

# **Sherburne County Local Water Management Plan**

**2007 through February, 2017  
Amended September, 2012**



Prepared by the Sherburne Soil and Water Conservation District  
and the  
Sherburne County Water Plan Advisory Committee

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## Appendices

Appendix A Sherburne County Local Water Management Plan 2007-2017

Appendix 1 Surface Water, Ground Water and Related Resources

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## Acronyms and Phrases

BMP .....	Best Management Practice
BWSR .....	Board of Soil and Water Resources
County.....	Sherburne County
CRP .....	Conservation Reserve Program
CWP .....	Clean Water Partnership
DNR .....	Minnesota Department of Natural Resources
EDA .....	Environmental Data Access
ERWS .....	Elk River Watershed
ERWA.....	Elk River Watershed Association Joint Powers Board
EPA .....	U.S. Environmental Protection Agency
EQIP.....	NRCS' Environmental Quality Incentive Program
FEMA .....	Federal Emergency Management Agency
FSA .....	Farm Service Agency of the U.S. Department of Agriculture
IBI .....	Index of Biotic Integrity
LAP .....	Lake Assessment Program
LCMR .....	Legislative Commission on Minnesota Resources
LID .....	Low Impact Development.
LGU .....	Local Government Unit
<b>MCD.....</b>	<b>Metro Conservation District</b>
MDA .....	Minnesota Department of Agriculture
MDH .....	Minnesota Department of Health
MGS .....	Minnesota Geological Survey
mg/L.....	Milligrams per liter (equals parts per million)
MNDOT .....	Minnesota Department of Transportation
MPCA .....	Minnesota Pollution Control Agency
<b>MSC.....</b>	<b>Mississippi River (St. Cloud) Watershed</b>
MS4.....	Municipal Separate Storm Sewer System
<b>MWRPP.....</b>	<b>Major Watershed Restoration and Protection Plan</b>
NALMS.....	North American Lake management Society
<b>NEMO.....</b>	<b>Non-Point Education for Municipal Officials</b>
NPDES.....	National Pollution Discharge Elimination System

NRCS .....	Natural Resources Conservation Service of the U.S. Department of Agriculture
NWR .....	National Wildlife Refuge
OBWELL.....	Observation Well
OHWM .....	Ordinary High Water Mark
PPB .....	Parts per billion (equals ug/L)
PPM.....	Parts per million (equals mg/L)
PUD.....	Planned Unit Development
RAL's .....	Recommended Allowable Limits
RIM.....	Reinvest in Minnesota
SNA.....	Scientific and Natural Area
STORET .....	The EPA's water quality data base (maintained in Minnesota by the MPCA)
SWCD.....	Soil and Water Conservation District
SWPPP .....	Stormwater Pollution Prevention Plan
TEP .....	Technical Evaluation Panel
TMDL .....	Total Maximum Daily Load
ug/L .....	micrograms per liter (equals parts per billion)
USDA.....	U.S. Department of Agriculture
USFWS .....	U.S. Fish and Wildlife Service
USGS .....	U.S. Geological Survey
VOC .....	Volatile Organic Compounds
WCA .....	Wetland Conservation Act
WHIP .....	NRCS' Wildlife Habitat Incentive Program
WMA .....	Wildlife Management Area

## 2007 County Water Plan Advisory Committee

### Committee Members:

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 Livonia Township  
 East St. Cloud  
 Blue Hill Township  
 Livonia Township  
 Palmer Township  
 Elk River  
 Clear Lake Township  
 Palmer Township (member through March, 2006)  
 Big Lake Township  
 Becker Township  
 Sherburne SWCD  
 Sherburne SWCD  
 Sherburne County Zoning (member through January, 2006)  
 Sherburne County Zoning  
 Sherburne County Public Health  
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## 1.0 Executive Summary

This section is an amendment to the 2007 version of the Sherburne County Water Management Plan. In 2012, the mid-point in this 10 year plan, the Sherburne County Local Water Plan Advisory Committee reviewed the Water Management plan to identify any objective, goal or action item that required amendments. The Water Plan Advisory Committee was delegated the responsibility of overseeing the development of the amended Implementation Plan. The Water Plan Committee conducted two meetings during the planning process to review and update the goals, objectives and action addressed in the plan. The Water Plan Committee also requested input from public local government units (LGU) State and Federal Agencies via a public meeting, request for comment letters and numerous requests reported in local media,. The three Priority Concerns for the 10 year plan have not changed however goals, objectives and action items have changed. The items mentioned above were added, modified or deleted depending upon the current issues and concerns.

Those items that have been amended appear in red text.

This is the fourth version of the Sherburne County Local Water Management Plan (Water Plan). The first version was adopted by the County in 1992 and was revised in 1995 and in 2002. This version of the Water Plan is in effect through February 28, 2017. The Implementation Program outlined in Section 3 focuses on the first five years of the effective time frame of the plan. In 2012, the plan will be amended to update the Implementation Program for the final five years. The Sherburne Soil and Water Conservation District has been delegated the responsibility for developing and implementing the Local Water Management Plan

Sherburne County is located in east central Minnesota. The County Seat is located in Elk River. Elk River is approximately 35 miles northwest of Minneapolis and 30 miles southeast of St. Cloud.

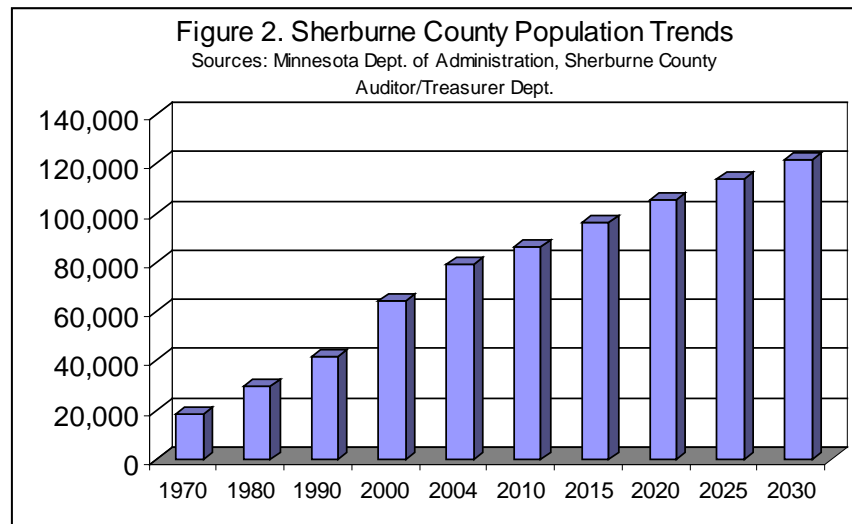


Figure 1. Location of Sherburne County

The estimated 2010 population of Sherburne County is 86,350 with 49,280 residing within incorporated areas. The County has experienced rapid population growth in recent decades and is one of the fastest growing Counties in Minnesota (Figure 2). Based on birth rate statistics provided by the Sherburne County Public Health Department, the projected population increase may be conservative.

The rapid population growth of Sherburne County is primarily due to its proximity to the Twin Cities metropolitan area and the St. Cloud urban area.

According to the U.S. Census, from 2000-2010, Sherburne County's population grew from 64,417 to 88,499 (37%). Six other counties in Minnesota experienced more overall growth. But when it comes for township population growth, Sherburne County's ten townships added 8,191 persons, more than twice as many as Beltrami (+3,408), Mille Lacs (+2,489), Scott (+2,309) and St. Louis (+2,083) counties.



