TMDL: Lake Pepin and Mississippi River Watershed TMDLs, MN
Date: 05/19/2021

DECISION DOCUMENT FOR THE LAKE PEPIN AND MISSISSIPPI RIVER WATERSHED TMDLs, MN

Section 303(d) of the Clean Water Act (CWA) and EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable Total Maximum Daily Loads (TMDLs). Additional information is generally necessary for EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see Section 2 below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

(1) the spatial extent of the watershed in which the impaired waterbody is located;
(2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
(3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
(4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and

(5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll-*a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices (BMPs).

Comment:

Location Description/Spatial Extent:

The Lake Pepin and Mississippi River (Lake Pepin) TMDL watershed is located in east-central Minnesota. The overall watershed covers over 47,000 square miles (approximately half of the state) and includes all or parts of over 55 counties and four states (Minnesota, South Dakota, Iowa, and Wisconsin) (Figure 1 of the TMDL). The TMDL report addresses two segments of the Mississippi River and Lake Pepin (Table 1 of this Decision Document).

Table 1: Waterbodies addressed by the Lake Pepin TMDL

Listed Waterbody name	Location Description	Reach AUID	Impaired Use	Listed Pollutant	Listing year
Mississippi River	Crow River to Upper St. Anthony Falls	07010206-805	Aquatic Life	phosphorus	2016
Mississippi River	Upper St. Anthony Falls to St. Croix River	07010206-814	Aquatic Life	phosphorus	2018
Lake Pepin	Mississippi River to Pool 4	25-0001-00	Aquatic Recreation	phosphorus	2002

Mississippi River Segments 805 and 814: Two segments of the Mississippi River are listed as impaired for eutrophication, and are hereafter referred to as Segments 805 and 814. Segment 805 is 25.81 miles in length, and has a watershed area of 19,640 square miles. Segment 814 is 41.13 miles long, and has a watershed area of 37,111 square miles. Both segments are mainly in the North Central Hardwood Forest ecoregion, with the lower portion of segment 814 in the Western Corn Belt Plains (Figure 3 of the TMDL).

Lake Pepin: Lake Pepin is a natural lake on the Mississippi River. Lake Pepin is a highly used recreational system, and supports a significant sport fishing industry (*Mississippi River Pools 1 through 8: Developing River, Pool, and Lake Pepin Eutrophication Criteria* (wq-s6-09); (MPCA, 2012)). The lake is informally divided into two parts, the Upper and Lower Lake Pepin (Figure 2 of the TMDL). The lake has a relatively short retention time (averaging 16 days) and is relatively shallow, and therefore is more riverine in nature much of the time (Section 3.1 of the TMDL). Table 2 of this Decision Document contains the hydrologic data for Lake Pepin.

Table 2: Lake data

Surface area	39.7 mi^2
Mean depth	17.7 ft
Maximum depth	56 ft
Mixing Depth	8-9 ft
Maximum Width	2.7 mi
Length	20.8 mi
Maximum Fetch	11.8 mi
Volume	448,340 acre-feet
Watershed area	47,363 mi^2
Watershed ratio	1,193:1
Retention time	16 days

The Lake Pepin TMDL watershed contains all or parts of several basins, including the Upper Mississippi River, Minnesota River, Crow River, Rum River, Twin Cities Metro, St. Croix River, and the direct tributaries to Lake Pepin (Sections 1.2 and 3.2, and Figure 4 of the TMDL). Because of Lake Pepin's location on the Mississippi River, much of the State drains into Lake Pepin. Minnesota Pollution Control Agency (MPCA) explained that not all of the basins are included in the TMDL; portions of the upstream basins are excluded from the TMDL calculations as certain lakes in the upstream portions are phosphorus "sinks", where phosphorus is captured and not contributed downstream, or where an appropriate TMDL already exists. These are termed "boundary conditions" by MPCA and are identified in Section 5.6 of the TMDL.

Several Tribal reservations are located in the Lake Pepin TMDL watershed (Section 5.8 and Appendix D of the TMDL). These lands account for less than 0.04% of the Lake Pepin TMDL watershed, and the State explicitly excluded these lands from the TMDL allocation process. A portion of the Minnesota River watershed extends into South Dakota; as discussed in Section 5.2 of the TMDL, this area is upstream of Lac qui Parle Dam, and is excluded from the TMDL as upstream of the boundary condition. A very small portion of Iowa is within the Minnesota River basin, but was excluded from the TMDL calculations.

Wisconsin has a more direct impact on Lake Pepin. The lake serves as the boundary between Wisconsin and Minnesota. Wisconsin lands within the St. Croix River watershed were excluded from the TMDL, as the St. Croix watershed already has approved TMDLs for phosphorus (MPCA 2012b, USEPA, 2012). The lands in Wisconsin that directly discharge to Lake Pepin were included in the TMDL modeling effort; however, the allocations were separated from the Minnesota allocations and are found in Appendix E of the TMDL. The allocations calculated in Appendix E for sources within Wisconsin are specifically excluded from this TMDL approval.

MPCA noted that many TMDLs have been previously approved in the Lake Pepin TMDL watershed (Section 4.2 of the TMDL). Table 14 of the TMDL notes that at least 500 phosphorus TMDLs and 174 total suspended solids TMDLs have been approved within the Lake Pepin TMDL watershed. As of the date of this Decision, based upon EPA records, over 300 TSS TMDLs have been approved in the Lake Pepin TMDL watershed. MPCA noted that wasteload allocations assigned to permitted sources in these approved TMDLs may differ from wasteload allocations assigned to the same permitted sources in the Lake Pepin TMDL. In these cases, the more restrictive allocation applies. This is to ensure that not only the original TMDL will attain water quality standards, but that the Lake Pepin TMDL will attain water quality standards.

Land Use:
The Lake Pepin TMDL watershed drains several ecoregions (Figure 3 of the TMDL) and covers 33 HUC-8 watersheds and 10 separate HUC-10 watersheds (Table 6 of the TMDL). The land use within the Lake Pepin TMDL watershed varies significantly, with forest dominating the northern portion of the watershed and agricultural land significantly dominating the southern portion of the watershed (Figure 5 of the TMDL). Overall, cultivated crops cover 39% of the Lake Pepin TMDL watershed, forest 20%, grassland and pasture 14%, wetland 11%, and developed lands 7%, with other land uses making up the difference.

The land use for the major basins differs significantly. The Upper Mississippi River Basin is approximately 29% forest, 21% cultivated crops, and 15% grassland and pasture, with other land uses making up the difference. The St. Croix River Basin has similar land use as the Upper Mississippi River Basin, with 42% forested lands and 17% grassland and pasture, with cultivated crops more predominant in the downstream (southern) portion of the basin. The Minnesota River Basin is much more agricultural in land use, with 72% of the basin cultivated crops, and very limited forest lands. The Twin Cities Metropolitan Area (Metro) is urbanized, with 55% of the area developed. The Mississippi River-Lake Pepin direct tributaries land use is 53% cultivated crops, 16% grassland and pasture, and 13% forest.

Problem Identification:
Lake Pepin was placed on Minnesota's 303(d) list of impaired waters in 2002, while Segments 805 and 814 were placed on the MPCA 303(d) list in the mid-2000's. Both of these segments have been resegmented several times, most recently in 2018 (Section 1.2 and Appendix A of the TMDL).

The waterbodies were placed on the MPCA 303(d) list due to exceedances of the eutrophication criteria, specifically, the phosphorus numeric criteria. Lake Pepin did not meet the Aquatic Recreation Use due to excessive algae and plant growth, while Segments 805 and 814 did not meet the Aquatic Life Use due to excessive phosphorus. As discussed in Section 2 of this Decision Document, site-specific criteria were developed for Lake Pepin and Segment 814.

Section 3.3 and Table 9 of the TMDL summarize the data used to assess the waterbodies. Several sources of data were used in the TMDL development process, including results from the United States Geological Survey (USGS) Long-Term Resource Monitoring Program (LTRMP), Metropolitan Council Environmental Services (MCES), and MPCA. MPCA presented data showing that while the overall loading of phosphorus has been reduced over the last decade, the waterbodies continue to exceed the water quality standard (WQS). MPCA also noted that the section of the Mississippi River downstream of Segment 814 (from the St. Croix River to Lake Pepin, Pool 3) is not impaired due to eutrophication, likely as a result of the high-quality inflow from the St. Croix River (Section 3.1 of the TMDL).

