REGION 5
CHICAGO, IL 60604

January 19, 2024

Mr. Glenn Skuta
Watershed Division Director
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Dear Mr. Skuta:

The U.S. Environmental Protection Agency completed its review of the final Total Maximum Daily Load (TMDL) for the Redwood River Watershed (RRW) River Eutrophication Standard (RES) TMDL, including supporting documentation. The RRW RES TMDL encompasses parts of Lincoln, Yellow Medicine, Redwood, Lyon, Pipestone and Murray counties in southwestern Minnesota. The RRW RES TMDL addresses impaired aquatic life use due to excessive phosphorus.

The RRW RES TMDL meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations set forth at 40 C.F.R. Part 130. Therefore, EPA approves Minnesota's one phosphorus TMDL. EPA describes Minnesota's compliance with the statutory and regulatory requirements in the enclosed decision document.

EPA acknowledges Minnesota's efforts in submitting this TMDL and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. David Werbach, at 312-8864242 or Werbach.david@epa.gov.

Sincerely,

1/19/2024

X

Tera L. Fong
Division Director, Water Division
Signed by: TERA FONG

cc: Mike Weckwerth, MPCA

wq-iw7-61g

TMDL: Redwood River Watershed River Phosphorus TMDL in portions of Lincoln, Yellow Medicine, Redwood, Lyon, Pipestone and Murray Counties in southwestern Minnesota
Date: 01/19/2024

DECISION DOCUMENT FOR THE REDWOOD RIVER WATERSHED RIVER EUTROPHICATION TMDL IN SOUTHWESTERN MINNESOTA

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 TMDL. 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 TMDL. Any differences between these guidelines and EPA's TMDL regulations should be resolved in favor of the regulations themselves.

1. Identification of Water body, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the water body as it appears on the State's/Tribe's 303(d) list. The water body 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 water body 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 water body. 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 water body 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.

Comment:

Location Description/Spatial Extent:

The Redwood River Watershed (RRW) in southwestern Minnesota is part of the Minnesota River basin and covers parts of Lincoln, Yellow Medicine, Redwood, Lyon, Pipestone and Murray counties. The RRW is approximately 699 square miles (447,000 acres) in size and is within the Western Corn Belt Plains (WCBP) ecoregion (Section 3.0 of the final TMDL document). Surface water in the RRW generally flows in a west to east direction from the headwaters areas in the western portion of the watershed toward the east into the Minnesota River near Redwood Falls (Figure 1 of the final TMDL document). The segment addressed by this TMDL (07020006-501) is approximately 4 miles long, and is the downstream-most stretch of the Redwood River. The entire drainage area of the Redwood River was considered in developing the TMDL for the impaired segment (Section 4.3 of the final TMDL document).

This RRW River Eutrophication Standard (RES) TMDL addresses one river segment impaired due to eutrophication due to excessive phosphorus for a total of **one** TMDL (Table 1 of this Decision Document). This impairment is described in the TMDL as an impairment of Minnesota's RES. To avoid confusion with earlier TMDL efforts completed in the RRW and adjacent watershed (e.g., Minnesota River and Greater Blue Earth River Basin) this TMDL effort will be referred to as the RRW RES TMDL.

The Minnesota Pollution Control Agency (MPCA) also noted that previous TMDLs addressed waters in the RRW (Section 1.1 and Appendix D of the final TMDL document). In 2014, the Redwood River Fecal Coliform TMDL was approved by the EPA, and addressed nine segments in the RRW; in 2020, the Minnesota River and Greater Blue Earth River Basin TSS TMDL addressed one segment in the RRW (07020006-501), and six segments are addressed under the Minnesota Statewide Mercury TMDL (2007 and subsequent revisions). The RRW was also included in the Lake Pepin and Mississippi River Eutrophication TMDL Report (2021). Most recently, the Redwood River Watershed TMDL report was approved by the EPA (May 12, 2023) addressing several river segments and lakes for total phosphorus, chlorides, total suspended solids and bacteria.

Table 1. RRW RES TMDL

AUID (07020006 -###)	Water body name (description)	Designated use class	Pollutant
501	Redwood River –Ramsey Creek to Minnesota River	2Bg, 3	Phosphorus
			Total phosphorus TMDL – 1

Land Use:
Land use in the RRW is fairly consistent across the watershed. The overall land use in the RRW is mainly cropland (78%), with other land uses including rangeland (9%), developed lands (6%), wetlands (3%) open water (2%), forest/shrub (1%), and barren lands (<1%) (Section 3.4, Table 4 and Figure 2 of the final TMDL document and **Table 2** of this Decision Document).

MPCA noted that population in the watershed is fairly sparse, with the cities of Redwood Falls (population 5,100) and a portion of Marshall (population 12,432), which lie within the boundaries of the RRW, being the largest cities. MPCA determined that there are no tribal lands in the RRW (Section 3.0 of the final TMDL document).

Table 2: Land use in the RRW

Impaired Water body Name	Segment ID	Watershed Area [Acres]	Percent of Watershed [%]						
			Cropland	Rangeland	Developed	Forest/Shrub land	Open Water	Wetlands	Barren/Mining
Redwood River	07020006-501	447,532	78	9	6	1	2	3	< 1

Problem Identification:
The Redwood River segment (07020006-501) identified in Table 1 of this Decision Document was included on the final 2022 Minnesota 303(d) list due to excessive phosphorus. Total phosphorus, chlorophyll-a (chl-a), dissolved oxygen flux, biological oxygen demand and/or pH measurements in the impaired segment indicated that this water body was not attaining the designated aquatic life use due to exceedances of the eutrophication criteria. Water quality monitoring was completed throughout the watershed, and that data formed the foundation for RRW RES TMDL modeling efforts.

