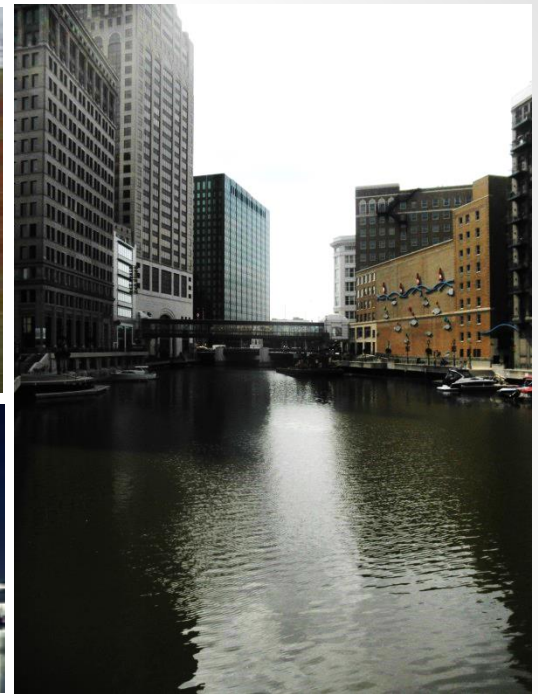


Source: milwaukeekeeper.org



Milwaukee River Basin TMDL:

The 201 course for MS4s (no 101 level pre-requisite required)

Mid-Moraine Water Quality Collective

Village of Jackson

December 6, 2017

Bryan Hartsook, PE

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Wisconsin DNR

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TMDL Terminology for MS4s:

No Controls

- Discharged from urban model area **with no stormwater controls**

Existing Conditions

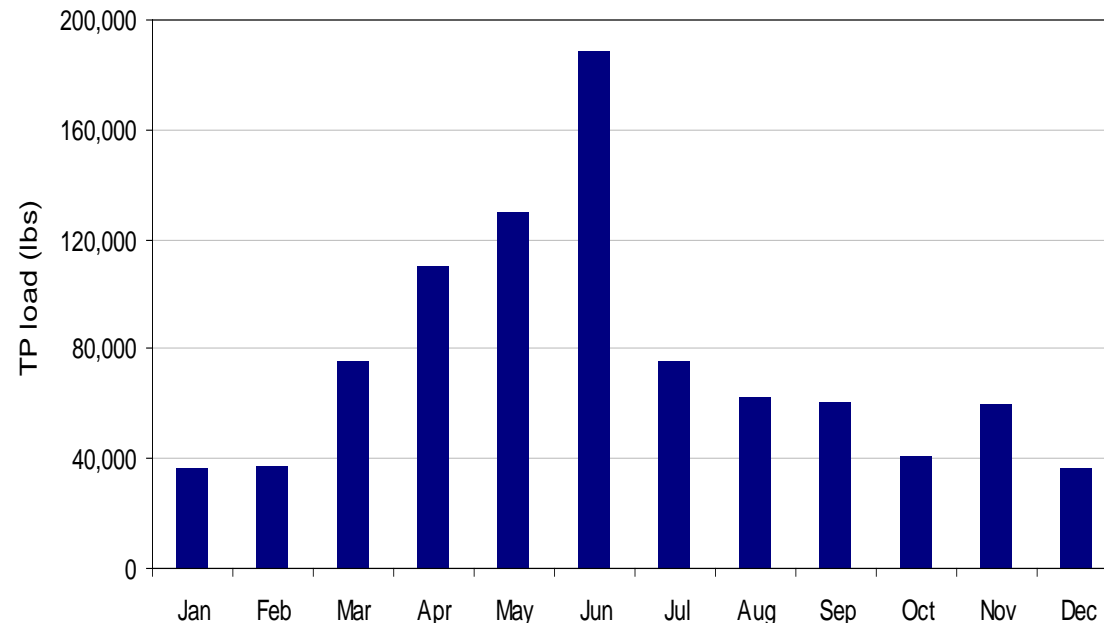
- Discharged from urban model area **with existing stormwater controls**

