UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 14 2019

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 Loads (TMDLs) for the Grand Marais Creek watershed including supporting documentation and follow up information. The Grand Marais Creek watershed is in the northeastern portion of Minnesota. The TMDLs address aquatic recreation use impairment due to *E. coli*.

The TMDLs meet 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 three TMDLs for three segments in the Grand Marais Creek watershed. 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 these TMDLs and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. David Pfeifer, Acting Chief of the Watersheds and Wetlands Branch at 312-353-9024.

Sincerely,

Joan M. Tanaka

Joan M Tanaka,
Acting Director, Water Division

Enclosure

cc: Celine Lyman, MPCA
Denise Oakes, MPCA

wq-iw5-13g

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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 reviewed the recent approval (dated May 14, 2019) of the Grand Marais Creek Watershed Total Maximum Daily Load (TMDL) report and has determined that there was an error within Table 5 of the Decision Document. EPA misidentified the values in the table for segment Judicial ditch 1 (AUID 09020306-519) and originally used data from County Ditch 2 (AUID09020306-515).

EPA has corrected the values used in Table 5 of the original Decision Document in a revised Decision Document. Please see Table 5 of the revised Decision Document for the final approved TMDL assessment units. I am enclosing a copy of the revised Decision Document for your records. If you have any questions, please contact Donna Keclik, TMDL reviewer, at 312-886-6766.

Sincerely,

Matthew Gluckman, Chief,
Watersheds Section

Enclosure

cc: Celine Lyman, MPCA
Denise Oakes, MPCA

wq-iw5-13g

TMDL: Grand Marais Creek watershed, Minnesota
Effective Date: May 14, 2019 **Correction Date** July 1, 2019

Decision Document for Approval of Grand Marais Creek 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 Grand Marais Creek watershed is located in northwest Minnesota within Marshall, Polk, and Pennington Counties. The watershed drains approximately 592 square miles (378,880 acres) with a majority of the watershed located in Polk County. For the most part the creek is very low gradient with a poorly defined floodplain. The majority of the area has been converted from tall-grass prairie to cropland. The predominant land use in the watershed is cropland (91.6%) and drainage ditch networks are a prominent feature of the landscape. Small towns including Fisher and Oslo make up about 5% of the watershed's land area.

Major rivers and streams within this watershed include the Red River, Grand Marais Creek, Judicial Ditch (JD) 1, Polk County Ditch (CD) 2, and JD 75. The Red River forms the western border of the Grand Marais Creek Watershed in Minnesota. Grand Marais Creek begins about 1.5 miles NW of Fisher, and parallels the Red Lake River for approximately 41 miles prior to its confluence with the Red River.

The segments and pollutants that are discussed in the TMDL report and this document are identified in Table 1 below. Figure 1-1 of the TMDL report identifies the location of the impaired stream segments. Table 2 below identifies other pollutants or stressors and segments which are also discussed but are not addressed by this TMDL.

Table 1: List of impaired segments addressed in the Grand Marais Creek watershed TMDL

Reach Name	AUID (09020306 -xxx)	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
County Ditch 2	515	2B, 3C	CD66 to Grand Marais Creek	Aquatic Recreational Use	*E. coli*
Judicial Ditch 1	519	2B, 3C	CD7 to Red River	Aquatic Recreational Use	*E. coli*
Judicial Ditch 75	520	2B, 3C	CD7 to Red River	Aquatic Recreational Use	*E. coli*

Table 2: List of impaired segments not addressed in the Grand Marais Creek watershed TMDL

Reach Name	AUID (09020306-xxx)	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
Grand Marais Creek	507	2B, 3C	Headwaters to CD2	Aquatic Life	DO[1]
					Turbidity[2]
RLWD Ditch 15	509	2B, 3C	Headwaters to CD66	Aquatic Life	DO[1]
County Ditch 2	515	2B, 3C	CD66 to Grand Marais Creek	Aquatic Life	F-IBI[1]
County Ditch 43 (Judicial Ditch 25)	517	2B, 3C	Unnamed ditch to CD7	Aquatic Life	F-IBI and M-IBI[1]
Judicial Ditch 75	520	2B, 3C	CD7 to Red River	Aquatic Life	F-IBI[1]
Grand Marais Cutoff Channel	522	Not Identified	Grand Marais Cutoff Channel to Red River	Aquatic Life	To be addressed by Minnesota Department of Agriculture
Red River	523	1C, 2Bdg, 3C	English Coulee (ND) to Turtle R (ND)	Aquatic Consumption	Mercury in fish Tissue and Water Column[3]
Red River	524	1C, 2Bdg, 3C	Turtle R (ND) to Park R (ND)	Aquatic Consumption	Mercury in fish Tissue and Water Column[3]

