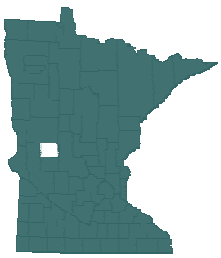
Douglas County

Comprehensive Local Water Management Plan

2009-2019

Implementation Plan Update: 2014



Douglas Soil and Water Conservation District
900 Robert Street, Suite 102
Alexandria, MN 56308
www.DouglasSWCD.com

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Contributors

Water Plan Technician/Water Plan Task Force Lead
Emily Siira

Water Plan Task Force Members

Julie Aadland	Area Hydrologist, DNR Waters
Tom Anderson	County Drainage and Ag Inspector
Marilyn Bayerl	Bayerl Water Resources
Dean Beck	Area Supervisor, DNR Fisheries
Jim Casper	Le Homme Dieu Lake Association
Mark Dybdal	District Conservationist, Natural Resources Conservation Service
Sue Engstrom	Lake Darling/Douglas County Lake Association
Jerry Haggenmiller	District Coordinator, Douglas Soil and Water Conservation District
Bonnie Huettl	Lobster Lake/Douglas County Lake Association
Darren Hungness	LandTeam Inc.
Jack Frederick	Minnesota Pollution Control Agency
Jerry Johnson	County Commissioner
Dick Kuehn	Douglas County Lake Association
Vern Lorsung	Lake Latoka Association
Shaun McNally	Coordinator, Pomme de Terre River Watershed
Lynn Nelson	Sauk River Watershed District
Bud Nielson	Lake Ida Association
Kylene Olsen	Chippewa River Watershed Project
Dave Rush	Director, Douglas County Land & Resource Management
Jon Schneider	Douglas Soil and Water Conservation District Supervisor
Scot Spranger	Alexandria Lakes Area Sanitary District
Rebecca Sternquist	Assistant Director, Douglas County Land & Resource Management
Gary Thoennes	Douglas Soil and Water Conservation District Supervisor
Pete Waller	Board Conservationist, Board of Soil and Water Resources
Mike Weber	City of Alexandria

Other Agency Advisors

Beck Balk	Minnesota Department of Agriculture
Mike Howe	Minnesota Department of Health, Source Water Protection Unit
Tim James	Minnesota Pollution Control Agency
Dan Steward	Board of Soil and Water Resources

Douglas County Board of Commissioners
Paul Anderson
Bev Bales
Jerry Johnson
Dan Olson
Norm Salto

Figures and Tables

Abbreviations

ALASD	Alexandria Lakes Area Sanitary District
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CSP	Conservation Security Program
CRP	Conservation Reserve Program
CCRP	Continuous Conservation Reserve Program
CREP	Conservation Reserve Enhancement Program
CRWP	Chippewa River Watershed Project
CWA	Clean Water Act
CWL	Clean Water Legacy
DCLA	Douglas County Lakes Association (COLA)
DNR	Minnesota Department of Natural Resources
DWSMA	Drinking Water Supply Management Area
EPA	Environmental Protection Agency
EQB	Environmental Quality Board
EQIP	Environmental Quality Incentives Program
GIS	Geographic Information System
LGU	Local Government Unit
LID	Low Impact Development
LRM	Douglas County Land and Resource Management
LWM	Local Water Management
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MN	Minnesota
MPCA	Minnesota Pollution Control Agency
NEMO	Nonpoint Education for Municipal Officials
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PdTJPB	Pomme de Terre Joint Powers Board
RIM	Reinvest in Minnesota
SCPP	Minnesota Statewide Conservation and Preservation Plan
SGCN	Species of Greatest Conservation Need
SIZ	Shoreland Impact Zone
SWCD	Soil and Water Conservation District
SWMP	Stormwater Management Plan
SRWD	Sauk River Watershed District
SSTS	Subsurface Sewage Treatment Systems
TMDL	Total Maximum Daily Load
TSI	Trophic State Index
USFWS	United States Fish and Wildlife Service
WCA	Wetland Conservation Act Administration
WPTF	Water Plan Task Force
WWRP	Wetland Reserve Program

I. Executive Summary

Background

Douglas County is located in west-central Minnesota approximately 130 miles northwest of Minneapolis. Rich in water resources, Douglas County is home to over 200 lakes over 40 acres in size. The City of Alexandria serves as the county seat nestled within the Chain of Lakes area. The county's population in 2005 was estimated at 35,467, an 8.1% increase since 2000, and it is projected that the population will increase 41% by 2030. Douglas County experiences the common struggle of working to accommodate rapid growth and development while protecting valuable water resources. Agriculture, in the form of cultivated land, is the dominant land use within the county.

This is the fourth revision of the Douglas County Comprehensive Local Water Management (LWM) Plan and the first revision done by the Douglas SWCD. This plan will become effective upon final approval by the Board of Soil and Water Resources and after official adoption by the Douglas County Board of Commissioners. The LWM Plan will be in effect through 2019 and covers the entire county.

Purpose

The goal of the Douglas County Comprehensive Local Water Management (LWM) Plan is to serve as a guide for resource protection and preservation in Douglas County for the next 10 years. An assessment of the progress made toward the completion of the goals will be done after the first five years and any necessary revisions will be made at that time.

The Douglas County LWM Plan is developed and written under the legislative authority of the "Comprehensive Local Water Management Act" (Minnesota Statutes sections 103B.301 to 103b.355). The purpose of the Douglas County Comprehensive Local Water Management Plan is to:

- Identify existing and potential problems and opportunities for the protection, management, and development of water and related land resources;
- Identify priority concerns to be addressed during the effective time frame of the plan;
- Develop goals and implement actions that improve water quality and quantity and related resource management and planning in the County.

Description of Priority Concerns - Summary of Goals & Actions

Priority Concerns, as defined by M.S. 103B.305, subd. 5, are issues, resources, subwatersheds, or demographic areas that are identified as a priority by the plan authority. The priority concerns for Douglas County were selected after tabulating survey responses, reviewing agency comments,

and through discussion with the Water Plan Task Force. See the Priority Concerns Scoping Document for more detailed information about the selection process (Appendix A). The Priority concerns are: Development Pressures and Land Use, Natural Habitat Destruction, Waste and Stormwater Management, and Water Quality. Education and outreach will be a component of each priority concern and therefore are not listed as separate concerns. A complete assessment of each Priority Concern as well as Goals, Objectives and Action items can be found in later sections of this Plan.

Development Pressures and Land Use

Douglas County is continuing to experience strong residential and commercial development pressures. The LWM Plan seeks to strategically plan for continued growth while protecting the County's natural resources. The goal is to balance open space and development in Douglas County in such a way as to maintain and/or improve the region's water quality. The following is a partial list of the intended action items:

- Incorporate the LWM Plan into the updated County Comprehensive Plan
- Promote the use and updating of the sensitive areas maps
- Create incentives for conservation developments
- Protect shore impact zones (SIZ), define intensive clearing, prohibit filing of wetlands in SIZ
- Assist with the evaluation of preliminary plats as needed, encourage low impact development (LID)

Projected Total Cost: $ 248,500

Natural Habitat Destruction

Natural fish and wildlife habitat has been declining with development sprawling into more rural parts of the county, around natural environment lakes and large wetlands, and with the conversion of agricultural land to rural housing. The goal is to preserve, restore, and enhance natural habitat in Douglas County. The following is a partial list of the intended action items:

- Encourage surface water zoning for the protection of aquatic habitat, vegetation, and lake bottom sediment
- Consider all wetlands in Douglas County to be high priority and work to further restrict wetland impacts
- Work with Douglas County Land and Resource Management (LRM) to update ordinances to include surface water restrictions on shallow basins or bays of larger lakes
- Work to restore large drained lake basins (Crooked Hansford lakes or others)
- Research the feasibility of establishing a county tax incentive for installing, restoring and maintaining shore line buffers
- Assist the DNR and other organizations with exotic species control and education

Projected Total Cost: $ 378,000

Waste and Stormwater Management

As the population of Douglas County increases, so do the impacts waste and stormwater have on the overall water quality of the region. Large populations increase the need for higher capacity sewage treatment facilities. As current infrastructure ages, there may be an increase in the amount failing septic systems. The construction of buildings, roads, and parking lots increases the amount of impervious surface. The result is an increase in runoff and erosion that can cause negative changes to stream flow, aquatic habitat, and water quality. The goals are to improve waste and stormwater runoff management in Douglas County. The following is a partial list of the intended action items:

- Encourage the use of pervious pavement systems and proper maintenance
- Promote the use of BMPs in commercial, residential, and agricultural settings to reduce sediment and nutrient loading
- Enhance the awareness of stormwater issues by implementing storm drain marking projects
- Require SSTS inspections within five years in all shoreland zoning districts
- Purse grants and low-interest loans to assist with SSTS upgrades
- Educate property owners on proper septic system maintenance

Projected Total Cost: $2,972,000

Water Quality

The LWM Plan recognizes that there are a myriad of issues that contribute to the degradation of water quality. Many of these issues are examined in more length in the previously listed Priority Concerns. However items such as trend analysis of lake data, advanced water quality monitoring, ground water protection plans, and participation in the TMDL process for the ever increasing amount of listed impaired water bodies have not yet been addressed elsewhere in the Plan. The goals that the LWM plan focuses on include: protecting and maintaining surface water quality from further degradation; improving or restoring impaired surface waters; and protecting and maintaining ground water resources. The following is a partial list of the intended action items:

- Collect water quality data on currently unmonitored lakes
- Assist lake associations with lake management plans
- Encourage lakeshed based planning
- Assist with the development of TMDL studies and implementation plans
- Provide technical advice and assist in the coordination of water quality improvement efforts
- Develop plans to protect ground water quality and quantity

Projected Total Cost: $259,000

Consistency with Other Plans

A number of plans were considered in the development of this plan. The Douglas County Comprehensive Local Water Management Plan is consistent with other local and state plans.

Local Water Management Plans – Todd, Stearns, Otter Tail, Grant, and Pope Counties
Comprehensive Plans – Douglas County
Wellhead Protection Plans – Alexandria, Carlos, Evansville, and Osakis
Stormwater Pollution Plan - Alexandria

Recommendations to Other Plans and Official Controls

The Minnesota Department of Natural Resources (DNR) oversees the Shoreland Management program. Shallow lakes are particularly sensitive to the impacts of development. It is recommended that shallow lakes be given additional protection in the Shoreland Management program.

The Douglas County LRM has a Joint Powers agreement to permit and inspect NPDES construction sites. Given the significant impacts that can occur if the permits are not followed, it is important that an assertive inspection and enforcement program remains in effect. It is recommended that the MPCA continues to fund this program on an ongoing basis.

The MPCA has given responsibility of administering the feedlot program to Douglas County. It is recommended that the County continue with the county delegation for the feedlot program.

In the November 2008 election, Minnesotans approved a constitutional amendment (Minnesota Constitution, Article XI, Sec. 15) dedicating sales tax funds to outdoor heritage, clean water, parks and trails, and arts and cultural heritage effective July 1, 2009 to June 30, 2034. It is the recommendation of this plan that these dedicated funds be used to supplement, not replace the current funding mechanisms and state appropriations regardless for the economic status of the state. It is also recommended that these dedicated funds be awarded to specific projects or credible organizations based on sound science, logic, and environmental benefit to the state.

II. Assessment of Priority Concerns

This section will provide a general assessment of the four concerns as they relate to Douglas County. This will include what the concern is, why it was selected, potential risks of not addressing the concern, and the specific geographical area it addresses (if more specific than county-wide).

Priority Concern: Development Pressure and Land Use

Development Pressure is the implied results of and demand for subdividing land and construction of new dwellings and other structures. This pressure may be attributed to economic incentives to sell and divide property due to high land values, potential investment returns, demand for riparian properties, and diminishing agricultural returns. Development impacts include land use changes due to population growth, increasing population densities, and associated management behaviors that affect natural resources.

Douglas County has grown from a population of 22,910 in 1970 to an estimated 35,827 in 2007. The Minnesota State Demographic Center forecasts the county population to grow at a rate of 32% between 2005 to 2035. See Appendix C-Population Growth in Douglas County from 1990-2000. It is expected that development will continue to be concentrated around lakes, primarily the remaining areas of General Development and Recreational Development lakes, followed by small, shallow Natural Environment lakeshore. The Douglas County Planning Advisory Commission has reviewed an average of fifty preliminary plats each year since 1999. Sixty-two percent of land use permits were issued in residential shoreland areas versus all other zoning classifications (residential, agricultural, etc.) in 2007. In 2006, the Douglas County Board of Commissioners approved recommendations made by the LRM and the Douglas SWCD to establish criteria for sensitive feature mapping. The sensitive features included fish spawning areas, aquatic vegetation, wetlands, biodiversity significance, hydric soils, shallow soils, steep slopes, and bluffs. The criteria have since been used to create static maps from existing GIS data that are used as a tool for making informed land use decisions. See Appendix D-Sensitive Area Map.

With a majority of development occurring in shoreland areas, effects on water quality are a concern. Overall surface water quality throughout the county is generally good but some basins and streams are showing signs of degradation. Water quality degradation can be largely attributable to land use conversions and extensive shoreland development. Such land use activities set the stage for infrastructure construction to support rural growth, increases in impervious surfacing, landscape modifications that have included drainage and filling, natural habitat encroachment or destruction, and increased surface water use. Evidence of declining water quality may suggest that some lakes have reached or exceeded capacity to adsorb such environmental disturbances. Sustainability of these valued surface waters will be increasingly threatened with further population growth. See Appendix E for a list of Douglas County's Impaired Waters.

