



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

FEB 08 2011

REPLY TO THE ATTENTION OF:

WW-16J

Paul Aasen, Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Dear Mr. Aasen:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Load (TMDL) for Medicine Lake, including supporting documentation and follow-up information. Medicine Lake, ID 27-0104-00, is located in the Twin Cities Metropolitan Area in the City of Plymouth in Hennepin County, in eastern Minnesota. The TMDL was calculated for phosphorus and addresses the excessive nutrient impairment of Class 2B waters for Aquatic Recreation Use.

The TMDL meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Minnesota's phosphorus TMDL, addressing excess nutrients. The statutory and regulatory requirements, and EPA's review of Minnesota's compliance with each requirement, are described in the enclosed decision document. We wish to acknowledge Minnesota's effort in submitting this TMDL and look forward to future TMDL submissions by the State of Minnesota. If you have any questions, please contact Mr. Peter Swenson, Chief of the Watersheds and Wetlands Branch, at 312-886-0236.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tinka G. Hyde".

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Dave L. Johnson, MPCA
Brooke Asleson, MPCA

wq-iw8-19g

TMDL: Medicine Lake, Minnesota

Date:

DECISION DOCUMENT FOR THE APPROVAL OF THE MEDICINE LAKE, MINNESOTA, TMDL

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 Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

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

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

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

- (1) the spatial extent of the watershed in which the impaired waterbody is located;
- (2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);

- (3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
- (4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater treatment facility); and
- (5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

Comment:

Location Description/Spatial Extent: Sections 1.2, 1.2.1 and 1.2.2 of the TMDL state that Medicine Lake (ID 27-0104-00) is located in eastern Minnesota in the upper Mississippi River Basin in Hennepin County. The lake is in the City of Plymouth, within the North Central Hardwoods Forest Ecoregion, and receives runoff from six municipalities: Plymouth, Medicine Lake, New Hope, Golden Valley, Minnetonka, and Medina. The outlet of the lake is the headwater of Bassett Creek. There are three primary watersheds and eleven major subwatersheds. The lake's surface area is 900 acres, with 33% littoral acres (<15 feet depth) and the watershed drains 12,000 acres. The lake meets Minnesota's deep lake criteria with a mean depth of 5.3 meters, and stratifies in the summer. Winds may initiate turnover events (of the stratification in the lake) that potentially increases internal loading of phosphorus. This submittal is for one phosphorus TMDL.

The lake is used for many types of recreation, fishing and aesthetic viewing. Medicine Lake is the second largest lake in the county and has multiple parks adjacent to it. Residential development began in the 1930's, increased in the 1960's and 1970's, and now is fully developed.

Land use: Section 2.2 of the TMDL states that the land use category is impervious in the developed areas. Figure 1.4 of the TMDL submittal is a map that shows approximately 23% of the land is 26-50% impervious, 21% of the land is 76-100% impervious, and 12% is 51-75% impervious. The remaining land use is 9% short grasses, 9% open water, 7% wetland emergent vegetation, 6% forested, 3% maintained tall grass, 2% wetland forest, 1% tree plantation, and traces of slightly impervious, wetlands, wetland shrubs, tall grasses, and dry tall grasses.

Problem Identification: Section 2 of the TMDL states that Medicine Lake was placed on the impaired waters list in 2004 for impairment of the narrative standards for nutrients (phosphorus, chlorophyll *a* and Secchi disc transparency) for the growing season. The lake has typical problems of an urban setting.

Pollutant of Concern: The pollutant of concern is excess nutrients (phosphorus).

Source Identification: Section 3 of the TMDL states that sources of the elevated levels of phosphorus and associated chlorophyll *a* and secchi disk readings are stormwater runoff from Municipal Separate Storm Sewer Systems (MS4s), other permitted point sources (two wastewater locations), internal loading, and atmospheric deposition. Most of the stormwater runoff drains

through detention systems in the watershed. No point sources discharge directly into the lake except for the MS4s. Internal loading is from lake sediment release and die-off of curly leaf pondweed. Table 1 below shows the permittees.

