



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 24 2020

REPLY TO THE ATTENTION OF

WW-16J

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

Dear Mr. Skuta:

The U. S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Load (TMDL) for the Upper Wapsipinicon River Watershed (UWRW) including supporting documentation and follow up information. The UWRW is located entirely in Mower County in south central Minnesota. The TMDL addresses the aquatic recreation use impairment due to *E. coli*.

The TMDL meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Minnesota's one TMDL for one segment in the UWRW. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in the enclosed decision document.

We wish to acknowledge Minnesota's effort 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 Pfeifer, Chief of the Watersheds and Wetlands Branch at 312-353-0924.

Sincerely,

A handwritten signature in blue ink, appearing to read "T. Short".

Thomas R. Short Jr.
Acting Director, Water Division

Enclosure

cc: Celine Lyman, MPCA
Emily Zanon, MPCA

wq-iw9-23g

TMDL: Upper Wapsipinicon River Watershed, Minnesota, *E. coli*

Effective Date: February 24, 2020 **Correction July 8, 2020 Tables 1, 2, 5 AU corrected to 07080102-507**

Decision Document for Approval of Upper Wapsipinicon River Watershed Total Maximum Daily Load Report

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 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 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 (NPS) 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 Upper Wapsipinicon River Watershed (UWRW) is located entirely in Mower County in south central Minnesota. Only 13 square miles of the watershed are in Minnesota, before the river and several of its small tributaries flow across the border into Iowa where the river flows until it enters the Mississippi River. These 13 square miles are roughly 0.81% of the entire watershed. The entire watershed drains 1,568 square miles of land across Minnesota and Iowa. The watershed is located in the Western Corn Belt Plains ecoregion. In Minnesota, soils in the watershed are defined as silty and loamy (fine-grained material). The UWRW begins in small drainage ditches in Minnesota and flows south to the Minnesota/Iowa border. Three small ditched tributaries east of the UWRW flow across the border before joining the mainstem. The UWRW is part of the greater Cedar River watershed. Altered hydrology is common throughout the watershed, with 90% of the streams being channelized or ditched. Land use in the UWRW is 91% row crop agriculture. The Iowa portion of the watershed includes an active organization, known as the UWRW Management Authority, dedicated to reducing flooding, improving water quality, and reducing in-stream sedimentation.

Table 1: Impaired Segment pollutant addressed in the Upper Wapsipinicon River TMDL

Reach Name	AUID	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
Wapsipinicon River	07088102-507 07080102-507	2Bg	-92.6732, 43.5073 to MN/IA border	Aquatic Recreation	<i>E. coli</i>

Table 2: Pollutant/Stressor not addressed in the Upper Wapsipinicon River TMDL

Reach Name	AUID	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
Wapsipinicon River	07088102-507 07080102-507	2Bg	-92.6732, 43.5073 to MN/IA border	Aquatic Life Macroinvertebrate Bioassessment	Flow Alteration
					Habitat
					Nitrate
Wapsipinicon River	07088102-507 07080102-507	2Bg	-92.6732, 43.5073 to MN/IA border	Aquatic Life	Fish bioassessments

Land Use: MPCA stated that the UWRW was historically prairie land. Currently 91% of the land use is row crop agriculture. The remaining land used is made up of 3.2% pasture; 5.5% of land is developed and forest and wetland are less than 1% of the total watershed (Section 3.2 of the TMDL). Figure 4 of the TMDL maps out the different land uses for the watershed.

Problem Identification/Pollutant(s) of Concern: The Minnesota Pollution Control Agency (MPCA) UWRW TMDL report addresses impairments in one stream reach (Table 1 above) in the UWRW. The impairment affects the aquatic recreation designated use. The impairment is on Minnesota's 2018 303(d) list of impaired water bodies. MPCA indicated that the impairment was identified based on high levels *Escherichia coli* (*E. coli*), other impairments were also identified but are not being addressed in this TMDL (see Table 2 above).

Priority Ranking: The MPCA indicated that the schedule for TMDL completion, 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 its Watershed Restoration and Protection Strategies (WRAPS) cycle. The schedule for TMDL completion corresponds to the WRAPS report completion on the 10-year cycle. The MPCA developed a state plan, Minnesota's TMDL Priority Framework Report, to meet the needs of the EPA's national measure (WQ-27) under EPA's Long-Term Vision for Assessment, Restoration and Protection under the Clean Water Act 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 UWRW AUID addressed by this TMDL are part of that MPCA prioritization plan to meet EPA's national measure.

