

# THE SUCKER RIVER WATERSHED

*Protecting the River into the Future*



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Report prepared by:

*South St. Louis Soil Water Conservation District  
215 North 1<sup>st</sup> Avenue East, Room 301  
Duluth, MN 55802*

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## **SUMMARY**

The South St. Louis Soil and Water Conservation District partnered with the Lake Superior Basin Programmatic Work Group in creating a community-based process for developing watershed protection that could have statewide application. The Sucker River was selected as the pilot watershed due to its location between two already impaired rivers and being one of the few remaining high quality trout streams on the north shore. The overall goal of the project was to protect the Sucker River into the future by getting citizens to think about their role in the watershed, ask questions, and take action.

The Sucker River has been described as a stream “on the edge” of declining and becoming impaired. The headwaters of the river have not exceeded pollution limits while the lower portion was recently placed on the impaired waters list for turbidity. The Sucker River has remained a high-quality trout stream, even though parts of the watershed have undergone many changes. Preventing impacts to a stream is the key to keeping it in good shape. Stream restoration is expensive, and it is difficult to get a damaged trout stream back.

One goal of this project was to help residents to understand the link between their activities on land and the health of the Sucker River and ultimately make decisions with consideration for stream health. This report was developed to aide communities and individuals in adopting stewardship practices that prevent degradation of the Sucker River and to become better informed on the health of the river. Valuable information from watershed citizens was used to guide us in this voluntary and non-regulatory effort.

## **CHAPTER 1 - INTRODUCTION**

### **OVERVIEW**

Northern Minnesota is composed of forests, wetlands, streams, and lakes. All of these features intertwine within each other in an elaborate matrix defined by nature. Any change in land use affecting one portion of the matrix can spiral down to effect the whole system. The idea of this interconnected “water matrix” makes water quality one of the most important aspects in protecting Minnesota’s natural resources into the future.

The Minnesota Pollution Control Agency (MPCA) leads the state in assessing water quality. The MPCA works closely with citizens, local units of government, and the Department of Natural Resources (DNR) in an effort to protect and improve our state’s water quality.

On February 29, 2004, the MPCA published the Lake Superior Basin Plan. By implementing an approach used by the U.S. Forest Service, the plan was able to analyze and rank the relative conditions and vulnerability of the watersheds in the basin (MPCA 2004). One of the key aspects of the plan was to identify policy objectives and geographic priorities for water resource management in the Minnesota portion of the

Lake Superior Basin (MPCA 2004). It recommends focusing restoration and monitoring on watersheds that score lower in relative watershed health (MPCA 2004). It also places a priority on the maintenance and protection of high quality watersheds. The plan envisions that specific strategies will be developed as target watersheds are analyzed during the implementation phase of the plan (MPCA 2004).

The Lake Superior Basin Plan acknowledges the importance of local units of government in the protection of water resources. Local government is where the “rubber meets the road” when dealing with water resource protection (MPCA 2004). Local governments can work together with citizens throughout the community to become better informed about actions that are needed to improve and protect stream quality. It is important for citizens to understand what watershed they live in and how their actions affect the water resources in the area.

Through pollution prevention funding from the MPCA the South St. Louis Soil and Water Conservation District (SWCD) and the Lake Superior Basin Programmatic Work Group (PWG) partnered in creating a community-based process for developing watershed protection that could have statewide application. The PWG is an interagency group created by the MPCA to oversee the development of the Lake Superior Basin Plan, Coastal Nonpoint Program, and the state-wide water policy plan called “Watermarks 2000-2010”. All three processes identified the protection of high resource value waters and watersheds as key priorities. As a first step in implementing the “protection approach”, the SWCD initiated a Watershed Protection Pilot Project. The goal was to encourage voluntary, non-regulatory actions by watershed citizens, in an effort to prevent resource degradation and decline throughout the selected watershed.

The location of the Sucker River made it an ideal watershed to initiate the pilot project (Figure 1). At the time the river was located between two already impaired rivers and was a river “on the edge” of becoming impaired itself. The Sucker River is also one of Minnesota’s few remaining premier trout streams along the North Shore.