## 1.1 Background on Local Water Management Planning

Comprehensive Local Water Planning began at the state level in 1985 when a statewide planning committee was formed to make recommendations to the legislature about local water planning. The Legislature, after a yearlong effort, passed Comprehensive Local Water Planning into law as Chapter 110B in the spring of 1986. In 2003, the statute governing County Water Plans was revised and is currently found in M.S. 103B. The County Water Plans are now referred to as “Local Water Management Plans”.

The Sherburne County Board determined on August 2, 1989 that the Sherburne Soil and Water Conservation District (SWCD) Board of Supervisors should be the lead agency in the local water plan. The Sherburne County Water Planning Task Force, appointed by the SWCD Supervisors and County Board to represent the county's interest, met monthly starting in March 1990. It established the issues, goals, objectives, actions, and implementation strategies, and was the principal architect of the first version of the Sherburne County Water Plan. Following adoption of the County Water Plan in 1992, the County Board appointed a Water Plan Advisory Committee to review plan implementation and to update the Water Plan every five years.

## 1.2 The Purpose and Scope of the Sherburne County Local Water Management Plan

The Water Plan focuses on the quality and quantity of surface water and groundwater, and related land uses that effect water resources. The purpose of the Water Plan is:



1. To identify existing and potential problems or opportunities for the protection, management, and development of water resources and related land resources in the County
2. To identify priority concerns to be addressed during the effective time frame of the plan, and
3. To develop and implement a plan of action to address priority concerns.

The Water Plan applies to the entire geographic area of Sherburne County including incorporated and unincorporated areas.

### **1.3 Surface Water, Ground Water and Related Resources**

To facilitate the planning process, the county has assembled and studied available information relating to the physical environment, surface and groundwater resources, and related land use. This information is summarized in **Appendix 2** in the context of watershed units and ground water systems.

The Water Plan Advisory Committee used the assembled information to better understand the nature and condition of the County's water and water related resources.

### **1.4 Assessment of Surface Waters:**

#### Impaired Waters and TMDLs:

The federal Clean Water Act (CWA) requires states to adopt water-quality standards to protect waters from pollution. These standards define how much of a pollutant can be in the water and still allow it to meet designated uses, such as drinking water, fishing and swimming. The standards are set on a wide range of pollutants, including bacteria, nutrients, turbidity and mercury. A water body is "impaired" if it fails to meet one or more water quality standard.

To identify and restore impaired waters, Section 303(d) of the Clean Water Act requires states to:

- 1) Assess all waters of the state to determine if they meet water-quality standards.
- 2) List waters that do not meet standards (also known as the 303d List) and update every even-numbered year.
- 3) Conduct TMDL studies in order to set pollutant reduction goals needed to restore waters.

MPCAs responsibilities include performing assessment activities, listing impaired waters, and conducting TMDLs in Minnesota. The agency also coordinates closely with other state and local agencies on restoration activities.

The Clean Water Legacy Act, passed in June 2006, allocates first-year funding to accelerate water monitoring, TMDL development and restoration activities throughout the state.

#### Impaired Waters:

Below is the MPCA 2010 Clean Water Act Section 303 (d) list of impaired waters in the county. The MPCA recommends counties address waters listed for pollutants/stressors other than mercury and Polychlorinated Biphenyls (PCB) in their amended LWM plans.

## Stream Impairments

Reach Name	Reach Description	River ID #	Affected designated use	Pollutant or stressor	TMDL Status
Battle Brook	CD 18 to Elk Lk	07010203-535	Aquatic life	Aquatic macroinvertebrate bioassessments	Not Underway
Elk River	Elk Lk (71-0141-00) to St Francis R	07010203-579	Aquatic life	Aquatic macroinvertebrate bioassessments	Not Underway
Elk River	Elk Lk (71-0141-00) to St Francis R	07010203-579	Aquatic recreation	Fecal Coliform	Underway
Elk River	Elk Lk (71-0141-00) to St Francis R	07010203-579	Aquatic life	Turbidity	Underway
Mississippi River	Sauk R to CSAH 7 in St Cloud	07010203-574	Aquatic recreation	<i>Escherichia coli</i>	Underway
Mississippi River	Clearwater R to Elk R	07010203-510	Aquatic recreation	Fecal Coliform	Underway
Mississippi River	Clearwater R to Elk R	07010203-510	Aquatic life	Fish bioassessments	Not Underway
Mississippi River	Clearwater R to Elk R	07010203-510	Aquatic life	Mercury in Fish tissue	TMDL Approved
Mississippi River	Elk R to Crow R	07010203-503	Aquatic consumption	PCB in Fish Tissue	Not Underway
Mississippi River	Elk R to Crow R	07010203-503	Aquatic consumption	Mercury in Fish tissue	Completed
Mississippi River	Sauk R to University Dr S bridge in St. Cloud	07010203-574	Aquatic consumption	<i>Escherichia coli</i> 0	TMDL Underway
Mississippi River	Sauk R to University Dr S bridge in St. Cloud	07010203-574	Aquatic consumption	Mercury in Fish tissue	TMDL Approved
Mississippi River	University Dr S bridge in St. Cloud to St. Cloud Dam	07010203-575	Aquatic consumption	Mercury in Fish tissue	TMDL Approved
Rice Creek	Rice Lk to Elk R	07010203-512	Aquatic life	Oxygen, Dissolved	TMDL Underway
Rice Creek	Rice Lk to Elk R	07010203-512	Aquatic life	Turbidity	TMDL Underway

## Lake Impairments

Reach Name	Reach Description	Lake or wetland ID# [County# + Lake#]	Affected designated use	Pollutant or stressor	TMDL Status
Big Elk	Lake or Reservoir	71-0141-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Underway
Birch	Lake or Reservoir	71-0057-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Not Underway
Briggs	Lake or Reservoir	71-0146-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Not Underway
Julia	Lake or Reservoir	71-0145-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Not Underway
Lower Orono	Lake or Reservoir	71-0013-02	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Not Underway
Upper Orono	Lake or Reservoir	71-0013-01	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	Not Underway
Big	Lake or Reservoir	71-0082-	Aquatic consumption	Mercury infish Tissue	TMDL Approved
Lower Orono	Lake or Reservoir	71-0013-02	Aquatic consumption	Mercury in Fish Tissue	TMDL Approved
Upper Orono	Lake or Reservoir	71-0013-01	Aquatic consumption	Mercury infish Tissue	TMDL Approved
Mitchell	Lake or Reservoir	71-0081-00	Aquatic consumption	Mercury infish Tissue	TMDL Approved

### Minnesota's Watershed Approach:

The 10 year watershed cycle for Intensive Watershed Monitoring (IWM) Phase I began in the spring of 2009 for the Mississippi River St. Cloud (8 digit HUC) watershed under a separate contract. Monitoring and field data collected during the Phase I assessment is in the process of being compiled. In 2010, work will begin to conduct a watershed wide assessment and monitoring effort that will result in the final deliverable of an implementation plan that will prescribe restoration and protection strategies for the surface water resources within the Mississippi River (St. Cloud) watershed. Ongoing Total Maximum Daily Load (TMDL) projects within the watershed (e.g. Elk River Watershed Association TMDL and the Upper Mississippi River Bacteria TMDL) will continue in accordance with their existing specific project work plan.