Pollutant:
Phosphorus: While phosphorus is an essential nutrient for aquatic life, elevated concentrations of phosphorus can lead to eutrophication and nuisance algal blooms that negatively impact aquatic life and recreation (swimming, boating, fishing, etc.). Algal decomposition depletes oxygen levels which stresses benthic macroinvertebrates and fish. Excess algae can shade the water column which limits the distribution of aquatic vegetation. Aquatic vegetation stabilizes

bottom sediments, and also is an important habitat for macroinvertebrates and fish. Furthermore, depletion of oxygen can cause phosphorus release from bottom sediments (i.e. internal loading).

Degradations in aquatic habitats or water quality (ex. low dissolved oxygen) can negatively impact aquatic life use. Increased algal growth, brought on by elevated levels of nutrients within the water column, can reduce dissolved oxygen in the water column, and cause large shifts in dissolved oxygen and pH throughout the day. Shifting chemical conditions within the water column may stress aquatic biota (fish and macroinvertebrate species). In some instances, degradations in aquatic habitats or water quality have reduced fish populations or altered fish communities from those communities supporting sport fish species to communities which support more tolerant rough fish species.

Source Identification (point and nonpoint sources):

Point Source Identification:

MPCA identified approximately 400 Minnesota municipal and industrial wastewater treatment plants (WWTPs) discharging to the TMDL waterbodies (Section 3.4.1 and Appendix B of the TMDL; Attachment 1 of this Decision Document). MPCA explained that municipal WWTPs typically have an effluent limit of 1 mg/L of phosphorus. MPCA noted that the overall loading of phosphorus from WWTPs has dropped significantly since the year 2000 (Figures 19-23 of the TMDL). Further explanation of how MPCA determined the wasteload allocations for these facilities is found in Section 5 of this Decision Document.

MPCA identified over 200 Municipal Separate Storm Sewer System (MS4) entities in the Lake Pepin TMDL watershed (Section 3.4.2 and Appendix C of the TMDL; Attachment 2 of this Decision Document). Stormwater can contain phosphorus loads as a result of precipitation runoff from urbanized areas. MPCA noted that 11 communities are growing sufficiently that MS4 permits will be required in the near future. Further explanation of how MPCA determined the wasteload allocations for the MS4 entities is found in Section 5 of this Decision Document.

MPCA noted that construction sites may contribute phosphorus via stormwater runoff during precipitation events. Construction sites within the Lake Pepin TMDL watershed must comply with the requirements of the MPCA's NPDES Stormwater Program. The NPDES program requires construction sites to create a Stormwater Pollution Prevention Plan (SWPPP) that summarizes how stormwater will be minimized from the site. Section 5 of this Decision Document explains how MPCA determined wasteload allocations for discharges of construction stormwater.

Discharges of stormwater associated with industrial activity was also identified by MPCA as a potential source of phosphorus. The wasteload allocations established for discharges of industrial stormwater regulated under MPCA's Industrial Stormwater Multi-Sector Permit (MNR050000) and the General Permit for Nonmetallic Mining and Associated Activities (MNG490000) are discussed further in Section 5 of this Decision Document.

MPCA identified over 11,000 animal feeding operations (AFOs) in the Lake Pepin TMDL watershed. Of these, MPCA identified over 900 operating under a NPDES Concentrated Animal Feeding Operation (CAFO) permit. In Minnesota, AFOs that meet the federal definition of a CAFO that have a discharge, and all CAFOs and other AFOs that have 1,000 animal units are required to operate under either the CAFO General NPDES Permit (MNG440000) or the Feedlot

General State Disposal System (SDS) Permit (MNG450000) (Section 3.4.3 of the TMDL). Federal regulations generally define a CAFO as having a certain type and number of animals confined for more than 45 days in a 12-month period. Under MPCA NPDES permit requirements, the CAFO production areas must be designed to contain all manure and the direct precipitation and manure contaminated runoff from precipitation caused by a 25-year 24-hour storm event. Discharges of pollutants from an overflow at the production area of CAFOs are authorized under the NPDES permit but the overflow must be caused by precipitation, the discharge must not cause or contribute to an exceedance of a water quality standard, and the production area must comply with the aforementioned design criteria and permit requirements for inspection, operation and maintenance, and recordkeeping. Therefore, no wasteload allocations were developed by MPCA for the production areas at CAFOs. Precipitation-caused runoff from the spreading of manure at agronomic rates and in accordance with best management practices for nutrient management established in Minn. R. 7020.2225 and in MPCA's general permits is not regulated as a point source discharge and is therefore considered in the nonpoint source load section discussed below (Section 3.4.3 of the TMDL).

Nonpoint Source Identification**:** The potential nonpoint sources for the Lake Pepin TMDL are discussed in Section 3.4.4 of the TMDL. Figure 26 and Table 12 of the TMDL document the estimated nonpoint source loadings in the Lake Pepin TMDL watershed.

Non-regulated stormwater runoff: Stormwater runoff from urban areas (not regulated under an MS4 permit) may introduce pollutants, including phosphorus, to the Lake Pepin watershed. Residential and commercial developed areas, as well as transportation infrastructure, in areas outside of MS4 jurisdictions still drain impervious surfaces that introduce pollutants derived from wildlife, pet droppings, fertilizer, etc.

Stormwater from agricultural land use practices and feedlots: As discussed above, MPCA identified over 11,000 AFOs in the Lake Pepin watershed (Section 3.4.3 and Figure 25 of the TMDL). Runoff from the spreading of manure at agronomic rates is not regulated as a point source discharge and is therefore considered in the nonpoint source load. Runoff from fields with manure or chemical fertilizer can be exacerbated by tile drainage lines, which channelize the runoff flows. Runoff from agricultural lands may contain significant amounts of phosphorus from chemical fertilizers which may lead to impairments in the watersheds.

Erosion of soils from the fields can also contribute phosphorus. Phosphorus is often attached to soil and sediment, and when erosion occurs, the phosphorus-rich sediment is transported to nearby waterbodies, and then transported downstream, where it can become available for biological use. MPCA has determined that the total suspended solid (TSS) TMDLs in the watershed will also reduce phosphorus within the Lake Pepin TMDL watershed (Section 1.1 of the TMDL).

Natural Background: MPCA estimated the natural background loading of phosphorus into the three impaired waterbodies (Sections 3.4.5 and 5.3 of the TMDL). MPCA reviewed a study that utilized sediment cores in Lake Pepin to estimate the phosphorus loading before significant settlement (Engstrom *et al*, 2009). MPCA utilized the results of that study to estimate natural background loadings in the Lake Pepin TMDL watershed.

Failing septic systems: MPCA noted that failing septic systems, where waste material can pond at the surface and eventually flow into the waterbodies or be washed in during precipitation events, are potential sources of bacteria and phosphorus. Much of the watershed is rural, and failing septic systems are noted by MPCA as a source of pollutants in the watershed.

Streambank Erosion: Eroding streambanks, bluffs and ravines add sediment and attached phosphorus to local surface waters (Section 3.4.4 of the TMDL). Eroding riparian areas may be linked to soil inputs within the water column and potentially to changes in flow patterns. Changes in flow patterns may also encourage down-cutting of the stream bed and streambanks. Subsurface drainage tiling, channelization of waterways, land cover alteration, and increases in impervious surfaces all decrease detention time in the watershed and increase flow from fields and into streams. Draining and tiling wetland areas can decrease water storage on the landscape, which can lead to lower evapotranspiration and increased river flow. Unrestricted livestock access to streams and streambank areas may lead to streambank degradation and sediment additions to stream environments. These sources can include both natural and anthropogenic causes.

Roadway deicing: Studies performed by MPCA over the last 10 years indicates that some road deicing materials can contain significant amounts of phosphorus, particularly corn products that may be less corrosive than salt (*Detailed Assessment of Phosphorus Sources to Minnesota Watersheds* - Appendix F; Barr Engineering; 2004). In the Lake Pepin TMDL, MPCA did not quantify the loads due to deicing material, but noted that in urbanized areas this is a source that should continue to be monitored.