Baseline Conditions

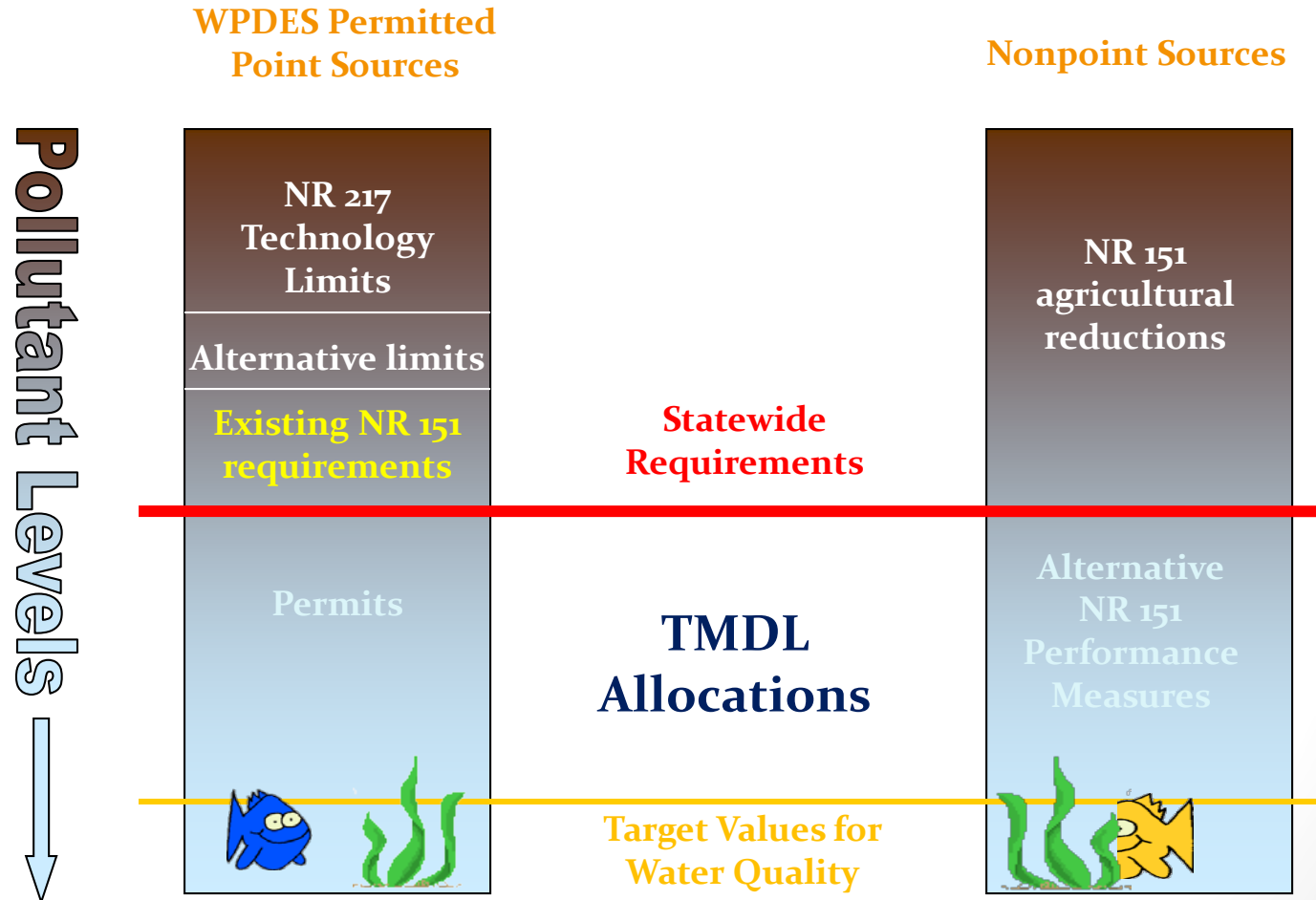
- Discharged from urban model area **with stormwater controls that achieve the 20% TSS reductions required by NR 151**

Expression of Allocations

- TMDL must express allocations by mass and on a daily basis (lbs/day) **but can be implemented on different time scales.**
- Because of the baseline conditions and language in NR 151, allocations can be implemented using percent reduction approach.

