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

FEB 2 2 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 Lake Superior South watershed including supporting documentation and follow up information. The Lake Superior South (LSS) Watershed is in the northeastern portion of Minnesota. The TMDLs address the aquatic life use impairment due to Total Suspended Solids and the 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 seven TMDLs for six segments in the LSS 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. Peter Swenson, Chief of the Watersheds and Wetlands Branch at 312-886-0236.

Sincerely,

Linda Holst

Linda Holst,
Acting Director,
Water Division

Enclosure

cc: Celine Lyman, MPCA
Karen Evans, MPCA

wq-iw10-10g

bcc: Branch file
Admin Record
D. Keclik

TMDL: Lake Superior South Watershed, Minnesota, Total Suspended Solids (TSS), *E. coli*
Effective Date: February 22, 2019

Decision Document for Approval of Lake Superior South 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 Lake Superior South (LSS) Watershed lies in the eastern portion of the Northern Lakes and Forest (NLF) Ecoregion in northwestern Minnesota. The LSS watershed consists of a long narrow strip extending along Lake Superior from the southwest to the northeast and is approximately 624 square miles. Elevations within this watershed range from a high of 1,250 feet above sea level to its lowest point on Lake Superior at 607 feet above sea level. The largest portion of this watershed is in Lake County, with a slightly smaller proportion in St. Louis County.

The United States Department of Agriculture (USDA) Major Land Resource Areas (MLRA) for the Lake Superior – South Watershed includes two classifications. The eastern half that lies along Lake Superior's western shoreline is classified as Superior Lake Plain, while the western half that is located uphill from Lake Superior is classified as Superior Stony and Rocky Loamy Plains and Hills, Western Part. Topography in the Superior Lake Plain is gently sloping to steep, with deep v-shaped ravines.[1]

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

[1] The TMDL referenced the Lake Superior - South Watershed Monitoring and Assessment Report - June 2014 for the watershed description. See Lake Superior - South Watershed Monitoring and Assessment Report - June 2014 pp 11-13.

Table 1: List of impaired segments addressed in the LSS TMDL

Reach Name	AUID (04010102-xxx)	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
Beaver River	501	2A	Headwaters to Lk Superior	Aquatic Life	TSS[1]
Big Sucker Creek (Sucker River)	555	2A	Unnamed cr to Lk Superior	Aquatic Life	TSS
French River	698	2A	Unnamed lk (69-1182-00) to Lk Superior	Aquatic Life	TSS
Little Knife River (East Branch Little Knife River)[2]	840	2A	Unnamed cr to Knife R	Aquatic Life	TSS
Talmadge River (Talmadge Cr)	508	2A	Headwaters to Lk Superior	Aquatic Life	TSS
Skunk Creek	528	2B	Headwaters to Lk Superior	Aquatic Life	TSS
				Aquatic Recreation	*E. coli*

1 MPCA listed turbidity as the cause of the impairment. However, the turbidity standard was replaced by TSS standards in 2015 (Minn. R. 7050.0222). Existing turbidity impairments will remain as turbidity impairments on the 303(d) list, but the TMDLs developed for them will be based on the TSS standards.
2 This segment drains to the Knife River that is listed as impaired for turbidity. A TMDL was completed for the Knife River in 2010.

Table 2: List of impaired segments not addressed in the LSS TMDL

Reach Name	AUID (04010102-xxx)	Use Class	Location/Reach Description	Affected Designated Use Class	Pollutant
Beaver River	501	2A	Headwaters to Lk Superior	Aquatic Life	Fish bioassessments
					pH
Beaver River, West Branch	577	2A	Unnamed cr to Unnamed cr	Aquatic Life	Aquatic Macroinvertebrate bioassessments
					Fish bioassessments
Little Knife River (East Branch Little Knife River)	840	2A	Unnamed cr to Knife R	Aquatic Life	Dissolved oxygen
Talmadge River (Talmadge Cr)	508	2A	Headwaters to Lk Superior	Aquatic Life	Dissolved oxygen
					Fish bioassessments

Land Use: Land cover varies throughout the impaired subwatersheds as provided in Table 6 and Figure 3 of the TMDL and Table 3 below. Forest and wetland land covers are dominant in all of the impaired subwatersheds with the exception of Skunk Creek. Skunk Creek passes through the

city of Two Harbors and has a large amount of developed lands (39%) in its subwatershed. Skunk Creek also has the lowest percentage of water and wetlands (2%) in its subwatershed. The wetland and lower open water areas contribute to flashiness in the stream system because of the lack of storage in the headwater areas. In the case of Skunk Creek, very low available storage plus significant developed areas have the potential to contribute significantly to the turbidity impairment.