Internal loading: Sections 5.3 and 6.4 of the TMDL discuss the effects of internal loading on Segment 814 and Lake Pepin. The release of phosphorus from river and lake sediments via physical disturbance from benthic fish (rough fish, ex. carp), from wind mixing the water column, and from decaying plants may all contribute internal phosphorus loading to Lake Pepin and Segment 814. Phosphorus may build up in the bottom waters and may be resuspended into the water column when the waters mix. The modeling effort specifically identified reductions in sediment/phosphorus resuspension in order to attain WQS.

Future Growth:
MPCA determined a reserve capacity (RC) to account for changes in wastewater loadings (Section 5.5.1 of the TMDL). MPCA noted that while population increases could lead to increased flow from wastewater facilities in the future, the current wasteload allocations are based upon permitted flow rates, not actual flow rates, no RC was needed or determined for current dischargers. MPCA explained that RC was calculated to account for upgrading unsewered communities. As failing and nonconforming septic systems, and unsewered communities are upgraded, new wastewater systems will be needed. A small amount of RC was set aside for these small discharges (Sections 5.5.1 and Table 21 of the TMDL).

Priority Ranking:
As discussed in Section 1.3 of the TMDL, MPCA's schedule for TMDL completions, as indicated on the 303(d) impaired waters list, reflects Minnesota's priority ranking of this TMDL. The MPCA has aligned TMDL priorities with the watershed approach and Watershed Restoration and Protection Strategy (WRAPS) cycle. The schedule for TMDL completion corresponds to the WRAPS report completion on the 10-year cycle. Mainstem river TMDLs,

which are not contained in major watersheds and thus not addressed in WRAPS, must also be completed. The MPCA developed a state plan, Minnesota's TMDL Priority Framework Report (MPCA, 2015), to meet the needs of EPA's national measure (WQ-27) under EPA's Long-Term Vision for Assessment, Restoration and Protection under the CWA section 303(d) program. As part of these efforts, the MPCA identified water quality-impaired segments that will be addressed by TMDLs by 2022. The waterbodies of the Lake Pepin TMDL watershed addressed by this TMDL are part of the MPCA prioritization plan to meet EPA's national measure.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the first criterion.

2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:

Designated Uses:

Minnesota Rule Chapter 7050 designates uses for waters of the state. The impaired waters addressed by this TMDL are designated for a variety of uses (Table 3 of this Decision Document; Section 2.1 of the TMDL). For phosphorus, the Class 2B use is the most protective.

Class 2B waters are protected for aquatic life and recreation use (boating, swimming, fishing, etc.). Class 2Bd waters are similarly protected for aquatic life and recreation use but also protected as sources of drinking water. The Class 2B and 2Bd designated uses are described in Minn. R. ch. 7050.0222 subp. 4 and subp. 3, respectively, as:

> *Class 2B: "The quality of class 2B surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water aquatic biota, and their habitats according to the definitions in subpart 4c. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface water is not protected as a source of drinking water."*

Class 2Bd: "The quality of class 2Bd surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water aquatic biota and their habitats according to the definitions in subpart 3c. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface waters is also protected as a source of drinking water."

An additional 2B beneficial use subcategory addresses biology. Waters designated with a "g" are described in Minn. R. ch. 7050.0222 as:

"'General cool and warm water aquatic life and habitat' or 'class 2Bg' is a beneficial use that means waters capable of supporting and maintaining a balanced, integrated, adaptive community of warm or cool water aquatic organisms having a species composition, diversity, and functional organization comparable to the median of biological condition gradient level 4 as established in Calibration of the Biological Condition Gradient for Streams of Minnesota, Gerritsen et al. (2012)."

Table 3: Designated Use Classifications for the Lake Pepin TMDLs

Impaired water body segment	AUID	Designated Use Classification
Lake Pepin	25-0001-00	2B, 3C
Mississippi River: Crow River to Upper St. Anthony Falls	07010206-805	1C, 2Bdg, 3C
Mississippi River: Upper St. Anthony Falls to St. Croix River	07010206-814	2Bg, 3C

During the development of the Lake Pepin TMDL, MPCA determined that the water quality criteria for the lake and Segment 814 needed to be revised. Based upon the hydrologic characteristics, MPCA concluded that Lake Pepin has characteristics of both a lake and a river, depending upon the water flow (Figure 4 of *Lake Pepin Site Specific Eutrophication Criteria*, MPCA, 2011). After a detailed review, MPCA developed the site-specific criteria (SSC) as approved in January 2015 by the EPA and contained in Table 4 of this Decision Document. For Segment 805, MPCA is applying the statewide River Eutrophication Standard (RES) as approved by the EPA in 2015. The criteria are found in Minnesota R. ch.7050.0222.

Table 4: Numeric Criteria for the Lake Pepin TMDL

Impaired waterbody segment	Region	Total phosphorus (ug/L)	Chl-*a* (ug/L)**	BOD5 (mg/L)***	DO flux (ml/L/day)****
Mississippi River - 805	Central*	100	18	2.0	3.5
Mississippi River - 814	Site-specific	125	35	-	-
Lake Pepin	Site-specific	100	28	-	-

* - Central Nutrient Region
** - chlorophyll-*a*
*** - Biological Oxygen Demand measured over 5 days
**** - Dissolved Oxygen change over 24 hours

The site-specific criteria are measured as summer averages, with summer defined as June 1 to September 30 (Section 2.2 of the TMDL). A more detailed discussion on the development of the site-specific criteria can be found at *Lake Pepin Site Specific Eutrophication Criteria* (MPCA, 2011), and *Mississippi River Pools 1 through 8: Developing River, Pool, and Lake Pepin Eutrophication Criteria* (MPCA, 2012a). The site-specific criteria for TSS in the Lake Pepin watershed also discussed impacts on eutrophication and submerged aquatic vegetation (*Total*

Suspended Solids-Submersed Aquatic Vegetation Site-Specific Standard, South Metro Mississippi River (MPCA, 2010)).

Target: MPCA employed the phosphorus criteria of **100 ug/L** or **125 ug/L** measured as a summer average as noted in Table 4 of this Decision Document and Tables 15-17 of the TMDL. As discussed further in Section 3 of this Decision Document, the phosphorus loads were reduced to determine the attainment of the chl-*a* criteria or the other eutrophication criteria as required.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the second criterion.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for steam flow, loading, and water quality parameters as part of the analysis of loading capacity (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

Comment:
Functionally a TMDL is represented by the equation:

$$TMDL = LC = \Sigma WLA + \Sigma LA + MOS + RC,$$

where: LC is the loading capacity; WLA is the wasteload allocation; LA is the load allocation; MOS is the margin of safety; and (pursuant to MPCA rules) RC is any reserve capacity set aside for future growth. Sections 4 and 5 of the TMDL discuss the methodologies used for the TMDL allocations and reductions. TMDL summary tables are located in Attachment 3 of this Decision Document (Tables 15-17 of the TMDL).

Modeling for Segment 814 and Lake Pepin: To calculate the phosphorus loadings for Segment 814 and Lake Pepin, MPCA developed the Upper Mississippi River-Lake Pepin Water Quality Model (UMR-LP). This model consists of two parts, a hydrodynamic water quality model called ECOMSED and the Row-Column AESOP water quality model (RCA). The UMR-LP model was developed in conjunction with the project's Science Advisory Panel (SAP) (Section 4.1 of the TMDL). A modeling report was developed by Limnotech in 2009 that discusses the development, calibration, and implementation of the model (*Upper Mississippi River-Lake Pepin Water Quality Model: Development, Calibration, and Application*, LimnoTech, 2009). The model was developed for multiple uses; to inform the phosphorus and TSS site specific criteria for Lake Pepin and associated waterbodies, and to develop the TSS and phosphorus TMDLs for Lake Pepin and the Mississippi River (Section 4.1 of the TMDL).

ECOMSED is a three-dimensional hydrodynamic and sediment transport model used to simulate hydrodynamics and sediment transport in the Mississippi River (*Executive Summary*; LimnoTech, 2009). The "ECOM" component of the model is used to simulate three-dimensional and time-dependent hydrodynamic behavior in the Mississippi River segments. The "SED" component simulates the transport and fate of cohesive and non-cohesive sediments. Advective/dispersive transport and deposition and resuspension processes are simulated for cohesive sediments, which represent clays, fine and medium silts, and associated organic material. Likewise, transport and deposition/resuspension is simulated for a non-cohesive sediment class, which typically represents medium to coarse sands (Section 4.1 of the TMDL). The ECOMSED portion of the model was used for both the Lake Pepin TMDL as well as the South Metro Mississippi River TSS TMDL.