While phosphorus is an essential nutrient for aquatic life, elevated concentrations of phosphorus can lead to nuisance algal blooms that negatively impact aquatic life and recreation (e.g., swimming, boating, fishing, etc.). Algal decomposition can also deplete dissolved oxygen levels within the water column. The decreases in dissolved oxygen can stress benthic macroinvertebrates and fish. Depletion of oxygen in the water column can also lead to conditions where phosphorus is released from bottom sediments (i.e., internal loading). Also, excess algae can shade the water column which limits the distribution of aquatic vegetation. Aquatic vegetation stabilizes bottom sediments and is an important habitat for macroinvertebrates and fish.

Priority Ranking:
MPCA's schedule for TMDL completions, as indicated on the 303(d) impaired waters list, reflects Minnesota's priority ranking of this TMDL. MPCA has aligned TMDL priorities with the watershed approach and 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 is developing a state plan, to meet the needs of EPA's national measure (WQ-27) as a follow-up to the EPA's Long-Term Vision for Assessment, Restoration and Protection under the CWA section 303(d) program. The water addressed by this TMDL is part of the MPCA draft prioritization plan to meet EPA's national measure. An updated TMDL Priority Framework Report is currently under development by MPCA.

Pollutants of Concern:
The pollutant of concern is phosphorus.

Source Identification (point and nonpoint sources):

Point Source Identification: The potential point sources to the RRW are:

National Pollutant Discharge Elimination Systems (NPDES) permitted facilities: NPDES permitted facilities may contribute phosphorus loads to surface waters through discharges of treated wastewater. Permitted facilities must discharge wastewater according to their NPDES permit. MPCA determined that there are ten wastewater treatment plants (WWTPs) in the RRW which contribute phosphorus from treated wastewater releases (Table 14 of the final TMDL document; **Table 3** of this Decision Document) to the impaired segment. MPCA noted that these facilities were assigned a WLA in the RRW RES TMDL.

Table 3: Minnesota NPDES facilities which contribute phosphorus to Segment -501 in the RRW

Facility Name	NPDES ID#	Flow Type	Design Flow[1] (MGD)	TP WLA Concentration (mg/L)	TP WLA (lbs/day)
Marshall WWTP	MN0022179	Continuous	4.5[2]	0.53	13.92
ADM Corn Processing - Marshall	MN0057037	Continuous	2.64	0.53	11.67
Tyler WWTP	MNG585116	Controlled	1.09	2.0	4.47
Russell WWTP	MNG585062	Controlled	0.59	2.0	2.40
Ruthton WWTP	MNG585105	Controlled	0.38	2.0	1.55
Lynd WWTP	MNG585030	Controlled	0.34	2.0	1.40
Ghent WWTP	MNG585121	Controlled	0.26	2.0	1.06
Vesta WWTP	MNG585043	Controlled	0.26	2.0	1.06
Milroy WWTP	MNG585124	Controlled	0.25	2.0	1.01
Magellan Pipeline Co LP - Marshall	MN0059838	Intermittent	0.72	0.02	0.14[3]

1 For WWTPs with wastewater ponds (Ghent, Lynd, Milroy, Russell, Ruthton, Tyler, and Vesta) the effluent design flow represents the maximum permitted daily discharge volumes from secondary ponds. It is assumed that discharge from these facilities occurs (at most) for only 30 days during the 122-day summer growing season (24.6% of the summer). Since stabilization pond WWTP discharges have minimal eutrophication impacts during the summer season, their TP WLAs will be implemented as Kilogram/year, Calendar Year-to-Date effluent limits.
2 WLA flow for Marshall WWTP (3.15 MGD) is calculated based on 70% of the facility's average wet weather design flow (4.5 MGD).
3 WLA for Magellan Pipeline Co LP is calculated as maximum permitted flow (0.72 mgd) and an effluent concentration assumption of 0.02 mg/L plus a 15% load uncertainty factor.

Municipal Separate Storm Sewer System (MS4) communities: Stormwater from MS4s can transport phosphorus to surface water bodies during or shortly after storm events. MPCA noted that there are two MS4 permittees in the RRW; the City of Redwood Falls (MS400236) and the

City of Marshall (MS400241) which were assigned a portion of the WLA (Sections 3.6 and 4.5 of the final TMDL document and Table 5 of this Decision Document).

Concentrated Animal Feedlot Operations (CAFOs): MPCA has identified CAFOs in the RRW (Section 3.6 and Appendix E of the final TMDL document). 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. In the event of a discharge, the discharge cannot cause or contribute to a violation of a water quality standard (WQS). 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 load allocation (LA) of the RRW RES TMDL.

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs): MPCA did not identify any CSOs or SSOs which contribute phosphorus to waters of the RRW.

Stormwater runoff from permitted construction and industrial areas: Construction and industrial sites may contribute phosphorus via sediment runoff during stormwater events (Section 4.5 of the final TMDL document). These areas must comply with the requirements of the MPCA's NPDES Stormwater Program and create a Stormwater Pollution Prevention Plan (SWPPP) that summarizes how stormwater will be minimized from the site.

Nonpoint Source Identification: Figure 12 of the final TMDL document shows the estimated phosphorus contributions by source into Segment -501. Section 3.6.1 of the final TMDL document summarizes the various phosphorus nonpoint source categories.