Continued water quality monitoring and data analysis are needed throughout the county to maintain a long term database and identify trends. Several lakes have been identified as having

a measured declining water clarity trend. In many cases, a majority of the shoreland properties around these lakes have been sewered by the Alexandria Lake Area Sanitary District (ALASD) as early as 1976, which theoretically would have triggered the abandonment of individual septic systems. Lake Mary, a 2,371 acre lake south of Alexandria, has had a statistically significant declining water clarity trend for several years. The shoreland of this lake has centralized sewer and there is very little livestock within the watershed. More information is needed to understand this and other lakes' pollution sources in order to determine effective implementation strategies and prevent further degradation. Existing water quality data on all monitored lakes in Douglas County can be found on the Pollution Control Agency's website: www.pca.state.mn.us

Although growth and land use change is inevitable in the county, the way in which growth takes place affects its impact on water quality. With careful planning and a commitment to protect streams, rivers, and ground water, land use practices can be implemented that balance the need for jobs and economic development with protection of the natural environment. Development that takes place without such considerations, however, can lead to significant degradation of streams and ground water, and loss of aquatic life.

Priority Concern: Natural Habitat Destruction

Human impact on the landscape has been a concern for many decades. As shorelines are developed, agricultural lands are drained and ditched, forests are cleared, and urban sprawl continues, there will continue to be a marked decline in wildlife diversity and abundance. Current land use practices have led to habitat loss, degradation, and fragmentation. See Appendix F-Pre-settlement Vegetation and Appendix G-Restorable Wetlands.

The newly published Minnesota Statewide Conservation and Preservation Plan (SCPP) has identified the key issues, which if addressed, would benefit the greatest number of natural resources to the greatest degree. The SCPP recognizes continued economic prosperity depends on a healthy and sustainable environment, and vise versa. To foster the conditions we value, we must balance long-term plans for conserving and protecting our priceless natural resources with those ensuring a healthy public and healthy economy (SCPP Executive Summary, 2008). The Final Plan addresses four key issues for which recommendations are made, they are:

- Land and water habitat fragmentation, degradation, loss, and conversion
- Land use practices
- Transportation
- Energy production and use, and mercury as a toxic contaminant related to energy production

See Appendix H-Natural Resource Values Assessment of Recommendations.

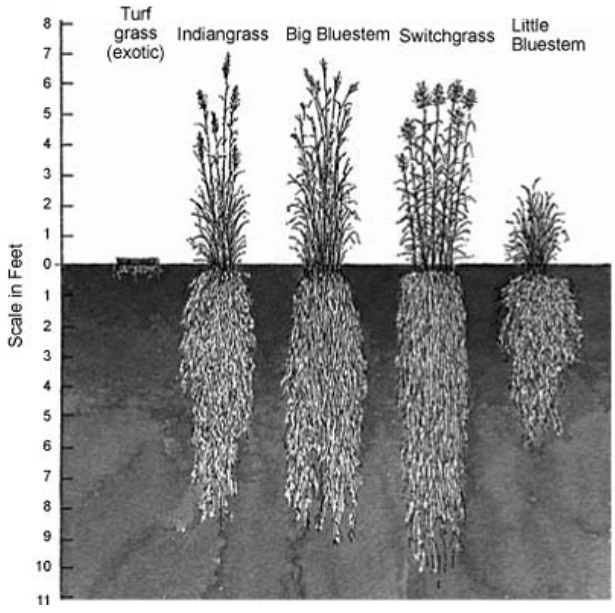
Habitat loss refers to the complete eradication of a parcel of habitat, such as conversion of native wetlands, lake and stream shoreline plant communities, prairies, forests, or brushlands to agricultural, residential or industrial uses. **Habitat degradation** occurs when the habitat is still present but its value to native plant, wildlife, and aquatic communities has been impaired or changed significantly. **Habitat fragmentation** is the breakup of large contiguous areas of habitat into smaller and smaller parcels and fragments. The fragments are no longer close enough or sufficiently connected to allow fish, wildlife, or other native organisms to move freely among habitats in order to use optimal breeding and rearing sites. Fragmentation may degrade the genetic capacity of wild populations to adapt to future environmental change because it fragments larger populations—which harbor more genetic variation into smaller breeding groups. A cumulative effect of habitat loss, degradation, and fragmentation is large declines in abundance and productivity of wild populations, threatening their ability to adapt to future environmental changes and to persist for the enjoyment of future generations. Source: SCPP, 31.

Shoreland issues are specifically addressed in Habitat Recommendation 2 of the SCPP Final Plan: Protect critical shorelands of streams and lakes. "A holistic approach is needed for shoreline protection that integrates acquisition with diverse private-land protection strategies such as conservation tax credits, trading of conservation tax credits, BMPs, shoreland regulations and incentives, zoning ordinances, conservation development, and technical guidance for shoreland owners (SCPP, 67)."

The complete SCPP can be found online at:
www.lccmr.leg.mn/statewideconservationplan/SCPP_FinalPlan.html

The establishment and protection of shoreline buffers is one of the best ways to reduce the negative impacts on aquatic systems and water quality. Buffers protect water quality by filtering runoff that contains excess nutrients, sediment, and other pollutants. Shoreline buffers also stabilize banks, reduce erosion, and provide important habitat for shoreline species. Vegetation native to Minnesota is well adapted to our climate and moisture conditions. It can withstand moderate flooding and drought. Native vegetation has deep fibrous or tap roots that anchor the soil and increase water infiltration.

Figure 1 Root system of common native grasses



In Minnesota, 292 species meet the definition of species in greatest conservation need (SGCN).

Species in Greatest Conservation Need (SGCN)
Definition: *Animal species whose populations are rare, declining, or vulnerable in Minnesota and meet one or more of the following criteria:*

A. Species whose populations are identified as being rare, declining, or vulnerable in Minnesota

B. Species at risk because they depend upon rare, declining, or vulnerable habitats (such as native prairies and grasslands; lakeshores and riparian corridors; wetlands; brushlands; unimpounded river and stream channels; unfragmented interior forest).

C. Species subject to other specific threats that make them vulnerable, such as:
   - Over-exploitation
   - Invasive species
   - Disease
   - Contaminants
   - Lack of citizen understanding and stewardship (such as killing large snakes thought to be venomous).

D. Species with certain characteristics that make them vulnerable, such as species that:
   - Require large home ranges/use multiple habitats
   - Depend upon large habitat patch sizes
   - Need special resources
   - Depend upon an ecological process (e.g. fire) that no longer operates within the natural range of variation
   - Are limited in their ability to recover on their own due to low dispersal ability or low reproductive rate
   - Have a highly localized or restricted distribution (Endemics)
   - Concentrate their populations during some time of the year (such as bats clustering in hibernacula and migratory stop-overs).

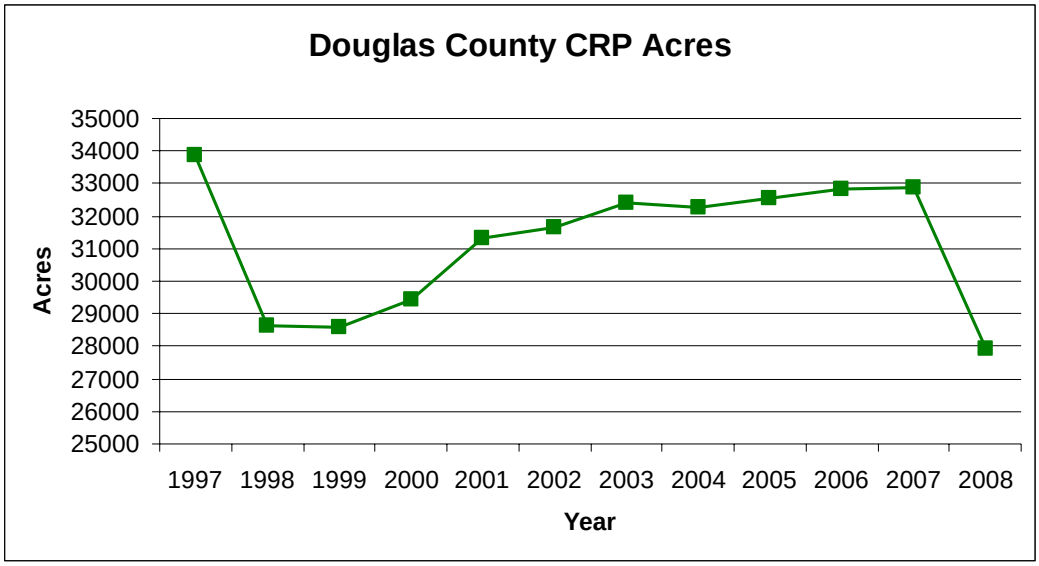
This set of SGCN includes mammals, birds, reptiles, amphibians, fishes, insects, and mollusks, and represents about one-quarter of the nearly 1,200 animal species in Minnesota that were assessed for this project. (Source:www.dnr.state.mn.us)

Tomorrow's Habitat for the Wild and Rare (a collaborative group of conservation professionals led by the DNR) identifies habitat loss and degradation as the primary problem facing species in greatest conservation need in Minnesota. It recommends a simple and direct approach to this problem: conserve key habitats used by Minnesota's SGCN in order to conserve the majority of Minnesota's wildlife. (Source: www.dnr.state.mn.us).

Douglas County has also seen a marked decline in the number of acres enrolled in the Conservation Reserve Program (CRP). In 2008, farmers saw record high corn prices, coupled with near record high wheat and soybean prices, setting up a scenario with which set aside programs

just couldn't compete. Many expiring CRP contracts were not re-enrolled and instead thousands of acres were plowed and farmed for the first time in 10-15 years.

Figure 2 Douglas County CRP Acres



Source: Douglas County FSA (September 3, 2008)

Conservation and Habitat Programs:

CRP (Conservation Reserve Program)

CRP is a voluntary program for agricultural landowners administered through the Farm Service Agency (FSA). Through CRP, landowners can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland.

CCRP (Continuous Conservation Reserve Program)

Environmentally desirable land devoted to certain conservation practices may be enrolled in CRP at any time under continuous sign-up. Offers are automatically accepted provided the land and producer meet certain eligibility requirements. Continuous sign-up contracts are 10 to 15 years in duration.

RIM (Reinvest in Minnesota)

The RIM program is a state program administered through the SWCD office. It protects and improves water quality, reduces soil erosion, and enhances fish and wildlife habitat by retiring private marginal cropland from agricultural production, planting permanent native vegetation, and restoring previously drained wetlands. Other benefits include flood control and ground water recharge. Landowners are paid a percentage of the assessed value of their land to voluntarily enroll it in a conservation easement. A variety of land types are eligible, including wetland restoration areas, riparian agricultural lands, marginal cropland, pastured hillsides, and sensitive ground water areas. After land is enrolled, it is managed under a conservation plan, which generally includes items like wetland restoration (for areas with drained wetlands), native grass plantings, and tree plantings.

CREP (Conservation Reserve Enhancement Program)
CREP is a combination of the federal CRP program and the state RIM program. The land owner receives annual CRP payments for 15 years, a one-time RIM payment, and cost-share for enrolling in a 50 year or perpetual easement. These acres are planted to native grasses and forbs, or trees and shrubs. Wetlands can be restored through this program.

WRP (Wetland Reserve Program)
The WRP program is a federal program administered through the Natural Resources Conservation Service (NRCS) office. The landowner receives a one-time payment and cost-share.

RIM-WRP
Combining these two easement programs allows state funds to leverage federal funds for conservation that are available through the recently enacted 2008 Federal Farm Bill. Competitive payment rates have been established for this partnership using township estimated market values.

Working Lands for Wildlife Initiative
The Working Lands program is a public/private partnership for wildlife development on working farms. In some cases, land might be set aside to restore wildlife habitat. Other projects might involve changes in certain agricultural practices in ways that support both wildlife and the economic vitality of the farming operation. The program is administered through the Minnesota Department of Natural Resources (DNR).

The **United States Fish and Wildlife Services (USFWS**) also serves the purpose of restoring and protecting vital habitat through the acquisition of federal land and establishing easements with private landowners.

Conservation Lands Summary	
	Acres
CRP	24,052.10
CCRP	3,246.00
CREP	2,341.80
RIM	1,684.40
RIM-WRP	23.60
WRP	677.90
USF&W Ease./Acq.	16,153.38
DNR WMA	5,429.60
Natural Lands	188,906.32
Total Resource Acres	32,025.80
Cropland Acres	236,375.00
Percent Enrolled	**13.5%**
County Size Total	460,928.00
Percent Conserving	**52.6%**
BWSR Prepared: 08/01/08	

Table 1 Summary of land enrolled in conservation programs

Specifically, the Fergus Falls Wetland Management District's mission is to identify, protect, and restore the tallgrass prairie/wetland ecosystem and associated habitats and to provide opportunities for outdoor recreation and environmental education. For this purpose, the district currently manages 216 waterfowl production areas (WPAs) totaling 44,499 acres, and 1,148 perpetual easements protecting 24,015 acres of wetlands on private land. Thirty-nine perpetual wildlife habitat easements covering 4,185 acres of wetland and grassland habitats on private land have also been obtained.