Protection is also extremely important in this area because it will likely experience population growth and development pressure in the future, since it is on fringe of the Duluth Metro area and has quick access to Hwy 61. Another means of population pressures is the increasing number of visitors up the north shore each year throughout the summer months.

The natural resource base and beauty of the watershed contributes significantly to the quality of life enjoyed by residents. Everyone who lives in the watershed contributes to non-point source pollution; but the good news is all watershed citizens can take action to reduce their impact.

## **PURPOSE**

*The Sucker River Watershed: Protecting the River into the Future* is a document for citizens, local government, and other interested groups throughout the area. It provides

an outline of the issues the river faces, the strategies used by the SWCD to implement protection, and gives recommendations on voluntary actions landowners and residents can take to prevent future impacts to the Sucker River. This is particularly relevant to the Sucker River Watershed, due to its rural nature and its community's ethic of individual responsibility for the land and community. This ethic can best be described as an "Ethic of Individuality", from the publication *Welcome to Duluth Township; A Guide to Land Use and Living in Duluth Township* (Yvonne Rutford, 2005). It states: "The individualism we value in Duluth Township encourages us to take individual responsibility and action to be stewards of our own land and our community". Protection of the Sucker River fits this ethic, it really is up to individuals to take action.

The driving forces for protection of the Sucker River are varied, but are all important:

- Protect fish habitat and water quality
- Promote individual actions that conserve the natural resources of the watershed
- Promote educational opportunities that support Sucker River stewardship
- Preserve the distinctive character and aesthetics of the watershed
- Avoid future impaired listings for the entire river, and increased regulations that would follow such a listing
- Increase awareness, stewardship, and local action on watershed issues

## **CHAPTER 2 - THE SUCKER RIVER**

### **BACKGROUND**

The Sucker River originates in Alden Township at the outlet of Paradise Lake and ultimately flows into Lake Superior near the community of Palmers in Duluth Township (Anderson et. al. 2003). The Sucker River is 28 miles long and has a watershed covering about 40 mi<sup>2</sup> (duluthstreams.org website). The river along with its watershed flows through four different townships: Duluth, North Star, Normanna, and Alden (Figure 2).

The Sucker River watershed is mostly a rural community, with larger tracts of land in the upper parts of the watershed, and is more densely populated with smaller lots near the shore of Lake Superior. Land use in the watershed is predominantly forested (70%), wetlands (25%), open shrub/grassland (3%), and some agriculture (2%) (duluthstreams.org website). Currently, the headwaters portion of the watershed is largely forested and contains many wetlands. Much of this northern portion contains county forest management land and, to a lesser extent, state forest management land.

### **WATERSHED IMPACTS**

Thermal pollution, increased flashiness, and excess sediments are the major pollutants threatening the Sucker River. These "nonpoint source" pollutants (NPS) degrade water quality, threaten trout habitat, and reduce the number and diversity of aquatic insects that

support stream life. NPS pollutants can result from small land use changes in a watershed that add up over time, which can lead to water quality and fish habitat degradation. For example, all land use changes that increase the amount of water that runs off the land may include forest management changes, increases in impervious surfaces, riparian vegetation removal, subdivisions of large tracks of land, etc.

Changes in land-use within the watershed add pollutants to the river: including thermal pollution (increased water temperatures), increased flashiness, and excess sediment. These pollutants have already proven a threat to water quality in the lower portion of the river. In 2006, the MPCA listed the lower portion of the Sucker River as an Impaired Water for aquatic life. The pollutant causing this impairment is turbidity (caused by excess sediment suspended in the water column). The impaired reach of the river is from North Shore Drive to Lake Superior (Figure 3).

There are many sources of data for the Sucker River, including water quality data from the MPCA, fisheries data from the Minnesota DNR, forestry inventory data from the County and State governments, and resident feedback surveys taken by the Duluth Township. Below are simplified summaries giving a basic overview of the major issues in the Sucker River Watershed.

