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

SEP 30 2009

REPLY TO THE ATTENTION OF:

WW-16J

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

Dear Mr. Eger:

The U.S. Environmental Protection Agency has conducted a complete review of the final Total Maximum Daily Load (TMDL), including supporting documentation and follow up information for Golden Lake. Golden Lake is located in the City of Circle Pines, Minnesota. The TMDL addresses the Aquatic Recreation Use impairment for nutrient/eutrophication biological indicators.

The TMDL meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, EPA hereby approves Minnesota's one TMDL for Total Phosphorus for Golden Lake. 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. Dean Maraldo, Acting Chief of the Watersheds and Wetlands Branch, at 312-353-2098.

Sincerely,

Tinka G. Hyde
Director, Water Division

Enclosure

cc: Brooke Asleson, MPCA
Chris Zydak, MPCA
Dave Johnson, MPCA

wq-iw8-16g

TMDL: Golden Lake, Minnesota, Phosphorus TMDL
Effective Date: SEP 30 2009

Decision Document for Approval of
Golden Lake TMDL 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 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 Golden Lake Watershed is located in the west-central portion of the Rice Creek Watershed District (RCWD) in southern Anoka County and is in the subwatershed of the Upper Mississippi River Watershed. This area lies entirely within the North Central Hardwood Forest Ecoregion. Golden Lake is located in the City of Circle Pines, and the watershed is located in the Cities of Blaine, Circle Pines, Lexington, and Lino Lakes. The main tributary to Golden Lake is Anoka County Ditch 53-62 (ACD 53-62), which enters the lake from the north. Approximately 6,426 acres drain to the lake through the ditch and approximately 139 acres drain directly to the lake. Golden Lake flows into Rice Creek just below the Rice Creek Chain of Lakes.

Golden Lake is 57.2 acres in size and has a maximum depth of 24 feet and a mean depth of 8 feet. The lakeshore is well developed and the lake is used recreationally for fishing and non-motorized boating. A groundwater assessment was conducted by the Minnesota Pollution Control Agency (MPCA) (Appendix A of the TMDL Report) and it was determined that Golden Lake recharges the local water table due to its elevation relative to the water table and due to the geology of the region.

A pond treatment system exists to the northeast of Golden Lake on ACD 53-62 (Section 1 of the TMDL Report). The basin, known as the Golden Lake Wetland Treatment Basin, was created in 1992 to treat water entering Golden Lake through ACD 53-62. Additional treatment is also provided by a sedimentation basin within Golden Lake. This in-lake basin was constructed to provide additional treatment for water coming through ACD 53-62. The City of Circle Pines is responsible for the maintenance of the in-lake sedimentation basin, which was cleaned in 2007. Recently, wetland restoration/creation projects have occurred in the upper portions of the ACD 53-62 ditch system.

Approximately 70% of the watershed is vacant/agricultural and approximately 30% is developed (See Figure 11 of the TMDL Report). However, MPCA stated that the area is quickly developing. Projected land use shows a dramatic change in the watershed. In 2020, 85% of the watershed is predicted to be developed with only 15% of the land remaining undeveloped as either open/park space or rural residential. (Section 1 of the TMDL Report).

Problem Identification/Pollutant of Concern: This TMDL by MPCA will address the aquatic recreation use impairment due to nutrient/eutrophication biological indicators.

As identified in the TMDL Report, the lake was placed on the Section 303(d) list in 2002 due to the impairment of aquatic recreational use as indicated by elevated levels of total phosphorus (TP). Golden Lake has been included in each subsequent listing cycle and is on the current 2008

Comment:
Designated Use of Waterbody: Golden Lake is classified by MPCA as a Class 2B water. Class 2B refers to waters of the State identified to support the aquatic (warm and cool water fisheries and associated biota) and recreation (all water recreation activities including bathing) use.

Water Quality Standards: The applicable WQSs are identified in MN. R. 7050.0222, which include eutrophication of lakes. The MPCA's definition of shallow lakes was used to evaluate Golden Lake; a lake is considered shallow by the MPCA if the lake's maximum depth is less than 15 ft, or if the littoral zone (area where depth is less than 15ft) covers at least 80% of the lake's surface area. Golden Lake is in the North Central Hardwood Forest Ecoregion of the state. The WQS for TP for shallow lakes in this region is less than 60µg/l. Additionally, the eutrophication WQSs also require that the waterbody has either a concentration of chlorophyll-a less than 20µg/l or a secchi depth greater than 1.0 m.

