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## WICOLA Clean Water Protection Project Proposal

### **Phase I**

#### **Goals and Objectives**

**Goal - Gather watershed data necessary for the development of a comprehensive watershed management plan with parameter-specific thresholds that will maintain or improve water quality for the Kawishiwi Watershed.**

Objective 1 - Continue and expand current water quality monitoring program to provide WICOLA a comprehensive overview of:

- 1.1 Current trophic conditions throughout the Kawishiwi watershed
- 1.2 Compare the water quality of BWCA waters vs. waters in developed areas
- 1.3 Determine how groundwater effects surface water
- 1.4 Identify and assess climate change impacts
- 1.5 Identify and assess fish and wildlife habitat
- 1.6 Comparative analysis of WICOLA waters to state drinking water standards

Objective 2 – Integrate and Coordinate monitoring activities within the Kawishiwi Watershed for all agencies, research institutions and organizations (including Minnesota Power’s FERC required monitoring, and MDNR/MPCA’s sentinel lake monitoring on White Iron Lake) throughout the watershed.

Objective 3 - Build on the monitoring data with a paleolimnology investigation of Birch, Farm, White Iron, Garden and Fall lakes. Analyses will include assessments of erosion, trophic status and contamination based on diatoms analysis, geochemistry (sedimentary metals, nutrients, organic/inorganic content and other parameters) and pollen analysis. Analyses will provide continuous ecological records from pre-European settlement to present.

Objective 4 – Document and graphically present results from Objectives 1-3. The primary intent will be to ensure that the assessment data are presented in a comprehensive way in a single, publically-available resource using documents and a web site.

Objective 5 – Survey or surveys to accomplish:

- 5.1 Onsite Subsurface Sewage Treatment System inventory to determine number of existing systems, current operating status, replacement upgrade needs and costs, and sensitive areas where onsite wastewater treatment is not appropriate.
- 5.2 Identify high priority beneficial uses that are impaired and in need of protection
- 5.3 Determine vulnerability of the Kawishiwi Watershed to introduction of aquatic invasive species, including identification of most vulnerable waters through surveys conducted of people fishing and/or boating, waterfowl hunting, camping, hiking within the watershed.

Objective 6 – Develop and conduct a comprehensive study to determine the effects – cumulative and acute – of individual onsite subsurface sewage treatment systems (SSTS) on surface water resources. Focus on contributions of nitrogen, phosphorus, bacteria, and pharmaceuticals from SSTS.

Objective 7 – Geographic Information System analysis of

- 7.1 Development potential, sensitive areas and potential threats throughout the watershed;

- 7.2 Sensitive areas in need of soil erosion and sediment control plans for restoration (i.e. wildfire events, shoreline erosion, steep slopes);
- 7.3 Land use within the water.

## **Phase II**

### **Goals and Objectives**

#### **Goal – Maintain or Improve the Waters of the Kawishiwi Watershed**

Objective 1 - Targeted long term monitoring of the watershed to provide early identification and tracking of deteriorating water quality, including:

- 1.1 Effects of climate change;
- 1.2 Changes to trophic status (identifying and measuring trends);
- 1.3 Other stressors as identified during Phase I.

Objective 2 Develop a comprehensive watershed management plan for the Kawishiwi Watershed. The plan will include education and/or restorative actions for the following:

- 2.1 Importance of Kawishiwi Watershed as a headwaters of the Rainy River Basin and the United States/Canada transboundary waters;
- 2.2 Implementation of locally developed parameter-specific thresholds that will maintain or improve water quality for the Kawishiwi Watershed;
- 2.3 The need for better compliance with and enforcement of existing zoning regulation;
- 2.4 Replacement and/or upgrade of individual sewage treatment systems if indicated from the Phase I studies;
- 2.5 Education of residents on proper operation and maintenance of individual sewage treatment systems to ensure proper operation and protection of water resources;
- 2.6 Education of residents regarding the analysis of WICOL waters to state drinking water standards;
- 2.7 Protection of areas sensitive to development and address potential threats as identified in Phase I;
- 2.8 Prevention of erosion.

Objective 3 Address the vulnerability of the Kawishiwi Watershed to introduction of aquatic invasive species, including, if indicated, strategic protection of most vulnerable waters identified in Phase I and to support state and federal efforts to:

- 3.1 Prevent new AIS from being introduced into Kawishiwi Watershed
- 3.2 Conduct rapid response and early detection of AIS
- 3.3 Manage and control of AIS
- 3.4 Provide local leadership and coordination on AIS issues

## **Preliminary Budget Estimates for Phase I**

Objective 1 - Continue and expand current water quality monitoring program to provide an adequate overview of:

- 1.1 current trophic conditions through out the watershed
- 1.2 identify and assess climate change impacts
- 1.3 identify and assess fish and wildlife habitat
- 1.4 comparative analysis of WICOL waters to state drinking water standards

Full-time coordinator at \$52 K/year for 3 years	156,000
Equipment and supplies	15,000
Mileage and misc. volunteer expenses	<u>15,000</u>
SUBTOTAL	\$186,000
10% contingency	<u>18,600</u>
TOTAL WATER QUALITY MONITORING	\$204,600

Objective 2 – Integrate and Coordinate monitoring activities within the Kawishiwi Watershed for all agencies, research institutions and organizations (including Minnesota Power’s FERC required monitoring, and MDNR/MPCA’s sentinel lake monitoring on White Iron Lake) throughout the watershed.

Part-time coordinator	\$5,000
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Objective 3 - Build on the monitoring data with a paleolimnology investigation of Birch, Farm, White Iron, Garden and Fall lakes.

Personnel costs	\$70,000
Field, supply and analytical costs	<u>\$25,000</u>
TOTAL PALEOLIMNOLOGY	\$95,000

Objective 4 – Document and graphically present results from Objectives 1-3. The primary intent will be to ensure that the assessment data are presented in a comprehensive way in a single, publically-available source using documents and a web site.

- 4.1 Develop, publish on the web and maintain a single database for project.

Data and web management	\$25,000
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Objective 5 – Survey or surveys to accomplish:

5.1 Onsite Subsurface Sewage Treatment System inventory to determine number of existing systems, current operating status, replacement upgrade needs and costs, and sensitive areas where onsite wastewater treatment is not appropriate.

5.2 Locally identify high priority beneficial uses needing protection

5.3 Determine vulnerability of the Kawishiwi Watershed to introduction of aquatic invasive species, including identification of most vulnerable waters through surveys

conducted of people fishing and/or boating, waterfowl hunting, camping, hiking within the watershed

(Pat Welle at BSU?) \$70,000

Objective 6 – Develop and conduct a comprehensive study to determine the effects – cumulative and acute –of individual onsite subsurface sewage treatment systems (SSTS) on surface water resources. Focus on contributions of nitrogen, phosphorus, bacteria, and pharmaceuticals from SSTS.

(Grad Student at SCSU?) \$60,000

Objective 7 – GIS analysis of

7.1 Development potential, sensitive areas and potential threats throughout the watershed

7.2 Sensitive areas in need of soil erosion and sediment control plans for restoration (i.e. wildfire events, shoreline erosion, steep slopes)

7.3 Land use within the watershed

Initial rough estimate \$25,000

Overall Project Administration Costs \$46,000

**PRELIMINARY BUDGET ESTIMATE TOTAL \$510,600**

**Revised: August 2, 2009**