Stormwater runoff from agricultural land use practices: Runoff from agricultural lands may contain significant amounts of nutrients, organic material and organic-rich sediment which may lead to impairments in the RRW. Manure spread onto fields is often a source of phosphorus, and can be exacerbated by tile drainage lines, which channelize the stormwater. Tile lined fields and channelized ditches enable particles to move more efficiently into surface waters. Phosphorus, organic material and organic-rich sediment may be added via surface runoff from upland areas which are being used for Conservation Reserve Program (CRP) lands, grasslands, and agricultural lands used for growing hay or other crops. Stormwater runoff may contribute nutrients and organic-rich sediment to surface waters from livestock manure, fertilizers, vegetation and erodible soils.

Discharges from Subsurface Sewage Treatment Systems (SSTS) or unsewered communities: Failing septic systems are a potential source of phosphorus within the RRW. Septic systems generally do not discharge directly into a water body, but effluents from SSTS may leach into groundwater or pond at the surface where they can be washed into surface waters via stormwater runoff events. Age, construction and use of SSTS can vary throughout a watershed and influence the phosphorus contribution from these systems.

Failing SSTS are specifically defined as systems that are failing to protect groundwater from contamination, while those systems which discharge partially treated sewage to the ground surface, road ditches, tile lines, and directly into streams, rivers and lakes are considered an

imminent threat to public health and safety (ITPHS). ITPHS systems also include illicit discharges from unsewered communities.

Stream channelization and stream erosion: Eroding streambanks and channelization efforts may add nutrients, organic material and organic-rich sediment to local surface waters. Nutrients may be added if there is particulate phosphorus bound with eroding soils. 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 streambed and streambanks. Stream channelization efforts can increase the velocity of flow (via the removal of the sinuosity of a natural channel) and disturb the natural sedimentation processes of the streambed.

Atmospheric deposition: Phosphorus and organic material may be added via particulate deposition. Particles from the atmosphere may fall onto lake surfaces or other surfaces within the RRW. Phosphorus can be bound to these particles which may add to the phosphorus inputs to surface water environments.

Future Growth:
MPCA noted that the RRW RES TMDL watershed is relatively sparsely populated, and that populations are likely to decline (Section 5.0 of the final TMDL document). The WLA and load allocations for the RRW RES TMDL were calculated for all current and future sources. Any expansion of point or nonpoint sources will need to comply with the respective WLA and LA values calculated in the RRW RES TMDL.

The EPA finds that the TMDL document submitted by 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 water body, 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:

Water quality standards (WQS) are the fundamental benchmarks by which the quality of surface waters are measured. Within the State of Minnesota, WQS are developed pursuant to the Minnesota Statutes Chapter 115, Sections 03 and 44. Authority to adopt rules, regulations, and standards as necessary and feasible to protect the environment and health of the citizens of the State is vested with the MPCA. Through adoption of WQS into Minnesota's administrative rules (principally Minnesota R. Chapters 7050 and 7052), MPCA has identified designated uses to be protected in each of its drainage basins and the criteria necessary to protect these uses.

Minnesota R. 7050 designates uses for waters of the state. The segments addressed by the RRW TMDL are designated as Class 2 waters for aquatic recreation use (fishing, swimming, boating, etc.) and aquatic life use and for Class 3 for Industrial consumption (Table 1 of this Decision Document). In 2021, MPCA revised their WQS and eliminated the subcategories for Class 3 (Minnesota R. 7050.0223). The Class 2B WQS are more restrictive that the Class 3 WQS, and therefore MPCA utilized the Class 2B WQS to develop the TMDL (Section 2.4 of the final TMDL document).

The Class 2 designated use is described in Minnesota R. 7050.0140 (3):

> Aquatic life and recreation includes all waters of the state that support or may support fish, other aquatic life, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare.

Standards:

Narrative Criteria:

Minnesota R. 7050.0150 (3) sets forth narrative criteria for Class 2 waters of the State:

> For all Class 2 waters, the aquatic habitat, which includes the waters of the state and stream bed, shall not be degraded in any material manner, there shall be no material increase in undesirable slime growths or aquatic plants, including algae, nor shall there be any significant increase in harmful pesticide or other residues in the waters, sediments, and aquatic flora and fauna; the normal fishery and lower aquatic biota upon which it is dependent and the use thereof shall not be seriously impaired or endangered, the species composition shall not be altered materially, and the propagation or migration of the fish and other biota normally present shall not be prevented or hindered by the discharge of any sewage, industrial waste, or other wastes to the waters.

Numeric criteria:

Numeric thresholds for phosphorus, chl-*a*, dissolved oxygen flux, biological oxygen demand, and pH are set forth in Minnesota Rules 7050.0222. These parameters form the MPCA eutrophication standard that must be achieved to attain the aquatic life designated use (Section 2.4 and Table 3 of the final TMDL document; Table 4 of this Decision Document).

Table 4. Surface water quality standards for RRW RES impaired reach -501

Standard	Parameter	Water Quality Standard[4]	Units	Criteria	Period of Time Standard Applies
River Eutrophication – Southern Rivers Nutrient Region	Total Phosphorus (causative[1])	Not to exceed 150	µg/L	Summer Mean	June - September
	Chlorophyll-*a* (response[2])	Not to exceed 35	µg/L	Summer Mean	June - September
	Diel dissolved oxygen flux (response[2])	Not to exceed 4.5	mg/L	Summer Mean	June - September
	5-day Biochemical Oxygen Demand (response[2])	Not to exceed 3.0	mg/L	Summer Mean	June – September
	pH (response[2])	Not to be less than 6.5 or greater than 9.0	su[3]	Summer Mean	June - September

[1]Primary, causative indicator of impairment; must be exceeded to be assessed as impaired.

