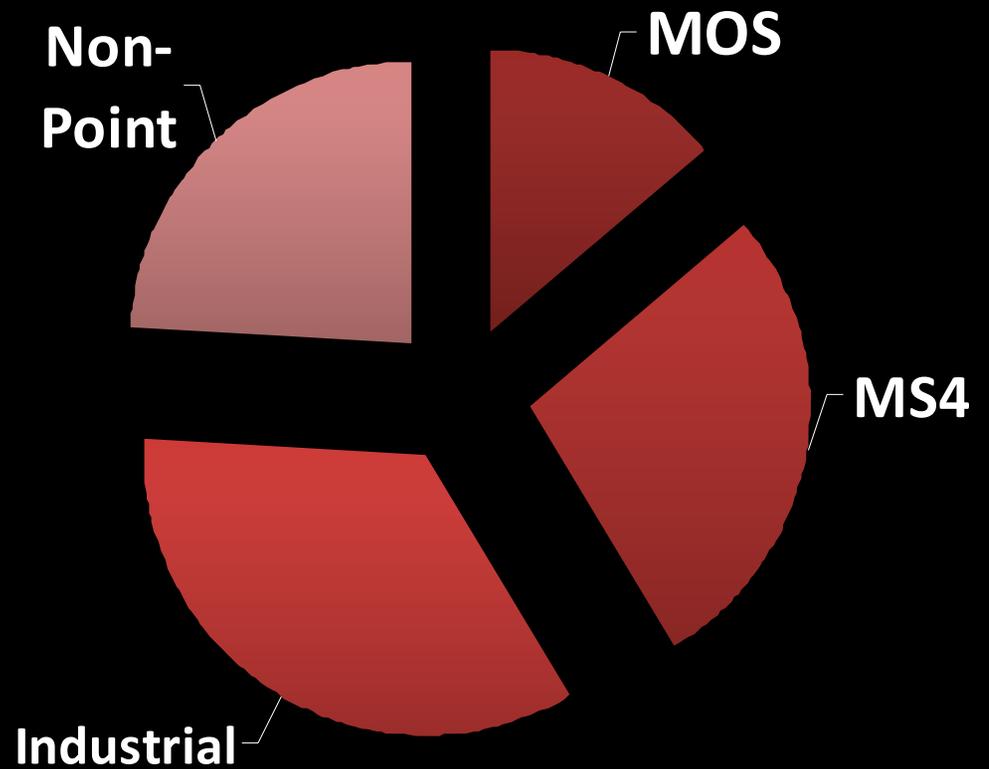
Example Waste Load Allocations

- Applies to National Pollutant Discharge Elimination System (NPDES) permits :



Example Load Allocation

- Nonpoint Sources



What happens once a TMDL is approved?

- Point sources –
 - NPDES permit limits must be *consistent with* (not necessarily identical to) the WLAs
- Nonpoint sources –
 - Voluntary implementation of best management practices

In summary

- Protect and Monitor
 - 4 Great Lakes
 - 3,288 miles of Great Lakes shoreline
 - 11,000 inland lakes
 - 77,000 river miles
 - 5.5 million acres of wetlands



TMDL and Stormwater

May 10, 2012



Stormwater Outline:

Stormwater as part of the WLA

Who's regulated?

Permit requirements

Special considerations for stormwater in a TMDL

Help

Questions

All point sources must be in the numeric WLA



Industrial Wastewater
Industrial Stormwater*
Municipal Stormwater*

*BMPs can replace numeric limitations

Permit Requirements

TMDLs are identified in the Certificates of Coverage (COC) issued in 2011 and 2012



Permit Requirements

2008-2010 COCs: www.michigan.gov/deqwater
click on *Total Maximum Daily Load*



Do your activities and exposures contribute to the TMDL?



E. coli

Dissolved Oxygen

< Sediment/Biota

< Phosphorus

Do your activities and exposures contribute to the TMDL?