Table 3: Land cover

Waterbody	Percent of the Watershed										Total Area (acres)
	Open Water	Developed	Barren Land	Deciduous Forest	Evergreen Forest	Mixed Forest	Shrub/Scrub	Grassland/ Herbaceous/ Pasture/Hay	Woody/ Wetlands	Emergent Herbaceous Wetlands	
Beaver River	3	2	1	31	10	16	7	1	28	1	78,727
Big Sucker Creek (Sucker River)	1	2	0	19	12	25	11	2	27	1	24,141
French River	1	3	0	32	11	20	6	3	21	3	11,936
Talmadge River (Talmadge Creek)	0	5	0	25	19	22	7	4	17	1	3,786
Little Knife River (E Br Little Knife River)	0	7	1	20	13	24	10	7	16	2	4,185
Skunk Creek	0	39	0	7	19	17	7	9	2	0	1,319

Problem Identification/Pollutant(s) of Concern: The LSS TMDL report addresses impairments in seven stream reaches (Table 1 above) in the LSS Watershed. The impairments affect aquatic life and aquatic recreation designated uses. All the impairments are on Minnesota's 2016 303(d) list of impaired water bodies[2]. MPCA indicated that the impairments were identified based on high levels of turbidity or Escherichia coli (*E. coli*), aquatic macroinvertebrate or fish bioassessments, pH outside of the allowable range, and low dissolved oxygen. A TMDL has already been developed to address a turbidity impairment for the Knife River (AUID 04010102-504) entitled Total Maximum Daily Load Study of Turbidity on the Knife River Watershed.

The turbidity standard used in previous 303(d) lists was replaced by TSS standards in 2015 (Minn. R. 7050.0222). Existing turbidity impairments will remain as turbidity impairments on the 303(d) list, but the TMDLs developed to address them will be based on the TSS standards. Biotic impairments (i.e., aquatic macroinvertebrate or fish bioassessments) in the Beaver River, West Branch Beaver River, and Talmadge River were further evaluated for the cause of impairment as part of the stressor identification process. Table 2 of the TMDL summarizes the candidate causes evaluated. Biotic impairments are primarily due to elevated water temperatures, low dissolved oxygen, poor habitat, elevated turbidity/TSS, and altered hydrology. Biotic

[2] At the time the TMDL was submitted the 2016 303(d) list was in draft to EPA for review and approval. The 2016 303(d) list was approved on January 28, 2019. These segments were identified on the final approved 303(d) list.

impairments will not be fully addressed as part of this TMDL. However, MPCA indicated that the biotic impairments are inextricably linked and will be favorably influenced by actions taken to address turbidity and *E. coli* impairments.

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 LSS waters addressed by this TMDL are part of that MPCA prioritization plan to meet EPA's national measure.

Pollutants of Concern: The pollutants of concern are TSS and *E. coli*. As mentioned above MPCA has listed segments for turbidity. Since the initial listings of the turbidity impairment, MPCA developed new standards for TSS and no longer has a turbidity standard. Although the TMDL discusses other listing 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). In the LSS, permitted sources include municipal and industrial wastewater and stormwater. There are no regulated CAFOs in the watersheds.

Sediment point sources: There are three NPDES-permitted facilities discharging to TSS impaired segments in the LSS Watershed:

- Beaver Bay WWTP (MN0040754) is a stabilization pond facility that discharges municipal wastewater effluent to the Beaver River (04010102-501).
- Northshore Mining–Silver Bay (MN0055301) discharges industrial wastewater to the Beaver River (04010102-501).
- DNR French River Hatchery (MN0004413) discharges industrial wastewater to the French River (04010102-698).

The City of Two Harbors wastewater treatment plant (WWTP) (MN0022250) is in the Skunk Creek Watershed, but the plant discharges directly to Lake Superior.

There are some impaired TSS segments in the LSS Watershed within Municipal Separate Storm Sewer Systems (MS4). The Duluth Township MS4 (MS400134) drains a portion of the Big Sucker Creek (Sucker River) and French River impaired subwatersheds. The Duluth Township roads are considered the regulated area under the MS4 permit (see Section 3.4.1 of the TMDL). These areas, 0.07% of the Big Sucker Creek (Sucker River) total watershed area and 0.01% of

the French River total watershed area, were used to determine the portions of the watershed load allocated to the MS4.

Construction and industrial stormwater in the LSS Watershed are covered by general permits. The construction stormwater general permit (MNR100001) regulates construction stormwater, and industrial stormwater is regulated through multiple permits: the multi-sector general permit for industrial stormwater (MNR050000), the general permit for non-metallic mining and associated activities (MNG490000), and the No Exposure exclusion permit (MNRNE0000). There are several industrial stormwater permitted facilities located within the TSS impaired subwatersheds.