Target: MPCA determined the target as a TP concentration less than 60µg/l, which is the WQS for class 2B lakes in the North Central Hardwood Forest Ecoregion.

EPA finds that the TMDL Report 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.

list. Monitoring data documented exceedances of the nutrient water quality standards (WQSs).

Source Identification: The TMDL Report states that impairments in this watershed come from both point source and nonpoint sources. The point sources include NPDES regulated storm water discharges from municipal separate storm sewer system discharges (MS4s) and from construction and industrial sites. Additionally the Aveda Corporation is regulated by an individual NPDES permit for its point source discharge of cooling tower and reverse osmosis wastewater. Failing septic systems have also been identified as point sources. Nonpoint sources considered were lake internal loading, atmospheric deposition, and watershed run-off.

Population and Growth trends: Growth trends have been projected through the year 2020 and the subsequent impact on nutrient loadings to the watershed has been assessed.

Priority Ranking: Minnesota does not include separate priority rankings for its waters in the TMDL. MPCA prioritizes its waters during the development of the impaired waters list. The TMDL for this segment was scheduled to begin in 2004 and for completion in 2008. During the listing process, ranking criteria for scheduling TMDL projects include: impairment impacts on public health and aquatic life, public value of the impaired water resource, likelihood of completing the TMDL in an expedient manner, a strong base of existing data and restorability of the waterbody; technical capability and local willingness to assist with the TMDL, and appropriate sequencing of the TMDLs within a watershed or basin.

EPA finds that the TMDL Report 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:
Method for cause and effect relationship
Watershed runoff, atmospheric deposition, and internal load modeling: The overall loading to the lake and loading capacity are discussed in Section 1 and 3, respectively, of the TMDL Report. Three watershed-loading scenarios were modeled:

1) Existing conditions: based on 2000 land use plans with land cover data.
2) Future conditions: based on 2020 land use plans with land cover data. Under this scenario, it was assumed that the existing wetlands would not be developed.
3) Future conditions with implementation of the Resource Management Plan (RMP), which is further described in Section 1.B of the TMDL Report).

To determine the watershed pollutant loading rates from stormwater point and nonpoint sources, MPCA used the EPA's Simple Method. This method calculates the runoff volumes based on soil imperviousness, which is based on land use and land cover, and then assigns an event mean concentration to the runoff volumes, also based on land use and land use cover.

The resulting watershed pollutant loading rates and the BATHTUB model were used to estimate external loading rates. The BATHTUB models applies a series of empirical equations derived from assessments of lake data and performs steady state water and nutrient calculations based on lake morphometry and tributary inputs. Atmospheric deposition loading was calculated from the BATHTUB default rate, 0.27 lbs/acre/year.

The total load (external and internal) and subsequent required load reductions were calculated using the BACHMAN-CANFIELD module of the BATHTUB model. BACHMAN-CANFIELD is a model developed specifically for reservoirs, that simulates in-lake TP concentrations based on TP loading rates, lake geometry and water residence time in the lakes. The BACHMAN-CANFIELD model was used to estimate the TP load needed to explain the observed water quality, as well as the load reduction needed to achieve the TMDL target concentration of 60µg/l TP.

Internal loading was estimated by subtraction. The external load estimated by the BATHTUB output was subtracted from the total load estimated by the BACHMAN-CANFIELD model. The internal loading is due to the release of TP from decaying curlyleaf pondweed and from bottom sediments. The release of TP from bottom sediments is attributed to several causes including: anoxic conditions in the overlying waters, physical disturbance by bottom-feeding fish, and physical disturbance due to wind mixing.

To meet the WQS, the TP concentration must be less than 60µg/l with either concentration of chlorophyll-a less than 20µg/l or a secchi depth of greater than 1.0 m. Using 60µg/l TP as the target concentration, the model calculated that the total loading capacity must not exceed 264 lbs/day TP. The model also calculated that, at this TP loading capacity, chlorophyll-a would be 35µg/l and secchi depth would be 1.0 m, therefore, the secchi depth will also meet the WQS.

