

Section 1: Introduction

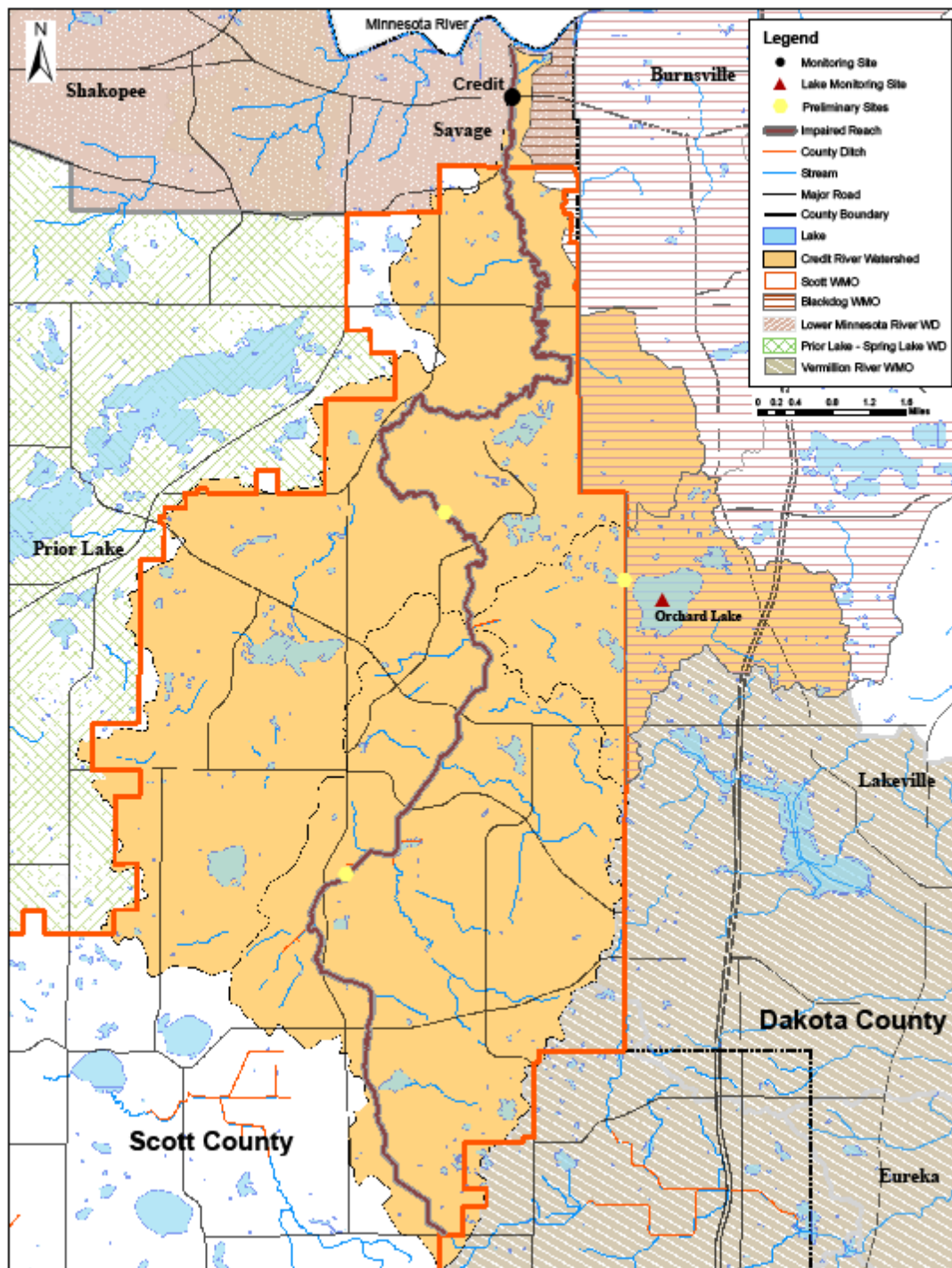
Project Summary

In 2002, the Credit River (Figure 1-1) was listed on the 303(d) list of impaired waters for aquatic life based on turbidity data. This project was designed to collect additional data necessary for modeling and assessing the watershed for potential sources causing the impairment, and the development of an implementation strategy to achieve the required water quality standards. The end product was originally intended to be a complete turbidity Total Maximum Daily Load (TMDL) study for the Credit River sufficient for EPA approval. However, over the course of the data collection effort it became clear that river may not in fact exceed the turbidity standard (see Section 3 and Appendix A). A request to de-list the river was submitted by Scott County in the spring of 2010. The MPCA concurred with the delisting and completed the transparency document to delist in late summer of 2010 (Appendix A). Delisting will not be official until the USEPA approves the 2012 303(d) list. However, with delisting there is no longer a need to complete a TMDL. Therefore, the end product of this study was changed to the completion of a Protection Plan. This Protection Plan assesses the efficacy of the existing stormwater programs and development standards, and lays out an approach for protecting the unimpaired condition.

Project efforts consisted of the completion of six tasks as follows:

- Task 1: Data Collection
- Task 2: TSS and Turbidity Relationship
- Task 3: Special Studies
- Task 4: Model Development
- Task 5: Solution Identification
- Task 6: Stakeholder Involvement
- Task 7: Technical Report
- Task 8: Final Report
- Task 9: Project Management

Details regarding the various tasks are provided in the Project Workplan attached as Appendix B.



Credit River Watershed

Figure 1-1. Credit River Watershed

This document is the product of Tasks 7 and 8. A summary of Task 6: Stakeholder Involvement efforts is provided at the end of Section 1. Results of Tasks 1, 2 and 3 are presented in Section 2 Watershed Characterization and Section 3 Water Quality Assessment. Results of Task 4: Model Development are presented in the Technical Modeling Report attached as Appendix C. Results of Task 5: Solution Identification are the subject of Section 4 Evaluation of Existing Management Efforts. Section 5 presents the Implementation Plan.