Table 4: Industrial stormwater facilities within the TSS-impaired subwatersheds

Industrial Stormwater Facility	Impaired AUID
Lake County Highway Department (MNG490296) -Lax Lake Pit	Beaver River (04010102-501)
B&B Aggregates (MNRNE38YB)	Little Knife River (East Branch Little Knife River: 04010102-840)
Lake County Highway Department (MNG490296)-Nursey Pit	Little Knife River (East Branch Little Knife River: 04010102-840)
Richard B Helgeson Airport (MNR0539FF)	Little Knife River (East Branch Little Knife River: 04010102-840)
Builtrite Manufacturing Inc (MNR053CHH)	Skunk Creek (04010102-528)
Arrowhead Recycle Center (MNR0539TD)	Skunk Creek (04010102-528)

***E. coli* point sources:** Skunk Creek is the only stream in the watershed impaired due to high levels of *E. coli*. In addition to the stream, two Lake Superior beaches are also impaired by *E. coli*. Both impaired beaches are near the Skunk Creek confluence with Lake Superior and will be addressed under a separate TMDL process. The Skunk Creek Subwatershed is very small, less than two square miles in size, and includes much of the city of Two Harbors. The watershed has a high residential population density compared to other LSS impaired streams.

There are no permitted sources of *E. coli* in the Skunk Creek Subwatershed. However, the city of Two Harbors operates a wastewater facility with a permitted discharge to Lake Superior, and in 2013 and 2014, the MPCA reported two events that caused untreated sewage to flow into Skunk Creek. The cause of the overflows was related to an electrical issue at lift stations, and not from the WWTP's permitted outfall.

Sediment nonpoint sources: NPS sediment inputs in the LSS Watershed can be dominated by watershed loading or near-channel sources, depending on the impaired segment. Eroding bluffs have been identified as a major source of sediment in many of the North Shore tributaries. The large number of identified bluffs along the Big Sucker Creek, French River, and Talmadge River account for the dominance of near channel sources. Skunk Creek, located in Two Harbors, has the highest proportion of sediment loads from development and roads. Stream-specific sediment assessments have been conducted for the Beaver River, Big Sucker Creek, French River, and

Talmadge River. The assessments are based mainly on the Bank Assessment for Nonpoint Source Consequences of Sediment (BANCS) model.

Beaver River (04010102-501)

MPCA indicated that the Beaver River Subwatershed was subjected to historic alteration both from logging and from construction of the Milepost 7 tailings basin. The construction of the Mile Post 7 tailings basin included re-routing of tributary streams and changing the drainage areas upstream of the basin, resulting in changes to the channel and increased sediment in the river. In addition to streambank erosion, sediment also enters the stream from trail and road crossings. MPCA also stated that clay till soils in West Branch Beaver River could be contributing to high TSS in the mainstem.

Big Sucker Creek (Sucker River; 04010102-555)

MPCA indicated that there were high erosion sites located in clay till soils, based on available data through the use of Light Detection and Ranging (LiDAR) analysis. Other studies were conducted as well for the near-channel processes, which were determined to contribute an additional load of sediment to the stream. Watershed loading resulting from activities on the land surface account for the remaining load.

Big Sucker Creek is identified as impaired in only the most downstream reach. Water quality samples with TSS concentrations greater than the 10 mg/L standard have been collected in the past 10 years at existing water quality monitoring stations along upstream reaches. No exceedances were observed upstream of the Hegberg Road crossing.

French River (04010102-698)

The MPCA conducted a geomorphic assessment and BANCS modeling of the French River in 2017. Several high loading banks were inventoried as part of this work upstream of McQuade Road. Hydrologic Simulation Program-FORTRAN (HSPF) modeling of the watershed indicated slightly higher sediment contributions from near-channel sources.

Little Knife River (East Branch Little Knife River; 04010102-840)

MPCA stated it used historical information and HSPF modeling for this stream which suggests that the Little Knife River has slightly more sediment contributed by watershed loading than near channel sources. The fine-grained clay sediment present in much of the watershed is likely contributing to impairment. MPCA stated that highly altered riparian habitat near the sampling locations along the Little Knife River, along with grazing in the watershed, were contributors to sediment loads. In addition, open lands within the watershed, including an airport, may be altering flows and sediment loads. Very low flows have been documented in this stream.

Talmadge River (Talmadge Creek; 04010102-508)

Sources of sediment in the Talmadge River include bed and bank scouring and watershed loading. A reach-scale restoration project was completed in 2016 near Highway 61 to reduce bank erosion and improve physical habitat along 700 feet of stream channel. The Talmadge

River is very flashy, resulting in high peak flows and very low flow conditions. MPCA noted that protecting existing wetlands is important in this watershed as they provide storage and help to mitigate peak flows downstream.