The RCA model focuses more on the Lake Pepin eutrophication TMDL that is being approved. The model simulates water column processes that impact water quality. Numerous chemical inputs (including nitrogen, carbon, phosphorus, and algae) are linked to the cycling of detritus material, sediment oxygen demand, and algal growth to track eutrophication in the system.

The ECOMSED model addressed the segments of the Mississippi River from Lock and Dam #1 to the outlet of Lake Pepin. Allocations were calculated for each of the major tributary watersheds, and the model was run across the entire length of the river system, from river mile (RM) 847 to RM 780, to determine attainment of the SSC. EPA agrees this is appropriate, as the modeling report explains in detail how the model accounted for flows and loads along the river. The model report also explains how the unique hydrology due to the locks and dams in the river was accounted for in the model.

Scenarios: To determine the allocations needed to attain the SSC, 21 scenarios were run, ranging from the current baseline to reducing pollutant loads to pre-settlement conditions. For Scenarios 1-19, TSS, phosphorus, and algae were reduced at various levels to determine resulting water quality. The Science Advisory Panel asked MPCA to conduct additional scenarios, focusing on the Minnesota River to determine the effects of seasonal variations in TSS and related phosphorus loading. Scenarios 20 and 21 linked model results from the Minnesota River to the ECOMSED model. MPCA determined that Scenario 21 would most likely result in attaining the eutrophication criteria for Lake Pepin and Segment 814. MPCA noted that the scenarios provide a general indication of the types and magnitude of the BMPs needed to meet the load allocation for the Minnesota River in Scenario 21 (Section 4.1.2 of the TMDL).

Segment 805: To develop the loading capacity for Segment 805, MPCA utilized a modified load duration curve process (email from Justin Watkins, MPCA dated 4/20/2021). To develop the loading for this segment, MPCA reviewed the historical flow records for the Mississippi River at the Anoka gage (05288500) and the average June-September flow was calculated (Section 5.2 of the TMDL). For the portion of Segment 805 downstream of the Anoka gage, a drainage-area weighting approach was used to determine flow for the entire segment.

The June-September flow result was 10,175 cubic feet per second (cfs) (Table 18 of the TMDL). This represents approximately the 25% percentile flow at the Anoka gage (approximately 25% of the flows exceed 10,175 cfs) (https://rivergages.mvr.usace.army.mil/WaterControl/Districts/MVP/Reports/org/umr1/rdn/index.html#table1). To determine the phosphorus loading, the flow was multiplied by the phosphorus criteria of 100 ug/L (Table 3 of this Decision Document; Section 5.1.2 of the TMDL). The total loading capacity was determined by MPCA to be 2,490 kg/day of phosphorus (Attachment 3 of the TMDL; Table 18 of the TMDL).

Boundary conditions: During development of the TMDL, MPCA determined that portions of the Lake Pepin TMDL watershed either did not contribute significant phosphorus to the impaired segments, or that attainment of the previously approved TMDLs is sufficient to attain the Lake Pepin TMDL, therefore no further reductions in phosphorus loads in the boundary conditions are necessary (Sections 4.2 and 5.6 of the TMDL). The portion of the Minnesota River upstream of Lac qui Parle Dam was excluded from the TMDL analysis, as Lac qui Parle is a large reservoir on the Minnesota River and data analysis done by MPCA indicated that the lake serves as a sink for TSS and phosphorus and is meeting the appropriate WQS. The portion of the Mississippi River upstream of Aitkin demonstrated a similar result; several reservoirs near Aitkin serve as TSS and phosphorus sinks.

The Cannon River upstream of Byllesby Reservoir is also excluded from the Lake Pepin TMDL, as a TMDL was developed and approved in 2017, and MPCA determined that implementation of the TMDL and associated SSC will result in the Cannon River meeting the phosphorus loadings needed to attain the Lake Pepin allocations. MPCA also determined that the approved Lake St. Croix TMDL is sufficient to protect Lake Pepin, and therefore no direct allocations were developed for this watershed in the Lake Pepin TMDL.

Critical condition: The critical condition for the phosphorus TMDLs is the lower flow conditions, generally during late summer or early fall (Section 5.4 of the TMDL). As noted in the *Lake Pepin Site Specific Eutrophication Criteria* (MPCA, 2011), eutrophication issues and related algal growth are related to retention time of phosphorus in Lake Pepin. During higher flows, the lake is more river-like, and phosphorus is more likely to be flushed out of the lake (Figure 4 in MPCA, 2011). During low flows, the lake becomes more lake-like, and algae has a greater chance to consume phosphorus, resulting in algal blooms.

MPCA accounted for the critical condition using two processes. First, the SSC for Lake Pepin and Segment 814 specifically accounts for algal growth in the waterbodies based upon site-specific data. Second, the model used 20 years of flow data, which included an extreme wet year (1993) and an extreme drought year (1988). This allowed MPCA to address a wide variety of conditions in the TMDL modeling (Section 5.4 of the TMDL). For Segment 805, the RES criteria were developed to address the critical condition for algal response, which is the late

summer time period, when water temperatures are higher, flows are more stable, and residence time is increased ((MPCA 2012a); *Minnesota Nutrient Criteria Development for Rivers* (draft), wq-s6-08) (MPCA 2013)).

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the third criterion.

4. Load Allocations (LA)

EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

Comment:
Load allocations are addressed in Section 5.3 of the TMDL. The LAs for phosphorus are in Attachment 3 of this Decision Document (Tables 15-17 of the TMDL). MPCA calculated the LAs by subtracting WLAs, margin of safety, reserve capacity and boundary conditions from the loading capacity, the remaining portion of the loading capacity is the LA. In Section 3 of the TMDL and discussed in Section 1 of this Decision Document, MPCA identified several types of nonpoint sources that contribute phosphorus to the Lake Pepin watershed including but not limited to cropland and pasture runoff, streambank erosion, unpermitted feedlots, roadway deicing chemicals, natural background and internal loading. LAs by source type, other than natural background ("gross allotments" per 40 C.F.R. §130.2(g)), were not established by MPCA in the Lake Pepin TMDL. The natural background load is estimated from core studies in Lake Pepin that calculated phosphorus loadings from pre-1830, before human land use impacts occurred (Engstrom *et al*, 2009).

Internal Loading - MPCA did note that internal loading in Lake Pepin is a significant component of loading (Section 5.3 of the TMDL). The model scenario used to develop the TMDL loads (Scenario 21), includes a 50% reduction in resuspension rates of bottom sediments for Pool 1 through Pool 2 (downstream portion of Segment 814). The model estimates that the 50% reduction in sediment resuspension will result in a 2% reduction in phosphorus loading to Lake Pepin, as phosphorus is often attached to sediment particles. Sections 8 and 10 of this Decision Document discuss in more detail the actions and activities the State will pursue to reduce the resuspension of sediment in the TMDL waterbodies.

Animal Feeding Operations (AFOs) – As discussed in greater detail in Sections 1 and 5 of this Decision Document, runoff from AFOs and associated land application of manure and chemical fertilizers can be a source of phosphorus in the Lake Pepin TMDL watershed (Section 3.4.3 of the TMDL). MPCA identified over 11,000 feedlots in the Lake Pepin TMDL watershed, of which over 900 operate under NPDES CAFO permits. As discussed in Section 1 of this Decision Document, runoff from unpermitted AFOs, and precipitation-caused runoff from land application of manure that is not regulated as a point source and are considered under the LA portion of the TMDL.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the fourth criterion.

5. Wasteload Allocations (WLAs)

EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

Comment:
MPCA calculated WLAs for approximately 400 wastewater point source dischargers in the TMDL waterbodies (Section 5.2.1 and Appendix B of the TMDL). These facilities include WWTPs, industrial wastewater, industrial process water, and noncontact cooling water. Attachment 1 of this Decision Document lists the facilities for which phosphorus WLAs were calculated by MPCA. MPCA noted that WLAs may have been developed for these facilities under previously approved TMDLs; if so, the more restrictive WLA applies to ensure both the local water quality and downstream water quality is protected.

