Allocation Process & Draft Results

Northeast Lakeshore TMDL

December 16, 2021
Today’s Format

• Introductions
• Presentation covering the allocation process and draft allocation results
• Panel to address questions

• Both the recorded presentation and slides will be available on the DNR website.

[Link: https://dnr.wi.gov/topic/TMDLs/NELakeshore.html]

or just search “NE Lakeshore TMDL”
FIND YOUR ADVENTURE
GET YOUR 2021 PARK PASS TODAY!

LEARN MORE
NORTHEAST LAKE SHORE TMDL
A FRAMEWORK FOR WATER QUALITY IMPROVEMENT

South Branch of the Manitowoc River

Subscribe to receive email updates about the Northeast Lakeshore TMDL.

The DNR, together with many partners throughout the basins, is working to improve the surface water quality of tributaries, streams, rivers and lakes within the Northeast Lakeshore (NEL) TMDL basins. The NEL TMDL is focused on reducing phosphorus loads to support aquatic life and protect the water quality of the lakes.

Total Maximum Daily Loads (TMDLs)
- Overview
- TMDLs In Development
- Approved TMDLs
- Implementation
- Point Source
- Nonpoint Source
- Map and Projects

For more information, contact:
Kim Oldenburg
Northeast Lakeshore TMDL coordinator
Water Quality Program
tel: 1-608-266-7037
PAST WEBINARS

- March 2021 Informational Webinar
  Baseline Load Results and Allocation Process
  - March 23, 2021
  - Recorded presentation: Watershed Model Results & Allocation Process
  - Webinar presentation slides [pdf]

- Summer 2020 Informational Webinar Series:
The TMDL Process and Watershed Model Development

  In summer 2020, the DNR presented a series of public informational webinars to introduce development of the Soil & Water Assessment Tool (SWAT) watershed model for the NE Lakeshore TMDL. The [webinar announcement flyer](pdf) summarizes the topics of each webinar. Recordings and PDFs of the webinar presentations are below.

  - Webinar 1: TMDL process and introduction to the NE Lakeshore TMDL
  - Webinar 2: Water Quality Data and Impairments
  - Webinar 3: Watershed Model Introduction and Data Inputs
  - Webinar 4: Watershed Model Setup
Click Chat in the meeting controls.

NOTE: If don’t see controls, tap screen and they will pop up.
Today’s Presenters and Panel

Kevin Kirsch  
Statewide TMDL Coordinator

Pat Oldenburg  
Lake Modeler and Wisconsin River Basin TMDL Coordinator

Aaron Fisch  
Water Quality Modeler

Eric Hettler, PE  
TMDL Modeler

Nate Willis  
Wastewater Engineer

Keith Marquardt  
NE Region TMDL Coordinator
Special Thanks to Kim Oldenborg:

Kim Oldenborg
NE Lakeshore TMDL Coordinator

Kim served as project coordinator for three years; however, in June 2021 funding for her position ended. I am very happy to report though that Kim was quickly hired by CADMUS and we look forward to working with her again. CADMUS is the US EPA contractor that developed the SWAT model for the NE Lakeshore TMDL and has supported numerous other TMDL efforts in Wisconsin.
Presentation Outline

• TMDL Background

• Review Baseline Loads

• Loading Capacity and Lake Modeling

• Draft Allocations

• Outline Implementation and Next Steps
NE Lakeshore TMDL anticipated timeline

2017
WI legislature supports NE Lakeshore TMDL

2018
Completed inventory of WPDES permit holders and effluent monitoring data

2019
Completed collection of agricultural management data

2020
Completed analysis of stream monitoring data

- Winter 2021
  Webinar on draft allocation results
  Public comment period on draft allocations

- Spring 2021 (March 24th, 10 AM)
  Webinar on draft baseline loads and allocation methods
  Public comment period on full draft of the watershed model report.