Skunk Creek (04010102-528)

MPCA stated it used historical information and HSPF modeling for this stream. The modeling suggests that Skunk Creek is dominated by watershed processes, developed and impervious areas in and around the Two Harbors area. A review of longitudinal surveys conducted during three days in 2014 do not reveal hot spots, indicating that a mix of sediment sources are present during different flow conditions in the stream. Likely sources of sediment in Skunk Creek include stormwater runoff, stream crossings (roads, trails, ATVs), and channel scour and bank erosion.

***E. coli* Nonpoint Sources:** Skunk Creek is the only segment in the watershed listed for *E. coli.* Nonpoint sources of *E. coli* may include failing septic and wastewater systems, stormwater runoff, wildlife, and pets. No specific information is available on wildlife populations in the Skunk Creek Subwatershed or their potential to impact *E. coli* loadings.

Septic systems 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. Outside of the developed area near Two Harbors, there are an estimated 60 to 70 homes with septic systems. Of these, MPCA estimated that 17% are failing and potentially contributing to *E. coli* loading.

Other human sources of *E. coli* in the watershed include straight pipe discharges and earthen pit outhouses. Straight pipe systems are small-scale sewage disposal systems that transport raw or partially settled sewage directly to a lake, stream, drainage system, or the ground surface. Straight pipe systems and earthen pit outhouses likely exist in the watershed, but their number and locations are unknown and were not quantified.

Stormwater runoff acts as an important delivery mechanism of multiple *E. coli* sources including humans, wildlife, and domestic pets.

Stormwater runoff from impervious areas (such as roads, driveways, and rooftops) can connect the location where *E. coli* is deposited on the landscape to surface waters. Wildlife, such as birds and raccoons, can be another source of *E. coli* in urban stormwater runoff.

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 LSS 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 of the impaired streams in this report are classified as Class 1B, 2A/B, and 3B waters. This TMDL report addresses the water bodies that do not meet the standards for Class 2 waters, which are protected for aquatic life and recreation designated uses.

Class 2A waters are protected for the propagation and maintenance of a healthy community of cold water sport or commercial fish and associated aquatic life and their habitats. Class 2B waters are protected for the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life and their habitats. Both Class 2A and 2B waters are also protected for aquatic recreation activities including bathing and swimming.

Numeric criteria: The pollutants addressed in this TMDL are TSS and *E. coli* bacteria. Two standards are provided for TSS, depending on the stream class. All impaired streams except Skunk Creek are Class 2A streams with a standard of 10 mg/L of TSS. Skunk Creek is a Class 2B stream with a standard of 15 mg/L of TSS.

Skunk Creek is also impaired for *E. coli*. In Minnesota, *E. coli* is used as an indicator species of potential water pathogens, and exceedances of the *E. coli* criteria indicate that a water body does not meet the aquatic recreation designated use. While the TMDL will focus on the geometric

mean portion of the WQS, compliance is required with both parts of the WQS as identified in Table 5 below.

Table 5 summarizes the criteria and the TMDL endpoints

Water Body Type	Parameter	Water Quality Criteria	Endpoint(s)
Class 2A streams (All impaired streams except Skunk Creek)	TSS[1]	10 mg/L; TSS standards for Class 2A may be exceeded no more than 10% of the time. This standard applies April 1 through September 30.	< 10 mg/L TSS
Class 2B streams (Skunk Creek)	TSS[1]	15 mg/L; TSS standards for Class 2B may be exceeded no more than 10% of the time. This standard applies April 1 through September 30.	< 15 mg/L TSS
Class 2 (A and B) streams (Skunk Creek)	*E. coli*	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 10% 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.	< 126 organisms / 100 mL water (monthly geometric mean) < 1,260 organisms / 100 mL water (individual sample)

1. A previous turbidity standard was replaced by the TSS standard in 2015. The previous turbidity standard was 10 nephelometric turbidity units for Class 2A waters and 25 nephelometric turbidity units for Class 2B waters for protection of aquatic life.

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 LSS 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.

Sediment: The loading capacity was calculated as flow multiplied by the TSS standard (all impaired streams except Skunk Creek were calculated at 10 mg/L, Skunk Creek was calculated at 15 mg/L) and represents the TSS load in the stream when the stream is at the TSS standard. The existing loads were calculated as the 90th percentile of observed TSS loads in each flow zone from the months that the standard applies (April through September); the monitoring data concentrations were multiplied by estimated flow. Flow zones were determined for very high, high, mid, low and very low flow conditions. The method used for determining these TSS TMDLs is consistent with EPA technical memos.[3] Simulated flow from the MPCA's LSS Watershed HSPF model application was used to supplement the analysis. (See Appendix A of the TMDL for model documentation including calibration and validation statistics). The simulated flow data and the TSS monitoring data used to calculate the loading capacity are from 1993 through 2012 and 2007 through 2016, respectively. 2016 is the baseline year against which future reductions will be compared.