Problem Statement

In 2002, Credit River was listed on Minnesota's 303(d) List of Impaired Waters for aquatic life impairment due to turbidity. However, as stated in the Project Summary above data collected over the course of this planning effort found that the standard was not exceeded. Data is not sufficient to determine whether meeting the standard currently is due to improvements that have reduced turbidity since the initial listing, or to improvements in calculation methods, or to periods of lower flow which suspends less sediment. What is known is that depending on how the percent exceedence is calculated observed values are close to the standard. It is, therefore, important to have a Protection Plan detailing how to continue to meet the standard. Generally it is less expensive to protect an unimpaired water than it is to restore one.

Turbidity is commonly measured in Nephelometric Turbidity Units (NTU). Turbidity is a unit of measurement quantifying the degree to which light traveling through a water column is scattered by the suspended organic (including algae) and inorganic particles. The suspended organic and inorganic particles scatter light in the water column making the water appear cloudy. The scattering of light increases with greater suspended load. Turbidity limits light penetration which further inhibits healthy plant growth on the river bottom. Turbidity may cause aquatic organisms to have trouble finding food, may affect gill function, and the sediment associated with turbidity may cause spawning beds to be covered. Suspended organic and inorganic particles also transport nutrients from lands to receiving waters causing eutrophication.

The water quality standard for turbidity in class 2B waters is 25 NTUs. A surrogate variable must be used to complete a TMDL given that turbidity is not a quantitative measure of mass (concentration). Total suspended solids (TSS) measurements are often used as a surrogate for

turbidity. MCES ran statistical analyses using its TSS and turbidity data and determined that there is a strong relationship between TSS and turbidity. The project used TSS as a surrogate for turbidity.