1. This is considered a Non-pollutant Stressor (lack of base flow, loss of habitat or loss of connectivity). A TMDL has not been calculated for these impairments and will remain on the 303(d) list of impaired waters as category 5 until there is evidence to recategorizes to 4C. More information is discussed in Section 4.2 of the TMDL report.
2. This was proposed to be delisted when the TMDL was out for public notice. Since the public notice the 2018 list was approved with the turbidity impairment delisted.
3. Mercury impairments have been addressed by the state-wide Mercury TMDL.

Land Use: The predominant land use in the watershed is cropland (91.6%) and drainage ditch networks are a prominent feature of the landscape. In the early 1900s, a State/County project to increase drainage diverted the lower six miles of Grand Marais Creek into a ditch (cut-off channel) that emptied into the Red River a short distance upstream of its original confluence. A recently completed restoration project (Project 60) has restored the flow back into the original natural, meandering channel. The old cut-off channel has been buffered and stabilized but will only receive flow during high flow events (greater than 1.25-year recurrence interval) along with local runoff. This completed restoration should greatly enhance the water quality at the outlet.

The land cover distribution within impaired stream watersheds is summarized in Table 3-2 of the TMDL, (reproduced below in table 3) and Figure 3-2 of the TMDL.

Table 3: Land cover
Grand Marais Creek watershed and impaired streams subwatershed land cover

Waterbody Name (AUID 09020306-xxx)	Developed	Undeveloped	Cropland	Grassland/ Pasture	Open Waters/ Wetlands
Grand Marais Creek Headwaters to CD2 (507)	4.8%	0.4%	93.2%	0.0%	1.6%
RLWD Ditch 15 (509)	4.6%	1.4%	89.7%	1.0%	3.3%
County Ditch 2, CD66 to Grand Marais Creek (515)	4.6%	0.9%	92.0%	0.5%	2.0%
Judicial Ditch 1 (519)	4.9%	0.7%	93.7%	0.7%	<0.1%
Judicial Ditch 75 (520)	4.5%	2.1%	91.6%	0.7%	1.1%
Grand Marais Creek watershed	4.8%	1.0%	91.6%	0.3%	2.3%

Problem Identification/Pollutant(s) of Concern: The Grand Marais Creek watershed TMDL report addresses impairments in three stream reaches identified in Table 1 above. The impairments affect aquatic recreation designated uses. All the impairments are on Minnesota's 2018 303(d) list of impaired water bodies. MPCA indicated that the impairments addressed by these TMDLs were identified based on high levels of *E. coli*.

Using data from the most recent 10-year period (2005 through 2014), geometric mean *E. coli* concentrations were calculated by month for each impaired stream (Table 3-6 of the TMDL). Few *E. coli* monitoring data were available for the assessment, therefore additional monitoring is recommended to verify the impairments.

Biological stressor identification is done for streams with either fish or macroinvertebrate biota impairments, and encompasses both evaluation of pollutants and non-pollutant-related factors as potential stressors. Pollutant source assessments are done where a biological stressor ID process identifies a pollutant as a stressor, as well as for the typical pollutant impairment listings. For the three streams identified in Table 2 above related to the F-IBI and M-IBI impairment, the primary stressor identified was a lack of base flow, particularly in late summer. For the streams in Table 2 above identified as impaired due to low DO, MPCA determined the stressors to be the lack of base flow (stagnant water) during these late-summer periods. As no pollutant was identified, no TMDL has been completed to address the biological stressor impairment or the low DO impairment.

Priority Ranking: The MPCA stated 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 *EPA's Long-Term Vision for Assessment, Restoration and Protection* under the Clean Water Act Section 303(d) Program.

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). There are no permitted sources of bacteria in the Grand Marais Creek watershed.