Septic system modeling

To estimate failing septic systems within the Golden Lake Watershed, parcels outside of sewered areas were evaluated to determine if there were homesteads on them; one homestead was assumed for adjoining parcels under the same ownership. Each homestead was then assumed to have a septic system. Prior to 1996, state laws did not regulate septic systems, therefore, septic systems installed prior to 1996 may have been improperly designed. For septic systems installed prior to 1996, MPCA assumed that 5% of those under the same ownership since 1996 are failing septic systems. Using the WiLMS 3.0 model, TP loading for septic systems was estimated at 26 lbs/year, or 14% of the watershed load. Assumptions used in the model were:

- 6 failing septic systems (5% of septic systems installed pre-1996; same ownership since 1996)
- 4 people per household
- No TP retention in soils
- 1.1 lbs TP per person per household per year

Model results for existing and 2020 TP load and for load capacity (TMDL):

The modeled loads for all three scenarios and subsequent TMDLs are included in the following table, which has been reproduced from Table 18 of the TMDL Report. The watershed modeled loads include regulated and unregulated storm water run-off, Aveda Corporation, and septic systems. Atmospheric deposition and internal loading were assumed constant for all three modeled scenarios.

Total loads and TMDL model results

Load Category	Existing TP Load (lbs/year)	2020 TP (lbs/year)	2020 w/RMP (lbs/year)	TMDL* (lbs/year)
Watershed	183	299	196	205
Atmospheric deposition	15	15	15	15
Internal loading	260	260	260	44
Total	458	574	471	264

*TMDL represents the model results for Golden Lake to achieve 60µg/l TP.

Reserve Capacity: MPCA indicated that it had not explicitly calculated/modeled reserve capacity, an allocation for future growth, for this TMDL. MPCA, however, did model future growth based on growth projections for the year 2020. Future development, therefore, will require transfers of non-MS4 (unregulated/nonpoint source) storm water load allocations (LAs) to MS4 (regulated/point source) storm water waste load allocations (WLAs), based on the areas involved.

Critical Condition: MPCA determined that the summer growing season is the critical time period for Golden Lake when symptoms of nutrient enrichment are typically the most severe.
The TMDL Report is written to ensure that the WQSs are met over the course of the summer growing season. If the daily loads are met, it is believed that the average water quality conditions will meet the WQSs.

EPA finds that the TMDL Report submitted by MPCA satisfies all requirements of 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 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.

Comments:
Load Allocation (LAs):
The method used to determine LAs is discussed in Section 5A and 5C of the TMDL Report. MPCA determined LAs and WLAs based on subtraction of the margin of safety (MOS) from the total TMDL for external and internal sources. Modeled loads and load allocations are included in Table 18 of the TMDL Report, which was reproduced in Section 3 above. MPCA determined a margin of safety (MOS) equal to38 lbs/year (see Section 6, below) and assumed no reduction in atmospheric deposition (15 lbs/year). Both MOS and atmospheric deposition were subtracted from the modeled total TMDL (264 lbs/year), the resulting TMDL was allocated to the watershed and internal load sources, based on the proportion that each represented in the modeled TMDLs.

The resulting TMDL for watershed sources (175 lbs/year) represents point and nonpoint stormwater and the Aveda Corporation. To determine LAs and WLAs for non-MS4 and Ms4 stormwater sources, respectively, MPCA subtracted the Aveda Corporation WLA (6.0 lbs/year), discussed below in Section 6, and apportioned the resulting stormwater point and nonpoint source TMDL (169 lbs/year) to individual non-MS4 (unregulated/nonpoint source) LAs and MS4 (regulated/point source) WLAs based on the proportional area each represents in the watershed. The resulting individual non-MS4 LAs, internal load LA, and atmospheric deposition LA are included in the following table:

LAs

Load Category	Existing TP Load (lbs/year)	Goal Load (lbs/year)	Reduction
Blaine non-MS4	23	22	1
Lexington non-MS4	3	2.5	0.5
Internal Load	260	36	224
Atmospheric deposition	15	15	0
Total LA	301	75.5	225.5

The atmospheric deposition loading is assumed to remain constant and no reductions were assumed, therefore, the total LA is dependent on load reductions from non-MS4 areas and the internal load.

EPA finds that the TMDL Report submitted by MPCA satisfies all requirements of 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.