Table 1. Permits in the TMDL area

Source	Permit #
Permitted Stormwater (Plymouth MS4)	MS400112
Permitted Stormwater (Medicine Lake MS4)	MS400104
Permitted Stormwater (Minnetonka MS4)	MS400035
Permitted Stormwater (Golden Valley MS4)	MS400021
Permitted Stormwater (New Hope MS4)	MS400039
Permitted Stormwater (Hennepin County MS4)	MS400138
Permitted Stormwater (Mn/DOT MS4)	MS400170
Permitted Stormwater (construction)	Various
Permitted Stormwater (industrial)	Various
Permitted Wastewater (Honeywell)	MN0063266
Permitted Wastewater (Minnitech)	MN0063541

Priority Ranking: Section 1.1 of the TMDL submittal states that the priority ranking is implicit in the TMDL schedule included in Minnesota’s 303(d) list. This TMDL project was scheduled to begin in 2008 and targeted to be completed in 2010. Ranking criteria include: impairment impacts on public health and aquatic life; public value of the impaired water; likelihood of completing the TMDL and restoring the water; local interest and assistance with the TMDL; and sequencing of TMDLs within a watershed.

Future growth: Since there is no allocation in this TMDL for future growth, accommodations for new permits will be consistent within the existing allocation.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning 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 waterbody, the applicable numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the

pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

Comment:

Designated Use: Section 2.1 states that the waters are classified Class 2B, Medicine Lake is designated as a Class 2B water in Minnesota Rule 7050.0430. Minnesota Rule 7050.0140 defines the beneficial use of Class 2 waters as aquatic life and recreation.

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

Standards: Minnesota uses both the size of the waterbody and its ecoregional location to determine standards for a waterbody. Medicine Lake is classified as a deep lake in the North Central Hardwood Forest Ecoregion. Though this TMDL only addresses phosphorus, three measurements are used for the standard: phosphorus, chlorophyll *a*, and secchi depth. The water quality standard for Medicine Lake is in Minnesota Rules 7050.0222 Subp 4:

- 40 µg/L phosphorus;
- 14 µg/L chlorophyll *a*; and,
- clarity not less than 1.4 meters secchi depth.

Minnesota Rule 7050.0222 Subp. 4a. B defines conditions for impairment based on these criteria: *Eutrophication standards are compared to data averaged over the summer season (June through September). Exceedance of the total phosphorus and either the chlorophyll-a or Secchi disk standard is required to indicate a polluted condition.*

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

3. Loading Capacity - Linking Water Quality and Pollutant Sources

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

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily

load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

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

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

Comment:

The Loading Capacity for this TMDL is **10.3 lbs/day TP**, and is described in Section 4 of the TMDL.

Table 2. Loading Capacity

$$\begin{array}{rclclclclcl}
 \text{TMDL} & = & \Sigma\text{WLA} & + & \Sigma\text{LA} & + & \text{MOS} & + & \text{RC} \\
 \text{(lbs/day)} & \mathbf{10.3} & = & \mathbf{8.84} & + & \mathbf{0.69} & + & \mathbf{0.74} & + & \mathbf{0}
 \end{array}$$

Method for cause and effect - Overall, calculations and modeling determined watershed, internal, and atmospheric loading. Internal loading was further analyzed for sediment release of phosphorus and the relationship with the anoxic factor (anoxic water influence on release of phosphorus in the hypolimnetic zone), and release due to die-off of curlyleaf pondweed. Section 3 and Appendices A and B of the TMDL states that several methods were used to determine the loading, in brief:

- watershed runoff (Appendix A) -
 - **P8** generates annual stormwater runoff volumes and Total Phosphorus (TP) loads in the watershed; then these flow and load outputs are used as **BATHTUB** inputs;
 - **BATHTUB** then simulates TP, chlorophyll *a*, and secchi depth;
 - **P8** used for calibration, **FLUX** used for pollutant loading rates, then two models' results compared.
- in-lake loading by sediment release (Appendix B) -
 - internal lake loading rate calculated by multiplying sediment release rates by the anoxic factor of lake stratification zones (**Nürnberg equation; AQUATOX**);
 - internal lake loading from die-off of curlyleaf pondweed (**Nürnberg equation**); results compared to **BATHTUB** internal load estimates.
- atmospheric input (**BATHTUB**), used default value.

The **stormwater runoff model** is the P8 (Program for Predicting Polluting Particle Passage through Pits, Puddles, and Ponds) Urban Catchment Model. Appendix A states that the model is used to estimate flow and loads from urban watersheds, the effectiveness of stormwater detention ponds, and effectiveness of other BMPs. Model input and updates were provided to include recent information from subwatersheds, stormwater ponds, and the cities, including precipitation and temperature files. From previous modeling efforts, runoff coefficients in impervious areas and infiltration of stormwater detention ponds were adjusted.