The major threats to this watershed include:

1. Loss of shoreline buffers and habitat due to development.
2. Introduction of large amounts of phosphorus, sediment, and bacteria from urban and rural sources to surface waters.
3. The combination of long, moderately steep slopes and easily erodible sandy loam soil that is inherently high in phosphorus.
4. Increased nutrient, contaminant and sedimentation loading from storm water run-off from development and other non-point sources.
5. Protecting drinking water supplies from bacteria impairments.
6. Loss of biodiversity due to competition from invasive species.
7. Relatively high percentage of agricultural and urban/residential land uses within the watershed.

## 1.5 Water Plan Priorities

The process through which priority concerns were selected is described in Section 2. The following three concerns were identified as high priority for this planning period:

- (1) Impaired and degraded lakes and streams in the Elk River Watershed;
- (2) Increasing urban and residential land use replacing agriculture, forest and open space creates a concern about water quantity and quality due to increased impervious areas; and
- (3) Quality and quantity of riparian and aquatic vegetation.

## 1.6 The Implementation Plan

The implementation plan specifies goals, objectives, and specific actions to address issues and concerns identified in the plan. Where appropriate, priority watersheds for actions are specified.

**Goals**, in the context of this plan, are general statements that clearly communicate what is to be accomplished over the long-term to address the priority concerns. Goals are achievable in a reasonable period of time.

**Objectives** state how the goal will be accomplished by breaking it down into smaller, more specific measures that will be taken. Objectives are measurable.

**Actions** are specific activities that the county has identified as being necessary to achieve the goals and objectives identified in this plan. Actions include activities such as educational programs, land treatment projects, monitoring of water resources and development of ordinances and land use controls.

### Major Projects-Completed and/or In Progress which may guide water planning action priorities:

- Mississippi River (St. Cloud) Major Watershed Restoration and Protection Project
- ERWA TMDLs (Approved June 2012)
- City of St. Cloud Landscape Retrofit Project
- City of Elk River Landscape Retrofit Project
- Sub-Watershed Analysis Projects
- Briggs Lake Chain Infrared Detection Fly-Over

The following list identifies the goals and actions as identified through the Water Planning Process (2007) as well as the amendment process (2012).

### **Priority Concern 1.**

Goal 1. Reduce pollutant levels for impaired lakes and streams and maintain water quality where resources meet state standards. Actions focus on the implementation of the following objectives:

- Implement land use practices that reduce nutrient loading to surface water resources.

Goal 2. Work with MPCA as well as other federal, state and local watershed agencies to complete Major Watershed Restoration and Protection Plans (MWRPP) and associated Total Maximum Daily Loads (TMDLs). Actions focus on the implementation of the following objectives:

- Collect and complete data supporting the MWRPP process.
- Maximize effectiveness of completed TMDLs and the MPCA's MWRPP implementation strategies.

**Priority Concern 2.**

Goal 3. Mitigate the quantitative and qualitative storm water impacts to surface water from urban and residential development. Actions focus on the implementation of the following objectives:

- Retrofit stormwater treatment for developed areas with no or inadequate treatment.
- Use local controls and ordinances to reduce impacts from stormwater runoff
- Identify innovative practices to reduce stormwater runoff

**Priority Concern 3.** Actions focus on the implementation of the following objectives:

Goal 4. Protect, improve and establish native riparian and aquatic vegetation

- Establish riparian buffers on agricultural land
- Preserve and establish buffers of native vegetation on lakes and streams in urban and rural - residential areas.
- Provide education to landowners and LUGs regarding quality and quantity of riparian and aquatic vegetation

The total cost estimate for the implementation program is \$1,274,065 for 2012 through 2017. This cost includes existing staff time, grant funds (some of which is currently in place) USDA – NRCS funding, LGU budgets, funding by private organizations, volunteer time, and contributions from landowners for installing land treatment projects.

Some objectives and actions from the previous Water Plan version are considered **on-going** and will be continued. These initiatives come under the areas of enforcing existing ordinances and policies for water resource protection and the continuation of programs funded through on-going local, state and federal programs. These actions are considered essential for on-going protection of water resources in Sherburne County. These objectives and actions are listed in Section 4 of the Water Plan.

**1.7 Consistency with other Local, State and Regional Plans**

The following plans were reviewed in preparation of this plan:

Isanti Counties

Comprehensive Plans for Sherburne County, Elk River, Big Lake, Zimmerman, Becker, Clear Lake and St. Cloud

Storm Water Pollution Prevention Plans for Sherburne County, Elk River, St. Cloud

City of Zimmerman Comprehensive Storm Drainage Plan

The Minnesota 2001-2005 Non Point Source Management Program Plan (NSMPP), MPCA

Upper Mississippi River Basin Water Quality Plan, Headwaters to the Rum River at Anoka, MPCA

Minnesota Watermarks Gauging the Flow of Progress 2000 – 2010, Environmental Quality Board

Local Controls reviewed in the preparation of this plan:

Sherburne County zoning ordinance, subdivision ordinance, floodplain ordinance, recreational and scenic rivers ordinance

City of Becker subdivision ordinance, floodplain ordinance

City of St. Cloud subdivision ordinance, shoreland management ordinance, scenic rivers ordinance, floodplain ordinance

City of Elk River land development regulations, wild and scenic rivers ordinance, floodplain ordinance, shoreland management ordinance

City of Clear Lake zoning ordinance, subdivision ordinance

Zimmerman zoning ordinance, subdivision ordinance, erosion and sediment control ordinances,

City of Big Lake zoning ordinance, subdivision ordinance, floodplain ordinance, wetlands overlay district, shoreland ordinance.

The Sherburne County Local Water Management Plan is consistent with the existing local, state and regional plans reviewed.

**Plans Considered during the 2012 Amendment Process:**

In addition to those plans mentioned above, completed Total Maximum Daily Load Studies (TMDLs), and lake and management plans overlaying Sherburne County were been considered in the completion of this document. Additionally, plans from neighboring counties were reviewed to ensure consistency in the protection of regional water resources. There are no known conflicts between the Sherburne County Water Plan and other local plans regarding water resources.

## 2. Priority Concerns

### 2.1 Identifying Priority Concerns

The Water Plan Advisory Committee held meetings during 2005 and 2006 to prioritize water resources issues. The Committee identified issues through surveys, public information meetings, input from local officials and state agencies. From the issues identified, a **Priority Concerns Scoping Document** (PCSD) was developed, which can be found in Appendix 1. The PCSD summarizes public participation, advisory committee meetings, input from state agencies, meetings held with local officials, and issues identified in the planning process. The process of developing the PCSD resulted in 6 concerns which were given high priority. These were further refined to 3 concerns, which can be reasonably addressed during a 5 year period.

In selecting the top 3 priority concerns, the following points were considered: the implications of projected changes in population and land use for water resources; available funding; available county resources; and the immediacy of issues. The PCSD also discusses how issues that were not given high priority can be addressed.

**The Priority Concerns to be addressed in this version of the Sherburne County Water Plan are:**

Priority Concern 1: Impaired and degraded lakes and streams in the Elk River Watershed.

Priority Concern 2: Increasing urban and residential land use replacing agriculture, forest and open space creates a concern about water quantity and quality due to increased impervious areas.

Priority Concern 3: Quality and quantity of riparian and aquatic vegetation.

### 2.2 Assessment of Priority Concerns

#### **Priority Concern 1: Impaired and degraded lakes and streams in the Elk River Watershed**

The Elk River Watershed drains 613 square miles of land located in Sherburne, Benton, Mille Lacs and Morrison Counties. 595 square miles of the watershed are within Benton and Sherburne Counties. 70% of Sherburne County is drained by the Elk River Watershed.