Nonpoint sources: Nonpoint sources of pollution come from many diffuse sources. Nonpoint sources of pollution are often caused by rainfall or snowmelt moving over and through the ground. As the runoff occurs, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes and streams. Nonpoint sources *E. coli* that were identified in the Grand Marais Creek TMDL include subsurface sewage treatment systems (SSTS), livestock, and wildlife.

Subsurface sewage treatment systems (SSTS) "Failing" SSTS in Minnesota are defined as systems that are failing to protect groundwater or surface water from contamination. MPCA determined that failing SSTS were not a significant source of fecal pollution to surface water in the Grand Marais watershed. However, systems that 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 (sometimes called "straight-pipes"). Straight pipes are illegal and pose an imminent threat to public health as they convey raw sewage from homes and businesses directly to surface water. Community straight pipes are more likely to be found in small rural communities.

ITPHS data are derived from surveys of County staff and County level SSTS status inventories. The MPCA's indicated that the 2012 SSTS Annual Report provides the percentage of systems in unsewered communities that are ITPHS for each county in Minnesota. Most of the population within the impaired stream drainage areas resides within Polk County, which has no known ITPHS, and therefore ITPHS systems are not expected to be a significant source of E. coli within the drainage areas of the impaired streams.

Livestock- Livestock have the potential to contribute bacteria to surface water through grazing activities or if their manure is not properly managed or stored. Solid manure is typically surface spread on cropland. Liquid livestock manure is typically collected and applied to nearby fields through injection, which significantly reduces the transport of bacteria contained in manure to surface waters. The watershed does have active smaller feed lots which can contribute to the *E. coli* impairment.

Wildlife -The TMDL indicated that MPCA staff have observed beaver dams/beaver activity in the Grand Marais Creek watershed. Figure 3-11 of the TMDL identifies the location of this activity. Beavers seldom defecate on land. Because beavers defecate in water, they can be one of several transmitters of an infection called giardiasis, more commonly referred to as giardia.

Giardia has been found in many animal species, including pets, other wildlife, and livestock. It is one of the most common water-born pathogens in fresh water. Its main source is fecal material from birds and animals as well as humans. MPCA indicated that beaver dams have been

observed at least once at monitoring station S005-570 (JD 75, -520) and on numerous occasions at monitoring stations S004-131, S004-132, & S004-133 (CD 2, -515) during recent years of monitoring (2010 through 2015)

MPCA also indicated the presence of large numbers of birds on or near surface waters can act as sources of bacteria contamination. In two neighboring watersheds, water samples were tested for gene biomarkers for fecal coliform bacteria. Birds were found to be a major contributor to bacteria pollution in the Thief River (in the nearby Thief River watershed) and a potential contributor to bacteria pollution in Kripple Creek (in the nearby Red Lake River watershed). Although similar testing has not been completed for water samples collected in the Grand Marais Creek watershed, the presence of birds in the water or under bridges has been noted, including in field monitoring notes on numerous occasions at monitoring stations located within the impaired stream reaches (S005-570, S005-571, and S004-131) during a recent year of monitoring. MPCA stated that direct inputs from nesting and migratory birds likely contributors to fecal pollution in the impaired streams.

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 Grand Marais Creek 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: 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. All the impaired water bodies in this report are classified as one or more of the following classes: Class 2B, 1C, and 3C waters. For the water bodies which TMDLs have been develop in this report the classes are 2B and 3C. This TMDL report addresses the water bodies that do not meet the standards for Class 2B waters, which are protected for aquatic life and recreation designated uses, and is the most restrictive use.

Minn. R. Ch. 7050.014 states Class 2 waters are for aquatic life and recreation and includes all waters of the state that support or may support aquatic biota, 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.

Numeric criteria: *E. coli* can be found 7050.0222 for Class 2B waters which reads:

> *E. coli*. is not to exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

The *E. coli*-impaired reaches in the Grand Marais Creek watershed flow into the Red River of the North, which is a boundary water between North Dakota and Minnesota. North Dakota uses the same 126 org/100ml geomean standard that is used by Minnesota. The portion of the Red River that receives drainage from the Grand Marais Creek watershed was not listed as impaired for *E. coli* in Minnesota or North Dakota as of 2018.