- Summer 2020
  4 Part Webinar on Watershed model development
  Public comment period on a portion of the draft watershed model report

2021

- 4 Part Webinar on Watershed model development:
  - Nov. 2018 – May 2021

2022

- Mid 2022: Public comment period and hearing on TMDL report..
  Anticipated submittal of TMDL report to EPA for approval

2023:
Anticipated start of the TMDL implementation phase
Comment Period

Lake Modeling Report
Draft Allocation Tables

Find information on the NE Lakeshore TMDL webpage

Send General TMDL and Allocation Comments to:
kevin.kirsch@wisconsin.gov

Send Questions Regarding WLA and Wastewater Discharges to:
Nate Willis
nathaniel.willis@wisconsin.gov

<table>
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<tr>
<th>Comment Period</th>
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<td>October 2020 (past)</td>
<td>Watershed Model Report</td>
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<td>1. Overview</td>
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<td>2. Model Setup</td>
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<td>Spring 2021 (past)</td>
<td>Watershed Model Report</td>
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<td>3. Calibration and Validation Approach</td>
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December 17, 2021, through COB
January 21, 2022

Draft Allocations
(including inland lake modeling results)
Project Background
TMDL and Nitrogen Analysis
Northeast Lakeshore Nitrogen Analysis

Goals of Analysis

• Assess nitrogen in surface water
• Summarize available water quality data
• Identify locations on landscape with high nitrogen applications
• Identify factors contributing to surface water nitrogen concentrations
Northeast Lakeshore Nitrogen Analysis

Deliverables of Analysis (Spring 2022)

- Webinar to summarize results
- Stand-alone report detailing the analysis
Background

Study area
Covers nearly 2,000 square miles
Includes many major river basins

Impaired Stream Segments
TP: 73
TSS: 3
TP & TSS: 3
Impaired Lakes
TP: 13

Addresses phosphorus and sediment impaired waters
Focused on waters draining to Lake Michigan, but not Lake Michigan

Funding from WI legislature in 2017
**Total Maximum Daily Load (TMDL):**

Estimates the *amount* of pollutant a waterbody can receive and still meet water quality standards.
Total Maximum Daily Load (TMDL)
A framework for watershed restoration

TMDLs address pollution from many different sources

TMDLs address pollution in surface waters, not groundwater
Total Maximum Daily Load Process

Phase 1: TMDL Development
Phase 2: TMDL Implementation
Calculate Baseline Loads

What are the current pollutant loads and how much is coming from each source?

Determine Loading Capacity (TMDL)

What amount of pollutant can a waterbody receive?

Allocate load among sources

What amount of pollutant reduction is needed from each source?
TMDL Development Steps

1. Calculate Baseline Loads
   What are the current pollutant loads and how much is coming from each source?

2. Determine Loading Capacity (TMDL)
   What amount of pollutant can a waterbody receive?

3. Allocate load among sources
   What amount of pollutant reduction is needed from each source?
Summary of Baseline Pollutant Loadings

**Basin scale:**
Agricultural sources are predominant, as is agricultural land cover

**Subbasin scale, used for allocations:**
Relative contributions varied among sources (ag, urban, point source)

Variability in both phosphorus and TSS rates generally explained by variations in land cover, soils, and slope
Scale: Edge of Field vs Subbasin

- SWAT modeled baseline loads and the allocations are based on delivered pollutant loads to the subbasin outlet.

- Models such as SnapPlus deliver pollutants to the edge of field or the first perennial stream, not the subbasin outlet.

- As a result of delivery processes, loads at the subbasin outlet can be lower than sum of edge of field loads.
Baseline TP Rate (lb/ac)

SWAT modeled results represent delivered loads aggregated by subbasin

Nonpoint Sources (agricultural, urban, natural)

Generalized trends

North to South
Nonpoint Sources (agricultural, urban, natural)

TP Rate (lb./ac)

Generalized Trends

Higher loading rates generally occurred in subbasins with more agricultural area.

Highest rates generally found in agricultural areas with Cash Grain farming.
Baseline TSS Rate (lb./ac)

SWAT modeled results represent delivered loads aggregated by subbasin.

