Donovan Lake Total Maximum Daily Load Revision 2024 (revised 2015 TMDL)

Overview

TMDL report name (original)	Mississippi River-St. Cloud Watershed Total Maximum Daily Load
Date of original EPA TMDL Approval	May 14, 2015
Public notice date for original TMDL	October 13, 2014 – November 12, 2014
Public notice date for TMDL revision	May 13 2024 – June 12, 2024
EPA approval date for revision	Will be updated after approval
TMDL water body ID, impairment, and pollutant that require revision	Donovan Lake (05-0004-02), aquatic recreation nutrient/eutrophication biological indicators impairment, phosphorus TMDL
Summary of TMDL revisions	The TMDL revisions are allocation transfers; the loading capacity did not change. Donovan Lake drainage area was corrected based on information provided from City of St. Cloud to be 1,098 acres. Original lake response model and TMDL calculations updated with corrected areas, MPCA's preferred approach to MS4 WLAs, and 2020 U.S. Census information: • Revised Benton County and MNDOT WLAs based on 2020 Census urban areas with populations over 50,000. Corrected WLAs assigned to transportation corridors that were double counted in original TMDL. • Calculated WLAs based on the entire MS4 jurisdictional area within the revised TMDL subwatershed, not just developed areas.

Abbreviations

DNR	Minnesota Department of Natural Resources
EPA	U.S. Environmental Protection Agency
lb/day	pounds per day
µg/L	micrograms per liter
LA	load allocation
MNDOT	Minnesota Department of Transportation
MOS	margin of safety
MPCA	Minnesota Pollution Control Agency
MS4	municipal separate storm sewer system
TMDL	total maximum daily load
TP	total phosphorus
USGS	U.S. Geological Survey
WLA	wasteload allocation

Issue statements

The following issues are addressed with this Total Maximum Daily Load (TMDL) revision:

1. **Approximately 17 acres of St. Cloud City Municipal Separate Storm Sewer System (MS4) area were incorrectly excluded from the TMDL subwatershed for Donovan Lake.**
   The TMDL baseline year for Donovan Lake is 2006. A development was added within these 17 acres in 2005. Stormwater runoff from the 2005 development is treated by detention stormwater ponds before ultimately draining to Donovan Lake. The TMDL incorrectly states that the ponds are infiltration ponds, and the ponds were excluded from the TMDL subwatershed.

2. **Wasteload Allocations (WLAs) were incorrectly assigned to the same area for Minnesota Department of Transportation (MNDOT) and Benton County MS4s.**
   At the time of TMDL development, the 2000 Census defined urbanized area reached into the TMDL subwatershed. Twelve acres were defined as transportation corridors right of way, which should have been further delineated as state or county and assigned to MNDOT and Benton County MS4s, respectively. Instead, both MS4s were incorrectly assigned the full area of transportation corridors in the original TMDL, doubling the WLA that should have been assigned to these permittees. More recent 2020 Census defined urbanized areas have been released.

3. **Changes to regulated areas and MPCA's WLA process in the development of the original TMDL.**
   In addition to addressing the above issues, there have been several changes to Minnesota Pollution Control Agency's (MPCA's) preferred approach to calculating MS4 WLAs since the development of the original TMDL. There have also been legislative changes that affected MS4 regulated areas.

MPCA resolutions

The following actions were taken by MPCA to resolve the issues with the original TMDL.

1. Analyze and revise the TMDL subwatershed

A comparison of drainage area delineations to Donovan Lake is provided in Figure 1. The pink shaded areas on Figure 1 represent the 17 acres that were incorrectly omitted from the original TMDL. The revised TMDL subwatershed for Donovan Lake is provided in Figure 2 and includes the 17 acres. The revised TMDL subwatershed area was updated in the lake response model used to develop the original Donovan Lake TMDL. This update did not result in a meaningful change to the modeled existing loading to Donovan Lake because the additional load was so small that it did not change the lake model inputs. Therefore, the loading capacity did not change.

Figure 1. Analysis of drainage areas near Donovan Lake. Original TMDL report used DNR catchments and USGS Stream Stats to determine the TMDL subwatershed for Donovan Lake.