Lake Pepin and Segment 814: For facilities discharging into these waterbodies, MPCA calculated the WLAs based upon the facility type (municipal vs. industrial) and the Average Wet Weather Discharge Flow (AWWDF) for municipal facilities, and Maximum Design Flow (MDF) for industrial facilities. The AWWDF or MDF was multiplied by the target phosphorus concentration and the appropriate conversion factors to determine an annual and daily WLA (Table 8 of this Decision Document; Table 19 of the TMDL). This TMDL approval only addresses the WLAs; MPCA's implementation of the WLAs in NPDES permits is not addressed by this TMDL approval. Implementation of WLAs is addressed in the NPDES permit process.

Table 8: Summary for calculating WLAs for municipal and industrial WWTPs in the Lake Pepin TMDL Watershed.

Facility Type and Flow (AWWDF or MDF*)	Annual WLA to meet Lake Pepin TMDL
Continuous > 20.0 mgd	AWWDF x 0.3 mg/L
Continuous 1.0 – 20.0 mgd	AWWDF x 0.8 mg/L
Continuous 0.2 – 1.0 mgd	AWWDF x 1.0 mg/L
Continuous <0.2 mgd	AWWDF x 3.50 mg/L or maintain current discharge
Stabilization ponds	AWWDF x 1.0 or 2.0 mg/L or maintain current discharge
WWTPs at conc. below RES	Maintain current discharge**
Industrial Discharge with concentration > 1.0 mg/L and MDF > 1.0 mgd	MDF x 1.0 mg/L
Industrial Discharge with concentration > 1.0 mg/L and MDF < 1.0 mgd	MDF x 1.0 mg/L
Industrial Discharge with concentration < 1.0 mg/L	Current load x 1.15
Other Industrial	Limits specified on a site specific basis

*AWWDF- Average Wet Weather Design Flow, MDF – Maximum Design Flow
**Expansion of these WWTPs may be permitted assuming effluent concentration remains below RES

Segment 805: For facilities in the Rum River watershed, Mississippi River upstream of the Metro area, and the Crow River, a slightly different approach was used. The process noted above for Lake Pepin and Segment 814 was followed, but an additional calculation was performed for the facilities in these watersheds to address the RES criteria for Segment 805 (Attachment 1 and Table 9 of this Decision Document; Table 20 and Section 5.2.1 of the TMDL). The RES criteria apply from June through September, and MPCA noted that the WLAs in several basins (Mississippi River above Crow River, Rum River, and the Twin Cities Metro Area above Lock and Dam #1) were sufficient to protect not only Lake Pepin and Segment 814, but also Segment 805. The Crow River watershed facilities noted in Appendix B of the TMDL (Attachment 1 of this Decision Document) have an additional WLA calculated by MPCA that will be implemented in the appropriate permits to ensure the RES criteria for Segment 805 are attained. These WLAs would apply from June-September as a monthly average limit (Section 5.2.1 of the TMDL).

Table 9: Summary for calculating Seasonal RES WLAs for municipal and industrial WWTPs in the Crow River Basin

Facility (AWWDF or MDF*)	Seasonal WLA to meet downstream RES TMDL in the Crow River Watershed
Lower Crow Watershed	
Continuous 1.0 – 20.0 mgd	70% AWWDF x 0.38 mg/L
Continuous 0.2 – 1.0 mgd	70% AWWDF x 0.48 mg/L
Continuous < 0.2 mgd	70% AWWDF x 1.67 mg/L
North Fork Crow Watershed	
Continuous > 1.0 mgd	70% AWWDF x 0.20 mg/L
Continuous 0.2 – 1.0 mgd	70% AWWDF x 0.30 mg/L
Continuous < 0.2 mgd	70% AWWDF x 0.47 mg/L
Industrial discharge with concentration < 1.0 mg/L	MDF x 1.0 mg/L
South Fork Crow Watershed	
Continuous > 3.0 mgd	70% AWWDF x 0.15 mg/L
Continuous 1.0 – 3.0 mgd	70% AWWDF x 0.25 mg/L
Continuous 0.2 – 1.0 mgd	70% AWWDF x 0.30 mg/L
Continuous < 0.2 mgd	70% AWWDF x 0.50 mg/L
Stabilization ponds	70% AWWDF x 0.95 mg/L
Industrial discharge with concentration > 1.0 mg/L	MDF x 0.150 mg/L
Other Industrial	Limits specified on a site-specific basis

*AWWDF- Average Wet Weather Design Flow, MDF – Maximum Design Flow

Ponds - MPCA also determined WLAs for stabilization ponds (Section 5.2.1 of the TMDL; Attachment 1 of this Decision Document). Stabilization ponds are regulated in Minnesota through either general or individual permits. The WLAs were calculated based upon the permitted maximum daily discharge flow multiplied by the phosphorus effluent limit for the facility. Discharge was assumed by MPCA to occur over a 16 day period (the maximum under the permits).

MS4 Stormwater - MPCA also determined WLAs for approximately 200 MS4 entities in the Lake Pepin TMDL watershed (Attachment 2 of this Decision Document; Section 5.2.2 and Appendix C of the TMDL). Individual WLAs were not calculated for each MS4 entity; rather, categorical WLAs were determined for each TMDL using the jurisdictional area of each MS4 multiplied by a phosphorus export rate of 0.35 lbs/acre/year (essentially the WLA is the export rate for phosphorus). Section 5.2.2 of the TMDL discusses the sources and information considered by MPCA in establishing the export rate. Minnesota Department of Transportation (MnDOT) is included in the list of MS4 entities subject to the categorical WLAs (Appendix C of the TMDL). Jurisdictional area for MnDOT MS4 systems used to calculate the WLAs included regulated roads and rights-of-way. MPCA also calculated MS4 WLAs for 11 dischargers noted at the end of Appendix C of the TMDL that are not currently permitted as MS4s but are expected to be designated as MS4s in the next few years. MPCA noted that WLAs may have been determined for some of the MS4 entities in previous TMDLs. If so, the more restrictive WLA applies to ensure both the local water quality and downstream water quality is protected.

CAFOs – MPCA identified 914 CAFOs operating under NPDES permits. As explained by MPCA, CAFO production areas must be designed to contain all manure, and direct precipitation and manure-contaminated runoff from precipitation events up to the 25-year, 24-hour storm event, and even in the event of a discharge, the discharge cannot cause or contribute to a violation of a WQS. For the Lake Pepin TMDL, MPCA assigned all NPDES permitted CAFOs a WLA equivalent to zero (WLA = 0). MPCA noted that any precipitation-caused runoff from the land application of manure at agronomic rates is not considered a point source discharge, and is accounted for in the LA section of the TMDL.

Construction and Industrial Stormwater - MPCA established combined categorical WLAs for each TMDL for construction and industrial stormwater equivalent to 0.1% of the total loading capacity, excluding boundary condition loads (Attachment 3 of this Decision Document; Section 5.2.3 of the TMDL). MPCA estimated the areal coverage of the state under construction at any one time is 0.05%.

MPCA explained in Section 8.3.1 of the TMDL that BMPs and other stormwater control measures should be implemented at active construction sites to limit the discharge of pollutants of concern. BMPs and other stormwater control measures which should be implemented at construction sites are defined in the State's NPDES/SDS General Stormwater Permit for Construction Activity (MNR100001). If a construction site owner/operator obtains coverage under the NPDES/SDS General Stormwater Permit and properly selects, installs and maintains all BMPs required under the permit, including those related to impaired waters discharges, and any applicable additional requirements found in Appendix A of the Construction General Permit, the stormwater discharges would be expected to be consistent with the WLA in this TMDL.

MPCA explained in Section 8.3.2 of the TMDL that BMPs and other stormwater control measures that must be implemented at industrial sites are defined in the State's NPDES/SDS Industrial Stormwater Multi-Sector General Permit (MNR050000) or NPDES/SDS General Permit for Construction Sand & Gravel, Rock Quarrying and Hot Mix Asphalt Production facilities (MNG490000). If a facility owner/operator obtains coverage under the appropriate NPDES/SDS General Stormwater Permit and properly selects, installs and maintains all BMPs required under the permit, the stormwater discharges would be expected to be consistent with the WLA in this TMDL.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the fifth criterion.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

Comment:
The Lake Pepin TMDLs incorporated an explicit MOS of 5% of the total loading capacity (Attachment 3 of this Decision Document; Section 5.4 of the TMDL). MPCA determined this is sufficient based upon the modeling results. The Lake Pepin watershed has been extensively studied and monitored for many years, resulting in a robust dataset. The model that was developed followed an open modeling approach, and was reviewed by stakeholders during the TMDL process. MPCA formed a Lake Pepin SAP, comprised of technical experts from the MPCA, USGS, U.S. Army Corp of Engineers, WDNR, University of Minnesota, as well as numerous other groups. The panel provided input into the development and operation of the TMDL model, as well as the site-specific criteria developed for Lake Pepin (MPCA, 2011). As a result of this peer review by the SAP, MPCA determined that the model appropriately simulates the waterbodies, including appropriate validation and calibration. Therefore, MPCA determined that additional MOS is not needed.

