

INNOVATIVE WATER QUALITY PROTECTION STRATEGIES IN THE LAKE SUPERIOR WATERSHED

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INTRODUCTION

When most people look at Lake Superior, they see an immense, beautiful, and pristine resource. In this mode, it is hard to imagine that the activities and changes people make on the landscape can impact their Lake. Because of the unique challenges that protection approaches bring, innovative and creative strategies must be used to engage residents in water quality protection activities and nonpoint source pollution education. Protection of our water resources is a financially and environmentally responsible way to preserve coastal quality of life. Engaging residents, businesses, and local governments in action to prevent nonpoint source pollution is a necessary and tricky task at times. This is a challenge made more difficult, but even more important, by Minnesota's high-quality coastal environment.

Minnesota's Coastal Nonpoint Program employs many protection-oriented strategies, in categories ranging from urban/rural development to forestry practices to wetland and riparian management. Protection work is ongoing, and full implementation of Minnesota's Coastal Nonpoint Program will only take place with continued efforts by local and state governments, agencies, and educational partners.

BACKGROUND

In opinion surveys, the Western Lake Superior Region is identified as a desirable place to live and visit for the following reasons: spectacular natural beauty; superb outdoor recreational opportunities; healthy woods, lakes, and streams, where we can hunt, fish, and explore; and abundant natural resources supporting an economy partially built on mining, forestry, recreation, and tourism (1).

Lake Superior remains one of the most pristine of the Great Lakes. Its headwaters provide outstanding outdoor experiences and amenities attracting both residents and tourists. However because of the perceived superiority of the environment, people seem unaware that they are impacting the quality of the water. Unique strategies are needed to unify efforts by research, management, and education communities to convey an effective protection message.

The Western Lake Superior region is characterized by abundant water, including numerous coldwater trout streams. There are 42 named streams within the City of Duluth alone. On the Minnesota side of Lake Superior, a steep escarpment rises some 600 feet in

less than two miles; above the escarpment the land is dotted with wetlands. On the Wisconsin side the land is flatter, but once again dotted with wetlands and streams. The soils of the region are shallow and clay based, and ancient basalt outcroppings are visible throughout the region. Many area streams appear pristine, and make their way to the Lake via picturesque plunge pools along rock-lined streambeds. To the visitor, the land appears almost untouched. But heavy clay soils, steep gradients make the area susceptible to human impacts.

Our region faces threats from increasing development and its resulting increases in sediment and other pollutants. For now, the problems are mostly invisible. In this setting, how do we convince the public and elected officials that action is required in order to protect our water resources?

METHODS

With small populations and funding and staffing limitations, it is important for our region's agencies and governments to work together on multiple, diverse strategies to send the same message: our high-quality waters require protection and action to keep them clean.

One the unique strategies used to send water quality protection messages in our region involves government and educational partners and addresses multiple audiences, including landowners, businesses, residents, local officials, and children. The strategy initiated with the formation of the Regional Stormwater Protection Team. In 2002, the University of Minnesota Duluth and the City of Duluth met to discuss up coming concerns with new Phase II National Pollution Discharge Elimination System (NPDES) Municipal Small Storm Sewer System (MS4) Stormwater Permit requirements. From that meeting, the Regional Stormwater Protection Team was formed to address outreach in order to comply with and exceed Permit requirements, consolidate efforts and produce a profession effective program directed at protecting existing environmental assets.

Twenty-three communities and agencies make up the Regional Stormwater Protection Team (RSPT, see Figure 1). Membership includes all region MS4 communities, the

Figure 1. Regional Stormwater Protection Team Members

<p>Cities Duluth, MN Hermantown, MN Proctor, MN Superior, WI Cloquet, MN</p> <p>Other Local Governments South St. Louis River Soil and Water Conservation District Western Lake Superior Sanitary District St. Louis County</p> <p>State Agencies Wisconsin Department of Natural Resources Minnesota Department of Natural Resources Minnesota Department of Transportation Minnesota Pollution Control Agency</p>	<p>Townships Duluth Midway Rice Lake</p> <p>Tribal Fond du Lac Reservation</p> <p>Educational Institutions University of Wisconsin Superior Natural Resources Research Institute Minnesota Sea Grant University of Minnesota Duluth Lake Superior College</p> <p>Other St Louis River Citizens Action Committee</p>
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Universities, the reservation, and local agencies. The RSPT board is composed of busy professionals, with diverse talents and knowledge. The board consists of engineers, scientists, city managers, project managers, agency representatives, and elected officials. From the beginning the group has recognized that time is a premium, so meetings are short and small committees do much of the work outside of meetings.

RSPT is committed to efficiently producing high quality products. Consolidating efforts and sharing outreach responsibilities can develop a more professional stronger program. A two-tiered approach to outreach combines both education and projects that promote individual action.

Water quality protection projects implemented by RSPT members address diverse audiences, but contain similar messages of protection and actions needed to protect our high quality waters. Their educational campaign includes three television commercials, and related radio advertisements. The commercial's messages were put together by the RSPT, and a local artist who designed the characters. Because residents have become immune to beautiful, picturesque stream and lake photographs, animation was used to draw attention of the public.