The Elk River Watershed contains two major landforms, glacial till and glacial outwash. The glacial till portion of the watershed is located in the upper reaches primarily within Benton County. The glacial till area is dominated by agricultural land uses and soils are naturally high in phosphorus. The landscape contains elongated hills (drumlins) with moderate 2% - 4% slopes that offer a high potential for soil erosion and associated phosphorus movement.

Land use in the glacial outwash portion of the watershed consists of irrigated agriculture and urban/residential. The landscape is mostly level with moderate to steep slopes adjoining lakes and streams. Soils are mostly well drained and tend to be naturally high in phosphorus. Approximately 48 % the watershed is used for agriculture. Lakeshore is predominantly urban and residential. This combination of moderately steep slopes, easily erodible sandy loam soil that is high in phosphorus, agricultural land use and urban/residential land use in riparian areas leads to an extremely high

potential to introduce large amounts of nutrients to surface waters. Management of agricultural and lakeshore land will continue to have a big impact on water quality.

The Elk River, its tributaries and 11 priority lakes within the Elk River Watershed have documented water quality problems. In the upper reach of the Elk River, the average total phosphorus concentration is 225 µg/L (17 samples), well above the typical range for the ecoregion. There is sufficient data available to determine the Carlson's Trophic State Index for 16 lakes in the Elk River Watershed. Five watershed lakes are hypereutrophic and 6 lakes are rated as eutrophic. These lakes have phosphorus levels above the typical range for the ecoregion. Ten of the eutrophic and hypereutrophic lakes are directly connected to the Elk River or its tributaries and these streams significantly influence their water quality.

It is common knowledge that residential and urban sources are a non-point source of nutrient loading to surface water. Watershed lakeshore is 80 to 90% developed - predominantly with year round residences. Most of this development occurred prior to adoption of shoreland ordinances. Subsequently, most natural vegetation has been removed from the shorelines and replaced with turf grass.

Waters within the Elk River Watershed are identified on the 2006 impaired waters list (303d list). These include 1) Mayhew Creek from the headwaters to the Elk River (located in Benton County), Fish IBI and Invertebrate IBI; 2) The Elk River from Rice Creek to the St. Francis R, Invertebrate IBI and Turbidity; 3) Rice Creek from Rice Lake to the Elk River, Low Oxygen and Turbidity; 4) Battle Brook upstream from Little Elk Lake, Invertebrate IBI; 5) Birch Lake, Excess Nutrients.

Other water quality problems identified in the watershed include high fecal coliform counts measured for Lake Orono and in the Elk River.

Water Quality has economic significance. The report Lakeshore Property Values and Water Quality: Evidence from Property Values in the Mississippi Headwaters Region (Mississippi Headwaters Board and Bemidji State University, 2003) has shown that property values have a positive relationship with water quality. For a one meter change in transparency, the changes to property prices are expected to be in the magnitude of 10s of thousands of dollars. Reducing pollutant loading would help maintain or increase property values. The Elk River Watershed is located within the source water protection area for the Minneapolis and St. Paul drinking water supply. Reduction of pollutants would reduce treatment costs for these water suppliers.

Sherburne and Benton Counties and the respective SWCDs formed the Elk River Watershed Association Joint Powers Board in 1994 in response to water quality and quantity concerns. The purpose of the ERWSA is to work together to implement Local Water Management Plans within the watershed. The ERWSA has primarily focused on working with land owners to reduce non-point sources within the watershed. The ERWSA has also conducted water quality and quantity monitoring and sponsored educational programs. Funding has come from State of Minnesota grants and private donations.

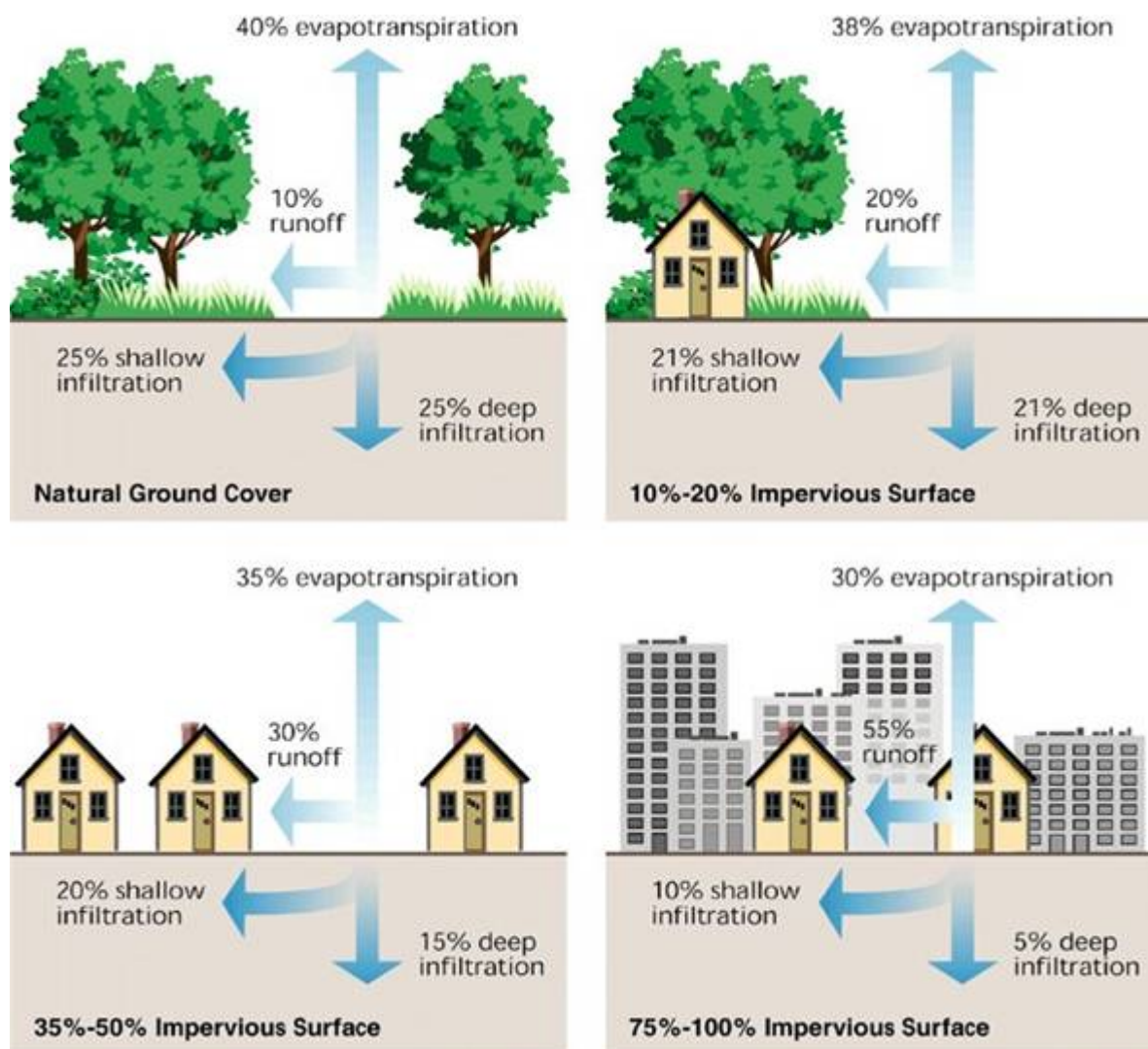
**Priority Concern 2: Increasing urban and residential land use replacing agriculture, forest and open space creates a concern about water quantity and quality due to increased impervious areas.**



## Effects of Increasing Stormwater Runoff

Stormwater is an all-inclusive term that refers to any of the water running off of the land's surface after a rainfall or snowmelt event. Prior to development, stormwater is a small component of the annual water balance. However, as development increases, the paving of pervious surfaces (that is, surfaces able to soak water into the ground) with new roads, shopping centers, driveways and rooftops all adds up to mean less water soaks into the ground and more water runs off.