The HSPF model is a comprehensive model that simulates watershed hydrology and water quality for conventional and toxic pollutants. Fir the LSS TMDL, the HSPF model was used to simulate stream flow in the tributaries. HSPF incorporates watershed-scale Agricultural Runoff Model (ARM) and NPS models into a basin scale analysis framework that includes fate and transport in one dimensional stream channels. It accounts for a variety of runoff processes along with in-stream hydraulic and sediment-chemical interactions. Within a delineated subwatershed, areas with similar land uses are aggregated and a uniform set of parameter values are applied to that land category. Upland responses within a subwatershed are simulated on a per-acre basis and converted to net loads to stream reaches the upland represents. Within each subwatershed, the upland areas are separated into multiple land use categories.

E. coli: The loading capacity for *E. coli* in Skunk Creek is based on the monthly geometric mean standard (126 org/100 mL). It is assumed that practices that are implemented to meet the

[3] See *U.S. Environmental Protection Agency, August 2007, An Approach for Using Load Duration Curves in the Development of TMDLS, Office of Water*. EPA-841-B-07-2006, Washington, D.C.

geometric mean standard will also address the individual sample standard (1,260 org/100 mL).

A flow duration curve was developed using the full range of hydrological conditions from data collected using April through October 1996 through 2009 daily average flow data. The resultant curve shows flow values and the frequency that the flow is exceeded. All flow conditions are represented. Similar to the TSS TMDL development process, the HSPF model was used to simulate tributary flows.

The load duration curve was developed using the flow multiplied by the standard or target concentration (126 org/100ml E. coli). The curve figure 29, of the TMDL Report represents the loads meeting the E. coli criteria. The points above the curve are pollutant exceedences. Review of the Load Duration Curve indicates that the criteria load was exceeded under all flow conditions.

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.

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 minus the sum of the WLAs and margin of safety (MOS). The LA includes nonpoint pollution sources that are not subject to permit requirements and includes natural background sources.

Sediment: MPCA stated that for the LSS watershed, much of the watershed is already assumed to be representing natural background, specifically forested and wetland areas. MPCA

determined through its source assessment process that there was no evidence to suggest that natural background sources are major drivers of the water body impairments or affect their ability to meet state water quality standards. Natural background sources are implicitly included in the LA portion of the TMDL. The major sources of the sediment in the watershed for the LA come from roads and road ditches along with channel instability-bank erosion. MPCA indicated that much of the instability can be linked to landscape changes and human disturbance.

The load duration curve shows TSS loadings exceeding the TMDL allocation most frequently during high flow (90th percentile and greater Mean Daily Flow) for Beaver River, Big Sucker Creek, French River, Talmadge River, and Skunk Creek. For the Little Knife River, no data collection was completed during the TMDL time period of 2007 through 2016. Data collection from 2004 through 2006 was investigated to determine potential reductions needed. Based on the older data, reductions are needed under all flow conditions, except for mid-range flows. The highest reductions are needed under high flow conditions.

E. coli: For Skunk Creek, 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 4.1.1 of the TMDL report. Natural background sources of *E. coli* would include wildlife and naturalized strains of *E. coli*. 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 all flow conditions. The largest load reductions are needed under very high to mid-range 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:

Sediment: Identified above (Section 1, Sediment Point Sources of this Decision Document) are the three NPDES permitted municipal and industrial wastewater facilities in the impaired watersheds. The three have the potential to discharge TSS to the impaired segments. Each of the facilities has an existing permit limit that is greater than the water quality standard (10 mg/L for all segments except Skunk Creek, 15 mg/l for Skunk Creek). The WLAs for the three facilities are contained in Tables 6-11 of this Decision Document. The current monthly average TSS limits are:

- Beaver Bay WWTP (MN0040754) is a stabilization pond facility that discharges municipal wastewater effluent to the Beaver River (04010102-501): 30 mg/L
- North Shore Mining Co. (MN0055301)–Silver Bay discharges industrial wastewater to the Beaver River (04010102-501): 20 mg/L
- DNR French River Hatchery (MN0004413) discharges industrial wastewater to the French River (04010102-698): 30 mg/L

MPCA indicated that the discharge monitoring records (DMRs) from the last five years (2012 through 2016) were reviewed for each of the three facilities. Beaver Bay WWTP's discharge was always below the permit limit and typically below the water quality standard (10 mg/L). Concentrations of 12 and 14 mg/L observed in Beaver Bay WWTP effluent records exceeded the instream water quality target of 10 mg/L in September and October of 2012, respectively.