### **SUCKER RIVER WATER QUALITY**

*Jesse Anderson, Minnesota Pollution Control Agency, Contact:*

Data together show that sediment and temperature are threats to the Sucker River. The river is a fragile system and is described as being “on the edge” of decline. Part of this is because of the streams natural environment which includes shallow soils, steep slopes, and bedrock. Many North Shore streams have minimal groundwater inputs; groundwater helps to stabilize temperatures and buffer the stream from low and high flow events. The shallow bedrock and clay soils naturally produce more runoff, which makes it more critical to prevent added runoff from developed areas throughout the watershed. Due to both the natural and developmental conditions around the Sucker River, protection is extremely important, especially due to its nature of already being “on the edge”.

### **FISHERIES DATA AND MANAGEMENT**

*Matt Ward and Deserae Hendrickson, Department of Natural Resources, Contact:*

Fisheries assessment data from the Sucker River indicate that as one proceeds downstream from the headwaters, brook and brown trout abundance increases then decreases, and rainbow trout abundance increases. The presence of rainbow trout upstream of mile 5.6 is solely a result of fry stocking, because a fish barrier prevents anadromous adults from migrating beyond that point. The lower 5.6 miles of the river are used as a spawning and nursery area by anadromous trout and salmon. The Sucker River has been stocked with rainbow trout in most years since 1981. Brook and/or brown trout have also been stocked periodically during this period.

Fisheries personnel have performed assessments at mile 1.0 on the Sucker River annually since 1992 to monitor population trends. Species sampled at this location include rainbow trout, brown trout, brook trout, coho salmon and chinook salmon. Rainbow trout are the most abundant of these species.

Environmental factors largely regulate survival rates and upstream retention rates of juveniles of all three species of trout. The longer the anadromous juveniles remain upstream, the higher the likelihood that they will survive to return as sexually mature adults. Best management practices within the riparian corridor and watershed are essential to maintaining good conditions within the stream. The MNDNR regularly monitors many environmental variables on the French and Knife River, which are watersheds adjacent to the Sucker River. Environmental factors that have been found to influence trout populations in these streams, and likely influence the Sucker River in a similar way include:

***High stream flow:*** Large fluctuations in discharge can occur with heavy rain events. Fish may experience discharge rates up to 45 times baseflow conditions, which can result in mortality or displacement downstream.

***Low stream flow:*** Reduced baseflow as a result of drought conditions can create extremely low water levels. This results in a reduction of in-stream habitat during the low flow period. In addition, low flows can increase the risk of stressful or lethal temperatures for trout in the stream. These conditions seem to contribute to premature downstream migration of anadromous juveniles, ultimately reducing their chance of survival. Maintaining wetlands within the watershed helps to supply and maintain adequate baseflow to the stream.

***Winter precipitation:*** The winter of 2002 - 2003 had a negative influence on many Duluth Area trout populations due to minimal snow depths. Without an insulative snow layer, many reaches became completely frozen, which caused over ice flow and both juvenile and adult trout mortality.

***Summer precipitation:*** Extremes in precipitation (either low or high) can result in impacts identified in the low and high stream flow sections above.

***Water and Air Temperatures:*** Water temperatures and air temperatures closely parallel one another on North Shore Streams due to minimal groundwater inputs and shallow stream water depths. The water temperatures in many North Shore streams are already on the thermal boundary of supporting trout populations. Low flow conditions can increase temperatures further by reducing the thermal buffering capacity that deeper water can provide. The presence of a thick vegetative riparian buffer and canopy helps to keep the stream temperatures low by providing shade from direct sunlight.

***Turbidity:*** Due to the presence of high sloughing clay banks, natural and human induced erosion commonly occurs. Erosion can increase stream substrate embeddedness, reduce available spawning substrates, and reduce egg hatching rates by essentially

suffocating the eggs. A greater amount of suspended solids in the water absorbs more heat from the sun than clear water without suspended solids, which contributes to temperature stressors. A good riparian buffer can help both reduce erosion as well as shade the stream to prevent direct sunlight from warming the water.