Comments:
The methods used to determine WLAs are discussed in Sections 5A and 5B of the TMDL Report and in Section 4, above. The WLAs for stormwater point sources (MS4s) were apportioned on an areal basis. The WLAs are included in the table below, which was reproduced from Table 26 of the TMDL report.

MPCA assigned three WLAs for storm water discharges regulated under NPDES Permits: an aggregate WLA for MS4 communities, construction and industrial; one WLA for Anonka County; and one WLA for Minnesota Department of Transportation (Mn/DOT).

The NPDES point source discharges from Aveda Corporation consist of noncontact cooling water and reverse osmosis reject water. Aveda Corporation has two outfalls that discharge into a stormwater pond, which discharge to Golden Lake via a drainage ditch. The discharges for Aveda Corporation were aggregated into one WLA. The WLA was calculated based on the maximum design flow for each outfall and the anticipated TP concentration. The resulting WLA was increased by 13% to account for flow variability.

The WLA for septic systems was set to zero.

WLAs

Source	Allocation (lbs/year)
City of Blaine	138
City of Circle Pine	
City of Lexington	
City of Lino Lakes	
Rice Creek Watershed District	
Construction Stormwater	
Industrial Stormwater	
Anoka County (Highways)	3.8
Mn/DOT	2.5
Aveda Corp	6.0
Total WLA	**150.3**

MPCA calculated the existing permitted load to as 157 lbs/year; therefore the load reduction required for point sources to meet the WLA is approximately 7 lbs/year. As Aveda Corporation's current discharge TP concentration is less than its WLA, the reductions will have to be met through controls on permitted storm water discharges.

EPA finds that the TMDL Report submitted by MPCA satisfies all requirements of 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.

Comments:
The MOS is discussed in Section 4 of the TMDL Report. MPCA calculated MOS assuming a margin of variability (MOV) and a margin of uncertainty (MOU), a method proposed by Walker (2003)[1]. The MOV is based on annual variability of the lake TP concentrations, and is directly related to the compliance rate, or the frequency of meeting the water quality goal. The MOU is based on the uncertainty in predicting the TP concentration. Using this method, MPCA estimated a MOS equal to 38 lbs/year.

[1] Walker, William W. 2003. Consideration of Variability and Uncertainty in Phosphorus Total Maximum Daily Loads for Lakes. Journal of Water Resources Planning and Environment 129:337-344.

EPA finds that the TMDL Report submitted by MPCA satisfies all requirements of 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)).

Comments:
Seasonal variation is discussed in Section 6 of the TMDL Report. In-lake water quality models used for this TMDL predict growing season or annual averages of water quality parameters based on growing season or annual loads. The MPCA's nutrient standards are based on growing season averages when symptoms of nutrient enrichment are typically the most severe.

EPA finds that the TMDL Report submitted by MPCA satisfies all requirements of 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.

Comments:
Reasonable assurance is discussed in Section 9 of the TMDL Report. MPCA discussed the following measures that provide reasonable assurance that nonpoint source reductions will be achieved:

The residents in the Golden Lake Watershed will be educated about the TMDL and the necessary improvements that need to be made to protect the natural resources of the Rice Creek Watershed.

The RCWD has an incentive grant program that awards financial assistance for the following: innovative BMPs; shoreland management and stream bank restoration; lake restoration; and native landscaping and lakeshore buffers. In addition, when the RCWD enters into the implementation phase, the RCWD anticipates applying for monies to further assist landowners and local municipalities in the application of BMP's identified in the Implementation Plan.

The RCWD will work with the Department of Natural Resources and the City of Circle Pines to develop an aerator operation plan that sustains winter oxygen levels for fish.

Current Regulations will benefit the Golden Lake Nutrient TMDL reduction strategies. One regulation is the stormwater management Rule M, which is required of new development in the Comprehensive Wetland Management Plan (CWMP) area. The complete water management rules can be found on the RCWD Website (http://www.ricecreek.org).