[2]Secondary, response indicator of impairment; one of the four response parameters must be exceeded to be assessed as impaired.

[3]pH is standard units.

[4]Minn R. 7050.0222 incorrectly lists water quality standards for chl-*a*, DO flux and BOD for 2B Southern Streams. These errors will be addressed in future rule making efforts. The Standards approved by EPA are presented in Table 2 of the final TMDL document.

Phosphorus TMDL Target): MPCA determined that the target for the river TMDL is total phosphorus (Sections 2.4 and 4.4 of the final TMDL document). The TMDL target is **150 µg/L** for the RRW RES TMDL. For the impaired stream segment, a phosphorus exceedance and at least one response variable outlined in Table 2 of the final TMDL document (Table 4 of this Decision Document) is necessary for the stream reach to be considered impaired.

In developing the eutrophication standards for Minnesota rivers, MPCA evaluated data from a large cross-section of rivers within each of the State's ecoregions. Clear relationships were established between the causal factor (phosphorus), and the response variables (chl-a, dissolved oxygen flux, biological oxygen demand, and pH). MPCA anticipates that by meeting the phosphorus concentrations of Southern River Nutrient Region WQS, the response variables will be attained, and the Redwood River will achieve the designated beneficial uses. MPCA noted that the WQS apply to summer mean values, from June 1 to September 30 (Section 2.4 of the final TMDL document).

The EPA finds that the TMDL document submitted by 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 water body 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.

TMDL 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)). TMDL 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:
The language of the MPCA RES explains that the RES must be maintained for the long-term summer concentration of phosphorus, when averaged over all flows (Section 2.4 of the final TMDL document). MPCA explained that to align with the language of the RES, the loading capacity value was based on the seasonal (June 1 to September 30) average of midpoint flows of five equally spaced flow regimes (0% to 20%, 20% to 40%, 40% to 60%, 60% to 80% and 80% to 100%). Selecting the midpoint flow values from these equally spaced flow regimes avoids weighting certain flow regimes more than other flow regimes when calculating the average flow across all flow regimes. The loading capacity was calculated as the average seasonal flow multiplied by the river eutrophication target of 150 µg/L phosphorus (Section 4.4 of the final TMDL document).

The RRW RES TMDL was developed using flow data generated from Hydrologic Simulation Program-Fortran (HSPF) modeling efforts initially developed for the Lower Minnesota River Dissolved Oxygen TMDL in 2002, and updated for further TMDL efforts in 2009, 2016, 2019 and 2023 (Section 4.3 and Appendix C of the final TMDL document). MPCA focused on daily recorded flow measurements and HSPF modeled flows from approximately 2009 to 2017. HSPF hydrologic models were developed to simulate flow characteristics within the RRW and flow data focused on dates within the summer season (June 1 to September 30).

HSPF is a comprehensive modeling package used to simulate watershed hydrology and water quality on a basin scale. HSPF parametrizes numerous hydrologic and hydrodynamic processes

to determine flow rate, sediment, and nutrient loads. HSPF uses continuous meteorological records to create hydrographs and to estimate time series pollution concentrations.[1,2] The output of the HSPF process is a model of multiple hydrologic response units (HRUs), or subwatersheds of the overall RRW. The flow from these HRUs were transferred from nearby U.S. Geological Service (USGS) gages (Appendix C of the final TMDL document).

MPCA estimated the allocations for each of the permitted facilities, the MOS set at 10% of the loading capacity, and the remainder of the load was attributed to the LA. Load allocations (e.g., stormwater runoff from agricultural land use practices and feedlots, SSTS, wildlife inputs etc.) were not split among individual nonpoint contributors. Instead, load allocations were combined into a categorical LA to cover all nonpoint source contributions.

Table 5. Redwood River RES TMDL allocations for Redwood River Reach 501.

TMDL Parameter		Summer Average Flow Condition[1] (lbs/day)
Wasteload	Marshall WWTP (MN0022179)	13.9
	ADM Corn Processing – Marshall (MN0057037)	11.7
	Tyler WWTP (MNG585116)[2]	4.47
	Russell WWTP (MNG585062)[2]	2.40
	Ruthton WWTP (MNG585105)[2]	1.55
	Lynd WWTP (MNG585030)[2]	1.40
	Ghent WWTP (MNG585121)[2]	1.06
	Vesta WWTP (MNG585043)[2]	1.06
	Milroy WWTP (MNG585124)[2]	1.01
	Magellan Pipeline Co LP – Marshall (MN0059838)	0.14
	City of Marshall MS4 (MS400241)[3]	3.03
	City of Redwood Falls MS4 (MS400236)[3]	0.88
	Construction/Industrial SW[3]	0.71
	Total WLA	**43.3**
Load	**Total LA [3]**	**226.4**
	Margin of Safety	**30.0**
	Reserve Capacity	**0.47**
	Loading Capacity (TMDL)	**300.2**
	Existing Load [4]	606.4
	Estimated Load Reduction [4]	50%

[1] Model simulated flow from June - September for HSPF reach -501 (2009-2017) and monitored flow from Redwood River USGS station 05316500 (2018) were used to develop the LC for this reach

[2] TP WLAs will be implemented as Kilogram/year, Calendar Year-to-Date effluent limits.