The illustration below shows the effects of increasing density of development on runoff. The changes in the landscape that occur during the transition from rural to urbanized land use have a profound effect on the movement of water off the land. Urban development within a watershed has a number of direct impacts on downstream waters and waterways, including changes to stream flow behavior and stream geometry, degradation of aquatic habitat and extreme water level fluctuation.



In addition to concerns about degradation of stream corridors due to increased flows, runoff from urban and residential areas creates a concern about increased pollutant loading. Runoff flowing over the land surface conveys pollutants such as nutrients, sediment, pesticides, oil and heavy metals to

receiving waters. In Sherburne County, agricultural land use is being converted to urban/residential at a rapid rate. Subsequently, storm water has become a significant water quality and quantity concern. Both the quality and quantity of stormwater runoff must be treated to avoid further degradation of surface waters in the County.

### Management Practices

The predominantly sandy soils in Sherburne County have rapid infiltration rates, which creates an opportunity to use infiltration and bioretention methods as a means to reduce the total runoff from a developed site. Stormwater management designs should emphasize allowing as much runoff as possible to infiltrate into the soil. An exception should be made for runoff from potential stormwater hotspots (PSHs) where there is a concern about groundwater contamination from metals and other toxic chemicals.

Most jurisdictions set limits on the rate of post development stormwater flow from a development. Typically the post development rate cannot exceed existing conditions. For some receiving basins and watersheds, it is desirable to limit the total volume of runoff in addition to the rate of flow to prevent degradation of receiving waters.

### State Regulatory Framework

The Minnesota Pollution Control Agency regulates the discharge of stormwater under the National Pollution Discharge Elimination System (NPDES) authorized under the federal Clean Water Act. The MPCA requires stormwater permits for all new construction that disturbs one acre or more of land. In addition, larger municipalities, and other jurisdictions experiencing rapid development are required to have a Municipal Separate Storm Sewer System Permit (MS4). Elk River, St. Cloud, the City of Big Lake, Big Lake Township, Haven Township and Sherburne County (for county roads) are currently under the MS4 permit rule. The MS4 permit requires on going site management and maintenance activities. Site management must include: 1) public education; 2) public participation and involvement; 3) illicit discharge detection and elimination; 4) construction site storm water runoff control; 5) post construction storm water management; and 6) pollution prevention / good house keeping. MS4 jurisdictions must develop a Storm Water Pollution Prevention Plan.

A “non-degradation” requirement for MS4 designated jurisdictions was adopted by the MPCA in 2005. This requirement identifies the year 1988 as a baseline for pollutant loading. MS4s will be required to determine the level of stormwater pollutant loading within their jurisdiction that existed in 1988, the current loading and projected future loading. They will then update their SWPPPs to incorporate objectives to reduce loading to the baseline level. This requirement is being phased in and as of 2006 no MS4 in Sherburne County has developed a non-degradation plan.

### Local Regulations and Plans

Sherburne County’s controls regarding stormwater can be found in the subdivision ordinance. Generally, developers and contractors must use BMPs during construction to prevent erosion and sedimentation. They further state that the County may require a temporary erosion and sediment plan, permanent erosion and sediment plan and identification of who is responsible for management of the plans. They also require a maintenance plan. The County stormwater related ordinances need to be

updated to reflect currently recommended practices as can be found in the 2005 Minnesota Stormwater Manual.

Elk River, the City of Big Lake, the City of Clear Lake, St. Cloud, Zimmerman and Princeton have ordinances requiring controls to prevent erosion and sedimentation during construction. These ordinances require BMPs such as phasing construction in increments of workable size so that adequate erosion and sediment control can be provided; the use of silt fences; sediment basins; and diversions. The Zimmerman, City of Clear Lake and Princeton ordinances require post construction practices such as detention basins. Zimmerman has a storm drainage plan dated 1989 and plans to update this plan.

Cities within the County specify requirements for new developments over and above their existing ordinances. For example, Sherburne County, St. Cloud, Becker, Zimmerman and Clear Lake require that post construction runoff does not exceed predevelopment rates. St. Cloud requires that some developments not exceed the 10 year storm event rate for all precipitation events.

Elk River has developed a SWPPP for their MS4 permit. The SWPPP specifies actions to be taken by the City according to the MPCA's guidelines. The education component specifies programs for the public, contractors, lawn services, City staff, City departments and City officials. The SWPPP also includes procedures for inspections, training of staff, "good housekeeping" such as street sweeping, stormwater system mapping and detection of illicit discharges. The SWPPP includes plans to update the City's construction site erosion and sediment control ordinance, develop a storm water management plan and develop policies and procedures for post development stormwater regulation. The SWPPP also has initiatives for installing rain gardens and developing design criteria for use of filtration practices.

Elk River requires that contractors complete a SWPPP for developments that have a potential for stormwater runoff. The contractor's SWPPP specifies BMPs to be used, responsible parties, maintenance and permanent BMPs such as seeding, wet detention or infiltration ponds. Contractors are provided with detailed specifications for BMPs.

St. Cloud has developed a SWPPP for their MS4 permit. The SWPPP includes educational programs for the public, businesses, City maintenance and parks staff, developers, contractors and consulting engineers. It also includes: a timeline to develop procedures for detection of illicit discharges; a storm sewer system inspection procedure; an erosion/sediment control ordinance; and regulatory standards for post construction runoff for developments and re-development. BMPs for pollution prevention/good housekeeping are also included. The City has a target date of November, 2007 to prepare a loading assessment and non-degradation report toward meeting the non-degradation requirement for their MS4 permit.

Sherburne County has developed a SWPPP under their MS4 permit that addresses runoff from county roads. Their SWPPP has initiatives for public education, education of staff, maintenance of stormwater treatment structures and detection of illicit discharges.

### Local Programs

The Elk River Watershed Association has a cost share program to install stormwater treatment BMPs for urban and residential sites where untreated stormwater drains directly to surface water.

Demonstration rain gardens have been installed at Lake Orono Park in Elk River and at a residential property on Big Elk Lake. This program will be funded through 2009.

### **Priority Concern 3: Quality and quantity of riparian and aquatic vegetation**

#### Historical Context

In 1979, Sherburne County adopted the Scenic and Recreational River ordinance which covers the land on the Mississippi and Rum Rivers. A Scenic and Recreational Rivers ordinance was also adopted by St. Cloud, Becker, Elk River and Princeton within the same time frame. A shoreland ordinance for lakes and other streams was adopted in 1992. Cities in the County also adopted shoreland ordinances in the late 1980s and early 1990s. These ordinances limit the removal of vegetation in the shoreland impact zone. The amount of woody vegetation removal permitted in the shore impact zone differs between jurisdictions. It has been difficult to enforce this provision of the shoreland ordinances and removal of desirable shoreline vegetation continues to be a problem.