The TMDL calculations also consider future growth through the year 2020. The RCWD developed the RMP to minimize the impact of growth on the entire ACD 53-62 drainage area, which constitutes the majority of the Golden Lake Watershed. The goal of the plan is to better clarify development possibilities for landowners while identifying significant natural resources to be set aside for protection. As indicated in Tables 21 and 22, Section 5 of the TMDL Report, and in the table included in Section 3 above, TP loadings to the lake will increase in the year 2020, however, the model projected that the TP increase will be minimized by implementation of the RMP. Measures additional to the RMP, including those discussed above, will need to be implemented in the year 2020 to ensure loadings will be appropriately reduced to achieve the TMDL.

EPA finds that the TMDL Report submitted by MPCA adequately addresses this eighth element.

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.

Comments:
Section 7 of the TMDL Report, discusses the continuation of monitoring of the plans for the Golden Lake Watershed. Efforts should be made to monitor the lake annually for the next 5 years.

Monitoring of ACD 53-62 (tributary to the lake) should be completed for additional years in order to confirm the low TP yields calculated from the existing monitoring data. If further monitoring data suggest that loading rates are substantially higher than what was assumed in this TMDL, the TMDL may have to be re-opened to redistribute the WLAs and LA.
Summer and winter dissolved oxygen profiles will be measured by the Rice Creek Watershed District to better characterize oxygen and sediment TP release dynamics. The Rice Creek Watershed District will work with the Department of Natural Resources and the City of Circle Pines to develop an aerator operations plan that sustains winter oxygen levels for fish, while taking into consideration the effects of hypolimnetic circulation and sediment TP release.

EPA finds that the TMDL Report submitted by MPCA adequately addresses this ninth element.

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:
MPCA present its recommended implementation strategy, and identifies responsible parties, in Section 8 of the TMDL Report. Additionally, MPCA identifies some BMPs currently in existence in the Golden Lake Watershed:

1. The cities of Circle Pines, Lexington, Lino Lakes, and Blaine perform street sweeping once each spring, summer, and fall.
2. A water quality pond, which treats watershed run-off, is located in the City of Circle Pines.
3. The City of Circle Pines is considering dredging targeted areas of Golden Lake to reduce internal loading.
4. A hypolimnetic aerator was installed in Golden Lake to prevent winter fish kills and limit internal loading due to anoxic conditions in the hypolimnion.
5. RCWD has adopted Rule M and Rule RMP-1 (discussed in Section 8, above).
6. The City of Blaine includes a stormwater article in each monthly newsletter, sent to all residents.
7. RCWD employs a full-time environmental education coordinator

EPA finds that the TMDL Report submitted by MPCA adequately addresses this tenth element.

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.

Comments:
Public participation associated with this TMDL began in 2003 with public meetings held by RCWD regarding the CWMP. In addition, a Public Advisory Committee (PAC) was formed that consisted of local stakeholders in the watershed; PAC members are included in Table 31 of the TMDL Report.

Two PAC meetings were held in total to build trust, engage community pride, develop a common understanding of water resource issues and their relationship to identified problems, provide an opportunity for local prioritization of issues, and enhance participant dedication to eventual implementation (Table 32). PAC members were notified via email about meeting times and dates. Two landowner meetings were held in September 2005 in Blaine and in March 2006 in the City of Circle Pines.

A draft TMDL Report was put on public notice in the State Register for a 30-day comment period from March 2 to April 1, 2009. Comments were received and MPCA adequately addressed the concerns of the commenter. The TMDL Report was revised, where appropriate, based on comments received.

EPA finds that the TMDL Report *submitted by MPCA satisfies all requirements of this eleventh element.*

12. Submittal Letter

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

Comment:
The transmittal letter was dated August 26, 2009 from Paul Eger, Commissioner, MPCA, to Tinka Hyde, Director, Water Division, Region 5 EPA. The letter stated that this was a final TMDL submittal under Section 303(d) of the CWA. The letter also contains the name of the waterbody and the impairment of concern.

EPA finds that the TMDL Report *submitted by MPCA satisfies all requirements of this twelfth element.*

13. Conclusion

After a full and complete review, EPA finds that the TMDL for Golden Lake satisfies all of the elements of an approvable TMDL. This approval document is for one lake impaired by nutrients/eutrophication for a total of one TMDL addressing one impairment in the 2008 Minnesota 303(d) list. EPA's approval of this document 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 CWA Section 303(d) for those waters.

Waterbody	Assessment Unit ID	Pollutant or stressor	Impairments
Golden Lake	02-0045	Nutrients	Aquatic recreation