Nonpoint Sources (agricultural, urban, natural)

Generalized Trends
North to South
Baseline TSS Rate (lb./ac)

SWAT modeled results represent delivered loads aggregated by subbasin

Nonpoint Sources (agricultural, urban, natural)

Generalized Trends
very similar to phosphorus

Lower loading rates generally occurred in subbasins with more natural area
TMDL Development Steps

1. Calculate Baseline Loads
   - What are the current pollutant loads and how much is coming from each source?

2. Determine Loading Capacity (TMDL)
   - What amount of pollutant can a waterbody receive?

3. Allocate load among sources
   - What amount of pollutant reduction is needed from each source?

Public outreach/communication
Loading capacity (TMDL)

Unique value for each of the 321 subbasins

Stream flow from watershed model x

Water quality criteria or target

Total phosphorus (NR 102.06)

- Most streams and rivers in NE Lakeshore area 75 ug/L
- Manitowoc River 100 ug/L
- Sheboygan 100 ug/L
Lake Modeling
Loading Capacity

Pat Oldenburg
Loading capacity (TMDL)

Lakes: loading capacity from lake model

- **Total phosphorus (NR 102.06)**
  - 26 lakes evaluated for the TMDL

- Two-story fishery lakes
  - 1 of 3 exceeding 15 μg/L TP criterion

- Deep seepage lakes
  - 10 of 13 exceeding 20 μg/L TP criterion

- Deep drainage lakes
  - 8 of 9 exceeding 30 μg/L TP criterion

- Shallow lakes
  - 1 not exceeding 40 μg/L TP criterion
Loading capacity (TMDL)

Lakes: loading capacity from lake model

Model Characteristics

Empirical models
• Based on observed relationships between in-lake TP lake and monitored hydraulic and TP loading in other lakes

Model selection criteria
• Predict growing season TP
• Commonly used in Wisconsin

Models evaluated for each lake
• Canfield-Bachmann 1981 Natural Lakes
• Canfield-Bachmann 1981 Artificial Lakes
• Walker 1987 Reservoirs
• Reckow 1979 Natural Lakes
• Reckow 1977 Anoxic Lakes
• Reckow 1977 Oxic Lakes (qs < 50 m/yr)
Loading capacity (TMDL)

Lakes: loading capacity from lake model

Model inputs

Lake Data
- Lake area and volume: DNR lake maps
- Water quality data: 1-17 years of data/lake, median 8 years of data/lake

Hydraulic loading
- Groundwater & surface water: SWAT model
- Net direct precipitation: county averages

Nutrient loading
- Watershed: SWAT model
- Nearshore septic: housing density & occupancy
- Direct deposition: statewide average
A quick word about watersheds

Original watershed boundary

SWAT Model inputs

Basin-wide model
• Relatively coarse digital evaluation model (30x30 m grid)
• Many modeled lake watersheds small, some with many small depressions
A quick word about watersheds

Detailed digital elevation model

SWAT Model inputs

Basin-wide model
- Relatively coarse digital evaluation model (30x30 m grid)
- Many modeled lake watersheds small, some with many small depressions
- Used fine detailed digital evaluation model (0.6x0.6 m grid) to refine watershed boundary
A quick word about watersheds

Final watershed boundary

SWAT Model inputs

- Basin-wide model
  - Relatively coarse digital evaluation model (30x30 m grid)
  - Many modeled lake watersheds small, some with many small depressions
  - Used fine detailed digital evaluation model (0.6x0.6 m grid) to refine watershed boundary

Final lake model input
- Reduce watershed SWAT hydraulic and phosphorus loads proportionally to reduced watershed size
Loading capacity (TMDL)

Example lake model results

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<tr>
<th>TP (μg/L)</th>
<th>Walker Reservoir</th>
<th>Canfield-Bachmann Natural Lake</th>
<th>Canfield-Bachmann Artificial Lake</th>
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Modeling Approach

- Refined hydraulic and nutrient loads applied to lake response models
- Each model predicts a unique in-lake TP for given hydraulic and nutrient load
- Observed monitoring results compared to model predictions
- How the observed results compare to the model predictions dictates how the models are applied
Loading capacity (TMDL)

Example lake model results

Modeling Approach

Modeling Approach A:
- Lake meeting water quality criteria, model fit indicates good estimate of nutrient loads
- Loading capacity based on maintaining existing water quality
- 6 Lakes in this category
Loading capacity (TMDL)

Example lake model results

[Graph showing TP (μg/L) vs. loading capacity with various lake models plotted]

Modeling Approach

Modeling Approach B:
- Lake not meeting water quality criteria, model fit indicates good estimate of nutrient loads
- Loading capacity based on weighted average of two closest response models bracketing the observed data
- 11 Lakes in this category
Example lake model results