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

Comment:

Load duration analysis method:

The load duration curve method was used to develop the TMDLs for the Grand Marais Creek watershed. 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 (e.g., for the high flow zone [0 to 10-percentile], the TMDL was calculated at the 5th percentile). However, the entire curve represents the TMDL and is what is approved by EPA.

The loading capacity for *E. coli* is based on the monthly geometric mean standard (126 org/100 mL). It is assumed that practices that are implemented to meet the geometric mean standard will also address the individual sample standard (1,260 org/100 mL). MPCA used the HSPF models to simulate daily flow data from the years 2006 through 2009 and monitored flow from the years 2013 through 2015 to develop flow duration curves. The loading capacities were determined by applying the *E. coli* water quality standard (126 org/ 100 mL) to the flow duration curve to produce a bacteria loading curve. Loading capacities presented in the allocation tables represent the median *E. coli* load (in billion org/day) along the bacteria standard curve within each flow regime.

Flow zones were determined for very high, high, mid, low and very low flow conditions. The mid-range flow value for each flow zone was then multiplied by the standard of 126 org/100ml to calculate the loading capacity. The method used for determining these *E. coli* TMDLs is consistent with EPA technical memos.

The curves in Figures 4-1, 4-2, and 4-3, of the TMDL Report represent the loads meeting the *E. coli* criteria. The points above the curve are pollutant exceedences. Review of the Load Duration Curves indicates that the criteria loads were exceeded under high and mid range flow conditions for County Ditch 2 (AUID - 515) and Judicial Ditch 75 (AUID -520) and high flow condition for Judicial Ditch 1 (AUID -519).

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 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 as the loading capacity (LC) minus margin of safety (MOS). There are no WLA in the watershed therefore WLA is zero. The LA includes nonpoint pollution sources that are not subject to permit requirements and includes natural background sources.

The LA covers watershed runoff and other nonpoint sources such as failing septic systems, leaky wastewater infrastructure, wildlife, and pets. The LA also includes natural background sources of *E. coli* as described in Section 3.5.1.2 of the TMDL report. Natural background sources of *E. coli* would include wildlife and naturalized strains of *E. coli*.

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:

No point sources were identified in the Grand Marais Creek watershed (WLA = 0) (Section 4.1.3 of the TMDL).

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 (Section 4.1.4 of the TDML). The use of an explicit MOS accounts for the uncertainty in extrapolating flows in upstream areas of the watershed, based on HSPF model calibration at stream gauges near the outlet of the Grand Marais Creek watershed.

Factors such as die-off and re-growth contribute to general uncertainty that makes bacteria loads particularly difficult. The MOS for the Grand Marais Creek watershed 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 126cfu/100mL. 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 for *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 segments. In this section MPCA indicated that the implementation plan from the Grand Marais Creek watershed TMDL and the restoration and protection strategies from the Grand Marais Creek WRAPS will be incorporated into local water management plans. At the local level, the West Polk Soil and Water Conservation District (SWCD), Red Lake Watershed District (RLWD), National Resources Conservation Service (NRCS), Middle Snake Tamarac Rivers Watershed District (MSTRWD), and Pennington SWCD currently implement programs that target improving water quality and have been actively involved in projects to improve water quality in the past. Local, State, Tribal, and Federal agencies that have cooperated on projects in the past and plan to work together in the future to improve water quality and habitat in this watershed also include: United States Fish and Wildlife Service (USFWS), Minnesota Department of Natural Resources (DNR), MPCA, and the Minnesota Board of Water and Soil Resources (BWSR).

In addition, MPCA indicated that landowners, within this watershed, have implemented many practices in the past including: cover crops, no till/strip till, seasonal residue use, filter strips/buffers/field borders, field and farmstead windbreaks, structures for water control, grade stabilization structures, ring dikes, nutrient and pest management, pasture management systems, CRP grass seeding, and wetland restorations. Currently, the most common practices are cover crops, seasonal residue use, and structures for grade and water control. It is assumed that these activities will continue.

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 Grand Marais Creek watershed was finalized on April 11, 2019.