The **FLUX program** is used to develop pollutant loading rates from sample data and flow records. The P8 modeling results were compared to FLUX modeling results in calibration year 2006. Assessments were made at several monitoring locations for flow, Total Suspended Solids (TSS), Total Phosphorus (TP) and Dissolved Phosphorus (DP), and calibration occurs in that order. Overall the comparison of P8 to FLUX was not as strong for TSS, but was strong for phosphorus (Figure 3 below, taken from Appendix A of the TMDL). Figure 3 shows the TP load comparison of the two models, including two standard deviation error bars and confidence interval bars. Data were then validated for 2004, 2005, and 2007 and overall P8 adequately simulates the loads.

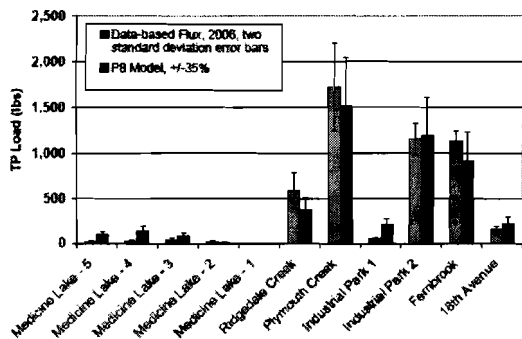


Figure 3. Model-Data Comparisons of TP for Calibration Year 2006.

The **BATHTUB model** was then used to determine the assimilative capacity of Medicine Lake. Flows and loads from P8 were used to simulate internal phosphorus, chlorophyll *a*, and Secchi depth. The same years were used for calibration and validation for BATH TUB as for P8 and FLUX and resulted in very good calibration coefficients.

Estimates using the Nürnberg anoxic factor were compared to the internal load derived from the **AQUATOX model** using daily sediment phosphorus release rates. The maximum estimate derived from the Nürnberg equation was used in calculating the potential hypolimnetic (deep) internal loading that could be transported to the surface waters during lake turn over. Mixing events are highly variable, depending on the phosphorus concentration in the hypolimnion prior to mixing or migration of the thermocline (plane of the depth of the lake where the temperature decreases rapidly).

Critical Conditions: Section 4.6 of the TMDL states that the critical condition is the growing season of June through September. Summer mean values for phosphorus are used as targets to calculate the TMDLs.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this third element.

4. Load Allocations (LAs)

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

Comment:

The Load Allocation is **0.69 lbs/day** of phosphorus. MPCA identified atmospheric deposition as the primary nonpoint source.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fourth element.

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:

The Wasteload Allocation is **8.84 lbs/day** of phosphorus as shown in the Table 3 below (Executive Summary Table in the TMDL) for MS4s and individual permittees. Hennepin County and MN DOT have MS4 permits and MPCA calculated individual WLA for each of these entities (Table 3 below). Honeywell and Minntech discharge wastewater well upstream of the lake; each facility has an **individual WLA** in Table 3 below.

- Hennepin County;
- MN Dept. of Transportation;
- Honeywell; and,
- Minntech.

Section 4.2 of the TMDL states that the remaining sources comprising the WLA are regulated under the NPDES program on a watershed level, and have a **categorical WLA**. The various potential general construction stormwater permits and industrial stormwater permits were also calculated and included in this categorical WLA, though these entities change. These permittees include:

- City of Plymouth;
- City of Medicine Lake;
- City of Minnetonka;
- City of Golden Valley; and,
- City of New Hope.

Table 3. Daily WLA.

Total WLA = 8.84 lbs/day TP

Source	Permit #	WLA (lbs/day TP)
Permitted Stormwater (Plymouth MS4)	MS400112	8.44 lbs/day (categorical)
Permitted Stormwater (Medicine Lake MS4)	MS400104	
Permitted Stormwater (Minnetonka MS4)	MS400035	
Permitted Stormwater (Golden Valley MS4)	MS400021	
Permitted Stormwater (New Hope MS4)	MS400039	
Permitted Stormwater (Hennepin County MS4)	MS400138	0.132 lbs/day
Permitted Stormwater (Mn/DOT MS4)	MS400170	0.26 lbs/day
Permitted Stormwater (construction)	Various	Implicit in MS4 WLAs
Permitted Stormwater (industrial)	Various	
Permitted Wastewater (Honeywell)	MN0063266	0.074*
Permitted Wastewater (Minntech)	MN0063541	0.63*

*Represents end-of-pipe discharge WLA. Contribution to total WLA for TMDL is smaller due to assimilation.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this fifth element.