Modeling Approach C:
- Lake not meeting water quality criteria, model fit indicates slight overestimate of nutrient loads
- Loading capacity based on the response model that most closely matched the observed data
- 3 Lakes in this category
Modeling Approach D:
• Lake not meeting water quality criteria, model fit indicates underestimate of nutrient loads
• Two possible explanations:
  • Underestimated external loads
  • Substantial internal loading (perhaps the likely scenario based on these specific lakes)
• Loading capacity based on geometric mean of applicable models
• 4 Lakes in this category

Example lake model results

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- Observed
Modeling Approach D:
- Round Lake Example
  - 1938 Air photo indicates possible barnyard on lake shore
  - Working theory: high historic external nutrient loads lead to current high internal loading
Modeling Approach E:
- Model fit indicates overestimate of nutrient loads
- Back calculated load based on lake models and current water quality indicate SWAT loads greatly overestimated
- Loading capacity based on geometric mean of applicable models; only one impaired
- 2 Lakes in this category
Loading capacity (TMDL)

Example lake

Summary

Estimated external loads were able to accurately in-lake TP in 20 of the 26 lakes examined
- Some fine-tuning of watersheds needed

External load estimates underpredicted in-lake TP in 4 lakes
- Possible internal loading issues

External load estimates overpredicted in-lake TP in 2 lakes
Allocation Process and Draft Allocation Results

Aaron Fisch
**TMDL Development Steps**

1. **Calculate Baseline Loads**
   - What are the current pollutant loads and how much is coming from each source?

2. **Determine Loading Capacity (TMDL)**
   - What amount of pollutant can a waterbody receive?

3. **Allocate load among sources**
   - What amount of pollutant reduction is needed from each source?

**Public outreach/communication**
Proportional Mass Reduction by Subbasin (Equal Percent Reduction)

Agriculture: 80 lbs. (50% reduction)
Individual permit: 40 lbs. (50% reduction)
Allocation Process

Baseline

Loading capacity/allowable load
Allocation Process

Baseline

Loading capacity/allowable load
Allocation Process

Baseline

Non-controllable  Controllable

Loading capacity/allowable load

Non-controllable  Controllable allowable
Allocation Process

Baseline

Non-controllable
Agriculture
Ind. Permits

Loading capacity/allowable load

Non-controllable
Agriculture
Ind. Permits

MO
S
RC
Allocation Process

Baseline

Agriculture

Individual permits

Permitted MS4

Non-permitted urban

Reserve capacity

Loading capacity/allowable load

Non-controllable

Agriculture

Ind. Permits

RC

GP
What are the sources?

1) Load allocation
   *Nonpoint sources*

2) Wasteload allocation
   *Point sources*

3) Margin of Safety

4) Reserve Capacity

Allocation Process
Divides the TMDL among sources
What are the sources?

1) Load allocation
   - Controllable sources
     - Agricultural
     - Non-permitted Urban
   - Uncontrollable sources
     - Natural

2) Wasteload allocation
   - Controllable sources
     - Permitted Urban
     - Industrial Wastewater
     - Municipal Wastewater
     - CAFO production areas
     - General Permits

3) Margin of Safety

4) Reserve Capacity

Allocation Process
Divides the TMDL among sources
**Controllable sources:**
Agricultural, non-permitted urban, permitted urban (MS4)

**How is it allocated?**
Receive an allocation proportional to their baseline load

**How are baseline loads determined?**
Modeled

*Permitted MS4 baseline starts at a 20% reduction of TSS (20% from “no controls” is permitted). If 20% of TSS was reduced, an estimated 15% of TP would result, so the baseline for TP is 15% from “no controls”.*
1) Load allocation

Controllable sources
- Agricultural
- Non-permitted Urban

Uncontrollable sources
- Natural

2) Wasteload allocation

Controllable sources
- Permitted Urban
  - Industrial Wastewater
  - Municipal Wastewater
- CAFO production areas
- General Permits

3) Margin of Safety

4) Reserve Capacity

Allocation Process

**Controllable sources:**
Industrial Wastewater & Municipal wastewater

*How is it allocated?*
Receive an allocation proportional to their baseline load

*How are baseline loads determined?*

**Industrial Wastewater**
- Baseline flow = Max annual average flow between 2015 - 2020
- Baseline TP conc. = 1 mg/L or effluent average if NCCW
- Baseline TSS conc. = current permitted limit or effluent average