The Douglas County Water Plan Task Force fully supports all state and federal conservation and habitat programs, and the funding that backs them. The programs support the preservation, restoration, and creation of essential habitat for wildlife all the while protecting our vital water resources from erosion, nutrient loading, and pollution.

Priority Concern: Wastewater and Stormwater Management

Wastewater Management

Wastewater is any water that has been negatively impacted by human activity. It is made up of liquid waste discharged from residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. The term most often refers to the management (storage, treatment, and discharge) of wastewater from municipalities or subsurface sewage treatment systems (SSTS).

A failing individual sewage treatment system is defined in MN Rules Chapter 7080 as "…a seepage pit, cesspool, drywell, leaching pit or other pit, a tank that obviously leaks below the designated operating depth or any system with less than the required vertical separation..." (between the bottom of the treatment system and saturated soil). A failing system is considered an "imminent health threat" if it discharges onto ground surfaces or into surface waters, or if sewage backs up into a dwelling or other establishment. Douglas County has adopted MN Rules Chapter 7080 as part of the Douglas County Zoning Ordinance.

Failing sewage systems discharge untreated waste water into the environment where it contaminates ground water supplies, degrades surface waters, or poses a serious pathogenic health threat on the ground surface. Untreated waste water contains harmful bacteria (measured in fecal coliform), high levels of nutrients (such as phosphorus), and other compounds that consume dissolved oxygen in water. Fecal coliform is an indicator used to measure the amount of potential harmful bacteria that may be present in a water sample. Phosphorus is the limiting nutrient in freshwater ecosystems; additions of this nutrient can significantly increase the amounts of algae and macrophytes leading to "weedy" and green waters. Untreated sewage contains organic compounds that as they decay, or are bacterially digested, consume oxygen. This consumption can reduce the amount of oxygen available for fish and other aquatic species.

Failing septic systems continue to be a problem throughout the county. A recent evaluation by Wenck Associates estimated failure rates to be as high as 30-40%. Rural areas, unsewered lake developments, and unsewered towns are present throughout the County and require additional attention to improve SSTS compliance. The central part of the County, within the Long Prairie River Watershed, has centralized sewer through ALASD. The location of ALASD boundaries are depicted on Appendix C-Population Growth.

Some measures are in place to reduce failure rates. Ordinance revisions may reveal many failing septic systems through a point of transfer compliance requirement. Since 2003, any property transfer must be accompanied by an inspection of the system and/or certificate of compliance. This requirement along with requiring a certificate of compliance with building permits, will identify many failing systems.

Homeowner education on septic system maintenance and day-to-day use play an important role in improving system life expectancy and treatment efficiency. Douglas County also recognizes that correcting failing SSTS will not be effective without proper disposal of septage by pumpers. Further information is needed to determine risks and potential alterations needed in this aspect.

Stormwater Management

Stormwater discharge is defined as precipitation and snowmelt runoff from roadways, parking lots, and roof drains that is collected in gutters and drains. Stormwater management is the activities within a watershed or region done to remedy existing stormwater problems and/or prevent the occurrence of new problems. Stormwater management applies to agricultural and urbanized land uses and includes quality and quantity considerations.

According to EPA's National Water Quality Inventory: 2000 Report, prepared under Section 305(b) of the Clean Water Act, urban stormwater runoff and discharges from storm sewers are a primary cause of impaired water quality in the United States.

> "The surest way to improve water quality in Minnesota is to better manage stormwater. Unmanaged stormwater can have devastating consequences on the quality of lakes, streams and rivers we enjoy. Stormwater often contains oil, chemicals, excess phosphorous, toxic metals, litter, and disease-causing organisms. In addition, stormwater frequently overwhelms streams and rivers, scours stream banks and river bottoms and hurts or eliminates fish and other aquatic organisms."
> Source: http://www.pca.state.mn.us/water/stormwater/index.html

Home to over 200 lakes over 40 acres in size, Douglas County has abundant surface waters. A map of surface waters in Douglas County is available in Appendix B. Many of these lakes are at risk of degradation due to inadequate or nonexistent stormwater management. Under a joint powers agreement with the MPCA, LRM has regulatory authority for stormwater management within the County. This includes permitting and enforcing NPDES requirements where greater than one acre is disturbed or impervious surfaces over one acre are created.

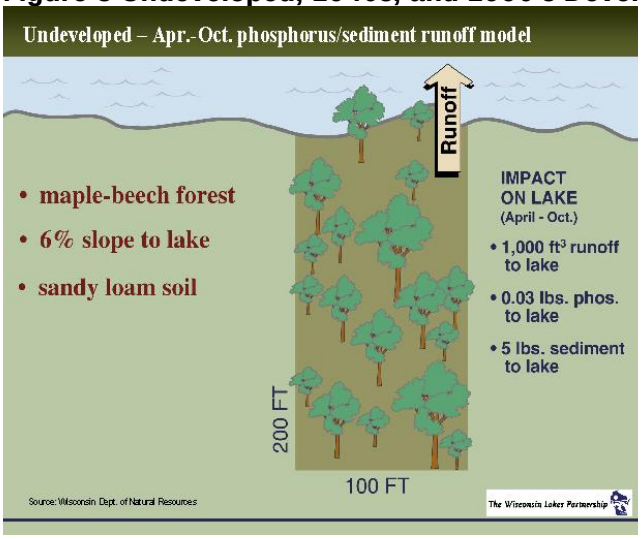
100 Year Storms

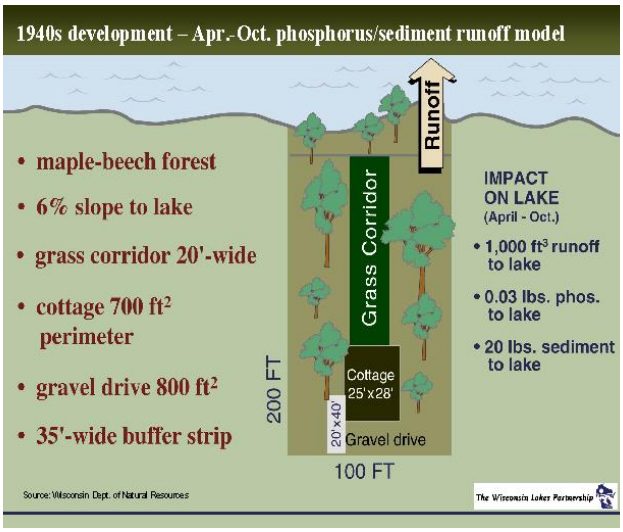
A 100 year storm event represents a probability that a particular amount of rain will fall within a given time period. In Douglas County, a rain event in which 5.57 inches fell in a twenty-four hour period would be considered a 100 year rain. A 100 year rain has 1% probability of occurring in a particular location. A 500 year rain has a probability of 0.2% of occurring.

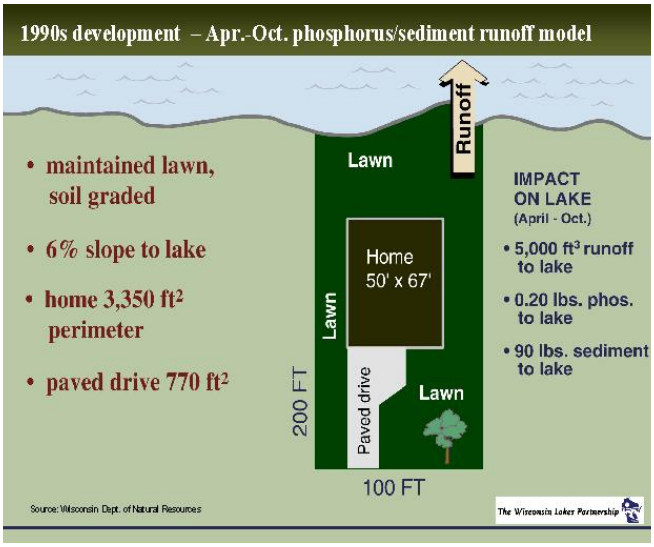
Increased development in combination with apparent climate change has created conditions of greater stormwater runoff. Three or more 100-year storm events have occurred in Douglas County in the last decade. A 500-year, 72-hour, storm event dropped 9.21 inches in June of 2003.

The construction of additional impervious surfaces (buildings, pavement, etc.), decrease in forested areas, filling of wetlands, road construction and related drainage, and reduction in the amounts of native vegetation have also supplied greater volumes of storm water. The shift from seasonal cabins to year-round homes contributes significantly to runoff and nutrient loading as illustrated in Figure 3 below (Source: Wisconsin Department of Natural Resources).

Figure 3 Undeveloped, 1940s, and 1990's Development, Runoff Impact on Lakes







Douglas County permits approximately 60-75 shoreland alterations every year. Many alterations eliminate or reduce the effectiveness of riparian buffers and stabilizing native vegetation.

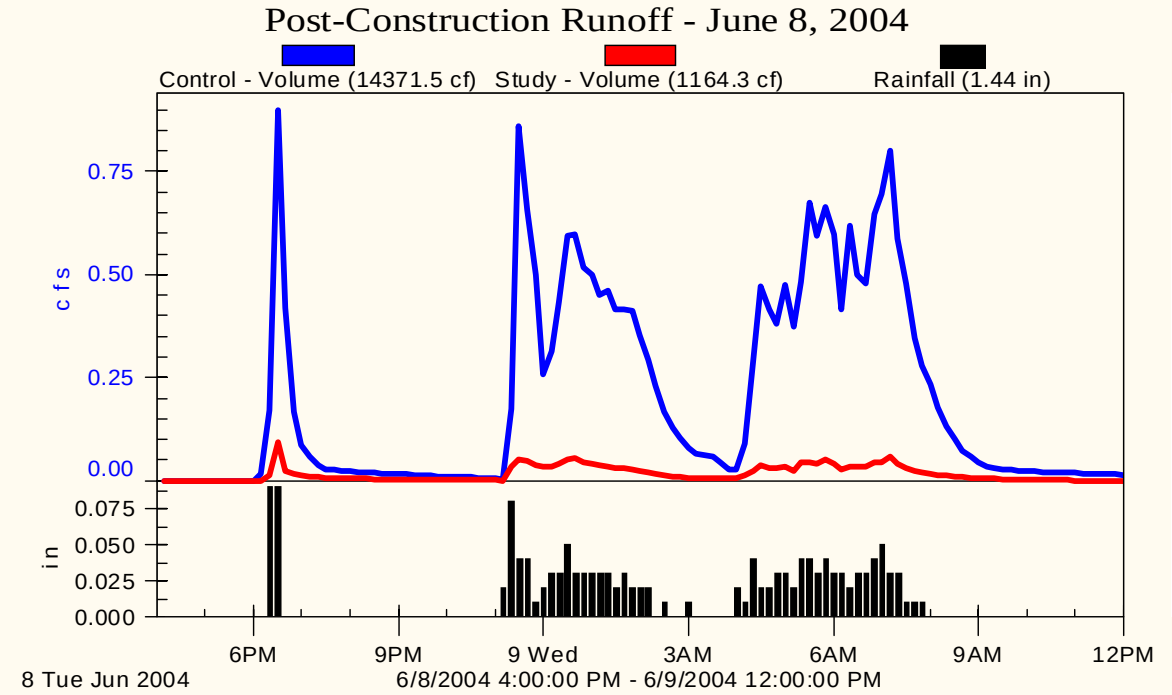
Many long-time lakeshore owners attest to changes in water clarity and the amounts of aquatic vegetation. Land values are affected by changes in water clarity as proven by a 2003 Bemidji State University study, "Lakeshore Property Values and Water Quality." A decrease in overall property values will harm the county's economy.

An area largely overlooked until recent years has been urban and residential stormwater management. With increasing shoreline development and alteration, water quality degradation continues to occur despite the removal of numerous failing septic systems. Improving stormwater management will encompass the reestablishment of vegetative buffers along lakes and rivers, maintenance of retention ponds and other stormwater management facilities, and continued education to modify property owner behaviors.

Recognizing the link between property values and water clarity shown by the Bemidji State University study, citizens should become mobilized to utilize erosion and sediment control measures, lakescaping, and preservation of aquatic vegetation as a means to reduce the impacts of additional pollutant loading created by higher stormwater volumes. As riparian and second tier development continue, stormwater management will be come a higher priority in preserving or improving existing water quality

Rain gardens, vegetated swales, wet ponds and other bioretention practices have been proven to effectively reduce runoff, filter pollution, and bind up excess nutrients. A study done by the City of Burnsville and Barr Engineering demonstrates nearly 90% reduction in stormwater volume in a side by side comparison of traditional street design with that of one retrofitted with 17 roadside rain gardens. The hydrograph below shows runoff discharge after receiving 1.44 inches of rainfall over nine hours.