In conclusion, trout populations on the North Shore are highly susceptible to adverse environmental conditions throughout their life. Anadromous trout populations are dependent upon juveniles remaining upstream for two to three years to improve their survival in Lake Superior. Electing to use best management practices within the riparian corridor and watershed today is crucial to sustaining the fishery for future generations.

## **FORESTRY INVENTORY DATA**

*Randy Roff, St Louis County Land Management, Contact:*

Forestry land use is a big factor in keeping the watershed healthy- and what many people may not realize, keeping a forest healthy takes action. Forest stewardship assistance is available, and we emphasize that healthy riparian areas are critical for stream health.

The largest percentage of land ownership in the Sucker River Watershed is that managed by St. Louis County. In plat books, these lands are listed as “State of MN - Tax Forfeited”. They were forfeited to the State in the 1930's, but are administered today by St. Louis County. The Land Department is responsible for managing these forest resources in a sound and sustainable manner.

County forestlands within the Sucker River watershed are dominated by aging birch and aspen forest stands. The majority are second-growth stands, which resulted from pine logging days of the early 1900's. This was followed by extensive forest fires in the 1920's and 30's and is why most of the aspen and birch are reaching old age at the same time.

Birch and aspen are considered old-age trees when they are over 70 years in age. After this, they begin to show distinct decline and mortality. Take a close look at the tops of the trees in many (if not all) of the birch stands in the watershed, and you will see clear indications of dieback: sparse foliage, dead branches, and standing dead trees. Both aspen and birch are “pioneer” species; they rely on site disturbance to regenerate.

Fire and early logging historically provided this disturbance factor, yielding the forest mix we see today. Without these disturbances and the open sunlight they provide, we see declining stands are being replaced largely by brush species such as hazel, mountain maple, and alder, with spotty tree growth of aspen and balsam fir. This yields undesirable, low density, brush-filled forest stands. In a riparian setting, stands such as these are strongly compromised in their ability to provide stream protection in the form of shade provision and sediment collection capacity.

The county's challenge with dominant aging aspen/birch timber types is to carefully provide the disturbance factor needed to promote healthy regeneration and healthy forests. They accomplish this through well-planned and carried-out forest management

and harvest. The Land Department works to protect water, wildlife, and aesthetic values through sale design and administration. St. Louis County adheres to Minnesota’s Voluntary Site-Level Forest Management Guidelines (<http://www.frc.state.mn.us>) to assure that forest stands, including those in riparian settings, are managed to maintain healthy young (or mixed age) forest. For the long term, this is the best situation for maintaining overall stream health.

## **RESIDENT FEEDBACK SURVEYS**

*Duluth Township Website and newsletters, <http://www.duluthtownship.org>, Contact:*

Surveys collected from Duluth Township, where the majority of watershed residents live, show that people want to keep the rural feel and natural resources of their township.

*[Duluth Township website and newsletters ( <http://www.duluthtownship.org> )]*

The surveys show that many residents are concerned about future land-use and development issues, especially related to privacy and keeping the natural resources that they moved to the watershed to enjoy. Also, the January 2005 resident feedback questionnaire for Duluth Township included some questions about stormwater issues. With a response rate of 11%, they surveyed the percent that were “*somewhat aware*” or “*very aware*” of the following:

- |  |            |
|--|------------|
| ○ Need natural buffer zones around streams | <b>93%</b> |
| ○ Special steps to limit stormwater runoff | <b>90%</b> |
| ○ Annual stormwater management report      | <b>70%</b> |
| ○ Twp may have to pay for stream cleanup   | <b>60%</b> |
| ○ Slow turnover of Lake Superior waters    | <b>60%</b> |
| ○ Sucker River workshop in the Township    | <b>50%</b> |
| ○ Increased French River sediment levels   | <b>39%</b> |

**Other Issues:** economy, recreation, tourism, and leaky septic systems.

## **PRIORITY AREAS**

Warm water and sediment are the most important pollutants to minimize in the Sucker River. Within the Sucker River watershed, there are three priority areas where action can be taken in order to minimize warm water and sediment inputs to the river. They are 1) Buffers 2) Forests and 3) Residential building sites.