DMRs for North Shore Mining and the French River Hatchery did not show any exceedances of the permit limit or the water quality standard (10 mg/L). Flows from these facilities can constitute most or all of the instream flow for their receiving water segments under low and very low flow conditions. If discharge from either of these facilities were to exceed the instream TSS standard under low flows, the facility would be a primary cause of impairment.
The French River Hatchery is being decommissioned and will transition to other uses. However, at the time of this TMDL the facility is still in limited operation, although rearing of rainbow trout to the yearling stage has been discontinued.

Individual WLAs were developed for each wastewater facility for the calculations in the TMDL. WLAs were calculated as the product of each facility's design flow (maximum daily discharge for Beaver Bay WWTP and maximum design flow for the industrial dischargers) and 10 mg/L TSS. These calculations used were for TMDL determinations. Effluent limits consistent with the WLAs will be established through the NPDES permitting process.

Municipal Separate Storm Sewer Systems - The Duluth Township MS4 (MS400134) drains a portion of the Big Sucker Creek (Sucker River) and French River impaired subwatersheds. The Duluth Township roads were considered the regulated area under the MS4 permit (see Section 3.4.1 of the TMDL). These areas, 0.07% of the Big Sucker Creek (Sucker River) total watershed

area and 0.01% of the French River total watershed area, were used to determine the portions of the watershed load allocated to the MS4.

Construction and Industrial Stormwater - The construction stormwater WLA was calculated as the loading capacity (or TMDL) minus the MOS and the wastewater WLAs multiplied by the percent area:

construction stormwater WLA = (TMDL – MOS – wastewater WLAs) x 0.01%

Several industrial stormwater permitted facilities are located within TSS impaired subwatersheds (Table 4 of this Decision Document). To account for all existing and any potential future industrial activities in the watershed, a conservative estimate of double the construction stormwater WLA was used for the industrial stormwater WLAs.

The WLAs for the individual point sources, stormwater source, and construction and industrial sources are contained in Tables 6-11 of this Decision Document.

***E. coli*:** No point sources were identified in the Skunk Creek subwatershed (WLA = 0). However, the city of Two Harbors operates a wastewater facility with a permitted discharge to Lake Superior, and in 2013 and 2014, the MPCA reported two events that caused untreated sewage to flow into Skunk Creek. The cause of the overflows was related to an electrical issue at lift stations in the watershed, and were not from the wastewater facility's permitted outfall. There are no other known overflows to Skunk Creek.

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:

MPCA explained that for both the sediment and *E. coli* TMDLs, the LSS HSPF model was calibrated and validated using nine stream flow gaging stations. Calibration results indicate that the HSPF model is a valid representation of hydrologic conditions between 1993 and 2012 in the watershed. A load duration curve was developed using HSPF-simulated daily flow data.
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. The MOS also accounts for limitations associated with estimating flow percentile data collected from 2013 to 2016 for sediment and 2014 to 2015 for *E. coli* (dates outside of the model simulation period). Flow percentiles from nearby USGS gauges were used to determine a representative flow in the impaired stream for each sampling date. This method assumes similar weather conditions at the USGS gauge and along the impairment; variations in temperature and rainfall can result in differences between flow conditions at each location.

Factors such as die-off and re-growth contribute to general uncertainty that makes bacteria loads particularly difficult. The MOS for the LSS 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 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:

Sediment: TSS concentrations and loads vary seasonally. Seasonal variation is partially addressed by the TSS water quality standard's application during the period when the highest TSS concentrations are expected via snowmelt and storm event runoff. The load duration approach accounts for seasonal variation 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.

E. coli*:* 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 both TSS and 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 restoration of the LSS Watershed will occur as part of local, regional, state, and federal efforts and will be led by Lake and St. Louis counties, Lake and South St. Louis SWCDs, state agencies, local communities, and residents. In addition, watershed groups such as the Advocates for the Knife River Watershed and entities such as Lake Superior Streams, Trout Unlimited, Lake Superior Steelhead Association, Lake Superior Coldwater Coalition and the University of Minnesota are all active partners in watershed protection and restoration in the LSS Watershed. An updated Lakewide Action and Management Plan was completed in 2016 and

outlines many protection and restoration activities for streams and rivers that are tributary to Lake Superior. 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 LSS watershed was finalized on August 8, 2018. 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. 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 LSS 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:

The three permitted wastewater facilities (Beaver Bay WWTP, Northshore Mining–Silver Bay, and DNR French River Hatchery) may require changes to their NPDES permit limits following additional data collection and review by the MPCA permit staff. DMRs from the past five years indicate that TSS concentrations from these facilities are likely meeting the WLAs; however, additional monitoring is needed.