Implicit MOS for the TMDLs is also contained in the TMDL. MPCA calculated site-specific criteria for phosphorus and total suspended solids, as discussed in Section 2 of this Decision Document. The site-specific criteria are based upon a detailed analysis of the recent and long-term history of Lake Pepin and the Mississippi River segments. As a result, the site-specific criteria more appropriately represent the attainment of the designated uses for the waterbodies.

The EPA finds that the TMDL document submitted by the MPCA contains an appropriate MOS satisfying the requirements of the sixth criterion.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

Comment:
The phosphorus WQSs are based upon a summer average, to account for the greater impact of phosphorus during the warmer summer months, as per MN Rule 7050.0222. The development of the RES criteria and site-specific criteria for the three waterbodies was developed with an analysis of seasonal variation in flow, loading, and water quality impacts. MPCA utilized over 20 years of flow data in the model effort for Lake Pepin and Segment 814, and over 30 years of summer flow data to develop the allocations for Segment 805. As noted previously in this Decision Document, Lake Pepin has a lake-like response in lower flows, and a river-like response in higher flows. In the development of the SSC, MPCA noted that it is during the lower-flow "lake-like conditions that algal blooms are most prevalent ((MPCA, 2012a). By utilizing this approach, MPCA accounted for seasonal variation in summer flows as well as seasonal impacts on water quality. The criteria development process as well as the TMDL modeling approach took the changing flow and loading factors into account.

The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of the seventh criterion.

8. Reasonable Assurance

When a TMDL is developed for waters impaired by point sources only, the issuance of a NPDES permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. 122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with, "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, EPA cannot disapprove a TMDL for nonpoint source-only impaired waters, which do not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

Comment:
Sections 6 and 8 of the TMDL provide information on actions and activities to reduce pollutant loading in the watershed. The main entities responsible for overseeing the pollutant reduction activities will be the MPCA, the approximately 45 counties in the watershed, and numerous Soil and Water Conservation Districts (SWCDs). Additional partners include cities, townships, Watershed Districts, Watershed Managment Organizations, the Minnesota Board of Water and Soil Resources (BWSR), as well as several US Department of Agriculture programs (Section 6.2 of the TMDL).

MPCA explained that reasonable assurance efforts and implementation actions are provided at several levels. The first level is statewide actions. MPCA has developed a statewide Nutrient Reduction Strategy (NSR) (https://www.pca.state.mn.us/water/nutrient-reduction-strategy). The NSR is a state-wide plan for reducing phosphorus loads exiting Minnesota. One of the major basins is the Mississippi River Basin, and Minnesota has set a goal of a 45% reduction in phosphorus loads exiting the state through the Mississippi River, as measured from the baseline of 1980-1996 (Section 6.1 of the TMDL; *The Minnesota Nutrient Reduction Strategy*, wq-s1-80, MPCA, 2014). The NSR identifies large-scale source types for phosphorus, and various implementation measures needed to achieve the NSR goals.

The NSR also identifies the effectiveness of various BMPs that can reduce phosphorus, as well as the estimated acreage across the state where these practices can be implemented. The NSR also identifies other actions, such as economic goals, education goals, and research strategies, that are necessary to achieve phosphorus reductions.

The second level of reasonable assurance and implementation actions is at the basin level. MPCA identified several larger-scale TMDLs that have already been developed within the Lake

Pepin TMDL watershed. These TMDLs have their own reasonable assurance and implementation actions. These TMDLs and associated WRAPS document sediment and nutrient loadings in watersheds contributing to the Lake Pepin TMDL watershed, and provide additional information on ongoing actions and activities necessary to reduce sediment and nutrients. Reductions achieved by these TMDLs will positively impact reductions and efforts to attain the Lake Pepin TMDL. MPCA has identified two approved TMDLs, Lake St. Croix Excess Nutrient TMDL and Byllesby Reservoir Phosphorus TMDL, that have phosphorus loads that are already protective of the Lake Pepin TMDL (Sections 1.1 and 4.2 of the TMDL). Approved TMDLs that include sediment reductions are considered critical by the MPCA, as the BMPs to reduce sediment often will reduce phosphorus as well, as phosphorus is often attached to sediment particles, and is washed off landscapes of through streambank erosion and ending up in Lake Pepin. Sections 1.1, 4.2, 6.3, and 8.2 and Table 25 of the TMDL identify already approved TMDLs within the Lake Pepin TMDL watershed and discuss the impact and interaction of these already approved TMDLs and WRAPS with the Lake Pepin TMDL. MPCA noted in the Lake Pepin TMDL that some point sources may have WLAs in already approved TMDLs and in the Lake Pepin TMDL. In situations with multiple WLAs, the most restriction allocation will be used to develop permit effluent limitations (Sections 4.2, 5.2 and 8.3.4 of the TMDL).

The third level of reasonable assurance is at the local level. Table 23 of the TMDL lists over 30 local government and stakeholder groups located in the Lake Pepin TMDL watershed. For example, the Blue Earth County SWCD has developed a *Water Management Plan (2017-2026)* that identifies impaired waters in the County, identifies priority areas for protection and restoration, and notes that sediment is a specific pollutant of concern. The plan also contains an implementation section that identifies responsible agencies/groups, ongoing and proposed actions, and sources of funding available to implement BMPs. The Cottonwood County SWCD has developed a *Local Watershed Management Plan (2017-2027)* that contains similar information as the Blue Earth SWCD Water Managment Plan. Several other counties also have watershed plans that address nutrients and sediment in the TMDL basin.

Several watershed groups have on-going activities in the Lake Pepin TMDL watershed (Section 8.2 of the TMDL). One example is the Hawk Creek Watershed Project https://www.hawkcreekwatershed.org/, which has a list of BMPs in development in the Hawk Creek Watershed, as well as information on grants and cost-share programs available to landowners. Other local groups actively working on efforts to improve water quality in the Lake Pepin watershed include the Chippewa River Watershed Project https://www.chippewariver.org/ and the Redwood-Cottonwood Rivers Alliance https://rcrca.com/.

MPCA also discussed the Buffer Law that was passed in 2015 and most recently amended in 2017 (Section 6.4 of the TMDL). The Buffer Law requires a 50-foot average width vegetative buffer to be planted along public streams, and a 16.5 foot minimum width buffer to be planted along public drainage systems. These systems are regulated by the county SWCDs. Buffers can filter runoff from fields and agricultural operations, removing sediment, bacteria, and nutrients. The buffers can also improve habitat and reduce streambank erosion. According to the Minnesota BWSR website, compliance with the Buffer Law is over 98% (https://bwsr.state.mn.us/minnesota-buffer-law). MPCA has studied the effects of stream buffers on the fish and macroinvertebrate populations in streams across the state. The studies indicate that streams with significant buffers systems in place have higher biological scores (https://www.pca.state.mn.us/water/buffers-improve-water-quality). Preliminary results indicate

up to 14% reduction in phosphorus loading in portions of the Lake Pepin TMDL watershed (Section 6.4 of the TMDL).

Point sources: Reasonable assurance that the WLAs set forth in the Lake Pepin TMDL will be implemented is provided by regulatory actions. According to 40 CFR 122.44(d)(1)(vii)(B), NPDES permit effluent limits must be consistent with assumptions and requirements of all WLAs in an approved TMDL. MPCA's NPDES permit program is the implementing program for ensuring effluent limits are consistent with the TMDL.

All regulated MS4 entities are required to satisfy the requirements of the MS4 general permit. The MS4 general permit requires the permittee to develop a SWPPP which addresses all permit requirements, including the following six minimum control measures:

- Public education and outreach;
- Public participation;
- Illicit Discharge Detection and Elimination (IDDE) Program;
- Construction-site runoff controls;
- Post-construction runoff controls; and
- Pollution prevention and municipal good housekeeping measures.