## **BUFFERS**

A buffer is a transitional zone between a developed area and a stream or lake. It is also known as a riparian area- which is simply the vegetated areas surrounding a stream. There are many benefits to preserving vegetated buffers, including flood control, habitat for wildlife, wetland protection, pollutant reduction, and even increased property value.

If the area between a house and river is maintained entirely as lawn down to the river’s edge, the stream banks can erode due to the lack of root structure holding the soil

together compared to native perennials. A poor buffer can cause the landowner and the stream ongoing problems with bank stability.

An ideal riparian buffer maintains the natural vegetation for a significant distance (greater than 100 feet) from the stream's edge. This helps prevent shoreline erosion, helps to filter out pollutants, and provides shade to keep the stream cool for trout and other aquatic life.

## **FORESTS AND WETLANDS**

Forests and wetlands are a natural and healthy land cover for watersheds - both slow down and store water runoff. When it comes to quality of water, forests and wetlands are the best land uses. There's no pavement to speed up or contaminate runoff to streams, no failing septic systems, and very little erosion.

Forests and wetlands act like a sponge, as they soak up water and trap sediment and other pollutants. They prevent erosion and flooding by slowing down rainwater runoff. Water quality benefits aside, forests also provide important wildlife habitat, recreation opportunities, and renewable building products.

Proper stewardship of forestland and protection of wetlands are two essential steps to sustaining the health of a watershed.

## **RESIDENTIAL DEVELOPMENT**

Many changes are necessary on a parcel of land in order to gain access and build a home. The vegetation is removed, grades or slopes are changed, soils are compacted from heavy equipment, and water runoff is changed to ensure water is flowing away from the home. When forestland is cleared or wetlands are filled for building a home. It changes the landscape and possibly the hydrology of the surrounding land.

All of these things are a necessary part of building a home, but there are many things that can be done to minimize the impact of changes on your land. Minimize vegetation cleared - save those big trees - especially for privacy, a wind break, and for shade. Reduce driveway width and length as much as possible, avoid cutting mature vegetation, especially along riparian areas. To create a view, sometimes large branches can be trimmed, while leaving the roots and mature trees to protect the stream bank from erosion. Manage stormwater by using vegetation, gently sloped swales, and native vegetation. This can be accomplished formally, such as a rain garden, or informally by simply directing runoff to an already vegetated area or native flower beds around your home. It is extremely important to consider the impact you may have on the watershed and try to minimize your impact as much as possible.

# CHAPTER 3 - PROTECTION ACTIVITIES IN THE SUCKER RIVER WATERSHED

## COMMUNITY BASED SOCIAL MARKETING/BENEFITS AND BARRIERS ANALYSIS

In order to outline the goals and objectives of the assessment, specific and tangible implementation steps were identified using Community Based Social Marketing and the Benefits and Barriers Analysis developed by Doug McKenzie-Mohr in his book *Fostering Sustainable Behavior, 1999*. This method implies that the reasons people would choose to not participate in an activity that would benefit their watershed can be broken down into three categories 1) they aren't aware, 2) there may be barriers associated with the activity (too expensive or inconvenient), and 3) they don't believe that the activity benefits them. Before creating a strategy to promote watershed protection throughout the Sucker River community, the barriers and benefits of the citizen's behavioral choices needed to be recognized. The Benefit and Barrier Analysis helped us to determine those behaviors or activities were the most beneficial to promote, the audience, and the conditions needed to spark the interest of the community. In conclusion a Benefit and Barrier Analysis was initiated for activities we thought would promote watershed protection. The analysis proceeded in four steps:

1. Identified activities to promote and listed the barriers and benefits of each activity.
2. a) Researched activities throughout literature and b) made in-the-field observations in order to find other benefits and barriers that were overlooked.
3. Selected activities based on potential impacts and initial perception of benefits and barriers to implement.
4. Initiated stakeholder feedback, in order to illuminate the actual benefits and barriers of selected activities.