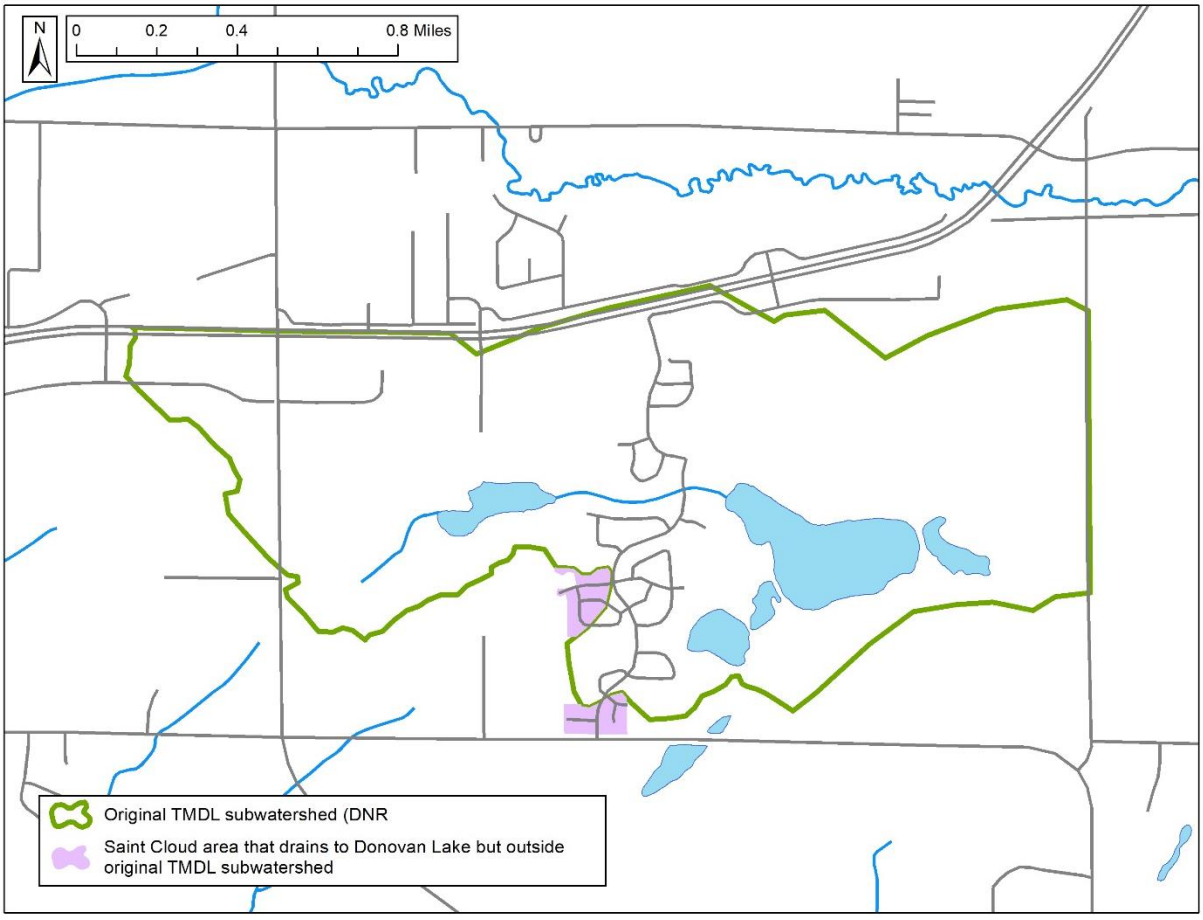
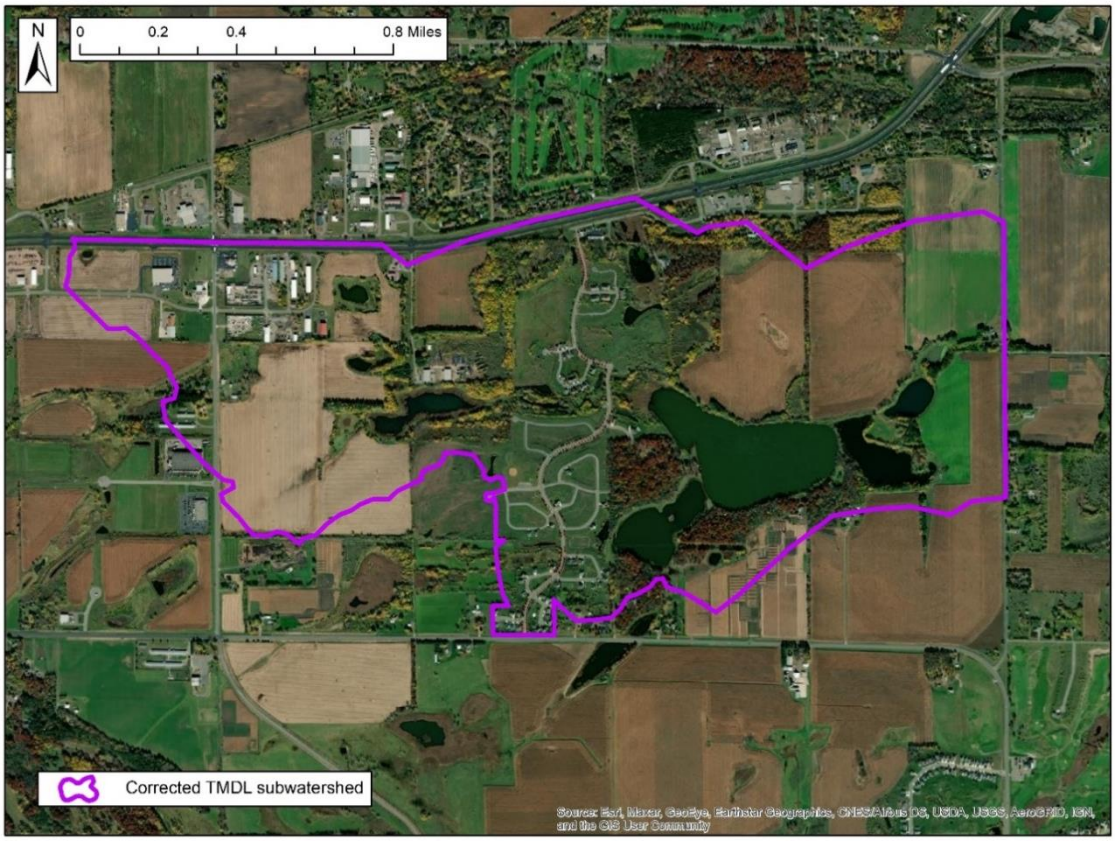