A SWPPP is a management plan that describes the MS4's activities for managing stormwater within their jurisdiction or regulated area. When a TMDL includes a WLA(s) for a MS4 entity(ies), the MS4 must identify the applicable WLA in its future permit application and identify BMPs to be implemented during the permit term to address the WLA (Section 3.4.2 of the TMDL).

The MPCA stormwater program also requires construction and industrial sites to create a SWPPP that summarizes how stormwater will be minimized from a site. Permittees are required to review the adequacy of their SWPPPs to ensure that each plan meets WLA set in the TMDL. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified prior to the effective date of the next General Permit.

Clean Water Legacy Act (CWLA): The CWLA was passed in Minnesota in 2006 for the purposes of protecting, restoring, and preserving Minnesota water. The CWLA provides the protocols and practices to be followed in order to protect, enhance, and restore water quality in Minnesota.

The CWLA outlines how MPCA, public agencies and private entities should coordinate in their efforts toward improving land use management practices and water management. The CWLA anticipates that all agencies (i.e., MPCA, public agencies, local authorities and private entities, etc.) will cooperate regarding planning and restoration efforts. Cooperative efforts would likely include informal and formal agreements to jointly use technical, educational, and financial resources.

The CWLA also provides details on public and stakeholder participation, and how funding will be used. In part to attain these goals, the CWLA requires MPCA to develop WRAPS. MPCA has developed guidance, *Watershed Restoration and Protection Strategy Report Template*, on what is required in the WRAPS. This guidance explains that WRAPS are required to contain such elements as the identification of impaired waters, watershed modeling outputs, point and

nonpoint sources, load reductions, etc. (Minn. Stat. § 114D.26). The WRAPS also contain implementation strategies and actions that are capable of achieving the needed load reductions, for both point and nonpoint sources (Minn. Stat. § 114D.26, subd. 1(b)(5)(iv)). Implementation plans developed for the TMDLs are considered "priority areas" under the WRAPS process. A timeline for achieving water quality targets, the reductions needed from both point and nonpoint sources, the governmental units responsible, and interim milestones for achieving the actions are included in WRAPS. Most of the WRAPS reports in the Lake Pepin TMDL watershed have been finalized (Figure 33 of the TMDL). Many of the implementation actions listed in the WRAPS reports are already underway.

The Minnesota BSWR administers the Clean Water Fund and has developed a detailed grants policy explaining what is required to be eligible to receive Clean Water Fund money (FY 2014 Clean Water Fund Competitive Grants Request for Proposal (RFP); Minnesota Board of Soil and Water Resources, 2014). A list of approved WRAPS and TMDLs is on the MPCA website at: https://www.pca.state.mn.us/sites/default/files/wq-iw1-13c.pdf

The EPA finds that this criterion has been adequately addressed.

9. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

Comment:
The final TMDL document outlines the water monitoring efforts in the Lake Pepin TMDL watershed (Section 7 of the TMDL). Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation planning efforts.

Follow-up monitoring is integral to the adaptive management approach. Monitoring addresses uncertainty in the efficacy of implementation actions and can provide assurance that implementation measures are succeeding in attaining water quality standards, as well as inform the ongoing TMDL implementation strategy. MPCA uses an Intensive Watershed Monitoring Program, where watersheds at the HUC-8 level undergo a comprehensive monitoring effort, including chemical, biological and physical monitoring. Each HUC-8 is monitored every 10 years, on a rotating basis. Because of the scale of the Lake Pepin TMDL watershed, multiple HUC-8 watersheds are included in this effort. Figure 39 of the TMDL identifies MPCA's monitoring schedule.

MPCA identified several other monitoring programs in Section 7 of the TMDL. One program is the Watershed Pollutant Loading Monitoring Network (WPLMN), in which MPCA coordinates with local partners to operate a state-wide monitoring network to track pollutant loading across 199 sites. Other monitoring programs discussed track the implementation and effectiveness of

BMPs. All of the monitoring programs discussed in Section 7 of the TMDL will play important roles in assessing progress toward meeting the TMDL targets.

The EPA finds that this criterion has been adequately addressed.

10. Implementation

EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. EPA is not required to and does not approve TMDL implementation plans.

Comment:
Because of the scale of the Lake Pepin TMDL watershed, MPCA did not develop a detailed implementation strategy. Rather, MPCA is utilizing existing documents and programs to address nutrient reduction in the watershed. Section 8 of the TMDL outlines the various documents and strategies MPCA is and will be utilizing. MPCA outlined the importance of prioritizing areas within the Lake Pepin TMDL watershed, education and outreach efforts with local partners, and partnering with local stakeholders to improve water quality within the watershed. Reduction goals for the nutrient TMDLs may be met via components of the following strategies:

Minnesota Nutrient Reduction Strategy (NRS): MPCA explained that the NRS contains clear, meaningful, and achievable nutrient loading reduction targets and interim milestones. The NRS builds on existing efforts, and focuses on local implementation actions and activities (Section 8.1 of the TMDL). The NRS has a target of a 45% reduction in phosphorus loading by 2025.

MPCA stated that there has already been a significant reduction in phosphorus from point source loads in the Lake Pepin area. As noted in Figure 40 of the TMDL, point source controls have resulted in an estimated 31% reduction in phosphorus by 2014. Figure 41 of the TMDL notes the phosphorus priority watersheds in Minnesota, with the majority of the high-priority watershed in the Minnesota River and Lower Mississippi River watersheds.

WRAPS: As noted in Section 8 of this Decision Document, the WRAPS documents are developed at the HUC-8 watershed scale, and provide more details on implementation strategies and activities. Most of the watersheds in the Lake Pepin TMDL watershed have approved WRAPS, and are in the process of implementing them. The WRAPS are used to inform local watershed management plans (termed "One Watershed One Plan" or 1W1P). MPCA explained that the 1W1P process is designed to integrate the numerous watershed planning efforts done at the local level into one comprehensive plan (Section 8.2 of the TMDL; http://bwsr.state.mn.us/sites/default/files/2019-05/1W1P%20Guiding%20Principles%20Policy.pdf)

MPCA estimated implementation costs to attain the Lake Pepin TMDL (Section 8.5 of the TMDL). MPCA noted that for wastewater phosphorus removal, costs per pound of phosphorus escalate rapidly with more stringent effluent concentration targets. The NSR document contains

further details on costs and benefits of various phosphorus removal BMPs. Because of the scale of the Lake Pepin TMDL watershed, cost estimates for agricultural practices vary greatly, and depend upon crop prices, changing technologies, new rules and regulations, and time periods of BMP implementation. An analysis by MPCA (*Lake Pepin Full Cost Accounting Project*; (MPCA Report wq-iw9-01n; 2012c)) indicated that reductions of 20% to 32% are achievable with minimal economic impact, but that reductions of 50% (as indicated for the Minnesota River Basin in Table 25 of the TMDL) will require more significant land use practice changes. However, the analysis also indicates that when the value of non-market ecosystem services are factored in, the economic impact is lessened considerably.

One of the sources of phosphorus identified in the TMDL is the resuspension of phosphorus-rich sediment in Lake Pepin and Segment 814. Scenario 21 discussed in Section 3 of this Decision Document include a 50% reduction in sediment resuspension. To address this load, MPCA identified several ongoing actions. As noted in the *Total Suspended Solids-Submersed Aquatic Vegetation Site-Specific Standard, South Metro Mississippi River* (MPCA, 2010), resuspension of sediments are due in a great part to wind across the water surface churning up waves and currents. The length of unbroken water surface is the "fetch", and the longer the fetch, the more energy is available to develop waves. To reduce the fetch, the MPCA, WDNR, USCOE, and the U.S. Fish and Wildlife Service are involved in building islands in the river to reduce wind impacts and the related sediment resuspension (Section 6.4 of the TMDL). The USCOE has recently announced two island building projects proposed for the Lake Pepin area. Further information can be found at https://www.mvp.usace.army.mil/Home/PN/Article/2379644/lock-and-dam-2-protective-island-project/ and https://www.mvp.usace.army.mil/Media/News-Releases/Article/1726096/corps-awards-a-pilot-program-project-in-lake-pepin/ .

The EPA finds that this criterion has been adequately addressed. The EPA reviews but does not approve implementation plans.

11. Public Participation

EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, EPA has explained that final TMDLs submitted to EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When EPA establishes a TMDL, EPA regulations require EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If EPA determines that a State/Tribe has not provided adequate public participation, EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by EPA.

