



Minnesota Center for Environmental Advocacy

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BY ELECTRONIC MAIL

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**Re: Draft Crystal Lake Nutrient TMDL
Comments of Minnesota Center for Environmental Advocacy**

Thank you for the opportunity to submit these comments on behalf of the Minnesota Center for Environmental Advocacy on the draft TMDL for Crystal Lake.

MCEA is a Minnesota non-profit environmental organization whose mission is to use law, science and research to preserve and protect Minnesota's wildlife, natural resources and the health of its people. MCEA has statewide membership. MCEA has been concerned about impairment of Minnesota's waters from point and nonpoint source discharges for a number of years, has made impaired waters a significant component of its work, and has participated in a number of related policy and legal matters.

The draft Crystal Lake TMDL cannot be approved in its current form because it is not calculated to meet the water quality standards and lacks a margin of safety, both requirements of federal law. In addition, the draft TMDL lacks source assessment, has an insufficient monitoring plan, and has insufficient reasonable assurance of reductions.

The TMDL Is Not Calculated to Meet Water Quality Standards

TMDLs must "be established at a level necessary to implement the applicable water quality standards."¹ Minnesota's eutrophication standards for Class 2 lakes include a causal variable, phosphorus, and two response variables, chlorophyll-a and Secchi depth.² Phosphorus and at least one of the two response variables must be met for the water quality standard to be achieved.³ EPA has confirmed in its comments on draft TMDLs that TMDLs must meet these criteria.⁴ The draft TMDL accurately identifies the water quality criteria that must be met.⁵

¹ 33 U.S.C. § 1313(d)(1)(C).

² Minn. R. 7050.0222 subp. 4.

³ *Id.* at subp. 3a(B).

⁴ Dave Werbach, U.S. EPA Region V, "Comments on the Revised Draft Lake Winona TMDL," Nov. 15, 2010 ("the total phosphorus criteria and either chl-a or Secchi depth criteria had to be met. . . . TMDLs have to meet the approved WQSs").

⁵ Draft TMDL at 24.

The TMDL contractors used the BATHTUB approach to calculate the maximum phosphorus load, running a first-order phosphorus model and the Canfield-Bachmann model. Neither model accurately predicted the phosphorus or chlorophyll-a levels resulting from existing conditions (instead predicting much lower levels).⁶

Rather than conduct a source assessment to more accurately estimate external watershed loading, the TMDL contractors assume that all of the missing phosphorus must result from internal loading.⁷ Even after adding a significant internal load, neither model accurately predicts the observed chlorophyll-a concentration. Both models predict almost 30 µg/l less chlorophyll-a than observed conditions.⁸

The TMDL contractors then modeled a reduced phosphorus load to meet the 90 µg/l criterion. Table 4.7D in the TMDL identifies “Crystal Lake modeled to the water quality standard.”⁹ It shows the phosphorus criterion of 90 µg/l being met, but not the chlorophyll-a or Secchi depth. Because neither response variable is met, the lake would not meet water quality standards.

	Water Quality Standard	Lake conditions modeled to TP standard
Phosphorus	90	90
Chlorophyll-a	40	42
Secchi depth	0.7	0.6

Unless the TMDL is calculated to meet the phosphorus criterion and one or more response criterion, and the calculation is built on reasonably accurate modeling, it cannot be approved.

Absence of Source Assessment

Source assessment is a component required by EPA in its review of TMDLs. EPA’s Protocol for Developing Nutrient TMDLs¹⁰ is clear on the importance of source assessment in supporting the allocations for a TMDL, and provides detail on how to conduct the assessment:

The source assessment is needed to evaluate the type, magnitude, timing, and location of loading to an impaired waterbody. It further describes the sources initially identified during the problem identification. The source assessment determines nutrient inputs, measured as loads or concentrations, that will support the formulation of the load allocation and the wasteload allocation of the TMDL. ...Once the sources within the watershed have been inventoried and mapped, each activity should be evaluated to determine its individual pollutant generating mechanisms, processes, and potential magnitude.

⁶ *Id.* at 42.

⁷ *Id.* at 42-43.

⁸ *Id.* at 43.

⁹ *Id.* at 44.

¹⁰ *Protocol for Developing Nutrient TMDLs*, First Edition, USEPA, 1999, Chapter 5—Source Assessment, p. 5-2.

The draft TMDL allocates a lump sum to nonpoint sources generally. In describing the load allocation, it identifies several components: natural background, internal loading, atmospheric loading, urban stormwater, septic systems, and the primary tributary to Crystal Lake.¹¹ No description is given of locations or the magnitudes of the source categories identified. The sources to the tributary (which is a method of transporting phosphorus rather than a source itself) are never identified. No category appears to include the watersheds of Mills and Loon Lakes, which flow to Crystal Lake. The implementation section later suggests that numerous agricultural BMPs will help achieve the target load.¹² Agriculture is not identified as a component of the load allocation in the TMDL.¹³

The lack of source assessment makes it impossible to determine the validity of either the load allocation or wasteload allocation, and prevents efficient implementation of restoration activities. The final TMDL should identify and describe the categories, locations, and magnitudes of the sources of the pollution loading. MCEA requests that the MPCA review any available source assessment data that would provide a solid basis for the load allocation in the TMDL, and then revise the load allocation and implementation framework as necessary.