[3]The daily wasteload allocations for MS4s, construction and industrial stormwater, and the total LA (i.e., nonpermitted watershed runoff) equate to areal phosphorus loading rates of approximately 0.189 lbs/acre/calendar year or 0.063 lbs/acre/summer period (122 days – June through September)

[4] Water quality monitoring station(s) used to estimate reductions: S000-299

EPA supports the data analysis and modeling approach utilized by MPCA in its calculation of wasteload allocations, load allocations and the margin of safety for the RRW RES TMDL. Additionally, EPA concurs with the loading capacity calculated by the MPCA in this phosphorus TMDL. The EPA finds MPCA's approach for calculating the loading capacity to be reasonable and consistent with EPA guidance.

[1] HSPF User's Manual - https://water.usgs.gov/software/HSPF/code/doc/hspfhelp.zip

[2] EPA TMDL Models Webpage - https://www.epa.gov/exposure-assessment-models/tmdl-models-and-tools

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:
MPCA identified several nonpoint sources which contribute phosphorus loads to Segment -501 of the Redwood River, including; stormwater from agricultural and feedlot areas, contributions from SSTS, and streambank erosion. MPCA did not determine load allocation values for each of these nonpoint source considerations but aggregated the nonpoint sources into one "watershed load" LA calculation for the TMDL (Table 5 of this Decision Document).

EPA finds MPCA's approach for calculating the LA for the phosphorus TMDL to be reasonable. The EPA finds that the TMDL document submitted by 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:

Wastewater discharges: MPCA identified ten NPDES permitted facilities within the RRW RES TMDL and assigned those facilities a portion of the WLA (Table 5 of this Decision Document). Seven of the facilities are controlled systems (ponds) (Table 14 of the final TMDL document), and the maximum daily flow was based on a six-inch per day discharge from the facility's secondary pond (Section 4.5 of the final TMDL document). Two of the facilities are mechanical dischargers (Table 14 of the final TMDL document), and the maximum daily flow was based upon the average wet weather design flow (Section 4.5 of the final TMDL document). One facility is a small industrial discharger (Magellan Pipeline Co LP) which intermittently discharges to the Redwood River. MPCA calculated the WLA consistent with the process utilized in the Lake Pepin and Mississippi River Eutrophication TMDL (Section 4.5 of the final TMDL).

MPCA also noted in Section 4.5 of the final TMDL document that the controlled discharge facilities are prohibited from discharging from June 15-September 15, and thus can only discharge 30 days during the summer season. MPCA calculated the WLA for these facilities based upon a flow rate of 24.6% of the summer growing season at a phosphorus concentration of 2.0 mg/L.

EPA notes that any phosphorus WLAs from earlier approved TMDLs are not impacted by the RRW RES TMDL and the previously approved WLAs are still applicable under 40 C.F.R. 130.7 and must be considered during the development and/or revision of an NPDES permit, consistent with 40 C.F.R. 122.44(d)(1)(vii)(B). Therefore, in the event that there exists a WLA from an earlier developed TMDL and the RRW RES TMDL both WLAs are applicable and must be considered during the development and/or revision of a NPDES permit.

MS4 discharges: MPCA identified the City of Marshall and the City of Redwood Falls as the only MS4 permittees discharging in the RRW (Section 4.5 of the final TMDL document). MPCA assigned a portion of the loading based upon the areal extent of the MS4 permitted portion of the watershed times the loading capacity (Table 5 of this Decision Document). MPCA calculated the areal extent to be approximately 5,875 acres (1.4%) for Marshall and 1,698 acres (0.4%) for Redwood Falls.

CAFOs: MPCA acknowledged the presence of CAFOs in the RRW in Sections 3.6 and 4.5 and Appendix E of the final TMDL document. CAFOs and other feedlots are generally not allowed to discharge to waters of the State (Minnesota R. 7020.2003). CAFOs were assigned a WLA of zero (WLA = 0) by MPCA for the RRW RES TMDL. 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. 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 identified construction and industrial stormwater contributions as necessitating a WLA (Table 5 of this Decision Document). The WLA for construction and industrial stormwater was calculated based on the average percent area (0.3%)

of the RRW which was covered under a NPDES/State Disposal System (SDS) Construction and Industrial Stormwater General Permit during the previous five years. The construction and industrial stormwater WLA was calculated as the percent area (0.3%) multiplied by the loading capacity (Section 4.5 of the final TMDL document).

Attaining the construction stormwater and industrial stormwater loads described in the RRW TSS TMDL is the responsibility of construction and industrial site managers. Local MS4 permittees are required to have a construction stormwater ordinance at least as stringent as the State's NPDES/SDS General Stormwater Permit for Construction Activity (MNR100001). In the final TMDL document MPCA explained that if a construction site owner/operator obtains coverage under the NPDES/SDS General Stormwater Permit (MNR100001) and properly selects, installs and maintains all best management practices (BMPs) required under MNR100001 and applicable local construction stormwater ordinances, 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. BMPs and other stormwater control measures which act to limit the discharge of the pollutant of concern (phosphorus) are defined in MNR100001.

MPCA is responsible for overseeing industrial stormwater loads which impact water quality to lakes and stream segments in the RRW. Industrial sites within lake subwatersheds are expected to comply with the requirements of 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). MPCA explained that 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. BMPs and other stormwater control measures which act to limit the discharge of the pollutant of concern (phosphorus) are defined in MNR050000 and MNG490000.