Most of the lakeshore in the County was developed prior to adopting shoreland ordinances. This has resulted in removal of most of the native vegetation in the upland riparian zone and replacing it with turf, sandy beach and rock. Accelerated shoreline erosion has resulted which is often controlled with rock rip rap or retaining walls. Streams and rivers are also impacted by removal of buffer vegetation. However, more stream riparian land was undeveloped prior to the adoption of shoreland controls and subsequently the amount of impact is not as extensive as for lakeshore.

Native aquatic vegetation has also been impacted. Aquatic vegetation was actively removed on developed lakeshore to enhance recreation. Boating has also impacted beds of aquatic vegetation. The extent of desirable aquatic species such as bulrushes, arrowheads, water lilies has been greatly reduced on County lakes. Numerous beds of bulrushes and arrowheads are present on the Elk River in addition to submerged and floating leaf species.

#### Exotic Species

Curlyleaf Pondweed (*Potamogeton crispus*) is present in abundance in a number of County lakes. Dense mats of these plants create problems for boating in the Briggs Lake Chain, Little Elk Lake, Lake Fremont and in recent years, Lake Orono. It is also present in Big and Mitchell Lakes. This exotic species has been present in County lakes for decades. Curlyleaf Pondweed is an annual submerged aquatic plant which propagates by vegetated buds called turions. The buds germinate in the fall and the plant grows under the ice during the winter months. In the spring, the plants reach the surface prior to other aquatic plants giving it a competitive advantage. The plants produce new turions in early summer and the plants die off in mid summer when water temperatures warm up. The decaying plants release nutrients into the water as they decompose and algae blooms are often noted following the annual dying back. The Briggs Lake Chain Association sponsors a control program for Curlyleaf Pondweed for the chain of lakes. In recent years they have contracted with a lake management company for chemical control of the plants. This project is done under a DNR Aquatic Plant permit.

Eurasian Water milfoil (*Myriophyllum specatum*) is present in Little Elk Lake and Big Eagle Lake.

Purple loosestrife (*Lythrum salicaria*) is a nuisance exotic plant species found on the margins of lakes and in wetlands in the County. This plant tends to be aggressive and can dominate wetlands and

shorelands where it is found. It is regarded as undesirable because it is of less value to wildlife than native species which it out competes. Biological control using the release of a species of beetle that feeds on purple loosestrife has been developed. The beetles have been used successfully in the County.

### Benefits of Riparian Vegetation

Studies in Wisconsin have demonstrated that phosphorus export from developed lakeshore lacking a vegetated buffer significantly exceeds that of sites with natural cover. Trees shade streams providing lower temperatures needed for game fish species. Woody vegetation and native grasses also reduce bank erosion where present. Aquatic plants tie up nutrients in their root systems. Shoreline buffers and aquatic vegetation provide habitat for animals and fish.

### Local Programs

The Elk River Watershed Association has sponsored a demonstration project to establish shoreline buffers on lakes and streams in the watershed. Through this program cooperators receive cost share to establish native plant buffers on shoreland including aquatic, wet edge and upland plant communities. Funding is available to continue establishing this practice through 2009. Native plant buffers are also being established on stream bank and lakeshore sites through the Sherburne Soil and Water Conservation District's cost share program in conjunction with bio-engineering erosion control projects. The District will continue to fund these types of projects.

### **2.3 Goals and Objectives- See Amendments listed on Page(s) 12-13**

The following Goals and Objectives have been developed to address the priority concerns.

#### Priority Concern 1:

Goal: Reduce pollutant levels for impaired lakes and streams and maintain water quality where resources meet state standards.

Objective A Implement land use practices that reduce nutrient loading to surface water resources

Objective B Work with the MPCA to establish TMDLs for impaired waters.

#### Priority Concern 2:

Goal: Mitigate the quantitative and qualitative storm water impacts to surface water from urban and residential development.

Objective A Retrofit stormwater treatment for developed areas with no or inadequate treatment.

Objective B Use local controls and ordinances to reduce impacts from stormwater runoff

Objective C Identify innovative practices to reduce stormwater runoff

#### Priority Concern 3:

Goal: Protect, improve and establish native riparian and aquatic vegetation

Objective A Establish riparian buffers on agricultural land

Objective B Preserve and establish buffers of native vegetation on lakes and streams in urban and rural - residential areas.

### 3. Implementation Program –Amended- July 2012

#### Priority Concern 1: Impaired and degraded lakes and streams in the Elk River Watershed

**Goal 1** Reduce pollutant levels for impaired lakes and streams and maintain water quality where resources meet state standards.

**Objective 1-A** Implement land use practices that reduce nutrient loading to surface water resources

**Actions:**

1. Implement educational programs for the public on residential fertilizer use, septic systems and shoreland BMPs. Programs to include bi-weekly articles in local newspapers (ie Sherburne County Citizen & West Sherburne Tribune) and Watershed Newsletters (ERWA - Currents), printed materials, workshops and demonstrations.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Elk River Watershed (ERWS)	SWCD, County Zoning, NEMO, Cities, ERWA	2012-2017	\$74,800 Existing Staff, grants
2. Work with landowners to establish buffers on lakes and streams in urban and rural - residential areas to filter runoff and reduce soil erosion.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS, TMDL priority areas	SWCD, ERWA	2012-2017	\$39,600 Existing Staff, grants, landowners
3. Establish rain gardens, infiltration and filtration treatment systems for urban and residential areas and retrofit systems for existing development.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS TMDL priority areas	SWCD, ERWA, Elk River	2012-2017	\$78,100 existing staff, grants, landowners
4. Work with agricultural landowners to establish filter strips and riparian buffers in high priority areas as identified via TMDLs or other water plan documents through USDA programs such as: CRP, EQIP, WHIP and state funded programs including but not limited to BWSR state cost share			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS, TMDL priority areas	SWCD working with USDA-NRCS, ERWA	2012-2017	\$105,585 existing staff, federal funds, grants, landowner
5. Work with agricultural landowners to implement nutrient management plans and waste utilization plans.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS, TMDL priority areas	SWCD working with USDA-NRCS, ERWA	2012-2017	\$13,200 existing staff, federal funds, grants, landowners
6. Work with agricultural landowners to improve irrigation efficiency and to implement irrigation water management plans			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>

ERWA	SWCD working with USDA-NRCS, ERWA	2012-2017	\$52,800 Existing staff, grants, landowners
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7. Work with livestock owners to reduce runoff from feedlots and pastures. **Focus should be on priority areas as identified in TMDLs and other watershed planning documents.** Practices will include livestock exclusion, pasture management plans, feedlot BMPs.

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS- TMDL priority areas	SWCD working with USDA-NRCS, ERWA	2012-2017	\$59,000 existing staff time, grants, landowners

8. Where feasible, implement streambank and shoreline protection where accelerated erosion is occurring. These sites are those meeting the SWCD's definition of high priority erosion, sedimentation, or water quality problems.

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS	SWCD working with USDA-NRCS	2012-2017	\$68,200 existing staff time, grants, landowners

9. Work with landowners to implement practices to reduce soil erosion and sedimentation such as critical area planting, conservation tillage, water diversions, sedimentation basins and other BMPs.

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWA	SWCD working with USDA-NRCS	2012-2017	\$4,000 existing staff time, grants, landowners

10. Within high priority minor watersheds (Map 8-6), wetland mitigation plans under WCA should result in no net loss of wetlands within the minor watershed to avoid adverse downstream effects.