MPCA indicated that for construction stormwater the BMPs and other stormwater control measures that should be implemented at construction sites are defined in the State's NPDES/State Disposal System (SDS) General Stormwater Permit for Construction Activity (MNR100001). For the six industrial stormwater permitted dischargers for TSS-impaired waters BMPs and other stormwater control measures that should be implemented at the industrial sites are defined in the State's NPDES/SDS Industrial Stormwater Multi- Sector General Permit (MNR050000) or NPDES/SDS General Permit for Construction Sand & Gravel, Rock Quarrying and Hot Mix Asphalt Production facilities (MNG490000).

Duluth Township is the only regulated MS4 in the impaired watersheds. Duluth Township conducts regular road inspections, which include culvert inspections and identification of any

areas of active erosion. All ditch/culvert maintenance or repair activities undertaken by the Township include re-seeding/re-vegetation, along with installation of rock armoring, ditch checks and diversions etc. where appropriate to prevent erosion and limit ditch flow/velocity. For the non-permitted sources, MPCA identified strategies for TSS impairments to include streambank restoration and stabilization, ditch maintenance guidance, buffer installation, timber harvesting management, culvert design guidelines and culvert upgrades, and green infrastructure and stormwater management.

Implementation efforts to address *E. coli* in the Skunk Creek subwatershed will focus on addressing improvements to septic systems, upgrade leaky wastewater infrastructure, enhance pet waste management programs as well as continue to educate the public on wildlife waste management.

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. Four meetings were held during the development of this TMDL. MPCA received comments from two commenters, South St. Louis Soil and Water Conservation District (SSLSWCD) and Duluth Township. Comments received from the SSLSWCD were related to the WRAPS process

and prioritization of targeted areas. MPCA added additional language in the WRAPS document and supplied a more detailed process in their response to the relationship of the One Watershed One Plan (1W1P) planning efforts. Additional language was also added to the TMDL to cover County forest management.

Duluth Township had concerns regarding the use of the 90th percentile use for loading determination and that the belief that the existing load calculation is overly conservative, and monitoring data was biased toward high flow. MPCA explained that more data is needed to better understand the issues for all flow regimes, and that use of the load duration curve method helps consider the need for reductions under specific flow regimes. Duluth Township also had concerns related to the calculation of MS4- related loadings and the area calculations used. MPCA explained they used a simple, area-weighted approach of the MS4 conveyance system to estimate wasteload allocations for the TMDLs calculations. Areas which not considered in the MS4 conveyance system area were considered in the LA portion of the TMDL . Concern was also raised that the area soils are different and should be considered as such. MPCA stated that the WQS for sediment has three different regional areas for the state, and that the state used these regional standards in the development of the TMDL.

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 LSS TMDL document, submittal letter and accompanying documentation on December 10, 2018. 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 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 finds that the six TSS TMDLs and one bacteria TMDL satisfy all elements for approvable TMDLs. This TMDL approval is for seven TMDLs, addressing water bodies for aquatic life use impairments and aquatic recreational (Table 1 of this Decision Document).

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 6: TSS TMDL Summary, Beaver River (04010102-501)

TSS load Table		Flow Regime				
		Very High (267–3,847 cfs)	**High (67–267 cfs)**	**Mid-Range (34–67 cfs)**	**Low (15–34 cfs)**	**Very Low (6–15 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	Beaver Bay WWTP (MN0040754) [a]	22	22	22	22	22
	Northshore Mining – Silver Bay (MN0055301) [b]	417	417	417	417	417
	Industrial Stormwater (MNR050000 and MNG490296) [c]	406	107	38	12	3
	Construction Stormwater (MNR100001) [c]	203	53	19	6	1
Load Allocation		19,678	5,184	1,839	600	144
MOS		2,303	643	259	117	65
Loading Capacity		**23,029**	**6,426**	**2,594**	**1,174**	**652**

a. The WLA for Beaver Bay WWTP applies from April 1 through September 30. It is assumed that the facility's 30 mg/L TSS effluent limit is sufficient to ensure that effluent NVSS concentrations will not exceed the 10 mg/L inorganic TSS concentration which is the basis for the water quality standard. Effluent monitoring may be required to confirm this assumption.
b. The current permit limit of Northshore Mining–Silver Bay (MN0055301) is based on 20 mg/L TSS, and the WLA is based on 10 mg/L TSS. A WQBEL will need to be considered upon permit reissuance.
c. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.

Table 7: TSS TMDL Summary, Big Sucker Creek (Sucker River; 04010102-555)

TSS load Table		Flow Regime				
		Very High (76–1,467 cfs)	**High (19–76 cfs)**	**Mid-Range (9–19 cfs)**	**Low (3–9 cfs)**	**Very Low (0.6–3 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	Duluth Township MS4 (MS400134)	4	1	0.5	0.2	0.1
	Industrial Stormwater (MNR050000)[a]	119	33	13	5	2
	Construction Stormwater (MNR100001)[a]	60	17	6	2	1
Load Allocation		5,781	1,622	623	231	102
MOS		663	186	71	26	12
Loading Capacity[b]		**6,627**	**1,859**	**714**	**264**	**117**

a. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.
b. Loading capacity rounded to nearest whole number.