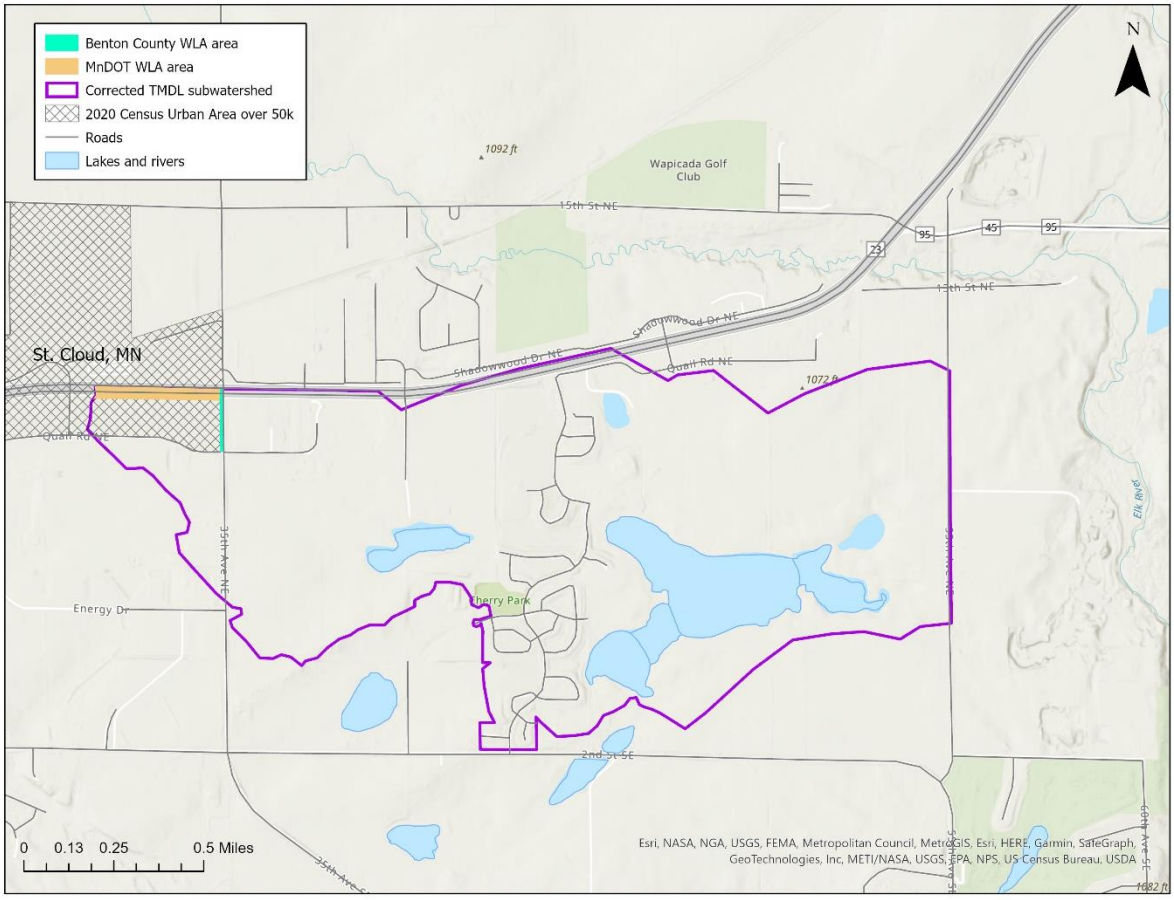
Figure 2. Corrected TMDL subwatershed for Donovan Lake.