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
See Map 8-6	WCA TEP Local WCA authorities	2007 - 2017	\$286,000 Existing staff time

11. Restore, enhance and create wetlands.

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS	SWCD, ERWA	2007 - 2011	\$15,400 existing staff time, grants, landowners

12. Participate in Source Water Protection activities **as identified by MDH and Sherburne County.**

<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWA	SWCD, ERWA, Cities, Source water protection communities	2007 - 2011	\$1,800 Staff time, city staff

**Goal 2.** Work with the MPCA as well as other federal, state and local watershed agencies to complete and implement Major Watershed Restoration and Protection Plans (MWRPP) .

Objective 1-B. Collect and compile data supporting the MWRPP process.

**Actions:**

1. Conduct annual lake and stream monitoring according to recommendations in TMDL plans or other Waters quality planning documents. Data to be submitted to the MPCA annually for entry to the STORET data base.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
MSC	SWCD, ERWA, CSMP, CLMP, County,	2012-2017	\$20,000 Existing staff time; grants; volunteer programs; Lake Associations; SWAG, ERWA

2. Coordinate, cooperate and facilitate the process by which the State is completing TMDLs and MWPRRRs.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
MSC	SWCD, ERWA, County Zoning, MMRC, LUGs	2012-2017 or ongoing	\$75,000 Existing staff time, MPCA grants

Objective 1-C. Maximize effectiveness of completed TMDLs and MWRPP implementation strategies.

1. Apply to the MPCA, BWSR and/or private foundations to implement activities identified in TMDL implementation plans and MWRPP plans.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS,	SWCD, ERWA, County Zoning, MMRC	2012-2017 / ongoing	\$632,200 Staff time; MPCA grants, CWF, BWSR Challenge Grants, Private

2. Investigate opportunities to implement SSTS inventories and/or upgrading schedules as outlined in the ERWA TMDLs and Briggs Lake Chain Infrared Flyover.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
ERWS	County zoning	2012-2017	\$252,000 Existing staff time; grants; volunteer programs; Lake Associations; SWAG, ERWA

**Priority Concern 2: Increasing urban and residential land use replacing agriculture, forest and open space creates a concern about water quantity and quality due to increased impervious areas.**



**Goal 3** Mitigate the quantitative and qualitative storm water impacts to surface water from urban and residential development.

**Objective 2-A** Retrofit stormwater treatment for developed areas with no or inadequate treatment.

**Actions:**

1. Work with cities and private landowners to install treatment using rain gardens, bioretention, filtration and infiltration practices in developed areas.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	SWCD, ERWA, Cities, project Conserve, MCD	2012-2017	See Objective 1-A, Action #3

2. Conduct subwatershed assessments in cooperation with Metro Conservations Districts Association and implement identified activities.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide, prioritized as follows: Birch Lake, Long Lake Chain	SWCD, MCD	2012-2017	\$20,000 Existing staff time, grants

**Objective 2-B** Use local controls and ordinances to reduce impacts from stormwater runoff

**Actions:**

1. Use low impact development (LID) concepts where needed to reduce stormwater volume reductions as well as to create demonstration projects to monitor and compare LID methods to standard development methods.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	County, LGUs	2012-2017	\$2,000 Existing staff time

2. Provide education for LGU's, agencies, developers and other relevant parties on issues of BMPs and stormwater as related to existing development and future development. (newsletters, websites, workshops)			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	County Zoning, Cities, SWCD, NEMO	2012 - 2017	\$5,000 Staff time; LGU budgets

3. Coordinate implementation of MS4 SWPPP objectives within the County where there are common actions such as public education programs. Set up an email network or periodic meetings to keep informed and to facilitate communication.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	County, MS4 cities and townships; in cooperation with Water Plan Coordinator	2012-2017	\$16,000 Existing staff time; LGU budgets

**Objective 2-C** Identify innovative practices to reduce stormwater runoff

**Actions:**

1. Demonstrate methods to reduce soil compaction in new developments. LGUs will consider incorporating BMPs to reduce soil compaction into stormwater ordinances.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>

Countywide	SWCD, LGUs	2012-2017	\$8,000 Existing staff time
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2. Investigate opportunities to utilize stormwater ponds for residential/light industrial irrigation.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide w/in City boundaries	Cities, SWCD, NEMO	2012-2017	Existing staff time

### **Priority Concern 3: Quality and quantity of riparian and aquatic vegetation**

**Goal 3** Protect, improve and establish native riparian and aquatic vegetation

**Objective 3-A** Establish riparian buffers on agricultural land

**Actions:**

1. Work with agricultural landowners to establish filter strips and riparian buffers in high priority areas as identified via watershed planning documents using USDA programs such as: CRP, EQIP, WHIP and state programs such as BWSR state cost share.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
outside ERWA	SWCD working with NRCS	2012-2017	See Objective 1-A, Action #5

**Objective 3-B** Preserve and establish buffers of native vegetation on lakes and streams in urban and rural - residential areas.

**Actions:**

1. Work with landowners to establish buffers of native vegetation on lakes and streams.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	SWCD, ERWA, LGU's, Park boards	2012-2017	See Objective 1-A, Action #2
2. Control invasive species in aquatic and wetland areas.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	SWCD, ERWA, state agencies	2012-2017	\$6,380 Existing staff time; state/federal/private funds, landowners

**Objective 3-C** Provide Education to landowners and LUGs regarding quality and quantity of riparian and aquatic vegetation.

**Actions:**

1. Educate citizens, landowners and LUGs on the establishment and maintenance of native buffers i.e. newsletters, workshops, flyers and other methods as identified.			
<i>Watershed</i>	<i>Responsibility</i>	<i>Time Frame</i>	<i>Estimated Cost/Sources</i>
Countywide	SWCD	2012-2017	\$8,000 Existing staff time

**Total cost estimate for the 5 year Priority Concerns implementation program: \$1,274,065**

#### 4. On-going Water Management Activities

The following objectives and actions support the goals of the County Water Plan and should be implemented on an on-going basis. Cost estimates are for annual costs. Sources of funding include existing staff time, cost share programs, **state, federal and private grants as well as** land owner costs for land treatment projects.

##### 4.1 Surface Water Quality and Quantity

**Objective:** implement land use practices that protect and improve surface water resources in Sherburne County.

**Actions**

- 1) Enforce proper disposal of septic system waste according to the Sherburne County solid waste ordinance.
- 2) The county should **continue to** require compliance with the septic system ordinance when building permits are issued and when property is sold or transferred.
- 3) Enforce the county solid waste ordinance regulating manure handling and storage.
- 4) Stencil storm sewer inlets in communities that discharge stormwater to surface water.
- 5) **Zoning and local LGUs will continue to monitor the need for potential changes to ordinances in regards to seepage disposal ordinances and population density.**

**Responsibility:** Zoning, LGUs

**Estimated Cost:** \$164,000

- 5) Work with landowners to implement BMPs to reduce wind erosion such as wind breaks and shelter belts.
- 6) **Maintain** a tree planting program.
- 7) **Continue** maintenance program for windbreaks and other tree planting projects.
- 8) Assist lake associations with developing and implementing lake management plans.
- 9) **Coordinate a more cohesive team of county water planners included in the watershed boundaries of the ERWA and the Mississippi River (St. Cloud) basins to better coordinate water management activities. Conduct up to two meetings per year.**
- 10) **Investigate the opportunity to assist County Lake Associations if formation of a COLA**
- 11) Participate in Source Water Protection activities as identified by MDH and Sherburne County

**Responsibility:** SWCD

**Estimated Cost:** \$13,200

**Objective:** **Continue to coordinate input of surface and groundwater quality data into State data bases including MPCA's Environmental Data Access (EDA) system.**

**Actions**

- 1) Maintain a computerized database of surface water quality data.
- 2) Maintain the rain gauge program.
- 3) Maintain an automated weather station in the county (SNOTEL) to provide information for use in irrigation scheduling.