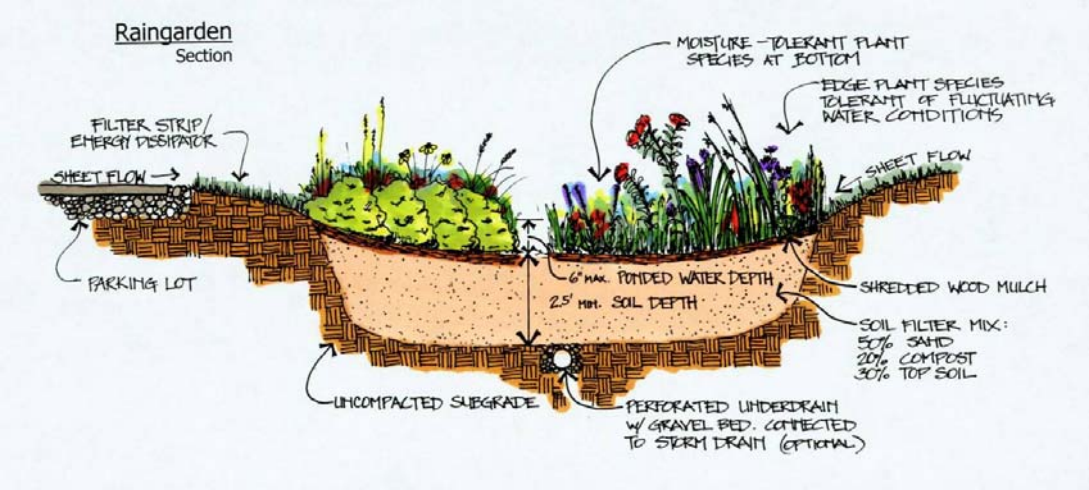
Figure 4 Stormwater reduction after installation of rain gardens



Source: City of Burnsville, Barr Engineering

A **rain garden** is a shallow depression where water gathers from rain or snowmelt that is planted with native wetland or wet prairie wildflowers and grasses. Rain gardens collect, store, and filter stormwater runoff from impervious areas such as roofs, parking lots, sidewalks, driveways, or patios. Rain gardens fill with a few inches of water and allow the water to slowly infiltrate into the ground rather than running off into storm drains, and eventually into streams and lakes.

Figure 5 Cross section view of a typical rain garden



Source: Gregg Thompson, Association of Metro Soil and Water Conservation Districts

Rain Barrels can also reduce a small portion of the runoff that enters storm drains. A rain barrel can be any type of container that is used to catch water flowing from a downspout and store it for future use. The stored rain water provides a low-cost alternative to using tap or well water for watering lawns and gardens. Rain water can actually improve the health of your plants because it's naturally soft and does not contain minerals, chlorine, and other chemicals found in city water supplies. The rain barrel pictured on the right was made during a Douglas Soil and Water Conservation District workshop. Homeowners had the opportunity to build their own rain barrels using discarded, food grade 55-gallon drums from a local vendor. The other supplies were purchased for approximately $15 from various local hardware retailers. Pre-assembled barrels are now available for purchase by request at the SWCD office and "Make Your Own" instructions are available free of charge.

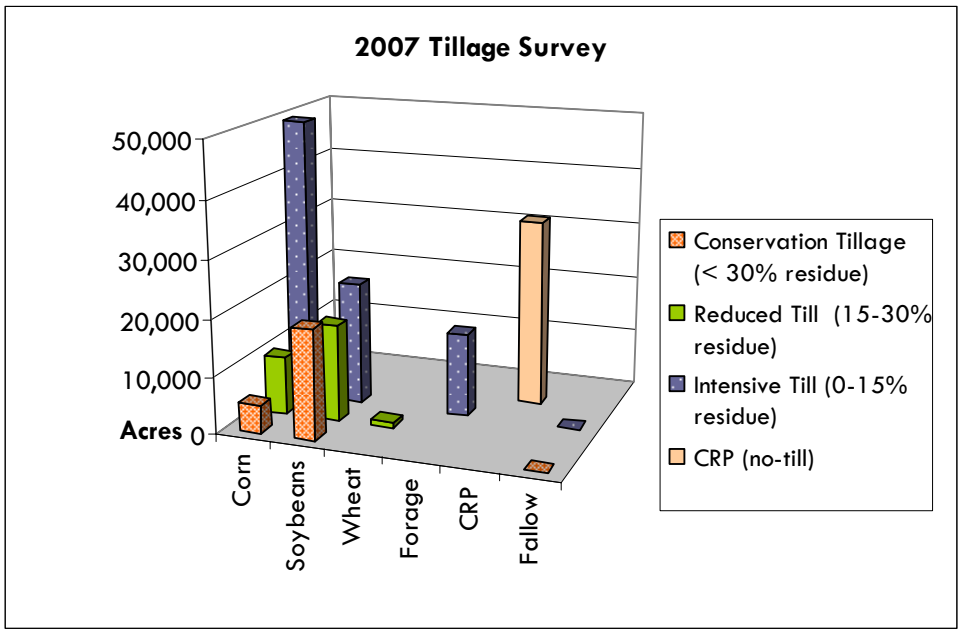
In September 2008, the City of Alexandria initiated a Comprehensive Stormwater Management Plan (SWMP). Once completed (Spring 2009) the SWMP will provide the city, contractors, residents and businesses concise guidelines, education, capital improvements and programs to address the current and future challenges of protecting the city's water and natural resources through stormwater management. The Plan will be different from a traditional stormwater management approach, which stressed detention and conveyance facilities, to

comprehensive watershed management. This method adds innovative techniques that treat stormwater as a resource instead of a waste product.

Stormwater management in agricultural areas has been fairly well executed through use of best management practices, nutrient management plans, and feedlot regulation. Many existing conservation programs need to be maintained to continue pollution reductions and additional efforts are needed to reach specific problem areas with greater emphasis.

Practices such as no-till seeding, leaving adequate crop residue, buffering drainage ditches, maintaining grassed waterways, and replacing open tile intakes with buried inlets will further assist in reducing sediment and nutrient loading to receiving waters, thereby improving water quality. Douglas Soil and Water Conservation District and the Natural Resource Conservation Service have many cost-share and loan opportunities available for similar conservation practices and projects already in place. Feedlot runoff issues will be addressed through the Douglas County Feedlot Program. Douglas County is a delegated feedlot authority and has a work plan that is reviewed annually by the Pollution Control Agency. This work plan is available at the Land and Resource Management Office and outlines implementation and monitoring activities of the feedlot program. See Appendix A-Watersheds of Douglas County.

Figure 6 Roadside Tillage Survey by Douglas SWCD (Source: BWSR)



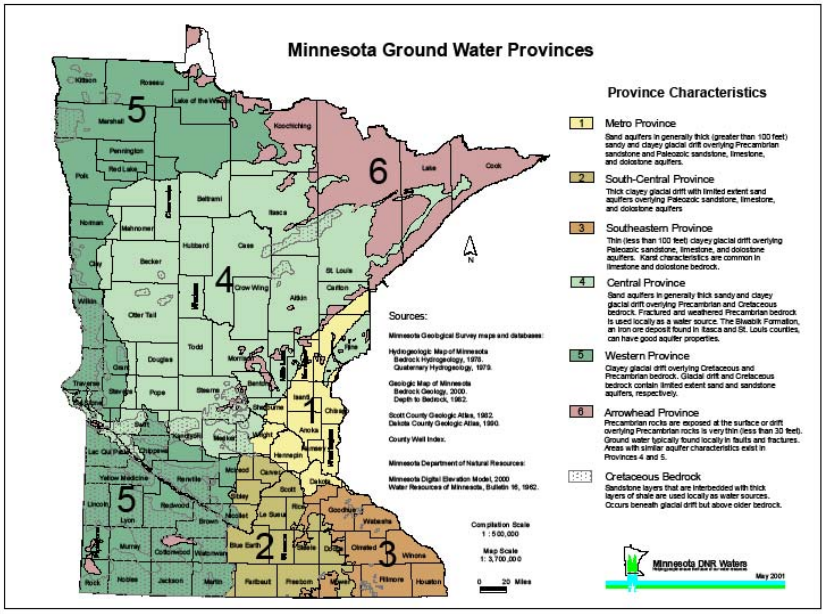
With a majority of growth occurring in the Long Prairie Watershed, residential stormwater management will be a high priority. The remaining watersheds will also have residential stormwater concerns, but at a lesser intensity. Rural areas throughout the county will continue to require agricultural stormwater management until remaining problem areas are resolved. All watersheds will require greater protection when managing stormwater in riparian areas. LMR is designated to do construction stormwater permitting for the MPCA.

Priority Concern: Water Quality

Ground Water

Development, sand and gravel mining, and drainage may also impact ground water resources by reducing recharge areas and decreasing recharge volumes while increasing the volume pumped from local aquifers. Most, if not all, drinking water is supplied from ground water in Douglas County. Figure 7 shows the six ground water provinces of the state based on bedrock and glacial geology. Areas within each province exhibit similar ground-water sources and the availability of ground water for drinking water, industrial, and agricultural uses. According to the DNR Waters, the aquifers within these provinces occur in two general geologic settings: bedrock comprising a wide range of rock types and ages, and unconsolidated sediments deposited by glaciers, streams, and lakes. Douglas County is within Province 4 (Central) which is characterized by sand aquifers that are thick and yield large quantities of water. When these aquifers are near the land surface, they may be vulnerable to contamination.

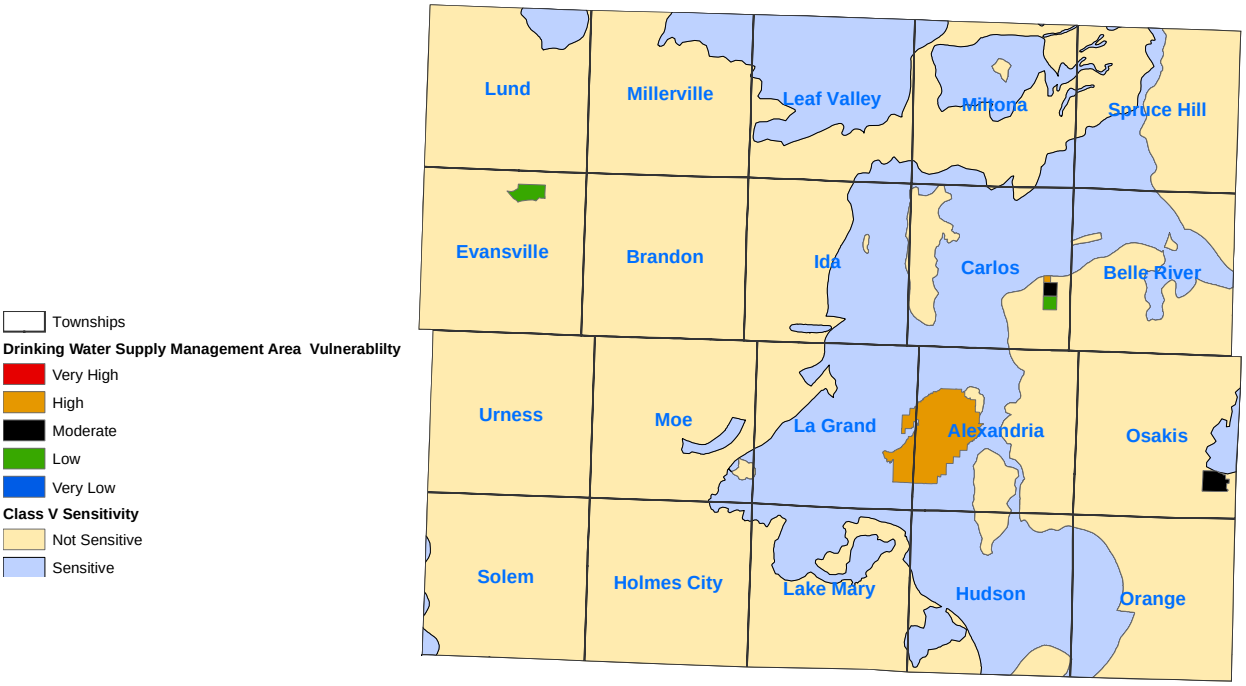
Figure 7 Minnesota Ground Water Provinces (Source: DNR Waters)



Ground water contamination can come in many forms including bacteria, nitrate, arsenic, and other chemicals (fertilizers, pesticides, etc.). The Minnesota Department of Health (MDH) recommends testing private wells for nitrate because of the potential health risks it posses to infants (blue baby syndrome). Nitrate and nitrite are naturally occurring sources of pollution and can be found in ground water, although high nitrate levels are usually due to human activities. Human introduced nitrate-nitrite enters environment from fertilizer, sewage, and human or farm-animal waste. In agricultural settings, risks of potential contamination can be reduced by proper nutrient management and manure storage. The MDH has developed nitrate-nitrogen probably maps for several counties in Minnesota. These maps can help with state and local water quality planning efforts. Douglas County has not yet been mapped. Contaminated ground water can also impact irrigated crops, livestock, and surface waters.

Wellhead protection is a method developed by the MDH to prevent well contamination by managing potential contaminant sources within a well's recharge area. Wellhead protection plans have now been completed for Alexandria, Carlos, Evansville, and Osakis. The MDH required these municipalities to complete wellhead protection plans because of their vulnerability rating. The vulnerability assessments must address three components: 1) geologic sensitivity, 2) well construction, maintenance, and use, and 3) water chemistry and isotopic composition (age dating). Wells classified as "moderately vulnerable" must manage all point source contamination risks and address land use activities that threaten the aquifer. Figure 8 shows the vulnerability of drinking water supply management areas in the county. All Douglas County citizens depend on ground water for drinking water and will benefit if public water suppliers develop and implement Wellhead Protection plans. Appendix I contains lists of all public water suppliers in this county.