**Municipal wastewater**
- Baseline flow = 1) Design flow or 2) Max annual average flow between 2015 – 2020 (which ever is highest)
- Baseline TP conc = 1 mg/L
- Baseline TSS conc = current permitted limit
Allocation Process

**Controllable sources:**
CAFO production areas and General Permits

**How is it allocated?**
CAFO production area = 0 assigned to production areas (fields covered by ag nonpoint)

**General Permits**
- Within a permitted MS4 boundary, stormwater permits included within the MS4 allocation
- General permits and stormwater permits outside MS4 boundary are assigned a wasteload allocation based on 1% of the controllable allowable load
- *This differs from past TMDLs. Prior TMDLs used a fraction of the non-permitted urban load. This method is simpler and more consistent across subbasins.*
1) Load allocation
   Controllable sources
   - Agricultural
   - Non-permitted Urban
   Uncontrollable sources
   - Natural

2) Wasteload allocation
   Controllable sources
   - Permitted Urban
   - Industrial Wastewater
   - Municipal Wastewater
   - CAFO production areas
   General Permits

3) Margin of Safety

4) Reserve Capacity

Allocation Process

**Uncontrollable sources:**
Natural

*How is it allocated?*
No percent reduction from their baseline load

*How are baseline loads determined?*
Modeled
### 1) Load allocation

**Controllable sources**
- Agricultural
- Non-permitted Urban

**Uncontrollable sources**
- Natural

### 2) Wasteload allocation

**Controllable sources**
- Permitted Urban
- Industrial Wastewater
- Municipal Wastewater
- CAFO production areas

**Uncontrollable sources**
- General Permits

### 3) Margin of Safety

**What are the sources?**

- **Margin of Safety:**
  - Required by EPA as part of the TMDL
  - Accounts for uncertainty in the data and modeling using to develop the TMDL

**How is it allocated?**
- Implicit, through conservative model assumptions, such as the use of a 90% confidence interval when translating SWAT loads to growing season median TP criteria (details will follow in TMDL report)

### 4) Reserve Capacity
**Reservation Capacity:**
- Included in each subbasin to account for new or expanding dischargers.

**How is it allocated?**
- For individual facilities, indirectly through the use of their facility design flows (design flows are an overestimate of actual use).
- For each subbasin, an additional set aside of 5% of the controllable allowable load.
- Reserve capacity is cumulative as you move through the drainage network, (i.e., downstream reaches can draw reserve capacity from upstream reaches).
Allocation Process Summary

How is the TMDL divided among sources?

TMDL = Load allocation + Wasteload allocation + Reserve Capacity + Margin of Safety

Nonpoint source

Point source
Percent Reductions

Total Phosphorus

Kewaunee River Basin Region

Main Takeaway(s):

• Most subbasins have reductions except for those within the Ahnapee River basin
Aside #1: Allocations vs. Monitoring data

QA/QC

• Percent reductions were compared with impairment listings and monitoring data to ensure consistency

• Example: Silver Creek, Ahnapee River, and Stony Creek percent reductions align with impairments and monitoring data
Percent Reductions

Total Phosphorus

Manitowoc River Basin Region

Main Takeaway(s):

• Almost all subbasins have reductions, and those that are in the major agricultural areas have the highest, upwards of 80%
Percent Reductions

Total Phosphorus
Sheboygan River Basin Region

Main Takeaway(s):

• The Onion River, Black River, and Sauk Creek on the south end have high reductions

• Areas with expansive wetland areas (such as the Mullet River and Sheboygan Marsh areas) have no reductions
Aside #2: My river is polluted, why is there no reduction?

• Previous TMDLs in Wisconsin have had more uniform percent reductions. This was a result of the TMDL being driven by reductions associated with downstream lakes with lower criteria.

• Local water quality is driven by local pollution. If upstream sources are eliminated, local sources drive reductions. Elimination of upstream sources may resolve downstream impairments without any local reduction.
Percent Reductions

Total Suspended Solids

Kewaunee River Basin Region

Main Takeaway(s):

• The only major basin with a reduction is the West Twin River basin.
Percent Reductions

Total Suspended Solids
Manitowoc River Basin Region

Main Takeaway(s):

- All basins will require between 40 and 80% reductions
Aside #3: Agricultural reductions

• Question:
  • Do all farm fields need to reduce sediment loss by 70%?