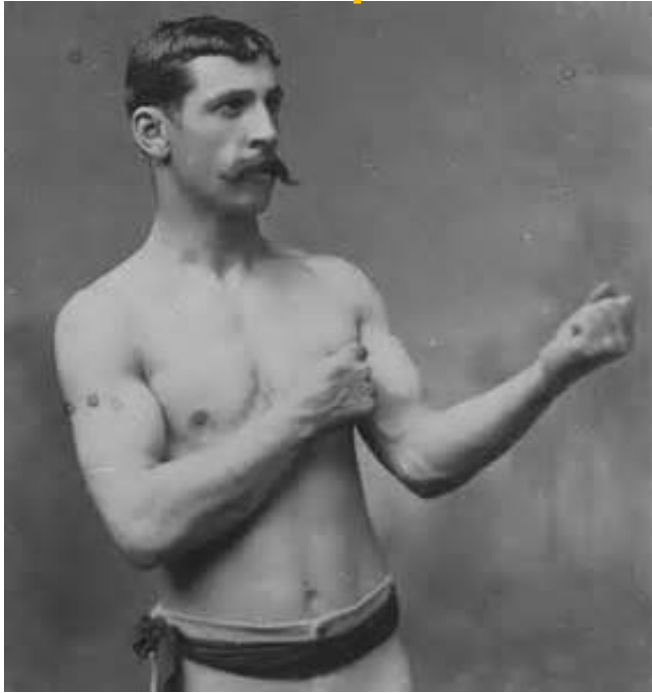


Define an Equitable Baseline Condition



(not to scale)

Development



An unorthodox approach to comparing models

VS.

Differences In:

- Input Resolution
- Output Resolution
- Period of Record
- Inherent MOS
- Calibration
- Overall Purpose

Implementation



Both models are “right” for their intended purpose.

Models are planning tools,
first and foremost

Models provide “the answer”
in the absence of huge
amounts of resources.

Percent Reduction Framework

- Builds on the **existing MS4 modeling**
- EPA will allow a percent reduction approach because DNR has a defined no controls scenario and defined climate files used in NR 151.13.
- The use of a percent reduction framework allows both the MS4 and DNR the ability to implement the reductions without having to reallocate and track WLAs across reachsheds, MS4s, and other land uses.

Percent Reduction Framework

- Percent reduction expressed based on regulatory requirements.
- For a TMDL that uses 20% reduction as the baseline loading condition (TMDLs approved after January 1, 2012) the conversion to the NR 151.13 **no-controls** modeling condition is:

TSS Percent Reduction = $20 + (0.80 * \% \text{ control in TMDL})$

TP Percent Reduction = $11 + (0.89 * \% \text{ control in TMDL})$

- Relationship between TSS and TP set by TMDL modeling condition

Implementation of Percent Reduction Framework

- The percent reduction calculated to meet the TMDL is applied to **the no controls load**, which provides the mass that needs to be controlled by the MS4. This mass will be different from that stipulated by the TMDL WLA.

Implementation of Percent Reduction Framework

- For the MS4 area contained in each reachshed, the no controls load is calculated using SLAMM, P-8, or equivalent.
- The MS4 area includes **the entire acreage** that the MS4 is responsible for; subtract areas not under the jurisdiction of the permittee.
- As new MS4 area is added or subtracted, the same TMDL percent reduction is applied to these new areas.

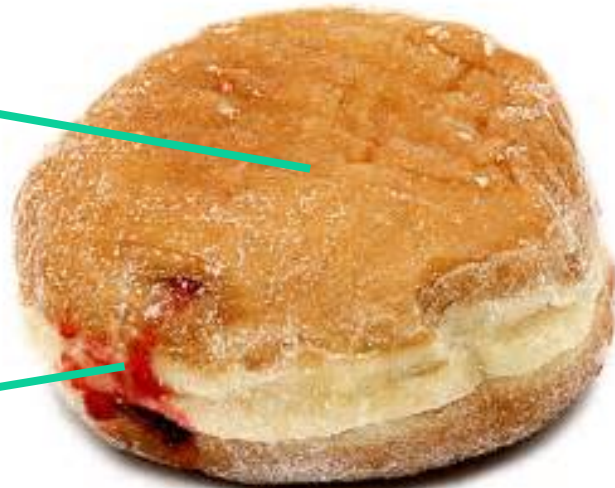
What you have now...