Pollutant of Concern: The pollutant of concern is *E. coli*. Although the TMDL discusses other impairments and pollutants, TMDLs were not developed for these other identified impairments. Table 2 above identifies the other pollutants/ stressors not being addressed in this TMDL.

Source Identification (point and nonpoint sources):

Point Source Identification: Permitted sources are those sources that are regulated by a National Pollutant Discharge Elimination System (NPDES) permit and include wastewater (municipal and industrial), stormwater, and concentrated animal feeding operations (CAFOs). CAFOs are inspected by the MPCA in accordance with the MPCA NPDES Compliance Monitoring Strategy. All CAFOs (as defined under the Clean Water Act and regulated under the National Pollutant Discharge Elimination System (NPDES) program) and many State regulated animal facilities (regulated under State Disposal System (SDS) permit) are inspected by the MPCA on a routine basis with an appropriate mix of field inspections, offsite monitoring and compliance assistance.

MPCA identified one NPDES permitted feedlot in the watershed, Mark Schaefer Farm 2 (permit number MNG440070). In the UWRW, all NPDES permitted feedlots are designed to have zero discharge. Because of this design requirement, the NPDES permitted feedlot facility has a "zero" WLA. There are no permitted municipal WWTPs or MS4s identified by MPCA in the UWRW.

Nonpoint Source Identification: Nonpoint sources of *E. coli* for the watershed may include non-permitted animal feed lots, failing Individual Septic Treatment Systems, non-permitted stormwater runoff, and wildlife.

All animal feedlots in Minnesota are regulated by Minn. R. ch. 7020. The MPCA has regulatory authority of feedlots but counties may choose to participate in a delegation agreement transferring partial feedlot regulatory authority to the local unit of government. Delegated counties are then able to enforce Minn. R. ch. 7020 (along with any other local rules and

regulations) within their respective jurisdiction for facilities that are not permitted under a NPDES feedlot permit. In the UWRW, Mower County is delegated the feedlot regulatory authority by MPCA. State or county regulated feedlots are considered under the nonpoint source designation for purposes of the TMDL program.

Stormwater runoff acts as a delivery mechanism of multiple *E. coli* sources including wildlife, domestic pets, and humans. Impervious surfaces such as roads, driveways, and rooftops can exacerbate stormwater flows increasing the likelihood of *E. coli* contaminated runoff entering surface waters. Frequency and intensity of storm events can also increase *E. coli* inputs from the landscape because of the already saturated surfaces such as farm fields. In the UWRW, a likely stormwater runoff scenario is *E. coli* contaminated runoff from farm fields reaches surface waters either directly or via field tile intakes. The land application of manure can also present an increased risk of *E. coli* runoff into surface and ground waters. Minn. R. ch. 7020, requires manure application rates, application setback distances, winter application restrictions and incorporation requirements for spreading manure in close proximity to sensitive features.

Subsurface Sewage Treatment Systems (SSTS) that function properly generally do not contribute *E. coli* to surface waters. Septic systems that discharge untreated sewage to the land surface are considered an imminent public health threat and can contribute *E. coli* to surface waters. Mower County is responsible for administering the SSTS program within this watershed to ensure compliance of existing septic systems as well as proper design and installation of new septic systems (Section 3.4.1.2 of the TMDL).

Future Growth/Reserve Capacity: MPCA requires that reserve capacity be considered in TMDL development to address potential new point sources in the watershed. MPCA has determined that a reserve capacity calculation is not applicable for the UW Watershed, as significant future growth is not expected in the watershed.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this first element.

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 Use of Water Body

Minnesota: The applicable water body classifications and water quality standards are specified in Minn. R. Ch. 7050. Minn. R. Ch. 7050.0470 lists water body classifications and Minn. R. Ch. 7050.222 lists applicable water quality standards. Use classifications are defined in Minn. R. 7050.0140, and water use classifications for individual water bodies are provided in Minn. R. 7050.0470, 7050.0425, and 7050.0430. The Upper Wapsipinicon River is a Class 2Bg water.

Class 2 waters are protected for aquatic life, aquatic consumption, and aquatic recreation. The Minnesota narrative water quality standards for all Class 2Bg waters (Minn. R. 7050.0222, subp. 4c.) states that:

“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).”