• Answer:
  • No. Sediment loss from farm fields will vary greatly. We will be releasing TP/TSS agricultural targets in terms of yields (lbs./acre/yr., rather than percent reduction) in the next webinar. Fields that already meet those targets will not require additional reductions.
Percent Reductions
Total Suspended Solids
Sheboygan River Basin Region

Main Takeaway(s):

• All basins will require between 10 and 60% reductions, except Sucker Creek, which will require 70%
How to Interpret Draft Allocation Results
How to Interpret Draft Allocation Results

Appendix X. Total Phosphorus
• Kewaunee River Basin Region
  • Annual load allocations by reach
  • Daily load allocations by reach
  • Individual permit allocations
  • MS4 allocations
  • Percent reductions by reach
• Manitowoc River Basin Region
• Sheboygan River Basin Region

Appendix Y. Total Suspended Solids
• Kewaunee River Basin Region
  • Annual load allocations by reach
  • Daily load allocations by reach
  • Individual permit allocations
  • MS4 allocations
  • Percent reductions by reach
• Manitowoc River Basin Region
• Sheboygan River Basin Region
How to Interpret Draft Allocation Results

Appendix X. Total Phosphorus

• Kewaunee River Basin Region
  • Annual load allocations by reach
  • Daily load allocations by reach
  • Individual permit allocations
  • MS4 allocations
  • Percent reductions by reach

• Manitowoc River Basin Region

• Sheboygan River Basin Region
How to Interpret Draft Allocation Results
### How to Interpret Draft Allocation Results

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<td>537</td>
</tr>
<tr>
<td>10</td>
<td>2,095</td>
<td>90</td>
<td>1,692</td>
</tr>
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<td>11</td>
<td>69</td>
<td>2.7</td>
<td>51</td>
</tr>
<tr>
<td>12</td>
<td>1,928</td>
<td>81</td>
<td>1,516</td>
</tr>
<tr>
<td>13</td>
<td>4,231</td>
<td>194</td>
<td>3,650</td>
</tr>
<tr>
<td>14</td>
<td>1,101</td>
<td>48</td>
<td>909</td>
</tr>
<tr>
<td>15</td>
<td>3,275</td>
<td>144</td>
<td>2,709</td>
</tr>
</tbody>
</table>
Implementation Overview

Kevin Kirsch
Nate Willis
Total Maximum Daily Load Process

Impaired Waters

Phase 1: TMDL Development

Phase 2: TMDL Implementation

Restored Waters
Implementation of TMDL plans relies on the use of...

- Existing Programs
- Existing Regulations
- Existing Resources
- Existing Rules
Existing programs and standards
• Existing County and Federal programs (NRCS)
• NR 151 performance standards

Two phases
1. All farms and cropland – meet NR 151 (this may meet the TMDL goals)

2. Critical fields – may to do more to meet TMDL targets

Compliance with TMDL agricultural targets is voluntary unless promulgated through NR 151.004. Cost share requirements still in place.
Edge of field targets (SnapPlus)

Translates TMDL allocations into a value that can easily be compared to nutrient management plans on a field scale.

Actual percent reductions will vary by field depending on its current conditions compared to the baseline condition specific in the TMDL.

<table>
<thead>
<tr>
<th>TMDL Subbasin</th>
<th>TP</th>
<th>Baseline (lbs./ac/yr)</th>
<th>% Reduction</th>
<th>Target (lbs./ac/yr)</th>
<th>Baseline (tons/ac/yr)</th>
<th>% Reduction</th>
<th>Target (tons/ac/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1.68</td>
<td>88%</td>
<td>0.20</td>
<td>1.71</td>
<td>47%</td>
<td>0.91</td>
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<tr>
<td>2</td>
<td></td>
<td>2.74</td>
<td>79%</td>
<td>0.57</td>
<td>2.72</td>
<td>47%</td>
<td>1.45</td>
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<tr>
<td>3</td>
<td></td>
<td>3.41</td>
<td>79%</td>
<td>0.71</td>
<td>3.29</td>
<td>79%</td>
<td>0.69</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>2.10</td>
<td>88%</td>
<td>0.25</td>
<td>1.80</td>
<td>47%</td>
<td>0.96</td>
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<tr>
<td>5</td>
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<td>3.14</td>
<td>74%</td>
<td>0.83</td>
<td>2.64</td>
<td>64%</td>
<td>0.96</td>
</tr>
</tbody>
</table>
Implementation Overview