The NPDES program requires construction and industrial sites to create SWPPPs which summarize how stormwater pollutant discharges will be minimized from construction and industrial sites. Under the MPCA’s Stormwater General Permit (MNR100001) and applicable local construction stormwater ordinances, managers of sites under construction or industrial stormwater permits must review the adequacy of local SWPPPs to ensure that each plan complies with the applicable requirements in the State permits and local ordinances. As noted above, MPCA has explained that meeting the terms of the applicable permits will be consistent with the WLAs set in the RRW RES TMDL. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified within 18-months of the approval of the TMDL by the EPA. This applies to sites under permits for MNR100001, MNR050000 and MNG490000.

EPA finds the MPCA’s approach for calculating the WLA for the RRW RES TMDL to be reasonable and consistent with EPA guidance. The EPA finds that the TMDL document submitted by 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:
For the phosphorus TMDL, MPCA used an explicit MOS (Table 5 of this Decision Document; Section 4.6 of the final TMDL document). MPCA utilized an explicit MOS of 10% to account for any uncertainties in the HSPF model (used to estimate flows). MPCA explained that the Redwood River Basin HSPF model was calibrated and validated with 10 years of flow data from several stream gages. The analysis by MPCA indicates a generally good agreement between the observed flows and the model results, and therefore no additional MOS is needed (Appendix C of the final TMDL document).

The EPA finds that the TMDL document submitted by 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:
Seasonal variation was considered for the RRW RES TMDL as described in Section 4.10 of the final TMDL document. The nutrient target employed in the TMDL was based on the average nutrient values collected during the growing season (June 1 to September 30). The water quality target was designed to meet the Southern River Nutrient Region eutrophication WQS during the period of the year where the frequency and severity of algal growth is the greatest.

The Minnesota eutrophication standards state that total phosphorus WQS are defined as the mean concentration of phosphorus values measured during the summer season. In the RRW RES TMDL effort, the LA and WLA estimates were calculated from modeling efforts which incorporated mean summer season total phosphorus values. Nutrient loading capacities were set in the TMDL development process to meet the WQS during the most critical period. The mid to late summer period is typically when eutrophication standards are exceeded and water quality within the RRW is deficient (Section 4.10 of the final TMDL document). By calibrating the modeling efforts to protect the river during the worst water quality conditions of the year, it is assumed that the loading capacity established by the TMDL will be protective of water quality during the remainder of the calendar year (October through May).

The EPA finds that the TMDL document submitted by 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:
The RRW RES TMDL provides reasonable assurance that actions identified in the implementation section of the final TMDL (i.e., Sections 6 and 8 of the final TMDL document), will be applied to attain the loading capacities and allocations calculated for the impaired segment within the RRW. The recommendations made by MPCA will be successful at improving water quality if the appropriate local groups work to implement these recommendations. Those mitigation suggestions, which fall outside of regulatory authority, will require commitment from state agencies and local stakeholders to carry out the suggested actions.

As noted in Section 1 of this Decision Document, the Redwood River has been addressed by previous TMDLs. These TMDLs have focused on bacteria, sediment/TSS, and chlorides for various segments in the RRW. In addition, TMDLs have been established for several downstream waters (Lower Minnesota River Dissolved Oxygen TMDL (2004); South Metro Mississippi River TSS TMDL (2015) and the Lake Pepin and Mississippi River Eutrophication TMDL Report (2021)). These TMDL efforts document the ongoing commitment MPCA has had to address impairments in southern Minnesota. Many of the sources identified in these TMDLs are either directly related to or closely related to phosphorus, and thus reductions in bacteria and TSS will certainly result in reductions of associated phosphorus in the basin.

MPCA has identified several local partners which have expressed interest in working to improve water quality within the RRW. Mitigation practices will be implemented over the next several years. It is anticipated that staff from Soil and Water Conservation District (SWCDs) (e.g., the Redwood County SWCD, Lyon County SWCD, etc.), local Minnesota Board of Soil and Water Resources (BWSR) offices, the Redwood-Cottonwood River Control Area (RCRCA) and other local watershed groups will work together to reduce pollutant inputs to the RRW. MPCA has authored the Redwood River WRAPS document (approved by MPCA in April 2023) which provides information on the development of scientifically-supported restoration and protection strategies for implementation planning and action. MPCA sees the WRAPS document as a starting point for which MPCA and local partners can develop tools that will help local governments, land- owners, and special interest groups determine (1) the best strategies for making improvements and protecting resources that are already in good condition, and (2) focus those strategies in the best places to do work.

County SWCDs, such as the Redwood County SWCD, have a history of implementation efforts in the RRW. In addition to the SWCDs, the RCRCA has been applying conservation practices in areas in the RRW and providing educational opportunities to local landowners in order to achieve sound management of natural resources since the 1980s (https://rcrca.com/). The SWCDs and the RCRCA employ various programming, such as shoreline planting programming, native plant, tree and seed planting programming, cost-share opportunities, equipment rentals and other technical services to ensure that efforts are made to improve water quality and conserve water resources in the RRW. Other county SWCDs in the RRW has similar programming efforts which locals can utilize.

