



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2002ND10B

**Title:** Physical and environmental factors influencing the periphyton communities of the Sheyenne River, North Dakota

**Project Type:** Research

**Focus Categories:** Water Quality, Ecology

**Keywords:** periphyton, diatoms, Sheyenne River

**Start Date:** 03/01/2002

**End Date:** 10/31/2002

**Federal Funds:** \$11,312

**Non-Federal Matching Funds:** \$23,241

**Congressional District:** 1

**Principal Investigator:**

Marvin Fawley  
North Dakota State University

**Abstract**

The physical factors affecting the periphyton communities of the shallow, turbid Sheyenne River (North Dakota) have been a focus of our research group for the past five years. Periphyton samples from both artificial and natural substrates at eight sites along the river were collected from 1997-1999. Major ions and other chemical parameters for these sites were determined by the North Dakota Department of Health. The algal species present in these samples have already been identified and enumerated, and some analyses have been completed. Our initial analyses (using only artificial substrate data) have indicated that certain physical factors do affect the periphyton community of this river. However, these analyses suggest that one of the most important factors affecting the periphyton communities of the Sheyenne is the presence of a reservoir, Lake Ashtabula. In this study, we plan to expand upon our analyses by critically examining the impact of Lake Ashtabula on the periphyton communities of the Sheyenne River. In addition, we will complete additional analyses of the periphyton communities found on natural substrates. Results of these analyses should enable more effective water management in the Sheyenne Basin, especially Lake Ashtabula. In addition, we plan to conclude the periphyton survey of the Sheyenne River by completing the descriptions of three potentially new species of the diatom genus *Nitzschia*. The complete periphyton flora of the Sheyenne River will provide an important basis for understanding the impacts of changes in the river, such as the proposed Devils Lake emergency outlet.