The final benefits and barriers matrix (Table 1) includes all of the activities considered throughout the process. Although not all of the activities in the table were implemented four main activities were selected that best suited the Sucker River watershed community. These activities include 1) leave a "no mow" zone on the property adjacent to the river, 2) plant native vegetation in the riparian zone, 3) increase watershed awareness and 4) promote forest stewardship plans.

The plan to promote watershed protection included various activities to increase awareness, involvement, and stewardship for the Sucker River. In order to make a difference, action was required from current and future residents, along with local government, agencies, and private interest groups.

## **WATERSHED AWARENESS**

### **SUCKER RIVER KICKOFF MEETING**

A Sucker River Protection kick-off meeting was held in October 2004. The residents that attended the meeting were presented with an overview of the project, were introduced to the issues effecting the river, and were shown practices that they can implement on their own land to increase watershed protection. At the end of the meeting they were asked to complete a questionnaire offering feedback on the current issues in the watershed.

Although only 13 residents attended the meeting, many other residents offered feedback through phone calls, at Duluth and Normanna Township meetings, and also through one-on-one interaction with watershed citizens. A summary of feedback and issues from residents can be found in **APPENDIX A**.

### **“SUCKER SERIES NEWSLETTER”**

The SWCD led an effort to call attention to the Sucker River and build awareness of watershed issues. One tool used was the “Sucker Series” newsletter, which was sent to over 800 homes in Duluth and Normanna townships. Three issues were produced within a one-year time period which are included in **Appendix B**. Summaries of each issue are included below.

1. Winter 2004 – This issue introduced the residents to the watershed and gave a general definition of a watershed and its basic hydrological functions. It informed the residents that they are the most important factor in keeping the Sucker River healthy today and into the future. Citizens were also made aware of a few actions they could take on their land to benefit the river.
2. Spring 2005 - This issue focused on the importance of forests in the watershed. It gave an overview of the importance of a buffer zone, the overall role of forests in a watershed, how to keep trees on your property healthy, the history of the forests in the area and current challenges that came from it, and what a forest stewardship plan is and how it can benefit a landowner.
3. Fall 2005 – This issue informed residents on what a rain barrel is and its uses in catching water runoff from their homes. This newsletter also went over various construction practices including how to prevent erosion during construction, how to correctly build a driveway on your property, and what permits landowners need before making improvements to their land. An overview of beaver activity was also included in this issue, giving the citizens insight on preventative approaches they can take to discourage beaver activity on their land.

## **SUCKER RIVER SIGNS**

Signs were also placed throughout the watershed to remind folks of the Sucker River and its watershed boundaries. One, “Now Entering the Sucker River Watershed”, sign was placed on the Berquist Road at the edge of the watershed. Also, 6 simple “Sucker River” signs were installed to label the River in three strategic locations (North Shore Rd, upper Berquist Road, and Ryan Road) (Figure 4).

## **RAIN GARDEN, NORTH SHORE COMMUNITY SCHOOL**

In spring 2005, the North Shore Community School (NSCS) Watershed Class learned about stormwater runoff and the effects that it can have on our water. With their teacher, Mike Nordin, they toured the school grounds and noted places with erosion present, puddles of water, or sediment remaining from water runoff. They decided to take action, and came up with the idea of treating runoff from the classroom building and parking lot by creating a rain garden (Figure 5). A rain garden is simply planting native vegetation in a flat or depressional location to slow down the flow of water and prevent further erosion. NSCS also installed a rain barrel to keep the rain garden watered during periods of low rain. The rain garden will help protect water quality by:

- Capturing and treating the first ½ inch of rain that comes off the parking lot
- Preventing erosion by slowing down the water runoff
- Demonstrating how rain gardens and rain barrels can be fun and attractive ways to treat stormwater runoff

NSCS students each planted one native plant in the garden in September 2005. The Watershed Class helped all day in constructing the rain garden by refilling mulch and water buckets. A big thanks goes out to those who worked all summer long to get the rain garden ready for planting, including Mike Nordin, Walt Carter, Charlene Johnson, the Hendrickson family, Phil Strom, Jessica Olson (rain garden designer), and the South St. Louis SWCD.