The Redwood County SWCD developed the "Redwood County Comprehensive Local Water Management Plan January 2006-January 2016; Amended for 2016-2020". The plan, which is similar to plans from other nearby counties, identifies priorities for controlling erosion and improving water quality in the Redwood River watershed (https://static1.squarespace.com/static/5f9496260b685119f40c7cda/t/6021b990d4de4e02bc263682/1612822930264/Redwood+County+Comprehensive+Local+Water+Management+Plan.pdf). These watershed plans, together with the WRAPS report, provide a detailed blueprint for improving water quality in the RRW.

The RCRCA is also the lead agency for the "Lake Redwood Reclamation Project", where over 680,000 cubic yards of sediment have been removed from Lake Redwood (https://rcrca.com/lake-redwood-reclamation) (Section 8.3.5 of the final TMDL document). Lake Redwood is near the downstream end of the Redwood River. Although Lake Redwood is not directly addressed by this TMDL (it is just upstream of Segment -501), the RCRCA has been working to implement numerous activities to reduce the inflow of sediment, phosphorus, and related pollutants into the Redwood River from sources throughout the Redwood River watershed. Table 17 of the final TMDL document lists the reported BMPs in the RRW for the time period 2004-2020.

Continued water quality monitoring within the basin is supported by MPCA. Additional water quality monitoring results could provide insight into the success or failure of BMP systems

designed to reduce bacteria, nutrient and sediment loading into the surface waters of the watershed. Local watershed managers would be able to reflect on the progress of the various pollutant removal strategies and would have the opportunity to change course if observed progress is unsatisfactory.

The MPCA regulates the collection, transportation, storage, processing and disposal of animal manure and other livestock operation wastes at State registered AFO facilities (Sections 3.6 and 6.1.6 of the final TMDL document). The MPCA Feedlot Program implements rules governing these activities and provides assistance to counties and the livestock industry. The feedlot rules apply to most aspects of livestock waste management including the location, design, construction, operation and management of feedlots and manure handling facilities.

Reasonable assurance that the WLA set forth will be implemented is provided by regulatory actions (Section 8.2 of the final TMDL document). According to 40 C.F.R. §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 stormwater program and the NPDES permit program are the implementing programs for ensuring WLA are consistent with the TMDL. The NPDES program requires construction and industrial sites to create SWPPPs which summarize how stormwater will be minimized from construction and industrial sites. Under the MPCA's Stormwater General Permit, managers of sites under construction or industrial stormwater permits must review the adequacy of local SWPPPs to ensure that each plan meets WLA set in the RRW TMDL. In the event that the SWPPP does not meet the WLA, the SWPPP will need to be modified. This applies to sites under the MPCA's General Stormwater Permit for Construction Activity (MNR100001) and its 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).

Various funding mechanisms will be utilized to execute the recommendations made in the implementation section of this TMDL. The Clean Water Legacy Act (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. Figure 13 of the final TMDL document shows the resources spent within the RRW since 2004 (Section 6.2.3 of the final TMDL document). Over $69 million has been spent by Federal, State, local governments, and landowners.

The CWLA also provides details on public and stakeholder participation, and how the funding will be used. In part to attain these goals, the CWLA requires MPCA to develop WRAPS. The WRAPS are required to contain such elements as the identification of impaired waters, watershed modeling outputs, point and nonpoint sources, load reductions, etc. (*Chapter 114D.26*; CWLA). The WRAPS also contain an implementation table of strategies and actions that are capable of achieving the needed load reductions, for both point and nonpoint sources (*Chapter*

114D.26, Subd. 1(8); CWLA). Implementation plans developed for the TMDL are included in the table, and are considered "priority areas" under the WRAPS process (*Watershed Restoration and Protection Strategy Report Template*, MPCA). This table includes not only needed actions but 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. MPCA has developed guidance on what is required in the WRAPS (*Watershed Restoration and Protection Strategy Report Template*, MPCA).

The Minnesota Board of Soil and Water Resources administers the Clean Water Fund as well, and has developed a detailed grants policy explaining what is required to be eligible to receive Clean Water Fund money (*http://bwsr.state.mn.us/cwf_programs*).

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 RRW (Section 7 of the final TMDL document). Progress of TMDL implementation will be measured through regular monitoring efforts of water quality and total BMPs completed. MPCA anticipates that monitoring will be completed by local groups (e.g., the Redwood County SWCD). The RCRCA in particular focuses considerable resources on monitoring efforts in the watershed. At a minimum, the RRW will be monitored once every 10 years as part of the MPCA's Intensive Watershed Monitoring cycle.

Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation efforts utilized in the RRW. Water quality information will aid watershed managers in understanding how BMP pollutant removal efforts are impacting water quality. Water quality monitoring combined with an annual review of BMP efficiency will provide information on the success or failure of BMP systems designed to reduce pollutant loading into water bodies of the RRW. Watershed managers will have the opportunity to reflect on the progress or lack of progress, and will have the opportunity to change course if progress is unsatisfactory. Review of BMP efficiency is expected to be completed by the local and county partners.

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 TMDL 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:
The findings from the RRW RES TMDL will be used to inform the selection of implementation activities as part of the Redwood River WRAPS process. The purpose of the WRAPS report is to support local watershed groups and jointly develop scientifically-supported restoration and protection strategies to be used for subsequent implementation planning.

