EPA Region 7 TMDL Review

TMDL ID	220	*Water Body ID*	IA 04-LDM-03080-L
Water Body Name	Badger Creek Lake		
Pollutant	Siltation and Nutrients		
Tributary	Badger Creek		
State	IA *HUC*	071000080403	
Basin	Des Moines		
Submittal Date	12/16/2002		
Approved	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter, dated December 13, 2002, and received by EPA December 16, 2002, formally submitted this TMDL for approval under Section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Badger Creek Lake was identified on the 1998 303d list as partially supporting for the aquatic life use because of excessive siltation and nutrients. These conditions have been observed since 1992.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Water quality standards and beneficial uses are described as well as applicable narrative criteria. Phase 1 numeric expressions for total phosphorus and sediment delivery to the lake are site specific to the watershed. The targets are established based on improving the trophic state of the lake out of hypereutrophic conditions, set at a Trophic State Index score of 70. A Phase 2 surrogate measure is also identified as a fully supporting Class B aquatic life use which will be determined in accordance with the Statewide Biological Sampling Plan protocol.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The altering of the physical and chemical characteristics caused by excess siltation and nutrients include the following impacts to the beneficial uses: 1) interference with reproduction and growth of fish and other aquatic life; 2) creating a light-limiting environment that interferes with establishment of aquatic vegetation; and 3) excessive suspension of siltation and nutrient rich water creates poor water quality that inhibits proper functioning of aquatic life. Since excess sediment and nutrients are impacting aquatic life in this lake, the target includes both sediment and nutrient loads to the lake and measurement of the aquatic life within the lake.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There are no point source contributions of sediment and nutrients to the lake. Land uses in the watershed are completely described and modeling of sediment and nutrient delivery to the lake has been completed using the Eutromod lake model, a well-known and accepted model.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Phase 1 of the TMDLs is to maintain current sediment and nutrient loads and to monitor to determine if these current loads actually are impacting the aquatic life use. Phase 2 will evaluate the effect the sediment and nutrient load targets have on the aquatic life community in the lake and allocations may be revised based on this assessment. The load capacity for sediments is identified as 3,809 tons/year, and for nutrients it is 7,487 pounds/year phosphorus.

WLA Comment

The wasteload allocation is zero.

LA Comment

The load allocation for sediments is 3,809 tons/yr; the load allocation for nutrients is 7,487 pounds/yr phosphorus. The total load allocation equals the load capacity.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is implicit based on the Phase 2 surrogate measure of attainment of the Class B aquatic life use, and the wetland project, which will provide further reduction in sediment and nutrient delivery rates.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

A yearly allocation is used since sediment and nutrient loading varies substantially by season and between years, and the impacts are felt over multi-year timeframes.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings were held in Des Moines January 14, 2002 and in Earlham Iowa on January 14, 2002 to present the final draft TMDL to the public. The draft was availabe through public notice from November 14 through December 6, 2002. Copies of the draft TMDL were also posted on the IDNR website for public review.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

The DNR Fisheries Bureau will conduct an assessment of the lake in accordance with the Statewide Biological Sampling Plan protocol when the lake restoration project is complete to characterize the condition of aquatic life. In-lake water monitoring as part of the Iowa Clean Lake Project will also be conducted three times per year for each of the field seasons 2000-2004.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurances are not required in the TMDL because there are no point sources contributing to the impairment in the watershed.