Figure 8 Drinking Water Vulnerability in Douglas County



The City of Alexandria has been expanding through orderly annexation over the last several years and will continue to doing so; enlarging the borders will make a public water supply available to a greater number of people. As a result, fewer wells will be used and more wells will be abandoned in this area. Residents are encouraged to take advantage of the free well sealing program provided by the water supplier, Alexandria Light & Power. Other private wells in the County can be protected by maintaining proper setbacks to potential contaminant sources and related land use education efforts. Additional information about drinking water supplies can be found at: www.health.state.mn.us/divs/eh/water/swp/swa/index.htm.

Surface Waters
Douglas County is located within the Central Hardwood Forest and Northern Glaciated Plains Ecoregions.

Lakes and rivers within ecoregions, because they occur in an area of similar land type, often have similar physical characteristics, water chemistry, and biological communities. It is often said that, "A lake is a reflection of its watershed," and therefore of its ecoregion. In other words, what happens on the land and the basic characteristics of the land (soil, geology, vegetation, drainage, etc.) affects the quality and health of a lake or stream. The number, appearance, and condition of lakes vary among ecoregions because of glacial history, geology, soil type, land use, and climate. Typical values for chemical and physical measurements have been compiled for the four lake-rich ecoregions by evaluating information from minimally impacted lakes and rivers. These values provide a "yardstick" for comparing other lakes and rivers in the same ecoregion. Source: Minnesota Shoreland Management Resource Guide (www.shorelandmanagement.org).

Figure 9 Ecoregions of Minnesota

Typical values for chemical and physical parameters have been compiled for the seven ecoregions by monitoring unimpacted water bodies (lakes or streams with minimal human disturbance). See Table 3 below. These values help us identify what conditions might have existed before human settlement and help us develop realistic expectations for how lakes or streams might be restored to a more "natural" state. It is unrealistic to expect a shallow, southern Minnesota lake to have the same water clarity or productivity, for example, as a northern Minnesota lake. Ecoregions help us understand these differences.

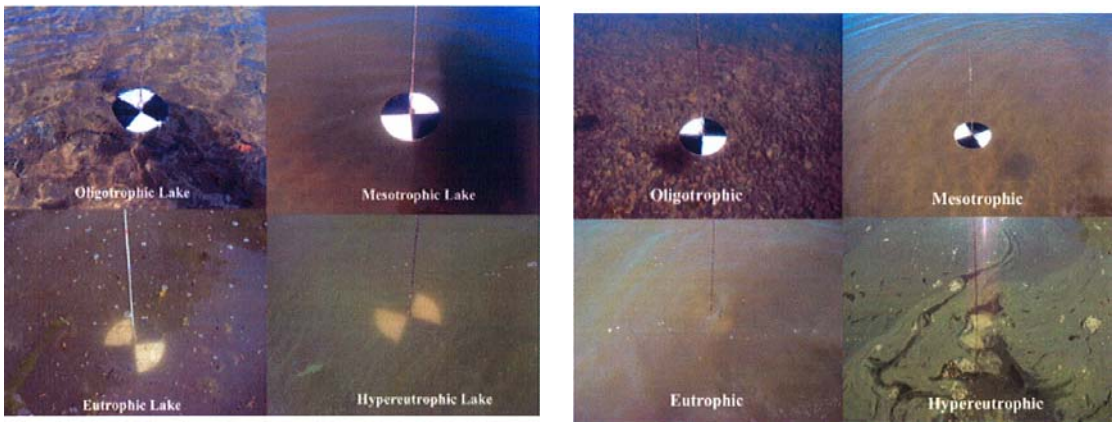
	Red River Valley	Northern Minnesota Wetlands	Northern Lakes and Forests	North Central Hardwood Forests	Northern Glaciated Plains	Western Corn Belt Plains	Driftless Area*
pH	8.6 – 8.8	7.2 – 8.3	7.2 – 8.3	8.6 – 8.8	8.3 – 8.6	8.2 – 9.0	N/A
TSS (in mg/L)	2 – 6	<1 – 2	<1 – 2	2 – 6	10 – 30	7 – 18	N/A
NO_x (in mg/L)	<0.01	<0.01	<0.01	<0.01	.01 – .1	0.01 – 0.02	N/A
TP (in mg/L)	0.023 – 0.050	0.014 – 0.027	0.014 – 0.027	0.023 – 0.050	0.130 – 0.250	0.065 – 0.150	N/A
Turb (in NTU)	1 – 2	<2	<2	1 – 2	6 – 17	3 – 8	N/A
Secchi (in m)	1.5 – 3.2	2.4 – 4.6	2.4 – 4.6	1.5 – 3.2	0.3 – 1.0	0.5 – 1.0	N/A
Chl-α (in µg/L)	5 – 22	<10	<10	5 – 22	30 – 55	30 – 80	N/A
TKN (in mg/L)	<0.60 – 1.2	<0.75	<0.75	<0.60 – 1.2	1.8 – 2.3	1.3 – 2.7	N/A

Table 2 Water quality variability by Ecoregion (Source: MPCA)

Water Quality can be easily assessed by looking at several of indicators. Currently volunteers, most of which are members of the Douglas County Lakes Association (DCLA), monitor approximately 30 lakes in Douglas County throughout the summer. These volunteers collect Secchi disk readings and water samples that are later analyzed at a lab for Total Phosphorus (TP) and Chlorophyll $\underline{a}$ (Chl $\underline{a}$). This data is easily collected and fairly inexpensive to analyze.

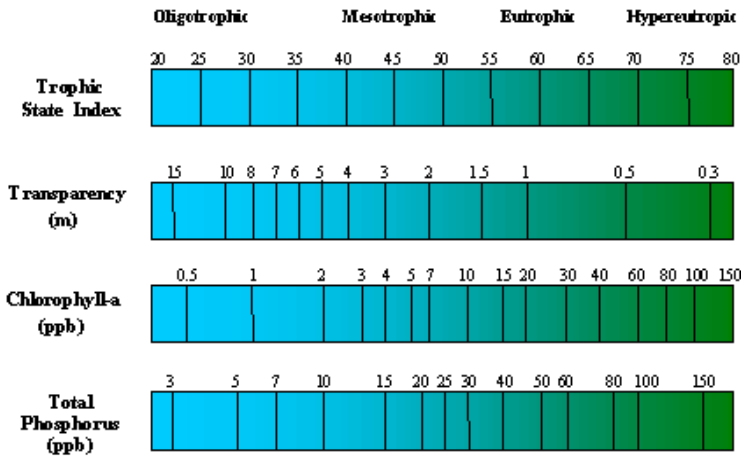
Phosphorus, Chlorophyll-a (algae concentration) and Secchi depth are related. When phosphorus increases, that means there is more food available for algae, so algal concentrations increase. When algal concentrations increase, the water becomes less transparent and the Secchi depth decreases. The overall trophic state index (TSI) of a lake is the average of the TSI for phosphorus, the TSI for chlorophyll-a and the TSI for secchi depth; therefore, it can be thought of as the lake condition taking into account phosphorus, chlorophyll-a and secchi depth.

Figure 10 Seasonal changes in Secchi disk readings (Source: MPCA)



Early summer Late summer

Figure 11 Trophic States (Source: MPCA)

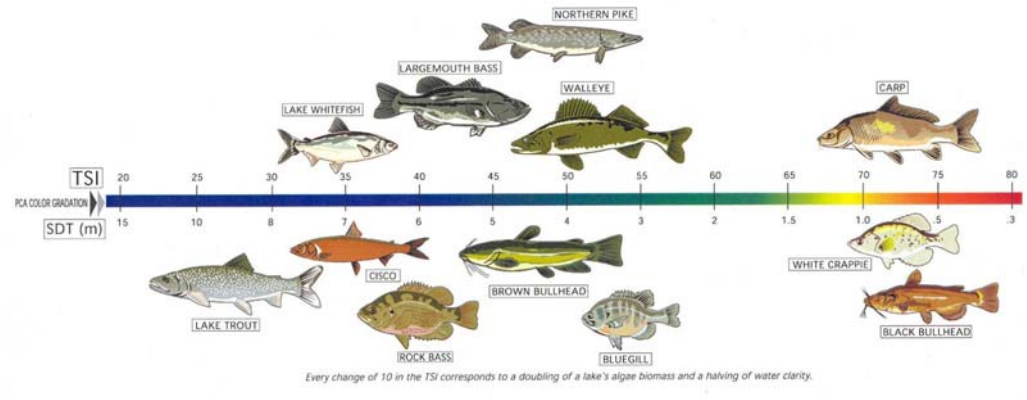


It is important to understand that Trophic States are defined divisions of a continuum in phosphorus and algal concentration. The TSI ranges from 0-100. 0-30 is Oligotrophic, where water is very clear, phosphorus is low, and algae is sparse. 30-50 is an in-between stage where the number of aquatic plants and algae increase due to more available phosphorus.

A TSI of over 50 describes a lake that is eutrophic, with a high density of plants and algae that could be unpleasant for swimming at certain times in the summer. Some lakes may be naturally eutrophic, having a TSI of 50 or greater for the last 100 years. Other lakes have gradually increased in TSI as a result of human activities. The Minnesota Pollution Control Agency recommends 8-10 years of quality long term data on a lake for the determination of increasing or decreasing TSI trends.

TSI is not necessarily interchangeable with water quality. Water quality is subjective and depends on how you intend to use the water body. A lake that is good for duck hunting is not necessarily good for water skiing. In turn, a lake that is great for swimming may not be great for bass fishing.

Figure 12 Fish species vary by lake TSI (Source: DNR)



Continued water quality monitoring and data analysis are needed throughout the county to maintain a long term database and identify trends. Several lakes have been identified as having a measured declining water clarity trend. In 2008, historical data showed a declining trend in TSI for lakes Aaron, Andrew, Darling, Freeborn, Geneva, Gilbert, Ida, Irene, Jessie, Louise, North Union, Red Rock, Smith, Oscar, and Stowe according to reporting by the RMB Environmental Laboratories at the primary monitoring site. More information is needed to understand this and other lakes' pollution sources in order to determine effective implementation strategies and prevent further degradation. Existing water quality data on all monitored lakes in Douglas County can be found on the Pollution Control Agency's website: www.pca.state.mn.us.

Water quality monitoring could be expanded to help resource managers better identify contributing factors in declining water conditions. Measuring stream clarity in lake inlets is one area of monitoring that could be expanded. Also a focused effort to monitor lakes within impaired watersheds could begin to lead to answers about potential sources of internal loading within the system. Biological monitoring could also be added for both streams and wetlands. Traditional water chemistry parameters like dissolved oxygen or total phosphorus can be highly variable in wetlands and often of little direct use in assessing wetland impacts or quality. However, wetland organisms and plants have adapted to the variable wetland environment and proven to be useful indicators of wetland quality.

Biological monitoring is often able to detect water quality impairments that other methods may miss or underestimate. It provides an effective tool for assessing water resource quality regardless of whether the impact is chemical, physical, or biological in nature. To ensure the integrity of surface waters, we must understand the relationship between human induced disturbances and their effect on aquatic resources. MPCA has monitoring protocol for sampling fish, aquatic invertebrates, and algae in streams, as well as plants and aquatic invertebrates in wetlands.

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. Section 303(d) of the CWA requires states to assess all of their waters for impairments and publish a list of impaired waters every two years, called the Total Maximum Daily Load (TMDL) List.

Currently all the major watersheds in Douglas County have impaired stream/river reaches. See Figure 14 below. TMDL studies are completed or in progress for each impairment. The Chippewa River watershed has a completed and approved for fecal coliform TMDL; a turbidity TMDL began in 2009. Pomme de Terre watershed has a completed TMDL and implementation plan for Fecal Coliform, as well as a TMDL study for turbidity in progress. The Long Prairie River watershed has a completed TMDL and implementation plan for low dissolved oxygen. In addition to the stream/river impairments, several lakes area also listed. A TMDL was started in 2008 on Lakes Osakis, Smith, and Clifford all within the Sauk River Watershed. See Appendix E for the complete list of impaired water bodies in Douglas County.