Insufficient Margin of Safety

The Clean Water Act requires TMDLs to contain a margin of safety to account for uncertainty.¹⁴ As discussed above, the modeled load was not expected to lead to either response variable meeting the water quality standard and was based on inaccurate predictions that would yield chlorophyll-a even further in excess of the standard. As such, there appears to be no margin of safety.

Again, the TMDL models generated significantly different results. The TMDL averages the two conflicting outcomes without explaining why the average of model outcomes provides an accurate result. The TMDL reduces this averaged result by ten percent to account for the margin of safety, then assigns the remaining loads totaling 900 kg to the wasteload and load allocations.¹⁵ If the first-order model is accurate (at 791 kg/year), even the phosphorus criterion would not be met even after the required load reductions are achieved. The allocated total is 109 pounds greater than the load predicted to meet the criterion in the first-order model.

	Annual TP Load
First-order model	791 kg/year
Canfield-Bachmann model	1,208.9 kg/year
Average of models	1,000 kg/year
WLA + LA	900 kg/year

¹¹ Draft TMDL at 50.

¹² *Id.* at 55.

¹³ *See id.* at 48-50.

¹⁴ 33 U.S.C. § 1313(d)(1)(C).

¹⁵ Draft TMDL at 45, 51.

The final TMDL must provide a margin of safety that is demonstrated to account for uncertainties, and that is above and beyond the reductions needed to meet the phosphorus and either chlorophyll-a or Secchi depth criteria.

Insufficient Monitoring Plan

EPA and MPCA provide guidance for monitoring plans, describing three elements for a lake TMDL monitoring plan as resource monitoring for impairment, implementation adoption, and implementation effectiveness.¹⁶ The TMDL accurately identifies these three elements of a monitoring plan.¹⁷

The draft TMDL proceeds to ignore its own statement of elements. It states that “Existing programs and projects can often be leveraged for monitoring.”¹⁸ It lists two such programs. Nowhere does the TMDL identify whether these programs that “can be leveraged” will actually conduct monitoring of any sort in the watershed. Even if the TMDL did identify them as operating within the watershed, the descriptions of the programs do not include implementation adoption or effectiveness monitoring.

Without more complete monitoring information, it will be impossible to determine whether implementation resources are being used effectively. Without evaluation of BMP effectiveness, the TMDL provides no assurance of correction if the responsible parties do not take implementation actions or if actions fail to achieve the target load.

The final TMDL should contain a monitoring plan that includes ambient water quality monitoring, implementation monitoring and implementation effectiveness evaluation.

Lack of Reasonable Assurance of Nonpoint Source Reductions

Reasonable assurance is a required element when wasteload allocations depend on successful implementation of nonpoint source load reductions.¹⁹ The TMDL assigns a wasteload to construction stormwater calculated based on its potential discharge and assumes reductions from nonpoint sources.²⁰ MPCA recommends that “some additional provision in the TMDL, such as a schedule and description of the implementation mechanisms for nonpoint source control measures, is needed to provide reasonable assurance that the nonpoint source measures will achieve the expected load reductions.”²¹ EPA states that the measures must not only be met, but “will be implemented and maintained.”²² Such delivery systems should have adequate funding.²³

¹⁶ *Protocol for Developing Sediment TMDLs*, U.S. EPA at 7-7 (1999); *Lake Nutrient TMDL Protocols and Submittal Requirements*, MPCA, Mar. 2007, at 49.

¹⁷ Draft TMDL at 57.

¹⁸ *Id.*

¹⁹ *Guidance for Water Quality-Based Decisions: The TMDL Process*, U.S. EPA, 1991.

²⁰ Draft TMDL at 42 (“external sources of phosphorus will need to be reduced to attain long-term improvements to Crystal Lake water quality”).

²¹ *Lake Nutrient TMDL Protocols and Submittal Requirements*, MPCA, March 2007, at 46.

²² *Protocol for Developing Nutrient TMDLs*, U.S. EPA, Nov. 1999, at 7-3.

The TMDL does not provide these assurances. It notes that “a wide variety of management practices will need to be considered and implemented.”²⁴ Nowhere does it identify what those practices are, where they should occur, who will implement them, who will oversee the implementation, or how they will be evaluated. There is no record that the responsible authorities have had success in implementing the practices. The TMDL does not identify any regulatory or nonregulatory programs to ensure nonpoint source reductions, lacks a schedule for nonpoint source reductions, and lacks a reliable delivery system supported by adequate funding.

MCEA recommends that the TMDL include additional detail of necessary steps and assurances of reductions from nonpoint sources to ensure that the reductions necessary to meet water quality standards will be achieved.

Conclusion

MCEA urges the MPCA to carefully review the issues above and make any necessary additions and changes to the draft TMDLs before adopting and submitting them to the EPA for final approval. Please feel free to contact us should you have any questions with respect to MCEA’s comments. Thank you for the opportunity to comment.

Sincerely,



Kris Sigford
Water Quality Director



Michael Schmidt
Water Quality Associate

²³ *Reasonable Assurance for Sources for Which an NPDES Permit is Not Required*, 65 Fed Reg. 43599-43600 (July 13, 2000).

²⁴ Draft TMDL at 58.