What you need...

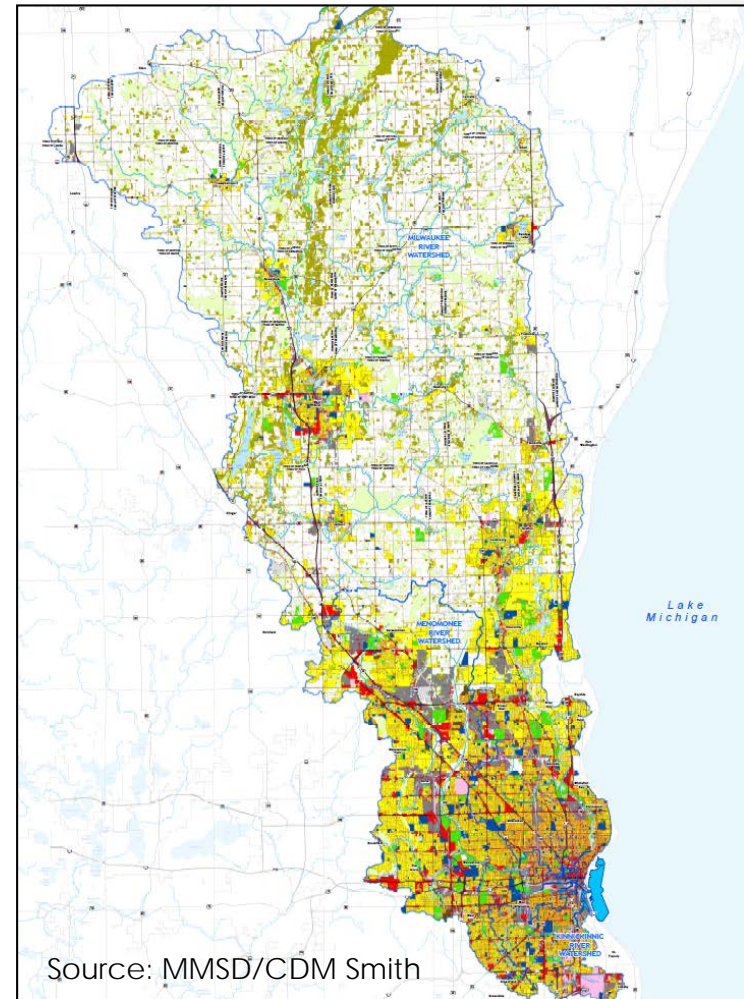
New
Development
Areas

Contribution
from each
reachshed



MS4 Baseline Condition

- Input loading parameters for land cover classes were calibrated to SLAMM and then adjusted to match collected water quality data
- Factors adjusted to represent a 20 percent reduction in TSS and associated reductions for TP and fecal coliform bacteria



MS4 Baseline Condition

- Associated watershed scale relative pollutant removal rates assumed in model:

Pollutant	Median removal relative to TSS	Percent removal relative to baseline
Total Suspended Solids	1.000	20%
Total Phosphorus	0.565	11.3%
Fecal Coliform	0.778	15.6%

Based on information on nine Midwestern studies summarized in Winer, R., 2000, *National Pollutant Removal Performance Database for Stormwater Treatment Practices, 2nd Edition* (Center for Watershed Protection. Ellicott City, MD)

Compliance Points

- Unlike the requirements contained in NR 151.13, individual MS4s may be divided in multiple reachsheds.
- Compliance with TMDL requirements will need to be achieved on a reach by reach basis.
- **Ultimately water quality standards must be met in-stream at the compliance point for each reachshed.**

Demonstrating Compliance

- Compliance is with water quality standards.
 - **The TMDL reductions are the best estimate for meeting water quality standards and are modeled or simulated predictions.**
 - Ambient stream monitoring will ultimately be required to de-list impaired waters and show compliance with the TMDL.
- Under a TMDL, EPA does not acknowledge the concept of maximum extent practicable as defined in s. NR 151.006, Wis. Adm. Code, but rather compliance schedules can be structured in SWMPs and permits to allow MS4s time to meet TMDL goals.