Figure 13 Flow diagram of the TMDL process (Source: MPCA)

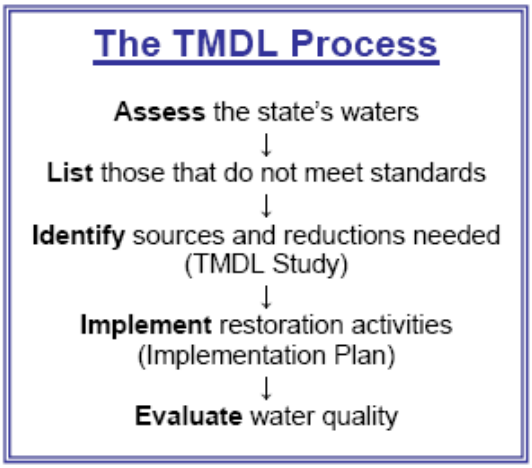
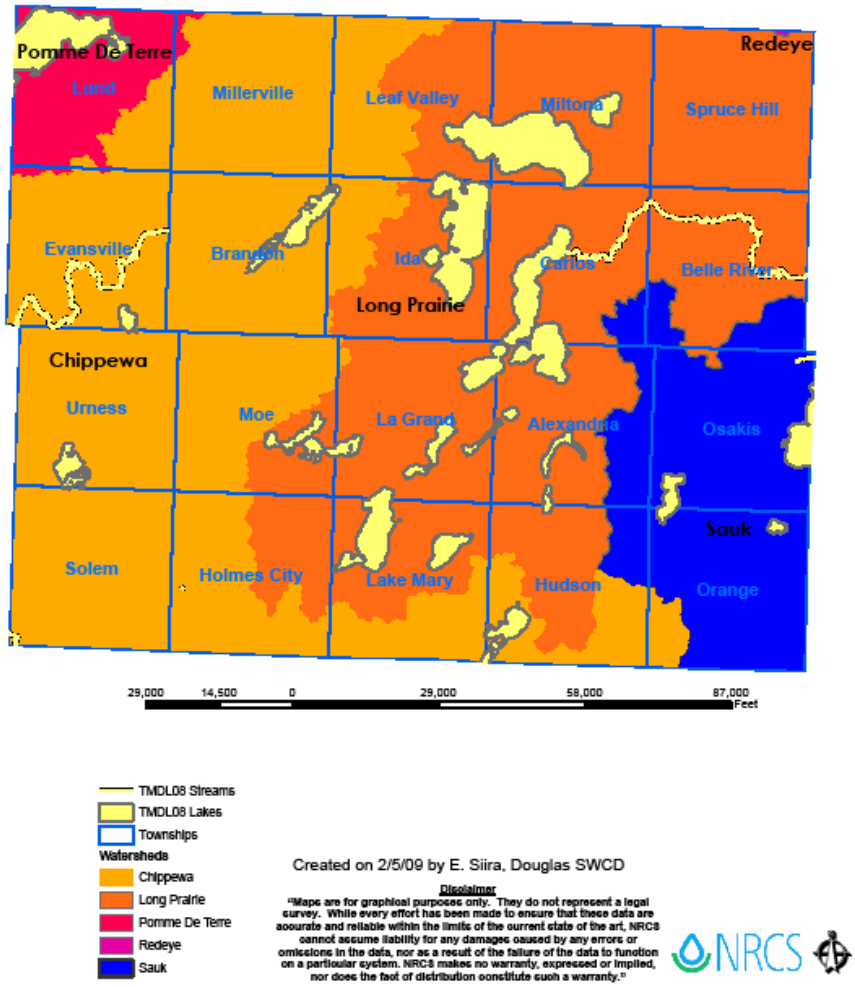


Figure 14 Map of Impaired Waters (Source: MPCA)



III. Goals, Objectives, and Action Items

Priority Concern: Development Pressures and Land Use

Goal 1. Manage development and growth in Douglas County in such a way as to maintain and/or improve the region's water quality.

Objective A. Guide new development with thorough planning, consideration for natural resources, and accurate information.

Actions:

1. Encourage the incorporation of the Local Water Management Plan into the County Comprehensive Plan.

2. Actively participate in the review and revision of county ordinances as they relate to the protection of water resources.

3. Identify specific protection or restoration needs of each major watershed within the County. Consider specific recommendations for best management practices and/or zoning changes to address needs.

4. Maintain updated ordinance information on county website and provide summary information to realtors.

5. Review development plans, encourage common infrastructure, and promote the use of low impact development concepts to conserve woodlands, expand open space, and protect other significant natural features.

6. Seek methods of creating incentives for conservation developments and disincentives for lot and block development designs.

7. Continue to promote the use of sensitive areas maps by the Planning Advisory Commission, Board of Adjustment, and County Board of Commissioners for use in the evaluation of environmental impacts that specific permit applications may have on local natural resources. Promote updating, increasing accuracy, and adding new information as better or more recent data becomes available, including information from the recently completed DNR County Biological Survey.

8. Continue to enforce existing shoreland ordinances and other ordinances as they relate to water quality. Where needed, dedicate personnel in the Land and Resource Management Office for targeted enforcement.

9. Cooperate and assist with the development of alternative wastewater treatment systems.

10. Improve communication between cities and county regarding shoreland alterations especially on lakes with split authority by holding a biennial meeting.

Objective B. Implement and promote land use practices that will reduce and/or mitigate negative human impacts on natural resources.

Actions:

1. Encourage conservation easements to provide buffers and/or prevent filling in wetlands on new developments in order to conserve natural areas and preserve water quality. Assist the Development Review Team with the evaluation of preliminary plats as needed.

2. Review the needs of the county in regards to implementing Surface Water Zoning ordinances. Consider setting standards for development based on lake designation or designation of special protection areas within a single lake (i.e. natural environment designation for sensitive areas of general development lakes).

3. Protect shore impact zones (SIZ) on all lakes. Revise ordinance(s) to better define "intensive clearing" and to require a Shoreland Alteration Permit for all clearing within the SIZ. Revise ordinance(s) to prohibit filling of all wetlands in SIZ.

4. Promote buffer strips, lakescaping, rain gardens and other practices that reduce the impacts of human activities. Attend meetings and give presentations to service organizations, lake associations, and realtors.

5. Obtain grant funds whenever possible to provide cost-share assistance.

6. Maintain an educational booth at the annual County Fair.

7. Continually educate LRM and SWCD staff on new best management practices, low impact development strategies, and water resource management technology.

8. Provide all new County Commissioners and Planning Advisory Commission members with information on the effects of various land uses and related water resource impacts by conducting an annual workshop, regular presentations, and requested training.

9. Continue to support solid waste programs and education efforts in hazardous waste disposal and recycling. Support efforts to educate citizens about the environmental impacts of illegal burning.

10. Utilize an aggressive marketing strategy of select water quality issues, best management practices, and conservation through use of the media, billboards, community and school presentations, and other education programs. Annually conduct a resource-related poster contest.

Priority Concern: Natural Habitat Destruction

Goal 1. Preserve, restore, and enhance natural habitat in Douglas County.

Objective A. Protect existing natural areas which provide crucial habitat for aquatic and terrestrial plants and animals.

Actions:

1. Create and maintain a clearinghouse of funding opportunities available for habitat protection and restoration projects on the Douglas SWCD website.

2. Encourage surface water zoning for the protection of aquatic habitat, vegetation, and lake bottom sediment.
    a. Compile existing DNR data of submergent vegetation on shallow lakes and bays to identify areas where surface water ordinances should be placed.
    b. Work with Douglas County LRM to update ordinances to include surface water restrictions of shallow basins or shallow bays of larger lakes to protect submergent vegetation.
    c. Investigate the feasibility of surface water zoning such as no-wake zone designations on shallow lakes and sensitive bays of larger lakes as needed.
    d. Create new ordinances to protect sensitive lakes by establishing special protection areas.
    e. Work with LRM to implement a docking ordinance to protect in-lake vegetation.

3. Encourage Douglas County to adopt the new DNR Shoreland Standards or incorporate Alternative Shoreland Standards in a timely way.

4. Reduce wetland impacts within shoreland and urban areas of Douglas County.
    a. Work with the City of Alexandria to establish wetland setbacks on all wetlands within the city of Alexandria.
    b. Consider all wetlands in Douglas County to be high priority and work to further restrict wetland impacts.
    c. Develop new wetland mitigation standards for replacement of wetlands (i.e. replacement required as close to the disturbance as possible or within same minor watershed).

5. Protect remnant woodland areas of Douglas County as a way to preserve natural hydrologic function.
    a. Create an inventory of large wooded tracts of land in Douglas County.
    b. Work to protect these areas from land altering activities.

Objective B. Restore previously impacted natural habitat.

Actions:

1. Restore high priority wetlands identified through the drained basin inventory to provide fish and wildlife habitat. Restore 25 acres per year.

2. Promote existing conservation programs (CRP, CCRP, WHIP, RIM/WRP) and the utilization of local, state, and federal funding opportunities.

3. Restore large drained lake basins (Crooked Hansford lakes, Wilken lake, and others identified in Douglas County) using Wetland Reserve Program ranking system to prioritize basins.

4. Work with MN DNR on water quality improvement/wildlife projects on Lakes Christina and Jennie or other projects as they arise.

Objective C. Enhance existing habitat by encouraging the establishment of healthy and diverse native vegetation.

Actions:

1. Promote buffer strips, lakescaping, rain gardens and other practices that reduce the impacts of human activities. Provide technical assistance and obtain grant funds whenever possible to provide financial assistance to landowners.

2. Research the feasibility of establishing a county tax incentive for installing, restoring and maintaining shoreline buffers, modeling Burnett County [Wisconsin] Land and Water Conservation Department.

3. Develop a guide book for shoreland property owners on restoring native buffers, local ordinances, strategies for improving water quality, and funding opportunities.

4. Assist the DNR and other organizations with exotic species control and education by providing informational materials to the public.

5. Promote the importance of preserving and restoring aquatic vegetation, as well as the importance of retaining fallen woody debris, by providing educational materials, encouraging no-wake zones, and lakescaping. Participate in at least one radio program and hold one workshop or open house annually.

6. Inventory/assess the land use adjacent to legal drainages, with special priority to those upstream of high priority lakes or rivers. Encourage the adoption of policies that require the establishment of buffers and/or side inlets where erosion and water quality issues exist. Offer assistance to landowners through conservation programs (such as CCRP) or other cost-share programs as funding is available.

Objective D. Create educational opportunities for the public.

Actions:

1. Host educational programs on the importance of preserving shoreline vegetation (in-lake and riparian).
    a. Support Nonpoint Education for Municipal Officials (NEMO) workshops.
    b. Create handouts, brochures, etc. describing the benefits of shoreland restoration, buffers, windbreaks, and conservation acres to wildlife and water quality.
    c. Participate in Kids' Groundwater Festival, Junior Viking Sportsmen's Habitat Day, Awake the Lakes/Day of the Lakes, and other natural resource related events when possible.

2. Establish a resource bank for Lake Associations and/or individuals to use for setting up workshops or annual meetings.
    a. Create data base of information on protecting and improving water quality for use by individuals or Lake Associations.
    b. Create data base of speakers that would be available for speaking at Lakes Association meetings on water quality improvement and protection.

3. Encourage maintenance of ditches done in such a way to protect wildlife habitat. Create information material for landowners, encouraging best management practices during ditch maintenance.

Priority Concern: Wastewater and Stormwater Management

Goal 1. Improve stormwater runoff management in Douglas County.

Objective A. Improve stormwater runoff quality by increased utilization of stormwater best management practices throughout the County.

Actions:

1. Promote the use of erosion and sediment control and other best management practices to reduce the amount of sediment and nutrients entering watercourses from commercial and residential areas.

2. Encourage the use of pervious pavement systems including long term maintenance and inspection to ensure proper function. LRM will tract locations of permitted pervious pavement systems. Establish a standardized inspection form.

3. Produce and distribute educational materials to inform citizens about the MN state law prohibiting the use of phosphorus in lawn fertilizers.

4. Maintain and update the inventory of all feedlots in the County through the county Feedlot Program. Follow the annual feedlot work plan and inspect, in priority order, feedlots based on proximity to water, open lots, and watershed.

5. Encourage the writing and utilization of nutrient management plans through incentives and cost-share programs. Provide technical and financial assistance for the closure of abandoned manure waste systems as needed.

6. Promote the use of erosion and sediment control and other best management practices such as buffer strips and no-till seeding to reduce the amount of sediment and nutrients entering watercourses from agricultural lands. Install sixty-five acres of buffer strips, create 2,000 feet of terraces or sediment blocks and seed 1,200 no-till acres per year.

7. Pursue funding to provide incentives or cost-share to assist agricultural landowners for implementation of erosion and sediment control and BMPs. Assist agricultural landowners with the installation of a 50 foot buffer strip on all agricultural land riparian to public waters and encourage similar practices on residential and commercial properties.

8. Work with agricultural landowners to replace open lateral tile lines with alternative tile intakes. Provide assistance when appropriate and available.

Objective B. Encourage compliance with stormwater rules and ordinances by continuing public education, promotion of BMPs, and further data collection, assessment, and management.

Actions:

1. Continue storm drain marking projects in Alexandria, Brandon, Carlos, Forada, Miltona, and Osakis to improve community awareness.

2. Monitor at least one ditch, storm drain, and/or storm water pond to evaluate quality and quantity of storm water each year.

3. Ensure MPCA and LRM Joint Powers agreement remains in place. LRM has regulatory authority for construction stormwater for NPDES permitted sites and sites where more than one acre of impervious surface is created. Provide information and workshops to contractors regarding new NPDES requirements as it become available. Review all stormwater pollution prevention plans (SWPPP) for proposed plats.

4. Create and maintain a database of detention ponds and other storm water management systems to track maintenance schedules and intervals of clean out requirements. Ensure maintenance of storm water management facilities on a regular basis.

5. Conduct tillage survey to determine crop residue levels and target areas for conservation tillage practices.

Goal 2. Improve wastewater management in Douglas County.

Objective A. Work to prevent SSTS failure and related sewage pollution in Douglas County.

Actions:

1. Work cooperatively with watershed and lake organizations to distribute educational materials and information to the public regarding SSTS operation and maintenance. Maintain a supply of brochures and other information for distribution.

2. Digitize septage disposal sites to identify areas of land spreading in coarse-grained soils that have potential for ground water contamination. Upon completion, re-evaluate the use of these areas as suitable disposal sites.

3. Educate property owners on proper septic system maintenance by distributing information, maintaining the Douglas County Website, and providing news releases at least twice a year.