Numeric criteria: The pollutant addressed in this TMDL is *E. coli* bacteria. The *E. coli* standard has two parts; one applied to monthly geometric mean concentrations, and the other applied to individual samples. The Class 2 standard is in effect from April through October. Although the TMDL was developed for the geometric mean portion of the criteria, both portions of the criteria are applicable.

Table 3 *E. coli* criteria for the UWRW

Parameter	Water Quality Standard	Description of standard	Time standard applies
<i>E. coli</i>	< 126 organisms / 100 mL water (monthly geometric mean)	geometric mean of ≥ 5 samples per calendar month	April 1 -October 31
	< 1,260 organisms / 100 mL water (individual sample)	$\leq 10\%$ of all samples exceed standard per calendar month	

Iowa: Because the impaired section of Upper Wapsipinicon River flows into the State of Iowa, MPCA also reviewed Iowa water quality criteria to verify whether the downstream *E. coli* standard was more restrictive than the upstream Minnesota standard. Approximately three miles downstream from the Minnesota/Iowa border, the Upper Wapsipinicon River (“01-WPS-354”) is

impaired by *E. coli* by Iowa. There is not a continuous *E. coli* impairment on the Upper Wapsipinicon River from Minnesota into Iowa. This gap in the *E. coli* impairment is due to a lack of data for assessment, rather than available data supporting *E. coli* meeting designated use standards (Section 2.1.1 of the TMDL).

Segment 01-WPS-354 is designated, by the State of Iowa, for Recreation Primary contact (A1), Recreation Secondary contact (A2) and Aquatic Life Cold Water Type 1 (B(CW1)). Similar to Minnesota, Iowa has two standards for *E. coli*. a monthly geometric mean and a monthly maximum. Table 4 below identifies Iowa’s standard.

Table 4 summarizes the criteria for Iowa for *E. coli*

Standard Type	Class A1: Primary Contact Recreational Use *	Class A2: Secondary Contact Recreational Use *
Geometric Mean (organisms/100 mL)	126	630
Sample Maximum (organisms/100 mL)	235	2,880

**Criteria apply from March 15–November 15 except year-round for Class A2 waters that are also designated for class B(CW1) [coldwater aquatic life] uses.*

MPCA determined that the geometric mean was the most stringent standard. Because both Iowa and Minnesota had the same geometric mean standard MPCA determined that the TMDL is protective of the downstream standard for Iowa.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements of this second element.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity (LC) 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.

TMDLs must take into account *critical conditions* for stream 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:

Load duration analysis method:

The load duration curve method was used to develop the TMDLs for the UWRW. The approach is based on an analysis that encompasses the cumulative frequency of historic flow data over a specified period. Because this method uses a long-term record of daily flow volumes, virtually the full spectrum of allowable loading capacities is represented by the resulting curve. Only five points on the entire loading capacity curve are depicted in the TMDL equation tables—the midpoints of the designated flow zones (very high flows (0% to 10%), high flows (10% to 40%), mid-range flows (40% to 60%), low flows (60% to 90%), and very low flows (90% to 100%)). However, the entire curve represents the TMDL and is what is approved by EPA.

The loading capacity for *E. coli* in the UWRW is based on the monthly geometric mean standard (126 org/100 mL). MPCA assumed that practices that are implemented to meet the geometric mean standard will also address the individual sample standard (1,260 org/100 mL).

A flow duration curve was developed using daily average flows from 2002 through 2016. This data was made available from the Iowa Flood Center (IFC) Generic Hydrologic Overland-Subsurface Toolkit (GHOST) model outputs and Steve IV radar-based hourly precipitation data. The curve is divided into flow zones, including very high flows (0% to 10%), high flows (10% to 40%), mid-range flows (40% to 60%), low flows (60% to 90%), and very low flows (90% to 100%). All flow conditions are represented.

The load duration curve was developed using the flow multiplied by the standard or target concentration (126 org/100ml *E. coli*). The curve (Figure 9 of the TMDL Report) represents the loads meeting the *E. coli* criteria. The points above the curve are pollutant exceedances. Review of the Load Duration Curve indicates that the criteria load was exceeded under very high to mid-range flow conditions. The method used for determining this *E. coli* TMDL is consistent with EPA technical memos. Table 5 of this Decision Document contains the TMDL summary of loads for the UWRW.

