

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Monitoring Macroinvertebrate Communities in the Little Missouri River and the Knife River

**Discipline:** Natural Resources  
**Type of Project:** Technical Assistance  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** University of Wyoming  
**Effective Dates:** 9/30/2010 - 9/30/13  
**Funding Amount:** \$ 22,807

**Investigators and Agency Representative:**

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**Project Abstract:** Two of the Northern Great Plains I&M Network parks in North Dakota have been listed as having Clean Water Act 303(d) impairments by the state. Knife River Indian Villages National Historic Site was listed in the 2004 cycle as having impairment due to total coliform levels from its confluence with Antelope Creek downstream to its confluence with the Missouri River (NPS 2010). A large part of this pathogen pollution probably comes from agricultural run-off upstream from the Knife River Indian Villages National Historic Site. In addition, Theodore Roosevelt National Park was listed in the 2004 cycle as having impairment due to total coliform and fecal coliform from its confluence with Beaver Creek downstream to Highway 85 (NPS 2010). Furthermore, Hughes (2010), National Park Service Water Rights Division, has expressed concern over the diversion of water from the Little Missouri River by the Theodora Roosevelt Medora Foundation (Medora Foundation). The Medora Foundation has withdrawn surface water 3 miles upstream from THRO boundary to irrigate an 18-hole golf course each year since 2002 (Hughes 2010).

Field work at both Theodore Roosevelt National Park and Knife River Indian Villages National Historic Site will occur during the 2011 field season. Benthic macroinvertebrates, total coliform, and a standard suite of water quality parameters (water temperature, pH, dissolved oxygen, and specific conductivity) will be sampled along the Little Missouri River and the Knife River.

The four sites along the Little Missouri River are as follows:

- 1) Just above the Medora Golf Course Diversion on federal land (U. S. Forest Service);
- 2) Just downstream from the Medora Golf Course Diversion Sully Creek State Recreation Area;
- 3) Where the Little Missouri River enters the park near the USGS Medora Gauging Station; and
- 4) Where the Little Missouri River exits the park (at the USGS Watford City Gauging Station).

The three sites along the Knife River are as follows:

- 1) Where the Knife River enters the park; and
- 2) Where the Knife River exits the park.

Benthic samples will be collected at each site. The invertebrates will be identified to the lowest practical taxonomic level (typically genus). The Fecal Indicator Bacteria will be sampled using the IDEXX Colilert system as identified in the NGPN Fecal Indicator Bacteria Standard Operating Procedure. Continuous multi-parameter probes will be used to collect temperature, pH, dissolved oxygen, and specific conductivity using the NGPN Water Quality Standard Operating Procedure.

**Outcomes with Completion Dates:**

Progress Report due March 31, 2012

Final Report due December 31, 2012

**Keywords:** Macroinvertebrate, monitoring, Clean Water Act, Theodore Roosevelt National Park and Knife River Indian Villages National Historic Site, Northern Great Plains I&M Network, University of Wyoming