2. Correct errors in WLA calculations for TMDL

Benton County and MNDOT MS4 WLAs were corrected and updated based on the 2020 Census defined large urban areas (population greater than 50,000). Buffers were used to calculate WLAs for the applicable transportation corridors: 55 feet for Benton CSAH 8 (35th Ave NE), per information provided by Benton County, and 100 feet for MNDOT Hwy 23 (Figure 3).

Figure 3. Areas used for revised MNDOT and Benton County WLAs.



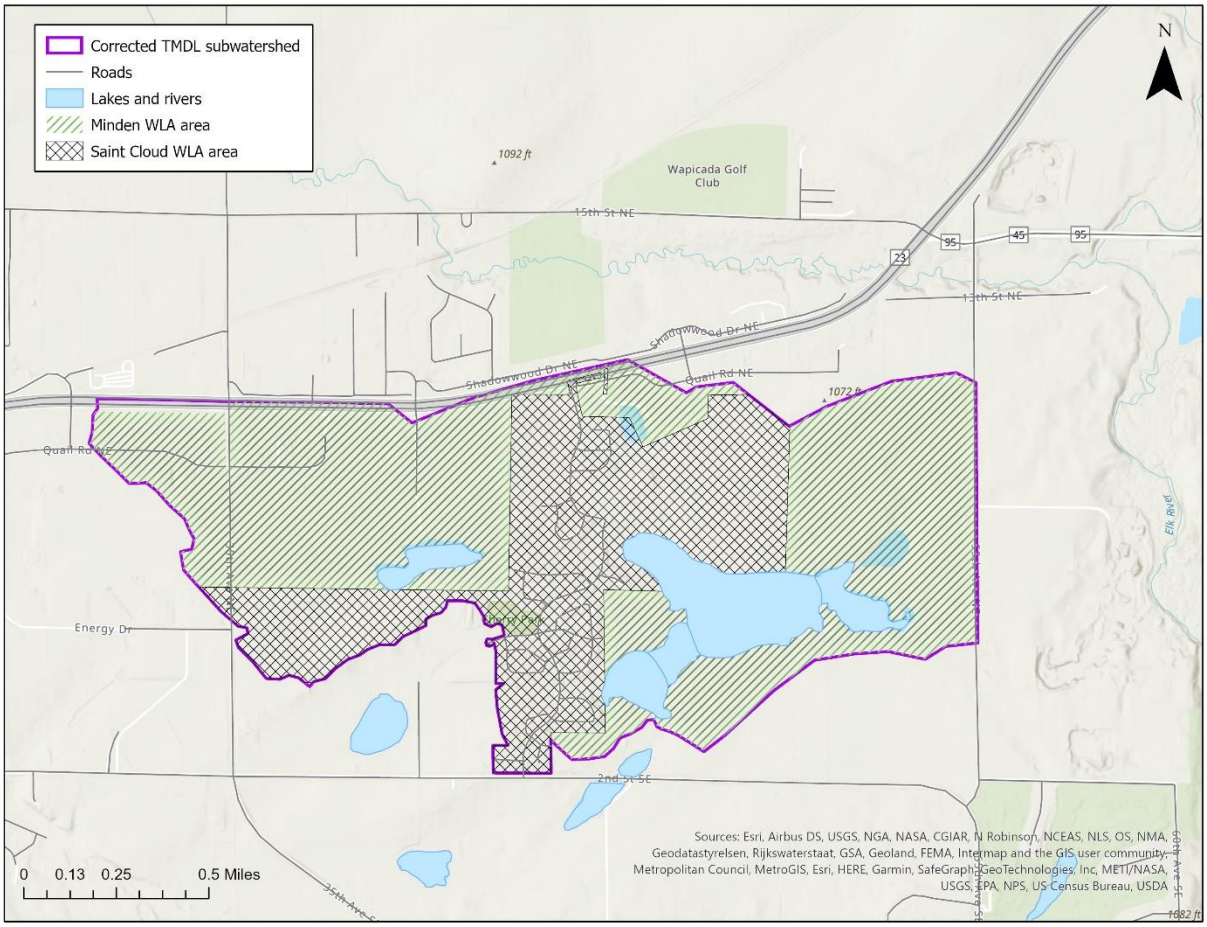
3. Update TMDL to account for changes in regulated area and MPCA's preferred approach to calculating MS4 WLAs

Several updates to the MPCA's preferred approach to calculating MS4 WLAs were included in the Donovan Lake TMDL revision. Areas used for WLA calculations for Minden Township and City of St. Cloud MS4s are mapped in Figure 4.