Table 5. *E. coli* TMDL summary, Upper Wapsipinicon River TMDL (07088102-507) 07080102-507

<i>E. coli</i> load Table	Flow Regime				
	Very High	High	Mid-Range	Low	Very Low*
<i>E. coli</i> Load (billion org/day)					
Wasteload Allocation	0	0	0	0	0

Load Allocation	266.21	70.91	14.50	3.43	0.00**
MOS	29.57	7.87	1.61	0.38	0.00**
Loading Capacity	295.78	78.78	16.11	3.81	0.00

* Very low flow is equivalent to no flow.

** Load calculated as zero.

Critical Condition: The Clean Water Act requires that TMDLs take into account critical conditions for stream flow, loading, and water quality parameters as part of the analysis of loading capacity. Through the load duration curve approach, it has been determined by MPCA that load reductions are needed for specific flow conditions; however, the critical conditions (the periods when the greatest reductions are required) vary by location and are inherently addressed by specifying different levels of reduction according to flow.

The EPA finds that the TMDL document submitted by 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 non-point 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 non-point sources.

Comment:

The LA represents the portion of the loading capacity that is allocated to unregulated pollutant loads (e.g., watershed runoff, channel erosion). The LA is calculated by MPCA as the loading capacity minus the sum of the WLAs and margin of safety (MOS). For this TMDL the WLA is determined to be zero, therefore the LA is LC minus the MOS. The LA includes nonpoint pollution sources that are not subject to permit requirements and includes natural background sources.

For the UWRW, the LA covers livestock waste from non-CAFO animal facilities, watershed runoff and other nonpoint sources such as failing septic systems, and pets. The LA also includes natural background sources of *E. coli* including runoff from undisturbed land and wildlife waste (Section 4.1.1 of the TMDL report). MPCA stated that quantifying these sources is not possible, and therefore it is also not possible to determine the amount of the LA that should be designated to natural background.

Based on the observed geometric mean load, reductions are needed under very high to mid-range flow conditions. The largest load reductions are needed under very high flow conditions.

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:

There are no permitted municipal WWTPs or MS4s in the UWRW, so there are no WLAs for these facilities in this TMDL. NPDES-permitted feedlot facilities are required to completely contain runoff and therefore are not allowed to discharge *E. coli* to surface waters. WLAs are not provided by MPCA for these facilities; this is equivalent to a WLA of zero.

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:

An explicit MOS of 10% was included to account for uncertainty that the pollutant allocations would attain the water quality targets. The use of an explicit MOS accounts for environmental variability in pollutant loading, limitations and variability in water quality monitoring data, calibration and validation processes of modeling efforts, uncertainty in modeling outputs, and conservative assumptions made during the modeling efforts, and limitations associated with the drainage area-ratio method used to extrapolate flow data.

Factors such as die-off and re-growth contribute to general uncertainty that makes bacteria loads particularly difficult. The MOS for the UWRW bacteria TMDL also incorporated certain conservative assumptions in the calculation of the TMDLs. No rate of decay, or die-off rate of pathogen species, was used in the TMDL calculations or in the creation of load duration curves for *E. coli*. Bacteria have a limited capability of surviving outside their hosts, and normally a rate of decay would be incorporated.

As stated in EPA's Protocol for Developing Pathogen TMDLs (EPA 841-R-00-002), many different factors affect the survival of pathogens, including the physical condition of the water. These factors include, but are not limited to sunlight, temperature, salinity, and nutrient deficiencies. These factors vary depending on the environmental condition/circumstances of the water, and therefore it would be difficult to assert that the rate of decay caused by any given combination of these environmental variables was sufficient enough to meet the WQS of 126 cfu/100 mL. Thus, it is more conservative to apply the State's WQS as the MOS, because this standard must be met at all times under all environmental conditions.

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 variations are addressed in this TMDL by assessing conditions only during the season when the water quality standard applies (April 1 through October 31). The load duration approach also accounts for seasonality by evaluating allowable loads on a daily basis over the entire range of observed flows and by presenting daily allowable loads that vary by flow.

Critical conditions- Through the load duration curve approach it has been determined that load reductions of *E. coli* are needed for specific flow conditions; however, the critical conditions (the periods when the greatest reductions are required) vary by location and are inherently addressed by specifying different levels of reduction according to flow.