Comment:
Section 9 of the TMDL discusses public participation for the Lake Pepin Watershed TMDL. Throughout the development of the Lake Pepin watershed TMDL the public and stakeholders were given various opportunities to participate in the TMDL process. Meetings were first held in

2004 to begin the TMDL process. A Stakeholder Advisory Committee was formed to provide input into the TMDL workplans regarding the assessment of Lake Pepin and to guide the watershed analysis. MPCA also organized the SAP to participate in model development for the Lake Pepin TMDL and the related South Metro Mississippi River TMDL. In 2008, the state also held meetings with various sector-specific groups to review the model results and address specific concerns of these groups. Over the next few years, MPCA engaged stakeholders and public citizens through technical conferences, annual public forums, and presentations to various organizations and associations (Section 9 of the TMDL).

MPCA determined in 2010 that site-specific criteria (SSC) were needed for Lake Pepin and portions of the Mississippi River. Work on the TMDL was halted while the SSC was pursued. The SSC was approved by the EPA in January 2015. After the SSC was approved, MPCA continued the TMDL development process.

The draft TMDL was posted online by the MPCA at (http://www.pca.state.mn.us/water/tmdl). The public comment period began on April 20, 2020 and ended on June 19, 2020. The MPCA received eight comment letters and adequately addressed these comments. A summary of some of the major issues and MPCA responses is below. The full responses are in "Response to Public Comments on the Lake Pepin Watershed Phosphorus Total Maximum Daily Load Report" (Response to Comments), submitted as part of the final TMDL submittal from MPCA (Email from Celine Lyman, MPCA, 04/21/2021).

MS4 Implementation: Several commentors expressed concerns over how the TMDL would impact MS4 discharges, and how the WLAs would be implemented. The commentors noted that the WLA for MS4 loads is restrictive, and there was little information in the TMDL on expectations for permittees to develop and implement the various BMPs needed to attain the WLA. Concerns were also raised on how recently developed BMPs would be accounted for in the WLAs, and how BMPs outside the traditional MS4 process (i.e., lakeshore erosion controls, streambank erosion controls, and ravine restoration and remediation) would be considered in conjunction with the TMDL.

MPCA noted in the Response to Comments that although specifics of how WLAs will be incorporated into stormwater permits is outside the scope of the TMDL, the MPCA TMDL program consulted with the MPCA Municipal Stormwater program to discuss possible approaches for implementing the MS4 WLAs. MPCA explained in the Response to Comments that additional meetings have been held with the MS4 commentors to discuss how the TMDL will be implemented. MPCA reiterated while the WLAs may be challenging for some of the MS4s, data from 2008 reports from thirty MS4 communities indicates over 50% of these communities were achieving the targeted WLA (based upon a 0.35 lb/acre/year of phosphorus)(Section 8.5 of the TMDL).

MS4 and WWTP Cost: Several commentors also expressed concerns over the cost of implementing the MS4 BMPs. The commentors stated that under Minnesota Statue and regulation, the estimated costs for implementation to achieve TMDLs is required. The commentors noted that the cost estimates in the TMDL were lacking in detail, especially for the MS4 entities.

MPCA acknowledged that the cost estimates for MS4s were difficult to develop, as there are over 200 MS4 communities addressed in the TMDL. The cost to achieve the TMDL for each MS4 will be dependent on the extent existing P loads exceed the WLA and the types of BMPs that will be most cost effective for the given MS4. Since existing P loads from each MS4 was not estimated, specific costs are difficult to calculate. To assist MS4 entities better understand potential costs, MPCA provided additional cost information in the Response to Comments and Section 8.5 of the TMDL. The MPCA Stormwater Program is also working with several of the commentors to develop various scenarios and tools to predict pollutant loads and reductions. A number of these tools, as well as other guidance, are available on the MPCA Stormwater site (https://www.pca.state.mn.us/water/stormwater-and-total-maximum-daily-loads)

One commentor raised concerns over the cost of WWTPs to comply with the WLAs. They noted that while there is some discussion of cost, it does not adequately capture the costs, especially for the smaller cities. As a result of this comment, MPCA attached a memorandum titled "*Lake Pepin TMDL WWTP phosphorus reduction cost estimates*" dated December 21, 2020, to the Response to Comments. MPCA noted that there has been a significant reduction in phosphorus from WWTPs over the last 15 years (Figures 19-23 and 40 of the TMDL), and will be working with the dischargers to continue this progress. The cost estimates do not provide details on what each facility could do; rather, the estimates are for the removal per pound of phosphorus. MPCA noted that discussions are underway with several permittees on new permit conditions.

Lake Pepin not impaired: Several commentors questioned whether or not Lake Pepin is currently impaired. The commentors noted that the data in Table 9 of the TMDL demonstrates that while Lake Pepin exceeds (134 ug/L) the phosphorus criteria of 100 ug/L, the lake does not exceed (27 ug/L) the chlorophyll-*a* criteria of 28 ug/L. The commentors explained that under MPCA regulations, a water is considered impaired only if the phosphorus criteria and the chlorophyll-*a* criteria are exceeded.

MPCA responded that the 10 year period represented by the data in Table 9 of the TMDL included higher than normal flow conditions in the lake. Detailed analysis of the relationship between flow and phosphorus concentration was performed during the development of the Lake Pepin SSC (MPCA, 2011), and demonstrated that excessive algal growth typically occurred during periods of lower flow, when the lake is more "lake-like". As explained by MPCA, under higher flows, the retention time is relatively low and Lake Pepin functions more like a river, and phosphorus is flushed through the system before having a significant impact on algal growth (Section 3.1 of the TMDL; MPCA, 2011). MPCA noted that TMDLs are required under Federal regulations to be developed to address the "critical condition", which was identified by MPCA as the lower flow conditions. MPCA provided additional documentation (Attachment B of the Response to Comments) regarding a proposed Lake Pepin Assessment Approach Summary for the lake, currently targeted to begin in 2023. The Summary explains how MPCA will include summer mean flow rates into the lake assessment process. MPCA noted that data from the preliminary assessment will be shared with stakeholders, and opportunities for discussion as this assessment process proceeds will be provided.

The EPA carefully reviewed the comments submitted during the public notice period, as well as the responses from MPCA. The EPA agrees that MPCA appropriately addressed the comments

and revised the TMDL document as appropriate. The EPA finds that the TMDL document submitted by the MPCA satisfies the requirements of this eleventh element.

12. Submittal Letter

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval*. Each final TMDL submitted to EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

Comment:

The EPA received the final Lake Pepin TMDL document, submittal letter and accompanying documentation from the MPCA on April 21, 2021. The submittal letter explicitly stated that the final Minnesota Lake Pepin and Mississippi River watershed TMDLs for phosphorus were being submitted to EPA pursuant to Section 303(d) of the CWA for EPA review and approval. The letter clearly stated that this was a final TMDL submittal under Section 303(d) of CWA. The letter also contained the name of the watershed as it appears on Minnesota's 303(d) list, and the causes/pollutants of concern. This TMDL was submitted per the requirements under Section 303(d) of the CWA and 40 C.F.R.§ 130.

The EPA finds that the submittal letter from MPCA accompanying the Lake Pepin TMDL satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the TMDLs for the Lake Pepin watershed satisfy all of the elements of approvable TMDLs. This approval is for **three** TMDLs as identified in Table 1 of this Decision Document, addressing the Aquatic Life Use and Aquatic Recreation Use impairments due to phosphorus.

The EPA's approval of these TMDLs extends to the water bodies which are identified in Table 1 of this Decision Document with the exception of any portions of the water bodies that are within Indian Country, as defined in 18 U.S.C. Section 1151. The EPA is taking no action to approve or disapprove TMDLs for those waters at this time. The EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under Section 303(d) of the CWA for those waters.

Pursuant to Executive Order 13175, Consultation and Coordination with Indian Tribal Governments and with EPA Policy on Consultation and Coordination with Indian Tribes (May 2011), EPA invited tribal consultation on its action to review the Lake Pepin Watershed TMDLs. EPA explained that its policy is to consult on a government-to-government basis with Federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Letters were sent to the Lower Sioux Indian Community, the Upper Sioux Indian Community, Mille Lacs Band of Ojibwe, Prairie Island Indian Community, Shakopee Mdewakanton Sioux Community, and the White Earth Nation. EPA received no response from the Tribes.

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