Money for the rain garden came from a NSCS endowment fund grant, the South St. Louis SWCD, Natural Resources Research Institute, and from private donations from Dorothy Camper and Leo Babeu. Other supplies used for the project were provided by the Western Lake Superior Sanitary District, Duluth Township, Lars and Arlene Fladmark, Jesse Schomberg, and Marshall Hardware in Duluth.

## **WATERSHED FORESTRY TRAINING**

On March 15<sup>th</sup> 2006, 10 landowners attended a special night of forestry training at the North Shore Community School. The South St. Louis SWCD partnered with Minnesota Sea Grant and the University of Minnesota Extension Service’s Woodland Advisors Program to provide free trees and forest training to landowners near the Sucker River. Participants were informed on how forests affect water and habitat, how forests change over time, the proper care and planting of tree seedlings, and how Forest Stewardship

Planning might help their land. Attendees were offered a walk-thru of their land with a trained Woodland Advisor to help them decide where trees should be planted, what types of trees would work best on their land, how to protect trees from deer, and how to plant them (control weeds, spacing, etc.). At the end of the meeting 5 landowners signed up for this opportunity.

## **FOREST STEWARDSHIP PLANS**

Forest Stewardship assistance is available through the South St Louis SWCD (<http://www.southstlouisswcd.org>) to owners of 20 acres or more in South St. Louis County. Forest Stewardship plans are provided at no cost, and with no obligation. Sometimes there are cost-share funds available to help implement the activities outlined in the plan. In developing a plan the forester inventories the land, talks with the landowner to gain perspective on their goals, and prepares a detailed Forest Stewardship plan that meets the needs and visions. Individual goals can include: tree planting, timber stand improvement, timber harvesting, improving wildlife habitat, or creating a low-impact hiking trail. There are currently 18 landowners who have Forest Stewardship plans in the Sucker River watershed (Figure 6).

Forest stewardship assistance is available for owners of larger land tracts, through the Minnesota Department of Natural Resources Forestry Program at: ([www.dnr.state.mn.us/grants/forestmgmt/stewardship.html](http://www.dnr.state.mn.us/grants/forestmgmt/stewardship.html))

## **RAIN BARREL GIVEAWAY**

A letter was mailed out to the 18 landowners who have Forest Stewardship Plans in the watershed offering them a free rain barrel if they have implemented a portion of their plan. Of the 18 landowners 2 contacted the SWCD about the offer and were given a free rain barrel.

# **CHAPTER 4 - IMPROVING WATERSHED INTEGRITY - RECOMMENDED STRATEGIES**

## **OVERVIEW**

Unlike a township or other political boundary, a watershed is a natural boundary. It determines an area of land where rain or snowmelt flows to the same lake or river. This boundary depends on the lay of the land, or the topography of the land.

Every yard, rooftop, driveway, farm, and home in the Sucker River watershed contributes water runoff to the stream. Rain or melted snow either flows across the land or soaks into the soil or groundwater. When water flows across the land, it has a chance to pick up pollutants before it eventually gets to a river or lake.

By doing a few simple things, every resident in the watershed can help protect the Sucker River. Like a healthy body keeps a person strong and alive, a healthy watershed keeps a river and the trout within it thriving. Watershed residents have an important role in keeping the Sucker River special, no matter if they live a few feet or a few miles from the stream.