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 National Pollutant Discharge Elimination System (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:

Section 6 of the TMDL discusses reasonable assurance for the impaired segment. In this section MPCA indicated that restoration of the UWRW is provided by the numerous nonpoint source reduction programs, local planning efforts, funding sources, and the project implementation efforts of partners and participating organizations that continue to work towards improving water quality. The goals and objectives for the UWRW TMDL is consistent with state-wide source reduction programs and the draft Cedar River One Watershed, One Plan (1W1P), and are incorporated into the MPCA’s WRAPS Report for the watershed. Actions being taken include coverage under the following programs:

- SSTS Implementation and Enforcement,
- MPCA feedlot program,
- State Buffer program,
- Agricultural Water Quality Certification Program,
- Minnesota Nutrient Reduction Strategy,
- Conservation Easements and Reinvest in Minnesota Reserve

More detailed can be found in Section 6 of the TMDL.

Clean Water Legacy Act: 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 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 TMDLs 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 WRAPS report for the UWRW was finalized on January 31, 2020. Several of the implementation actions listed in the WRAPS report are already underway.

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 (FY 2014 Clean Water Fund Competitive Grants Request for Proposal (RFP); Minnesota Board of Soil and Water Resources, 2014).

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 Section 7 of the TMDL. The six basic types of monitoring identified are based on the EPA's 1999 Protocol for Developing Sediment TMDLs. The six types of monitoring are Baseline monitoring, Implementation monitoring, Flow monitoring, Effectiveness monitoring, Trend monitoring and Validation monitoring.

Currently, the MPCA maintains a system of tracking BMPs that have been implemented from 2004 through 2018 (Table 10 of the TMDL) via Clean Water Accountability reporting. Thirty-three practices have been reported as implemented in the watershed. Tracking implementation will continue in the future as information is reported.

These activities may be, in part, conducted by the MPCA as part of future monitoring efforts or by local partners and other interested stakeholders. Monitoring efforts should use existing programs as much as possible and are subject to availability of resources. The Upper Wapsipinicon Watershed is scheduled for intensive watershed monitoring (IWM) again in 2021 as part of the MPCA's Watershed Approach. IWM allows the evaluation of the overall health of the state's water resources, assessment of the state's streams for aquatic life, recreation, and consumption use support on a rotating 10-year cycle, and identification of waters in need of protection efforts to prevent impairment.

Water quality monitoring is a critical component of the adaptive management strategy employed as part of the implementation efforts utilized in the LSS Watershed.

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:

Implementation strategies in the Upper Wapsipinicon River WRAPS Report will heavily influence and support implementation of this TMDL. Several subsections in Section 8 of the TMDL provide an overview of potential implementation strategies to address the high priority pollutant sources identified by MPCA, including IPHTs and septic systems, AFOs and agricultural runoff. Additional implementation activities are provided in the Upper Wapsipinicon River WRAPS Report and the future Cedar River 1W1P.

Section 8 of the TMDL lays out MPCA's implementation strategy summary in more detail, as does the WRAPS report prepared concurrently with this TMDL. Assessment of the

implementation efforts focuses on adaptive management. MPCA indicated that “Continued monitoring and “course corrections” responding to monitoring results are the most appropriate strategy for attaining the water quality goals established in this TMDL. Management activities will be changed or refined to efficiently meet the TMDL and lay the groundwork for de-listing the impaired water bodies.” (Section 8 of the TMDL).

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:

The public participation section of the TMDL submittal is found in Section 9 of the final TMDL. Several meetings were held from January 2019 through April 2019. On June 19, 2019, postcards were mailed to 64 residents and landowners within the Wapsipinicon watershed informing them of water quality conditions and invitation to submit concerns or comments during WRAPS/TMDL review. Public notice of the draft document requesting comments was placed in the State Register from December 16, 2019 through January 15, 2020. MPCA received one set of comments on the draft document from EPA. The comments were addressed by MPCA and the TMDL document revised as appropriate.

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:

MPCA submitted the Upper Wapsipinicon River TMDL document, submittal letter and accompanying documentation on February 10, 2020. The transmittal letter explicitly stated that the final TMDL referenced in Table 1 of this Decision Document is 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 CFR 130.

The EPA finds that the TMDL transmittal letter submitted for the Lake Superior South Watershed TMDLs by MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA find that the one bacteria TMDL satisfies all elements for an approvable TMDL. This TMDL approval is for one TMDL, addressing one waterbody impaired for aquatic recreational use (Table 1 of this Decision Document).

The EPA's approval of these TMDLs extends to the water body identified above with the exception of any portion of the water body that is within Indian Country, as defined in 18 U.S.C. Section 1151. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA for these portions.