Objective B. Identify and ensure the upgrade of failing septic systems.

Actions:

1. Pursue grants and low-interest loans to assist with SSTS upgrades. Continue to use Chippewa River Watershed Project and MN Department of Ag BMP Loan programs.

2. Require SSTS inspections within the next five years in all shoreland zoning districts and inspections within 10 years in all other residential zoning districts.

3. Continue to require a septic system inspection and/or Certificate of Compliance at property transfers for any systems over five years old. Continue to require Certificates of Compliance for permit applications with existing septic systems over five years old.

4. Continue to enforce Chapter 7080 of Minnesota State Rules throughout the County by requiring the upgrade on non-compliant systems and inspection of all SSTS installations.

Priority Concern: Water Quality

Goal 1. Protect and maintain surface water quality in Douglas County from further degradation.

Objective A. Monitor and assess surface waters to meet the required amount of data for MPCA impaired waters assessment.

Actions:

1. Utilize water quality data to determine long term trends and gauge effects of changing land uses.

2. Collect data on all lakes in the County approximately 50 acres or larger with in the next eight years. Work with MPCA to assess surface waters to determine water quality status for protection and restoration.

3. Create a priority lake list based on major watershed (eight-digit HUC), land use, and lake ecology.

4. Work with the Minnesota DNR Division of Waters to create/acquire lakeshed maps for identified priority lakes.

5. Train volunteers in advanced water quality monitoring, beyond Secchi disk readings. Monitor lake inlets and outlets.

6. Pursue funding for monitoring activities.

Objective B. Encourage water quality protection through planning.

Actions:

1. Assist with MPCA Lake Assessment Plans.

2. Assist lake associations with the development Lake Management Plans. Seek funding to complete development and implementation.

3. Encourage lakeshed-based planning.

4. Participate in appropriate meetings to provide technical advice, assist in coordination of water quality improvement efforts of both local and regional organizations. Attend at least 10 DCLA meetings each year.

5. Cooperate with lake associations to implement lake-specific projects. Facilitate participation in grant programs, such as the Healthy Lakes Program.

6. Educate citizens and local decision-makers on the economic values of clean water resources in sustaining the local tourism industry and maintaining property values by conducting two or more presentations at local organizations' meetings.

Objective C. View drainage systems as key to watershed management.

Actions:

1. Increase water quality monitoring of drainage ditches.

2. Host workshop(s) on alternative tile intakes.

3. Seek funding for incentives and promote side inlets, alternative tile intakes, ditch buffers, and ditch abandonment.

Goal 2. Improve or restore impaired surface waters.

Objective A. Assist with the development of TMDL studies and implantation plans.

Actions:

1. Support and cooperate with the PdTJPB on projects within or affecting Douglas County. Attend committee meetings as requested.

2. Support and cooperate with the CRWP and the MPCA on the Chippewa River TMDL process and other projects within or affecting Douglas County. Attend 12 CRWP meetings each year.

3. Support and cooperate with the SRWD and the MPCA on the Sauk River TMDL processes and other projects within or affecting Douglas County.

4. Assist and cooperate with Todd SWCD and the MPCA on the Long Prairie River TMDL process and projects.

5. Assist and cooperate with the MPCA with the Lake Winona TMDL process. Continue to work with the City of Alexandria and other agencies to improve water quality of Lake Winona.

6. Assist and cooperate with other TMDLs as needed.

Objective B. Assist with the implementation of completed TMDL.

Actions:

1. Work with TMDL lead local government units (LGUs) and MPCA to put best management practices (BMPs) on the ground to improve water quality of impaired systems.

2. Seek funding through special grants and appropriations for the implementation of BMPs.

3. Assist with monitoring of surface waters to determine the effectiveness of TMDL implementation activities.

Goal 3. Protect and maintain ground water resources in Douglas County

Objective A. Maintain and promote existing cooperative partnerships that monitor ground water.

Actions:

1. Continue to maintain seven monitoring wells to measure static water levels in select areas.

2. Provide public information on how and where to get wells tested, types of tests available, maximum allowable limits on ground water and drinking water contaminants, and what do if a well is contaminated.

3. Assist county residents with well water testing for nitrates and provide advice to them regarding testing results.

4. Work with the MN Department of Agriculture to acquire information on nitrate sensitive areas.

Objective B. Develop plans to protect ground water quality and quantity.

1. Cooperate with cities and the Minnesota Department of Health in developing and implementing wellhead protection plans for all public/community water supplies in the County.

2. Determine the feasibility of conducting a comprehensive ground water inventory such as a geologic atlas to determine availability, extent, and sensitivity to pollution of ground water resources. Incorporate ground water sensitivity information into the sensitive area maps.

3. Promote municipal water systems in all industrial areas.

4. Promote sealing of abandoned wells in all areas to reduce the potential for ground water contamination. Provide cost-share assistance when available.

5. Examine soil sensitivities and feedlot locations for potential ground water contamination. Target priority areas for nitrate testing and additional information.

6. Seek funding to study the impacts of abandoned manure pits on ground water. Seek funding for soil borings to be done to allow for the certification of compliance on undocumented manure storage facilities.

Objective C. Educate citizens on the importance of protecting ground water quality and conserving ground water resources.

1. Continue to promote public education of maintaining our ground water resources through avenues such as the Kids' Groundwater Festival, which will reach over 400 fourth grade students annually.

2. Promote the importance of water conservation.
    a. Support municipalities in their adoption of water conservation rate structures.
    b. Educate and encourage the public to use water efficient plumbing fixtures and appliances, and rainfall sensors on landscape irrigation systems.
    c. Host workshops and promote the use of rain barrels.

3. Educate local officials and landowners on the benefits of reclaiming abandoned gravel pits to protect ground water recharge areas.

Implementation Schedule

Responsible Parties for Implementation
DCLA: Douglas County Lakes Association
DNR: Minnesota Department of Natural Resources
DU: Ducks Unlimited
LRM: Douglas County Land and Resource Management
NRCS: Natural Resources Conservation Service
SWCD: Douglas Soil and Water Conservation District
WPTF: Water Plan Task Force

Funding Sources
Amend-CW: Dedicated Sales Tax Funding for Clean Water
Amend-OH: Dedicated Sales Tax Funding for Outdoor Heritage
CRP: USDA-FSA Conservation Reserve Program
CWL: Clean Water Legacy Grants
DCLA: Douglas County Lakes Association
EQIP: USDA-NRCS Environmental Quality Incentive Program
Existing Staff: In-Kind
Federal/State Grants: Various Grants
RIM/WRP: BWSR Reinvest in Minnesota/USDA-NRCS Wetland Reserve Program
SCS: BWSR State Cost-Share Program

IV. Implementation Schedule

Priority Concern: Development Pressure and Land Use

Goal 1. Balance open space and development in Douglas County in such a way as to maintain and/or improve the region's water quality.

Objective A. Guide new development with thorough planning, consideration for natural resources, and accurate information.

			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Incorporate LWMP into County Comprehensive Plan	2009	LRM	$1,000	Existing Staff	All
	2	Participate in revision of ordinances	2019	SWCD, LRM	$15,000	Existing Staff	All
	3	Identify protection/restoration needs of each major watershed	2013	SWCD, LRM	$50,000	CWL	All
	4	Maintain updated ordinances on county website	2019	LRM	$10,000	Existing Staff	All
	5	Review development plans, encourage LID	2019	SWCD, LRM	$5,000	Existing Staff	All
	6	Create incentives for conservation developments	2019	LRM, DNR, Consrv. Orgs.	$30,000	Existing Staff	All
	7	Promote the use of sensitive areas maps. Promote updating, increasing accuracy, and adding new information as better or more recent data becomes available.	2019	LRM, SWCD	NA	Existing Staff	All
	8	Continue to enforce existing shoreland ordinances and other ordinances as they relate to water quality.	2019	LRM	NA	Existing Staff	All
	9	Cooperate/assist with the development of alt. wastewater treatment systems	2019	LRM, U of M	NA	Existing Staff	All
	10	Improve communication between cities and county regarding shoreland alterations, esp. lakes with split authority	2019	LRM, SWCD	NA	Existing Staff	All

Objective B. Implement and promote land use practices that will reduce and/or mitigate negative human impacts on natural resources.

			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Encourage conservation easements	2019	WPTF	NA	Existing Staff	All
	2	Assist DRT with evaluation of preliminary plats as needed	2019	SWCD	NA	Existing Staff	All
	3	Review need for Surface Water Zoning	2013	LRM, SWCD	$5,000	CWL	All
	4	Protect shore impact zones, define intensive clearing, prohibit filling wetlands in SIZ	2019	LRM, SWCD, City of Alex	NA	Existing Staff	All
	5	Promote buffer strips, lakescaping, rain gardens, and other BMPs. Give presentations	2019	LRM, SWCD	$10,000	Existing Staff	All
	6	Obtain grant funds for cost-share	2019	SWCD	$100,000	Amend-CW	All
	7	Maintain booth at County Fair	2019	SWCD	NA	Existing Staff	All
	8	Educate LRM, SWCD on new BMPs, LID, and water resource technology	2019	LRM, SWCD	$12,000	Existing Staff	All
	9	Support solid waste programs, recycling. Educate impacts of illegal burning	2019	LRM, SWCD, Popa Douglas	$500	Existing Staff	All
	10	Market BMPs	2019	SWCD, DCLA	$10,000	DCLA	All

Priority Concern: Natural Habitat Destruction

Goal 1. Preserve, restore, and enhance natural habitat in Douglas County.

Objective A. Protect existing natural areas which provide crucial habitat for aquatic and terrestrial plants and animals.

			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Create/maintain a clearinghouse of funding opportunities for habitat protection and restoration projects on the Douglas SWCD website.	2019	SWCD	NA	Existing Staff	All
	2	Encourage surface water zoning for the protection of aquatic habitat, vegetation, and lake bottom sediment.	2013	LRM, SWCD, WPTF	NA	Existing Staff	All
	2a	Compile existing DNR data of submergent vegetation on shallow lakes and bays to identify areas where surface water ordinances should be placed.	2013	SWCD	NA	Existing Staff	All
	2b	Work with LRM to update ordinances to include surface water restrictions on shallow basins or bays of larger lakes.	2013	SWCD, LRM	$20,000	Existing Staff	All
	2c	Investigate the feasibility of surface water zoning such as no-wake zones on shallow lakes and sensitive bays of larger lakes as needed.	2013	SWCD, LRM	$5,000	Existing Staff	All
	2d	Create new ordinances to protect sensitive lakes by establishing special protection areas	2013	LRM, SWCD, WPTF	$50,000	Existing Staff	All
	2e	Work with LRM to implement a docking ordinance to protect in-lake vegetation	2010	LRM, SWCD, WPTF	$35,000	Existing Staff	All
	3	Encourage Douglas County to adopt the new DNR Shore land Standards or incorporate Alternative Shore land Standards in a timely way.	2014	LRM, SWCD, WPTF	NA	Existing Staff	All
	4	Reduce wetland impacts within shore land and urban areas in Douglas County	2010	SWCD, LRM, City of Alex	NA	Existing Staff	All
	4a	Work with the City of Alexandria to establish wetland setbacks on all wetlands within the city limits	2010	SWCD, LRM, City of Alex	NA	Existing Staff	Long Prairie
	4b	Consider all wetlands in Douglas County to be high priority and work to further restrict wetland impacts.	2010	SWCD, LRM, City of Alex., DU	NA	Existing Staff	All
	4c	Develop new wetland mitigation standards for replacement of wetlands (i.e. replacement required as close to disturbance as possible or within the same minor watershed).	2010	SWCD, LRM, City of Alex	NA	Existing Staff	All
	5	Protect remnant woodland areas of Douglas County as a way to protect natural hydrologic function.	2019	LRM, SWCD, Conserv. Orgs	NA	Existing Staff	All
	5a	Create an inventory of large wooded tracts in the county.	2015	LRM, SWCD	$8,000	Amend-OH	All
	5b	Work to protect these areas from land altering activities.	2019	LRM, SWCD	$25,000	Existing Staff	All

Objective B. Restore previously impacted natural habitat.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Restore high priority wetlands identified through the drained basin inventory to provide fish and wildlife habitat. Restore 25 acres per year.	2019	SWCD, NRCS	$75,000	USDA, Amend-OH	All
	2	Promote existing conservation programs (CRP, CCRP, WHIP, RIM/WRP) and the utilization of local, state, and federal funding opportunities.	2019	SWCD, NRCS	NA	Existing Staff	All
	3	Restore large drained lake basins (Crooked Hansford lakes, Wilken lake, and others identified in Douglas County) using Wetland Reserve Program ranking system to prioritize basins.	2019	SWCD, NRCS, DNR	unknown	RIM/WRP, Amend-CW/OH	Sauk
	4	Work with MN DNR on water quality improvement/wildlife projects on Lakes Christina and Jennie or other projects as they arise.	2014	DNR, DU, SWCD	unknown	Existing Staff	Pomme de Terre, Chippewa
Objective C. Enhance existing habitat by encouraging the establishment of healthy and diverse native vegetation.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Promote buffer strips, lakescaping, rain gardens and other practices that reduce the impacts of human activities. Provide technical assistance and obtain grant funds whenever possible to provide financial assistance to landowners	2019	SWCD	$50,000	CWL, Amend-CW, Existing Staff	All
	2	Research the feasibility of establishing a county tax incentive for installing, restoring and maintaining shoreline buffers, modeling Burnett County [Wisconsin] Land and Water Conservation Department.	2011	LRM, SWCD	$10,000	Existing Staff	All
	3	Develop a guide book for shoreland property owners on restoring native buffers, local ordinances, strategies for improving water quality, and funding opportunities.	2012	SWCD, LRM	$25,000	Existing Staff	All
	4	Assist the DNR and other organizations with exotic species control and education by providing informational materials to the public.	2019	SWCD	NA	Existing Staff	All
	5	Promote the importance of preserving and restoring aquatic vegetation, as well as the importance of retaining fallen woody debris, by providing educational materials, encouraging no-wake zones, and lakescaping . Participate in at least one radio program and hold one workshop or open house annually.	2019	SWCD, LRM	$20,000	Existing Staff	All
	6	Inventory/assess the land use adjacent to legal drainages, with special priority to those upstream of high priority lakes or rivers. Encourage the adoption of policies that require the establishment of buffers and/or side inlets where erosion and water quality issues exist. Offer assistance to landowners through conservation programs (such as CCRP) or other cost-share programs as funding is available	2015	SWCD	NA	Existing Staff	All