Table 8: TSS TMDL Summary, French River (04010102-698)

TSS load Table		Flow Regime				
		Very High (40–882 cfs)	**High (10–40 cfs)**	**Mid-Range (5–10 cfs)**	**Low (2–5 cfs)**	**Very Low (0.9–2 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	DNR French River Hatchery (MN0004413)[a]	127	127	127	127	– b
	Duluth Township MS4	0.3	0.08	0.03	0.004	– b
	Industrial Stormwater (MNR050000)[c]	54	15	5	1	– b
	Construction Stormwater (MNR100001)[c]	27	7	2	0.4	– b
Load Allocation		2,626	712	226	39	– b
MOS		315	96	40	18	10
Loading Capacity[d]		**3,149**	**957**	**400**	**185**	**104**

a. The current permit limit of DNR French River Hatchery (MN0004413) is based on 30 mg/L TSS, and the WLA is based on 10 mg/L TSS. A WQBEL will need to be considered upon permit reissuance.
b. Permitted wastewater design flows exceed stream flow in the indicated flow zone. The allocations are expressed as an equation rather than an absolute number: allocation = flow contribution from a given source x 10 mg/L. See Municipal and Industrial Wastewater (Section 4.1.1 of the TMDL) for more detail.
c. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.
d. Loading capacity rounded to nearest whole number.
-: No data

Table 9: TSS TMDL Summary, Talmadge River (Talmadge Creek; 04010102-508)

TSS load Table		Flow Regime				
		Very High (11–261 cfs)	**High (3–11 cfs)**	**Mid-Range (1–3 cfs)**	**Low (0.4–1 cfs)**	**Very Low (0.04–0.4 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	Industrial Stormwater (MNR050000) a	16.9	4.8	1.8	0.7	0.3
	Construction Stormwater (MNR100001)[a]	8.5	2.4	0.9	0.3	0.1
Load Allocation		821.9	231.9	88.4	33.7	13.3
MOS		94.1	26.6	10.1	3.9	1.5
Loading Capacity[b]		**941.4**	**265.7**	**101.2**	**38.6**	**15.2**

a. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.
b. Reductions based on one sample point. Additional sampling is needed to verify existing loads.

Table 10: TSS TMDL Summary, Little Knife River (E. Branch Little Knife River; 04010102-840)

TSS load Table		Flow Regime				
		Very High (21–342 cfs)	**High (3–21 cfs)**	**Mid-Range (1–3 cfs)**	**Low (0.5–1 cfs)**	**Very Low (0.1–0.5 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	Industrial Stormwater (MNR050000, MNR0539FF, MNG490296, and MNRNE38YB)[a]	28.0	5.6	2.1	0.8	0.3
	Construction Stormwater (MNR100001)[a]	14.0	2.4	0.9	0.3	0.1
Load Allocation		1,360.0	273.7	99.9	39.7	16.1
MOS		155.8	31.3	11.4	4.6	1.9
Loading Capacity		1,557.8	313.4	114.4	45.5	18.5

a. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.

Table 11: TSS TMDL Summary, Skunk Creek (04010102-528)

TSS load Table		Flow Regime				
		Very High (21–342 cfs)	**High (3–21 cfs)**	**Mid-Range (1–3 cfs)**	**Low (0.5–1 cfs)**	**Very Low (0.1–0.5 cfs)**
		TSS Load (lbs/day)				
Wasteload Allocation	Industrial Stormwater (MNR050000, MNR053CHH and MNR0539TD)[a]	6.77	1.79	0.66	0.28	0.07
	Construction Stormwater (MNR100001)[a]	3.39	0.90	0.33	0.14	0.03
Load Allocation		328.44	86.87	32.10	13.48	3.21
MOS		37.62	9.95	3.68	1.54	0.37
Loading Capacity		**376.22**	**99.51**	**36.77**	**15.44**	**3.68**

a. It is assumed that loads from permitted construction and industrial stormwater sites that operate in compliance with the permits are meeting the WLA.

Table 12. *E. coli* TMDL summary, Skunk Creek (04010102-528)

E. coli load Table	Flow Regime				
	Very High (21–342 cfs)	**High (3–21 cfs)**	**Mid-Range (1–3 cfs)**	**Low (0.5–1 cfs)**	**Very Low (0.1–0.5 cfs)**
	E. coli Load (billion org/day)				
Load Allocation	12.90	3.41	1.26	0.53	0.13
MOS	1.43	0.38	0.14	0.06	0.01
Loading Capacity	**14.33**	**3.79**	**1.40**	**0.59**	**0.14**