Residents are also targeted in Winter Road Sand Sweep-up, which prevented 27 metric tons of sand from entering storm drains in its first year, and saw an impressive expansion in its second year. The sand sweep-up was followed up by a fall program where residents adopt their local storm drain and keep it clear. These programs helped residents realize they are part of problem, and the solution to preventing nonpoint pollution.

Rain Barrels are made available to residents by the City of Superior, who brought their already-successful rain barrel workshops and availability to its Minnesota partners via the Lake Superior Watershed Festival. They also sold their barrels at the South St. Louis Soil and Water Conservation District Tree Sale in May, 2006.

A unique Watershed Festival was hosted by RSPT in June of 2005; almost 500 attendees enjoyed learning about watersheds and listening to water-related entertainment. The Festival attracted a diverse crowd of families and adults, many of whom had never been to an environmental event before. The event will be improved and repeated in June, 2007.

Businesses were targeted as partners in stormwater pollution prevention through partnerships and workshops. A recent workshop hosted by the City of Duluth explored impacts of fast, oils and greases on sanitary sewer lines. A winter parking lot and sidewalk maintenance workshop, attended by private and public snowplow operators, showed how properly applying sand and deicing compounds for protection of both the public and local streams. The relationships and partnerships developed during these workshops will be instrumental in RSPT finding business support for other water quality related outreach.

Other workshops hosted by RSPT members included erosion and sediment control and other stormwater management solutions for construction sites. The first local workshop on construction site stormwater issues was hosted by RSPT in 2005, and the South St. Louis Soil and Water Conservation District follows up every year with additional trainings. These trainings highlight unique strategies needed for our region which is challenged with heavy clay soils, bedrock, and trout streams every few miles.

One audience targeted by RSPT members is local elected officials. A unique program, View from the Lake, brings people out onto Lake Superior so they can look back on the land. University of Minnesota Sea Grant and University of Wisconsin Superior partnered to develop educational materials and games on topics such as land-use and development impacts on water quality, global climate change, and mercury. A Nonpoint Source Reduction bus tour in Fall of 2006 toured rain gardens, grassed swales, pervious pavement, biofiltration, underground storage systems, and other Best Management Practices. Local engineering firms joined elected officials on the tour, and they shared stories of both success and challenges.

RSPT member activities also highlight watershed protection. Riparian landowner workshops offered forestry technical assistance in the Sucker River watershed. The success of that effort has led to the Flute Reed Watershed group inviting the same workshop in their area. Rain garden projects in the region have been successful in highlighting watershed issues, both on small (North Shore Community School, MN and Northern Lights Elementary School, WI) and large scales (University of Minnesota-Duluth and Lake Superior College).

An innovative and important tool developed for our region is the Lake Superior Streams website (www.lakesuperiorstreams.org), which incorporates real-time stream data, a design toolkit, and detailed information on area streams. This unique website serves the region in countless ways, as RSPT members consistently utilize the site to promote their events and share programs. In addition, a GIS tool was created for Duluth Township to assist rural residential development with shoreland and wetland protection.

RESULTS

The work of the RSPT shows that targeting multiple and diverse audiences for programs that involve both education and action can make a difference. Linking human uses of land to water quality is effective.

Although no formal evaluation of all of RSPT's efforts has been conducted, there are many anecdotal and accounting proxies that can be used to show results. The City of Duluth has reported increased number of calls reporting stream concerns, and many invitations to speak at local business and non-profit organizations that support the RSPT in their efforts. Minnesota Sea Grant and the University of Wisconsin distributed surveys on their View from the Lake program, which indicate 83% of local officials and 61% of all participants said they "Will take action in their community".

The formation of RSPT has also increased networking across regional agencies. Following each meeting, members remain and engage in conversations about other concerns. The e-mail list and mailing lists are now links for inter-governmental communications about activities. The communities are beginning to better utilize the resources of the University researchers for valid scientific and research support.

CONCLUSIONS

Without visible issues, it is hard for residents to imagine what they do can affect water resources. By utilizing both education and action-oriented marketing, RSPT can approach multiple audiences with coordinated messages in the Western Lake Superior region.

Designing appropriate evaluation tools for protection-oriented projects is a challenge. The effectiveness of an awareness campaign is hard to measure. Smaller projects that involve individual activity can easily be evaluated, but projects that maintain or improve a high quality water resource cannot be evaluated in the short term. In addition, there are few tools and little knowledge of how to effectively evaluate a protection message.

Due to difficulty in measuring results from protection activities, these projects are sometimes less appealing to funding sources. Visible, measurable, and identifiable results are not always available through protection activities. Although it is known that protection is a cheaper solution than expensive restoration efforts, the visible results of restoration often receive priority in funding.

For small communities, the burden of justifying a funding budget to the politicians and the public is an on-going challenge. Although mandatory permit requirements or agency missions may ensure that funding for some protection activities will remain in budgets, protection is ongoing and long-term funding sources need to be found in order to support sustained programs.

As Minnesota works to fully implement its Coastal Nonpoint Program, the work of RSPT members will be an important component. Although protection strategies can often be hard to define and difficult to measure, we need to discern ways in which protection can become an important, valued, and funded management strategy.

LITERATURE CITED

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