The TMDL outlined some implementation strategies in Section 8 of the final TMDL document. MPCA outlined the importance of prioritizing areas within the RRW, education and outreach efforts with local partners, and partnering with local stakeholders to improve water quality within the watershed. The RRW WRAPS document (April 2023) includes additional detail regarding specific recommendations from MPCA to aid in the reduction of bacteria, TSS, chloride and phosphorus to surface waters of the RRW. Additionally, MPCA referenced the Statewide Nutrient Reduction Strategy (https://www.pca.state.mn.us/water/nutrient-reduction-strategy) for focused implementation efforts targeting phosphorus nonpoint sources in RRW. The reduction goals for the phosphorus TMDL as well as the previously approved bacteria, TSS, and chloride TMDLs may be met via components of the following strategies:

Pasture management/livestock exclusion plans: Reducing livestock access to stream environments will lower the opportunity for direct transport of bacteria to surface waters. The installation of exclusion fencing near stream and river environments to prevent direct access for livestock, installing alternative water supplies, and installing stream crossings between pastures, would work to reduce the influxes of bacteria and improve water quality within the watershed. Additionally, introducing rotational grazing to increase grass coverage in pastures, and maintaining appropriate numbers of livestock per acre for grazing, can also aid in the reduction of bacteria inputs.

Manure management plans: Developing manure management plans can ensure that the storage and application rates of manure are appropriate for land conditions. Determining application rates that take into account the crop to be grown on that particular field and soil type will ensure that the correct amount of manure is spread on a field given the conditions. Spreading the correct amount of manure will reduce the availability of bacteria to migrate to surface waters.

Feedlot runoff controls: Treatment of feedlot runoff via diversion structures, holding/storage areas, and stream buffering areas can all reduce the transmission of bacteria to surface water

environments. Additionally, cleaner stormwater runoff can be diverted away from feedlots so as to not liberate bacteria.

Septic Field Maintenance: Septic systems are believed to be a minor source of nutrients to some of the lakes. Failing systems are expected to be identified and addressed via upgrades to those SSTS not meeting septic ordinances. MPCA explained that SSTS improvement priority should be given to those failing SSTS on lakeshore properties or those SSTS adjacent to streams within the direct watersheds for the lake. MPCA aims to greatly reduce the number of failing SSTS in the future via local septic management programs and educational opportunities. Educating the public on proper septic maintenance, finding and eliminating illicit discharges, and repairing failing systems could lessen the impacts of septic derived nutrients inputs into the RRW.

Stormwater wetland treatment systems: Constructed wetlands with the purpose of treating wastewater or stormwater inputs could be explored in selected areas of the RRW. Constructed wetland systems may be vegetated, open water, or a combination of vegetated and open water. MPCA explained that recent studies have found that the more effective constructed wetland designs employ large treatment volumes in proportion to the contributing drainage area, have open water areas between vegetated areas, have long flow paths and a resulting longer detention time, and are designed to allow few overflow events.

Identification of Stream, River, and Lakeshore Erosional Areas: An assessment of stream channel, river channel, and lakeshore erosional areas should be completed to evaluate areas where erosion control strategies could be implemented in the RRW. Implementation actions (e.g., planting deep-rooted vegetation near water bodies to stabilize streambanks) could be prioritized to target areas which are actively eroding. This strategy could prevent additional sediment inputs into surface waters of the RRW and minimize or eliminate degradation of habitat.

Improved Agricultural Drainage Practices: A review of local agricultural drainage networks should be completed to examine how improving drainage ditches and drainage channels could be reorganized to reduce the influx of sediment to the surface waters in the RRW. The reorganization of the drainage network could include the installation of drainage ditches or sediment traps to encourage particle settling during high flow events. Additionally, cover cropping, and residue management is recommended to reduce erosion and thus siltation and runoff into streams.

Bioinfiltration of stormwater: Biofiltration practices rely on the transport of stormwater and watershed runoff through a medium such as sand, compost or soil. This process allows the medium to filter out sediment and therefore sediment-associated bacteria. Biofiltration/bioretention systems, are vegetated and are expected to be most effective when sized to limit overflows and designed to provide the longest flow path from inlet to outlet.

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 TMDL 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 TMDL 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:
The public participation section of the TMDL submittal is found in Section 9 of the final TMDL document. Throughout the development of the RRW RES TMDL the public was given various opportunities to participate. As part of the strategy to communicate the goals of the TMDL project and to engage with members of the public, MPCA worked with county and SWCD staff in the RRW to promote water quality, to gain input from landowners via surveys and interviews and to better understand the social dynamics of stakeholders in the RRW. MPCA's goal was to create civic engagement and discussion which would enhance the content of the TMDL and WRAPS. MPCA utilized a Local Work Group composed of staff from various county and state programs to discuss the TMDL development process. Several public informational meetings were held during the development of the TMDL (Table 19 of the final TMDL document).

MPCA posted the draft TMDL online at (http://www.pca.state.mn.us/water/tmdl) for a public comment period. The public comment period was started on October 16, 2023, and concluded on November 15, 2023. No comments were received by MPCA.

The EPA finds that the TMDL document submitted by 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 water body, and the pollutant(s) of concern.

Comment:
The EPA received the final Redwood River Eutrophication TMDL document, submittal letter and accompanying documentation from MPCA on December 20, 2023. The transmittal letter explicitly stated that the final TMDL referenced in Table 1 of this Decision Document was being submitted to EPA pursuant to Section 303(d) of the Clean Water Act 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 Clean Water Act and 40 C.F.R. Part 130.

The EPA finds that the TMDL transmittal letter submitted for the Redwood River Watershed RES TMDL by MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the one phosphorus TMDL satisfies all elements of an approvable TMDL. This TMDL approval is for **one (1) TMDL**, addressing one segment for aquatic life use impairment (Table 1 of this Decision Document).

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