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. As part of the MPCA Intensive Watershed Monitoring strategy, four stream sites were monitored for biology (fish and macroinvertebrates) and water chemistry: Judicial Ditch 75 at CR 22, County Ditch 2 at CR 62, Grand Marais Creek at CR 64, and Judicial Ditch 1 at CR 22. Additional sites will be sampled in the next 10-year cycle. Fewer sites were sampled as part of the assessment for this TMDL study due to no water in many streams during 2012, which was a dry year.

The RLWD has been collecting water quality samples in the Grand Marais Creek watershed for its long-term monitoring program since 1980. River Watch is a volunteer monitoring program that gives high school students the opportunity to collect water quality data. These data are collected using the same methods that are used by professionals, and is stored in MPCA's EQuIS database along with all other data that is collected within the watershed. MPCA stated that RLWD and International Water Institute staff should continue to work with those schools collecting the volunteer data and encourage the inclusion of Grand Marais Creek watershed sites in their monitoring repertoire.

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:

The final TMDL document outlines the implementation strategy in Section 8 of the TMDL. The following implementation activities were identified to address and further understand high *E. coli* levels in the impaired streams:

- Molecular source tracking sample analysis to identify specific sources of *E. coli* such as birds, beaver, humans, ruminants (cattle), geese, etc.
- Road overpass bird nesting deterrence practices
- Beaver dam removal and deterrence
- Signage near road crossings over impaired streams alerting residents of the high *E. coli* levels
- Continued monitoring.

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. meetings were held during the development of this TMDL. Table 9-1 in the TMDL identifies Technical Advisory Committee meetings. Table 9.2 in the TMDL identifies Grand Marais Creek watershed TMDL Civic Engagement Meetings that were held. The TMDL was on public notice from January 7, 2019 to February 6, 2019. MPCA received no public comments during the public notice period.

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 Grand Marais Creek TMDL document, submittal letter and accompanying documentation on April 18, 2019 via email. The transmittal letter explicitly stated that the final TMDLs referenced in Table 1 of this Decision Document were being submitted to EPA pursuant to Section 303(d) of the Clean Water Act for EPA review and approval.

The letter and email 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 Grand Marais Creek watershed TMDLs by MPCA satisfies the requirements of this twelfth element.

13. Conclusion

After a full and complete review, the EPA finds that the three bacteria TMDL satisfy all elements for approvable TMDLs. This TMDL approval is for three TMDLs, addressing water bodies for aquatic life use impairments and aquatic recreational (Table 1 of this Decision Document). Below are the TMDLs being approve in Tables 4-6.

The EPA's approval of these TMDLs 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. The EPA is taking no action to approve or disapprove TMDLs for those waters at this time. The EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA.

Table 4. ***County Ditch 2 (AUID 09020306-515) E. coli TMDL and Allocations***

E. coli load Table	Flow Regime				
	Very High	**High**	**Mid-Range**	**Low**	**Very Low**
	E. coli Load (billion org/day)				
Waste Load Allocation	0	0	0	0	0
Load Allocation	**358.16**	**49.28**	**8.58**	**2.11**	**0.20**
MOS	**39.79**	**5.47**	**0.95**	**0.23**	**0.02**
Loading Capacity	**397.95**	**53.75**	**9.53**	**2.34**	**0.22**

Table 5. ***Judicial Ditch 1 (AUID 09020306-519) E. coli TMDL and Allocations***

E. coli load Table	Flow Regime				
	Very High	**High**	**Mid-Range**	**Low**	**Very Low**
	E. coli Load (billion org/day)				
Waste Load Allocation	0	0	0	0	0
Load Allocation	**363.97**	**28.92**	**5.81**	**1.53**	**0.07**
MOS	**40.44**	**3.21**	**0.65**	**0.17**	**0.01**
Loading Capacity	**404.41**	**32.13**	**6.46**	**1.70**	**0.08**

Table 6. ***Judicial Ditch 75 (AUID 09020306-520) E. coli TMDL and Allocations***

E. coli load Table	Flow Regime				
	Very High	**High**	**Mid-Range**	**Low**	**Very Low**
	E. coli Load (billion org/day)				
Waste Load Allocation	0	0	0	0	0
Load Allocation	**412.09**	**60.51**	**7.99**	**1.69**	**0.08**
MOS	**45.79**	**6.72**	**0.89**	**0.19**	**0.01**
Loading Capacity	**457.88**	**67.23**	**8.88**	**1.88**	**0.09**