9 Key Element Plans and County Land and Water Plans

These plans and TMDLs complement each other

Agricultural

MS4

Wastewater

Goal: TMDL

9KE plan

Co. Land and Water Plan

1) Identify causes and sources
2) Estimated the pollutant reductions
3) Management measures
4) Technical and financial needs
5) Education component
6) Develop a schedule
7) Measurable milestones
8) Identify criteria
9) Monitor and evaluate

TMDL

80
Implementation Overview

9 Key Element Plans

- Agricultural implementation and planning does not have to wait for an approved TMDL
- Five 9KE plans already approved
- Kewaunee River in development

Agricultural
MS4
Wastewater
• Assigned individual allocations for each subbasin; however, implemented using percent reduction. The allocated loads again represent delivered loads and as such are not directly transferable to output from WinSLAMM.

• Implemented in an MS4 permit with an extended compliance schedule with specified benchmarks.

• Implemented through NR 217 and WPDES permits.

Once EPA has approved the TMDL (anticipated 2022), permits can be issued with the TMDL derived mass allocations.

• Typically, the TMDL limit will become effective upon the next permit reissuance.
FAQ
- What is my TMDL limit?
- When does the limit become effective?

Tables with mass allocations and equivalent concentrations based on the assumed baseline flows and are available on the NE Lakeshore TMDL website.

Questions: Nate Willis (nathaniel.willis@wisconsin.gov)
Wastewater Allocation and Equivalent Concentration Summary Tables

**Municipal Facilities:** Mass allocations and equivalent concentrations calculated using design flow.

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Permit No.</th>
<th>Baseline Flow (MGD)</th>
<th>TMDL TP WLA (lbs per year)</th>
<th>TP Month Limit (lbs/day)</th>
<th>TP 6-mo Limit (lbs/day)</th>
<th>TP Equivalent Monthly Concentration - Baseline flow (mg/L)</th>
<th>TP Equivalent 6-Month Concentration - Baseline flow (mg/L)</th>
<th>TMDL TSS WLA (lbs per year)</th>
<th>TSS Limit Mo avg (lbs/day)</th>
<th>TSS Limit weekly avg (lbs/day)</th>
<th>TSS Limit daily max (lbs/day)</th>
<th>TSS Equivalent Monthly Concentration (mg/L)</th>
<th>TSS Equivalent weekly Concentration (mg/L)</th>
<th>TSS Equivalent Daily Concentration (mg/L)</th>
</tr>
</thead>
</table>

**Industrial Facilities:** Mass allocations and equivalent concentrations calculated using highest annual average flow.

| Facility Name | Permit No. | Baseline Flow (MGD) | TMDL TP WLA (lbs per year) | TP Month Limit (lbs/day) | TP 6-mo Limit (lbs/day) | TP Equivalent Monthly Concentration - Baseline flow (mg/L) | TP Equivalent 6-Month Concentration - Baseline flow (mg/L) | TMDL TSS WLA (lbs per year) | TSS Limit Mo avg (lbs/day) | TSS Limit weekly avg (lbs/day) | TSS Limit daily max (lbs/day) | TSS Equivalent Monthly Concentration (mg/L) | TSS Equivalent weekly Concentration (mg/L) | TSS Equivalent Daily Concentration (mg/L) |
Comment Period

Lake Modeling Report
Draft Allocation Tables

Find information on the NE Lakeshore TMDL webpage

Send General TMDL and Allocation Comments to:
kevin.kirsch@wisconsin.gov

Send Questions Regarding WLA and Wastewater Discharges to:
Nate Willis
nathaniel.willis@wisconsin.gov

Comment Period | Topic
---|---
October 2020 (past) | Watershed Model Report
| 1. Overview
| 2. Model Setup

Spring 2021 (past) | Watershed Model Report
| 3. Calibration and Validation Approach
| 4. Calibration and Validation Data
| 5. Calibration and Validation Results
| 6. Discussion of Calibration and Validation
| 7. Summary of Model Results
| 8. References

**December 17, 2021, through COB January 21, 2022**

Draft Allocations
(including inland lake modeling results)