The Scott WMO and other local units of government in the Credit River Watershed have Comprehensive Water Resource Management Plans and Local Water Plans, and several have Storm Water Pollution Prevention Plans that include efforts for controlling erosion and sedimentation. However, there has not been a systematic analysis of these efforts to determine whether they are sufficient to preserve the unimpaired condition of the river. The focal point of this document is an assessment of those existing management efforts (Section 4) and the identification of gaps. Filling these gaps along with the continuation of existing efforts becomes the substance of the Implementation Plan presented as Section 5.

Resource Goals

Overall resource goals are driven by Goal 2: Surface Water Quality as articulated in the Scott WMO approved Comprehensive Water Resources Management Plan (Scott WMO Plan) adopted June 2009”

“To Protect and Improve Surface Water Quality”

There are seven policies and a number of strategies articulated in the WMO Plan for achieving this goal. The following policies and strategies are advanced by this Protection Plan. They include:

- Policy 2.1: Promote a Sustainable System of Buffers and Green Infrastructure
- Policy 2.3: Address Impaired Waters and Improve Water Quality
 - Strategy 2.3.2: Targeted Project Implementation and Capital Improvements
- Policy 2.4: Improve Understanding of Water Quality
 - Strategy 2.4.1: Complete Diagnostic Studies/TMDLs leading to targeted implementation and monitoring
 - Strategy 2.4.2: Monitoring and Assessment Tools Development

Benchmarking of these goals and strategies from the Scott WMO Plan will occur as part of the normal plan revision and update process of the Scott WMO. The Scott WMO anticipates revising and updating its plan about once every two years.

Specific numeric goals for the Credit River are based on water quality standard for turbidity in class 2B waters which is 25 NTU. The MPCA considers a 2B water to be impaired if more the 10% of observations exceed 25 NTU. Total suspended solids (TSS) concentrations are also used as a surrogate for turbidity. A turbidity level of 25 NTU has been found by the MCES to be equivalent to 139 mg/L TSS in the Credit River (MCES, 2009). Therefore, having less than 10% of TSS concentrations less than 139 mg/L is also a goal. One important consideration in determining achievement of these goals is consideration of the distribution of the turbidity and TSS data, and whether that distribution reflects a uniform distribution over time, or whether it is biased by flow. This issue and potential sample distribution biases are discussed in more detail in Section 4.

Public and Stakeholder Involvement

Public and stakeholder involvement consisted of three efforts:

1. Updates and discussions by the **Scott WMO Watershed Planning Commission**. The Watershed Planning Commission is a citizen advisory commission that advises the Scott County/WMO Board. Updates were provided as a regular agenda topic at the monthly meetings of the Watershed Planning Commission, and special discussions of the project were held at the following monthly meetings: April, May and June 2011.
2. Updates and discussions by a **Technical Advisory Committee** established for the project. The Technical Advisory Committee was comprised of City and Township staff/officials in the watershed, Scott WMO and Scott SWCD personnel, and State agency (MPCA and MnDNR personnel). Scott WMO personnel also provided updates to the Black Dog Watershed Management Organization.
3. Involvement of the **general public and riparian property owners**. The general public was kept informed and involved through articles in the Scott WMO annual report and with an open house meeting held in April, 2011. Journalists also produced new paper articles regarding the results of the study and the delisting decision. Riparian property owners were invited to be become involved through a series of workshops on riparian zone management. The WMO sponsored two workshops in 2009 in an ongoing effort to encourage green infrastructure and a buffered environment for Scott County, and in response to the multiple riparian revegetation potential projects identified by the

geomorphic assessment completed in 2007. The first workshop titled *Introduction to Riparian Buffers*, targeted property owners directly on the Credit River. Nine homeowners attended and learned the importance of riparian buffers and functions for stream water quality. The second workshop focused on designing a riparian buffer depending on the landowner goals and needs. Installation and maintenance requirements were also covered. The workshops produced two streambank stabilization cost share projects.