- WLAs assigned to city and township MS4s in the revised TMDL are calculated based on their jurisdictional area located within the drainage area to Donovan Lake. The original TMDL approximated the regulated MS4 based on areas with developed land covers. It is now common practice for the MPCA to assign a WLA to the entire jurisdictional area of a city or township MS4 permittee located within the drainage area to an impaired water. Using the entire city or township boundary acknowledges that future stormwater conveyance within the boundary will be MS4-regulated. This practice reduces the need for WLA transfers and other updates when land cover changes and provides more flexibility on where an MS4 permittee can implement best management practices for compliance with their permit.

- The areas used to calculate the WLAs for MNDOT and Benton County (see resolution number 2 above) are located within Minden Township's jurisdictional boundary, so those areas were subtracted from the area used to calculate the WLA for Minden Township.
- The 2019 Legislation changed the regulated area for Minden Township MS4. Previously, the township's stormwater conveyance was regulated throughout the entire jurisdiction. Based on the legislative change, Minden Township MS4 regulated area now consists of stormwater conveyance within the census defined urban area with a population of at least 50,000, and "other platted areas." However, to minimize the need for future MS4 WLA revisions, the entire jurisdictional area was used to calculate Minden Township's WLA. This approach acknowledges that stormwater conveyance within the boundary could become MS4-regulated based on changes to the urban area and platted areas. For compliance purposes, best management practices and associated reductions should be reported within the areas defined by the 2019 Legislation.

Figure 4. Areas used for Minden Township and City of St. Cloud WLAs.



Revised Donovan Lake TMDL Summary

Acres used to calculate WLAs are provided in Table 1. The entire Donovan Lake Watershed is accounted for in the WLAs; the LAs are assigned to sources other than watershed runoff. The revised TMDL summary for Donovan Lake is provided in Table 2; the original TMDL summary table for Donovan Lake TMDL is provided in Table 3.

Table 1. Areas used for WLA calculation in TMDL revision.

Name	Area (acres)
Corrected TMDL subwatershed	1,098
Minden Township	716.7
St. Cloud City	372.5
Benton County	1.3
MNDOT Outstate	7.5

Table 2. Revised Donovan Lake (05-0004-02) phosphorus TMDL summary.

- Listing year: 2010
- Numeric standard used to calculate TMDL: 60 µg/L total phosphorus (TP)
- Baseline year: 2006
- TMDL and allocations apply Jun–Sep

TMDL Parameter		TMDL TP Load [a]	
		lb/day	lb/yr
WLA [b]	Construction stormwater (MNR100001)	0.0021	0.76
	St. Cloud City MS4 (MS400052)	0.070	26
	Minden Township MS4 (MS400147)	0.13	49
	Benton County MS4 (MS400067)	0.00024	0.089
	MNDOT Outstate MS4 (MS400180)	0.0014	0.51
Load allocation (atmospheric, internal, and groundwater)		0.15	53
MOS		0.039	14
Loading Capacity		0.39	143
Existing Load		0.93	352
Percent Reduction		59%	

a. TMDL TP loads are rounded to two significant digits.

b. This WLA is based on the entire jurisdictional area for Minden Township that lies within the Donovan Lake drainage area. MS4 regulated areas at the time of this TMDL revision were 142.5 acres in Minden Township (based on 2019 Legislative changes), 372.5 acres in Saint Cloud, 1.3 acres for Benton County, and 7.5 acres for MNDOT.

Table 3. Original Donovan Lake (05-0004-02) phosphorus TMDL summary.

Total Phosphorus	TMDL lb/day	TMDL lb/year
Loading Capacity	**0.392**	**143.28**
Margin of Safety	0.039	14.33
Wasteload Allocation*		
Construction Stormwater	0.002	0.76
"Straight Pipe" Septic Systems	0.000	0.00
MS4 Communities Benton County St. Cloud Minden Twp. MN DOT, non-traditional	0.033	12.16
Load Allocation		
Watershed	0.173	63.08
Internal	0.079	28.91
Atmospheric + Groundwater	0.066	24.04