**Responsibility:** SWCD

**Estimated Cost:** \$5,000

##### 4.2 Ground Water Quality

**Objective:** Implement land use practices that protect and improve ground water resources in Sherburne County.

**Actions**

- 1) Implement monitoring and water testing programs: e.g. well water testing, observation well monitoring **and annual nitrate test clinics.**
- 2) **Educate the public on the County's Pharmaceutical Program and disposal program.**
- 3) **Seek opportunities to educate the Public and LGUs on the implications of Endocrine Disruptors in our water sources.**
- 4) Expand and maintain Geographic Information Systems for the county's natural resources.

**Responsibility:** SWCD, Land Mapping, **State Agencies**

**Estimated Cost:** \$18,000

**Objective:** Locate and seal unused wells in Sherburne County.

**Actions**

- 1) Promote importance of proper well sealing.
- 2) Assist in the implementation of approved wellhead protection plans.
- 3) Require unused wells to be sealed where land use change is planned.
- 4) Locate and encourage unused wells to be sealed in Drinking Water Supply Management Areas.
- 5) Participate in MN Dept. of Agriculture's Central Sand Private Well Network Project.

**Responsibility:** SWCD, Public Water Suppliers

**Estimated Cost:** \$2,000

#### 4.3 Ditches

**Objective:** Enhance water quality and flood control through drainage system management

**Actions**

- 1) Maintain and update the maps of existing public and private ditches in Sherburne County.
- 2) Enforce existing 1-rod (16.5 FEET) filter strip requirements along public drainage ways.
- 3) Record and control private ditch accesses to county ditch system.
- 4) Identify sensitive areas along drainage ditches. Sensitive areas may include highly erodible cropland, residential development, and hazardous waste generators.
- 5) Advise the ditch authority on opportunities for enhancing water quality and quantity such as wetland restorations, buffer strips, CRP eligibility and programs such as WHIP for habitat enhancement.
- 6) Implement BMPs for ditch clean outs to prevent sedimentation. Ditch spoil piles will be seeded after clean-outs to prevent re-sedimentation of the ditch.

**Responsibility:** Land Mapping, Ditch Authority, SWCD

**Estimated Cost:** \$17,000

#### 4.4 Pollutant Sources-

**Objective:** Protect surface and groundwater resources from contamination from pollution sources such as: waste sites, landfills, scrap yards, leaking storage tanks, land spreading practices and road salt.

**Actions**

- 1) Provide public education as to the importance of recycling.
- 2) Continue township and community recycling programs.
- 3) Promote proper disposal of hazardous household waste such as used oil, batteries, paint, etc. through the support of household hazardous waste programs.
- 4) Continue to provide information to the public concerning sites where they can safely dispose of used tires, appliances, etc.
- 5) Promote proper disposal of outdated or orphaned farm chemicals and pesticide containers as regulated by MDA.
- 6) Enforce fines for violators of littering and or improper disposal.
- 7) Promote the non-permitted disposal site cleanup program.
- 8) Maintain a list of known leak sites and storage tank locations in Sherburne County.
- 9) Encourage compliance with MDA regulations regarding bulk storage of pesticides and fertilizers
- 10) Publicize the MPCA spill emergency phone number: 1-800-422-0798.
- 11) Enforce ordinance regulating the land treatment or application of solid waste where the soil conditions are highly susceptible to wind and/or water erosion and/or have high percolation rates or shallow depth to water table.
- 12) Enforce regulations, based on depth to water table, for regulating the disposal and spreading of sewage system sludge, septage and water treatment plant wastes.
- 13) All salt and sand mixtures used for de-icing roads in Sherburne County should be stored on a bituminous or concrete pad and be properly covered.
- 14) Snow removed from roadways should not be deposited in floodplain or wetlands

**Responsibility:** Solid Waste Officer; #5 Local Emergency Services; Highway Department and Public Works

**Estimated Cost:** \$110,000

#### 4.5 Wetlands-

**Objective:** Maintain the existing level of wetland resources in the County.

**Actions**

- 1) Educate the public on the nature and value of the wetland resources in the county.
- 2) Maintain a computerized wetland database.
- 3) Encourage Sherburne County to complement state and federal wetland legislation by using its authorities to protect wetlands.
- 4) Enforce the Wetlands Conservation Act.
- 5) Consider downstream effects when reviewing wetland replacement plans.
- 6) **Promote federal and state wetland programs such as CRP, RIM and WRP.**

**Responsibility:** County Zoning and LGUs in cooperation with the SWCD

**Estimated Cost:** \$70,000

#### 4.6 Flood Plain Ordinances

**Objective:** Maintain the functions of flood plains to provide for the flow of waters. And to store flood waters.

**Actions**

- 1) Educate the public to the availability of the floodplain maps.
- 2) Enforce the floodplain ordinances.

**Responsibility:** County Zoning and LGUs

**Estimated Cost:** \$6,000

#### 4.7 Shoreland Ordinances

**Objective:** Require compliance with the current shoreland ordinances.

**Actions**

- 1) Enforce the Shoreland Ordinances. Zoning and LGUs will enforce the Shoreland Ordinance and septic system requirements. The County Forester and SWCD will assist with vegetation restoration plans.

**Responsibility:** Zoning, LGUs in cooperation with the SWCD

**Estimated Cost:** \$26,000

#### 4.8 Unique and Scenic Features

**Objective:** Minimize the impact of land use practices on unique and scenic features in Sherburne County.

**Actions**

- 1) When making any changes to the land such as new development, consideration should be made as to whether or not it will adversely impact any areas identified in the County Biological Survey or other areas identified as providing excellent habitat.
- 2) Use planning and zoning regulations to encourage long-term environmental protection.

**Responsibility:** Zoning with assistance from the SWCD

**Estimated Cost:** \$4,000 (#1 only; #2 see sections 4.6 and 4.7)

#### 4.9 Fish and Wildlife Habitat

**Objective:** Preserve, restore and develop fish and wildlife habitats

**Actions**

- 1) Educate landowners on the advantages of using native vegetation when landscaping.
- 2) Assist landowners in establishing and restoring native prairie.
- 3) Work with developers, homeowner associations to re-establish native prairies or woodlands in “open spaces” in cluster developments and PUDs.
- 4) Work with developers and homeowner associations to restore/revegetate wetlands located in “open spaces” in cluster developments and PUDs.

- 5) Work with landowners to protect areas used by endangered, threatened and special concern species by putting the land into one of the programs designed for wildlife preservation.
- 6) Where possible, establish natural preserves in shore areas through PUDs, cluster housing, parks or easements.
- 7) Preserve or establish sustainable buffer areas in the Scenic and Recreational Rivers Zones that will provide for wildlife habitat, filtering of runoff and protection of banks from erosion. Sustainable refers to the ability of forested buffers to regenerate as trees age.
- 8) Work with County and City Parks to re-establish native prairies or woodlands
- 9) **Reduce impacts of invasive and exotic species**

**Responsibility:** SWCD, Zoning, Extension, Cities, **State**

**Estimated Cost:** #1, 2, 3: \$36,000  
#4 through 9: \$29,000

**Total estimated annual cost for On-going Water Management Activities: \$593,000**