E. coli



Identify and control sources to meet the TMDL requirement

Obvious sources



Identify and control sources to meet the TMDL requirement

Less obvious sources
or hard to control
sources



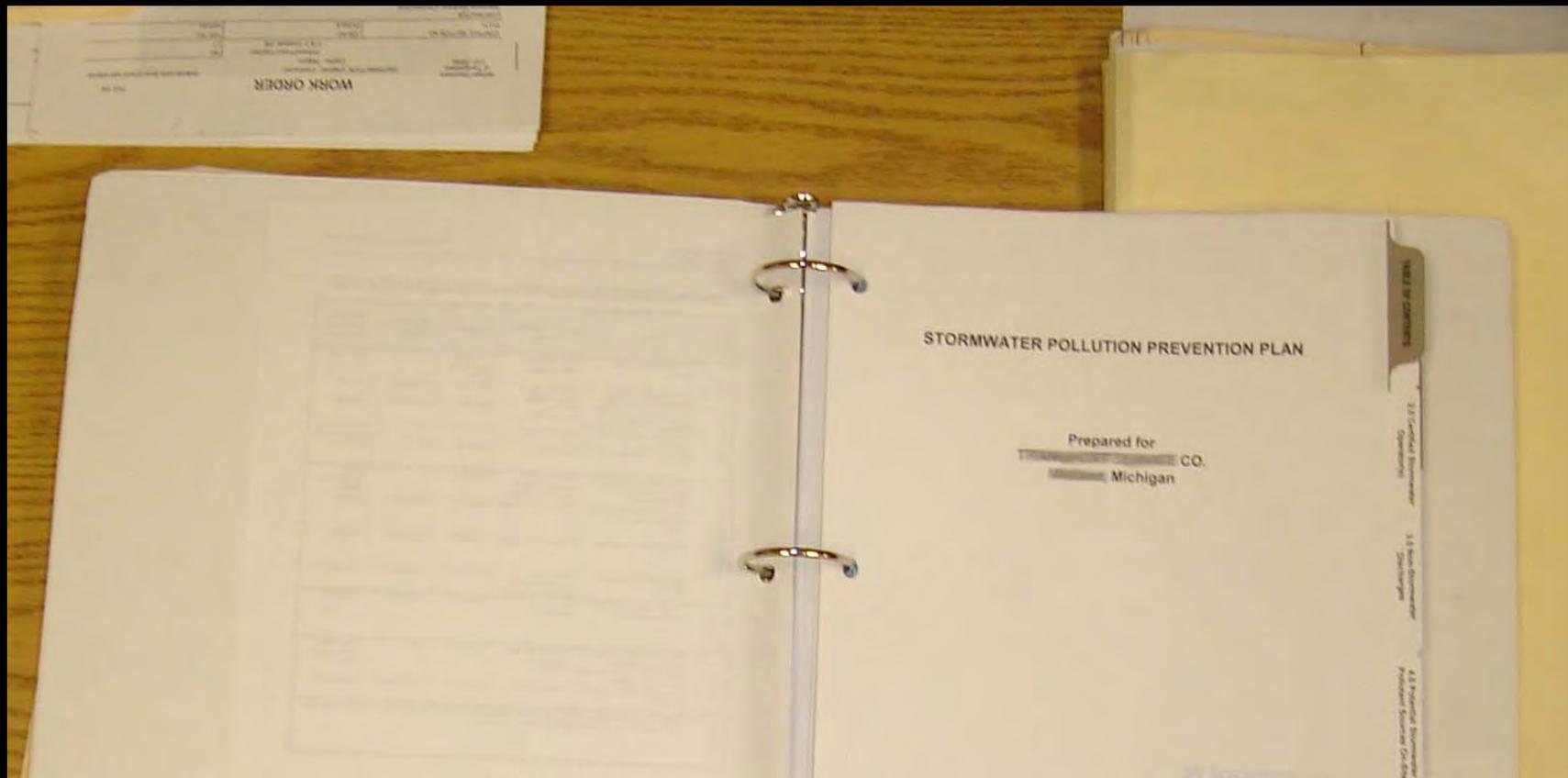
Determine if controls are adequate and effective to meet the TMDL requirement



Determine if controls are adequate and effective to meet the TMDL requirement



Document your controls in the SWPPP



Special Considerations - REDUCE VOLUME!

Pollutant Concentration

X Runoff Volume

Pollutant Load



Plan for the Worst Case Scenario



**Blowing
Rain**

Plan for the Worst Case Scenario



Flooding

Plan for the Worst Case Scenario



**Freeze
and
Thaw**

**First flush
vs
Saturation**



Sampling is not
required routinely,
but

Common sense goes a long way



Need Help? Contact Your District Stormwater Staff



Need Help?

MICHIGAN
RETAP

RETIRED ENGINEER
TECHNICAL ASSISTANCE PROGRAM

Questions?

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