In order to accomplish goals and objectives of this project, specific and tangible implementation steps were identified using the Benefits and Barriers Analysis. Some of the actions are general good watershed behaviors that could be applied in any watershed (for example; minimizing fertilizer runoff by applying it properly), but many are more specifically needed in the Sucker River (e.g., keeping a healthy forested riparian zone)

## **CURRENT RESIDENTS**

- Take action on your land to minimize water runoff and erosion on your property
  - Install a rain barrel
  - Install a rain garden
  - Direct roof and driveway runoff to vegetated areas
  - Install pervious pavement
  - Educate children on the importance of stormwater management and stream monitoring
- Maintain healthy forests and riparian areas
  - Work on a Forest Stewardship plan to meet your land goals
  - Plant native vegetation and trees, especially in riparian areas
  - Leave a “no mow” zone on your property adjacent to the river
  - Consider conservation easement planning

## **FUTURE RESIDENTS**

- When building, use good site planning to conserve natural resources and minimize runoff
  - Observe setback and shoreline requirements
  - Follow township zoning ordinance
  - Avoid cutting across steep slopes
  - Consider low impact development

## **LOCAL GOVERNMENTS, LOCAL AGENCIES, SCHOOLS, AND PRIVATE ORGANIZATIONS**

- Build partnerships with groups to jump start activities
- Enforce local zoning codes
- Initiate, install, and fund implementation activities
- Support ongoing monitoring of the Sucker River
- Conduct a watershed assessment in your neighborhood

- Center for watershed protection- modified for area
- Engage citizens by providing frequent data summaries/communications to residents of the watershed
- Conduct stream bank erosion studies and promote stabilization projects
- Increase wetland protection and preservation within the watershed
- Continue stream monitoring on the river throughout the future years to capture any or all changes to the water system
- Keep up to date on septic system maintenance, inventory, and inspections

## **CHAPTER 5 - CONCLUSION**

### **CONCLUSION**

The natural beauty, pristine nature and valued trout habitat of the Sucker River is important to residents and visitors of the North Shore. The river provides solitude and beauty to both to the avid fisherman and the casual visitors of the waters edge. Protection of the Sucker River is especially important now before it becomes impaired like other streams along the North Shore.

As citizens of the watershed you can prevent the Sucker River from impairment by stepping up, taking action, and becoming better stewards on your own land. You are the most important factor in keeping the Sucker River healthy now and into the future.

The Sucker River Watershed Protection Project is a pilot project for watershed education and management in the Lake Superior Basin. We hope that this document guides residents and government agencies in future protection efforts throughout the area. It will take a combination of watershed education/awareness strategies and actions taken by both groups and individuals to prevent future impacts to the Sucker River.

# ORGANIZATIONS AND CONTACTS

## **South St Louis Soil and Water Conservation District**

Nicole Barg & R.C. Boheim  
215 North 1<sup>st</sup> Ave. East Room 301  
Duluth, MN 55802  
nicole.barg@southstlouisswcd.org  
r.boheim@southstlouisswcd.org  
Ph 218.723.4867

## **Department of Natural Resources**

Matt Ward, NR Specialist Fisheries  
5351 North Shore Drive  
Duluth, MN 55804  
[matt.ward@dnr.state.mn.us](mailto:matt.ward@dnr.state.mn.us)  
Ph 218.525.0853

Deserae Hendrickson, Area Fisheries Supervisor  
5351 North Shore Drive  
Duluth, MN 55804  
[deserae.hendrickson@dnr.state.mn.us](mailto:deserae.hendrickson@dnr.state.mn.us)  
Ph 218.525.0853

## **St. Louis County Land Department**

607 Government Services Center  
320 West 2<sup>nd</sup> Street  
Duluth, MN 55802  
[landdept@co.st-louis.mn.us](mailto:landdept@co.st-louis.mn.us)  
Ph 218.726.2606

## **Minnesota Pollution Control Agency**

Brian Fredrickson, Lake Superior Basin Coordinator  
525 Lake Ave. South  
Suite 400  
Duluth, MN 55802  
[brian.fredrickson@state.mn.us](mailto:brian.fredrickson@state.mn.us)  
Ph 218.723.4663

## **Duluth Township**

6092 Homestead Road  
Duluth, MN 55804  
Ph 218.525.5705

**Normanna Township**  
3033 East Pioneer Road  
Duluth, MN 55804

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