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:

MOS = 0.74 lbs/day of phosphorus as shown in Table 2 (270 lbs/yr). There was an explicit 5% MOS applied to the TMDL standard for phosphorus of 40µg/l, which equals 2 µg/l. Therefore, the calculated target for this TMDL is more stringent than the standard; $40\mu\text{g/l} - 2\mu\text{g/l} = 38\mu\text{g/l}$. This 5% MOS value applied to the standard translates to an actual MOS of 7.2% of the total loading allocation.

EPA finds that the TMDL document submitted by MPCA contains an appropriate MOS satisfying all requirements concerning this sixth element.

7. Seasonal Variation

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

Comment:

Seasonal variation was considered in this TMDL as described in Section 4.6 of the TMDL. There is great variation in an average year, and phosphorus loading is further complicated by phosphorus residence time versus flushing out, internal loading, and mixing of limnetic layers within the lake.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this seventh element.

8. Reasonable Assurances

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 4.7 of the TMDL submittal states that there is reasonable assurance that the TMDL will be implemented. The MS4s must review their Storm Water Pollution Prevention Program (SWPPP) to ensure that they meet WLAs. Further, the Bassett Creek Watershed Management Commission (BCWMC), Three Rivers Park District (TRPD), and several of the cities have already been working together for years to improve Medicine Lake water quality.

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:

Section 5 of the TMDL states that the lake and runoff in the basin will be closely monitored:

- BMP implementation tracking will be coordinated by the BCWMC;
- In-lake monitoring will be biweekly (April through October) for a ten year period by the TRPD; and,
- Aquatic macrophyte monitoring will be conducted annually at approximately 200 points.

The TMDL also suggests that watershed load monitoring and sediment phosphorus levels should be assessed.

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:

Section 7 of the TMDL includes an implementation strategy and includes:

- Continued maintenance of existing stormwater ponds and assessment and implementation of retrofits for improved performance;
- Continued curlyleaf pondweed control to maintain densities equal to or less than that experienced in 2006;
- Construction of the West Medicine Lake Water Quality Ponds in the City of Plymouth;
- Continued educational efforts that promote stewardship;
- Continued streambank stabilization efforts;
- Continued shoreline restoration efforts;
- Assessment and implementation of BMPs that reduce runoff; and
- Continued monitoring, assessment and adaptive management.

These efforts are expected to achieve the 28% reduction in watershed TP loads. They are consistent with the modeling effort as described earlier in this document. Modeling included both watershed and in-lake responses. Cost estimates are included in the implementation strategy.

EPA finds that this criterion has been adequately addressed.

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 was extensively involved in the development process of this TMDL. Section 6 of the TMDL submittal includes details of the involvement of stakeholders, the development of the workplan, the formation of the steering committee, and other stakeholder outreach. The steering committee formulated the allocation criteria and BMP criteria for the watershed and its decisions were integrated into the TMDL report.

The TMDL was public noticed from October 4, 2010 to November 3, 2010. Copies of the draft TMDL were made available upon request and on the Internet web site:

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/draft/public-noticed-tmdls.html>.

Several entities or individuals provided comments to the MPCA during the public comment period. The comments were adequately addressed by MPCA and are included with the final TMDL submittal. MPCA also adequately addressed U.S. EPA comments.

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this eleventh element.

12. Submittal Letter

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

Comment:

The EPA received the final Medicine Lake TMDL on December 13, 2010, accompanied by a submittal letter dated December 1, 2010. In the submittal letter, MPCA stated that the submission includes the final TMDL for excess nutrients (ID 27-0104-00).

EPA finds that the TMDL document submitted by MPCA satisfies all requirements concerning this twelfth element.

13. Conclusion

After a full and complete review, EPA finds that the phosphorus TMDL for Medicine Lake satisfies all of the elements of an approvable TMDL. This approval addresses 1 waterbody for excess nutrients, location ID 27-0104-00.

EPA's approval of this TMDL does not extend to those waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove TMDLs for those waters at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under the CWA Section 303(d) for those waters.