Objective D. Create educational opportunities for the public.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Host educational programs on the importance of preserving shoreline vegetation (in-lake and riparian).	2019	SWCD, LRM	$20,000	Existing Staff	All
	1a	Support Nonpoint Education for Municipal Officials (NEMO) workshops.	2019	LRM	$10,000	Existing Staff	All
	1b	Create handouts, brochures, etc. describing the benefits of shoreland restoration, buffers, windbreaks, and conservation acres to wildlife and water quality.	2019	SWCD, LRM	$25,000	Existing Staff	All
	1c	Participate in Kids' Groundwater Festival, Junior Viking Sportsmen's Habitat Day, Awake the Lakes/Day of the Lakes, and other events when possible.	2019	SWCD, LRM	NA	Existing Staff	All
	2	Establish a resource bank for Lake Associations and/or individuals to use for setting up workshops or annual meetings.	2019	SWCD, LRM	NA	Existing Staff	All
	2a	Create data base of information on protecting and improving water quality for use by individuals or Lake Associations.	2019	SWCD, DCLA	NA	Existing Staff	All
	2b	Create data base of speakers that would be available for speaking at Lakes Association meetings on water quality improvement and protection.	2019	SWCD, DCLA	NA	Existing Staff	All
	3	Encourage maintenance of ditches done in such a way to protect wildlife habitat. Create information material for landowners, encouraging best management practices during ditch maintenance.	2019	SWCD, County Drainage Inspector	NA	Existing Staff	All

Priority Concern: Waste and Stormwater Management							
Goal 1. Improve stormwater runoff management in Douglas County.							
Objective A. Improve stormwater runoff quality by increase utilization of stormwater best management practices throughout the County.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Promote the use of erosion and sediment control and other best management practices to reduce the amount of sediment and nutrients entering watercourses from commercial and residential areas	2019	LRM, SWCD	NA	Existing Staff	All
	2	Encourage the use of pervious pavement systems including long term maintenance and inspection to ensure proper function. LRM will tract locations of permitted pervious pavement systems. Establish a standardized inspection form.	2019	LRM	$15,000	Existing Staff	All
	3	Produce and distribute educational materials to inform citizens about the MN state law prohibiting the use of phosphorus in lawn fertilizers.	2019	SWCD	NA	Existing Staff	All
	4	Maintain and update the inventory of all feedlots in the County through the county Feedlot Program. Follow the annual feedlot work plan and inspect, in priority order, feedlots based on proximity to water, open lots, and watershed.	2019	LRM	$600,000	Existing Staff	All
	5	Encourage the writing and utilization of nutrient management plans through incentives and cost-share programs. Provide technical and financial assistance for the closure of abandoned manure waste systems as needed.	2019	SWCD, LRM, NRCS	$250,000	EQIP, SCS, CWL, Amend-CW	All
	6	Promote the use of erosion and sediment control and other best management practices such as buffer strips and no-till seeding to reduce the amount of sediment and nutrients entering watercourses from agricultural lands. Install sixty-five acres of buffer strips, create 2000 feet of terraces or sediment blocks and seed 1,200 no-till acres per year.	2019	SWCD, NRCS	$200,000	EQIP, SCS, CWL, Amend-CW	All
	7	Pursue funding to provide incentives or cost-share to assist agricultural landowners for implementation of erosion and sediment control and BMPs. Assist agricultural landowners with the installation of a fifty-foot buffer strip on all agricultural land riparian to public waters and encourage similar practices on residential and commercial properties.	2019	SWCD, LRM	$100,000	SCS, CRP, CWL, Amend-CW	All

	8	Work with agricultural landowners to replace open lateral tile lines with alternative tile intakes. Provide assistance when appropriate and available.	2019	SWCD	NA	Existing Staff	All
Objective B. Encourage compliance with stormwater rules and ordinances by continuing public education, promotion of BMPs, and further data collection, assessment, and management.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Continue storm drain marking projects in Alexandria, Brandon, Carlos, Forada, Miltona, and Osakis to improve community awareness.	2019	LRM, SWCD	$2,000	Existing Staff	All
	2	Monitor at least one ditch, storm drain, and/or storm water pond to evaluate quality and quantity of storm water each year.	2019	SWCD	$10,000	CWL, Amend-CW	All
	3	Ensure MPCA and LRM Joint Powers agreement remains in place. LRM has regulatory authority for construction stormwater for NPDES permitted sites and sites where more than 1 acre of impervious surface is created. Provide information and workshops to contractors regarding new NPDES requirements as it become available. Review all stormwater pollution prevention plans (SWPPP) for proposed plats.	2019	LRM	$500,000	Existing Staff	All
	4	Create and maintain a database of detention ponds and other storm water management systems to track maintenance schedules and intervals of clean out requirements. Ensure maintenance of storm water management facilities on a regular basis.	2019	LRM	$200,000	Existing Staff	All
	5	Conduct tillage survey to determine crop residue levels and target areas for conservation tillage practices.	2019	SWCD	NA	Existing Staff	All

Goal 2. Improve waste management in Douglas County.							
Objective A. Work to prevent SSTS failure and related sewage pollution in Douglas County.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Work cooperatively with watershed and lake organizations to distribute educational materials and information to the public regarding SSTS operation and maintenance. Maintain a supply of brochures and other information for distribution.	2019	LRM, SWCD, DCLA	NA	Existing Staff	All
	2	Digitize septage disposal sites to identify areas of land spreading in coarse-grained soils that have potential for groundwater contamination. Upon completion, re-evaluate the use of these areas as suitable disposal sites.	2019	LRM	$15,000	Existing Staff	All
	3	Educate property owners on proper septic system maintenance by distributing information, maintaining the Douglas County Website, and providing news releases at least twice a year.	2019	LRM	$80,000	Existing Staff	All
Objective B. Identify and ensure the upgrade of failing septic systems.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Pursue grants and low-interest loans to assist with SSTS upgrades. Continue to use Chippewa River Watershed Project and MN Department of Ag BMP Loan programs.	2019	LRM, SWCD	NA	Existing Staff	All
	2	Require SSTS inspections within the next 5 years in all shoreland zoning districts and inspections within 10 years in all other residential zoning districts.	2019	LRM	NA	Existing Staff	All
	3	Continue to require a septic system inspection and/or Certificate of Compliance at property transfers for any systems over five years old. Continue to require Certificates of Compliance for permit applications with existing septic systems over five years old.	2019	LRM	NA	Existing Staff	All
	4	Continue to enforce Chapter 7080 of Minnesota State Rules throughout the County by requiring the upgrade on non-compliant systems and inspection of all SSTS installations.	2019	LRM	$1,000,000	Existing Staff	All

Priority Concern: Water Quality

Goal 1. Protect and maintain surface water quality in Douglas County from further degradation.

Objective A. Monitor and assess surface waters to meet the required amount of data for MPCA impaired waters assessment.

			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Utilize water quality data to determine trends	2019	SWCD	NA	Existing Staff	All
	2	Collect data on all lakes 50 acres or larger within 8 years. Work with MPCA to assess surface waters.	2017	SWCD	NA	Existing Staff	All
	3	Create a priority lake list based on major watershed, land use, and lake ecology	2012	SWCD	NA	Existing Staff	All
	4	Create/acquire lakeshed maps	2014	SWCD, DNR	NA	Existing Staff	All
	5	Train volunteers in advanced water quality monitoring	2019	SWCD	NA	Existing Staff	All
	6	Pursue funding for monitoring activities	2019	SWCD	$75,000	CWL, Amend-CW	All

Objective B. Encourage water quality protection through planning.

			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Assist with MPCA Lake Assessment Plans	2019	SWCD	NA	Existing Staff	All
	2	Assist lake associations with developing Lake Management Plans. Seek funding for development and implementation	2019	SWCD	$50,000	CWL, Amend-CW	All
	3	Encourage lakeshed-based planning	2019	SWCD, DCLA, WPTF	NA	Existing Staff	All
	4	Participate in appropriate meetings to provide technical advice, assist in coordination of water quality improvement efforts of both local and regional organizations. Attend at least 10 DCLA meetings each year.	2019	SWCD	NA	Existing Staff	All
	5	Cooperate with lake associations on lake-specific projects. Facilitate participation in grant programs, such as the Health Lakes Program.	2019	SWCD	NA	Existing Staff	All
	6	Educate citizens and local decision-makers on the economic values of clean water resources in sustaining the local tourism industry and maintaining property values by conducting two or more presentations at local organization' meetings.	2019	SWCD, LRM	$20,000	Existing Staff	All

Objective C. View drainage systems as key to watershed management.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Increase water quality monitoring of drainage ditches	2019	SWCD, DCLA	$10,000	CWL, Amend-CW	All
	2	Host workshops on alternative tile intakes	2019	SWCD	$1,000	Existing Staff	All
	3	Seek funding for incentives and promote side inlets, alternative tile intakes, ditch buffers, and ditch abandonment.	2019	SWCD	$15,000	CWL, Amend-CW	All
Goal 2. Improve or restore impaired surface waters.							
Objective A. Assist with the development of TMDL studies and implementation plans.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Support/cooperate with the Pomme de Terre Watershed Joint Powers Board. Attend committee meetings as requested.	2019	SWCD, LRM	NA	Existing Staff	Pomme de Terre
	2	Support/cooperate with the Chippewa River Watershed Project and MPCA on Chippewa River TMDL processes and projects. Attend twelve CRWP meetings each year.	2019	SWCD, LRM	NA	Existing Staff	Chippewa
	3	Support/cooperate with the Sauk River Watershed District and MPCA on Sauk River TMDL processes and projects.	2019	SWCD, LRM	NA	Existing Staff	Sauk
	4	Assist/cooperate Todd SWCD with Long Prairie River TMDL processes and projects.	2019	SWCD, LRM	NA	Existing Staff	Long Prairie
	5	Assist/Cooperate the MPCA with the Lake Winona TMDL process. Continue to work with the City of Alexandria and other agencies to improve water quality of Lake Winona.	2019	SWCD, LRM	NA	Existing Staff	Long Prairie
	6	Assist/cooperate with other TMDLs as needed	2019	SWCD, LRM	NA	Existing Staff	All
Objective B. Assist with the implementation of completed TMDLs.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Work with TMDL lead LGUs and MPCA to put BMPs on the ground to improve water quality of impaired systems	2019	SWCD, LRM	NA	Existing Staff	All
	2	Seek funding through special grants and appropriations for the implementation of BMPs	2019	SWCD	$50,000	CWL, Amend-CW	All
	3	Assist with monitoring of surface waters to determine the effectiveness of TMDL implementation activities	2019	SWCD	NA	Existing Staff	All

Goal 3. Protect and maintain groundwater resources in Douglas County.							
Objective A. Maintain/promote existing cooperative partnerships that monitor ground water							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Continue to maintain seven monitoring wells to measure static water levels	2019	SWCD	NA	Existing Staff	All
	2	Provide public information on how and where to get wells tested	2019	SWCD, LRM	NA	Existing Staff	All
	3	Assist county residents with well water testing for nitrates	2019	SWCD	NA	Existing Staff	All
	4	Work with the MDA to acquire info regarding nitrate sensitive areas	2019	SWCD	NA	Existing Staff	All
Objective B. Develop plans to protect ground water quality and quantity.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Cooperate with cities and MDH in developing and implement wellhead protection plans	2019	SWCD	NA	Existing Staff	All
	2	Determine feasibility for conducting a comprehensive ground water inventory	2011	SWCD	NA	Existing Staff	All
	3	Promote municipal water systems in all industrial areas	2019	LRM, City of Alex, all other cities	NA	Existing Staff	All
	4	Promote sealing of abandoned wells in all areas to reduce the potential for ground water contamination. Provide cost-share assistance when available.	2019	SWCD, NRCS	$8,000	EQIP, CWL, Amend-CW	All
	5	Examine soil sensitivities and feedlot locations for potential ground water contamination	2019	LRM	NA	Existing Staff	All
	6	Seek funding to study the impacts of abandoned manure pits on ground water. Seek funding for soil borings to be done to allow for the certification of compliance on undocumented manure storage facilities.	2010	LRM, SWCD	$25,000	CWL, Amend-CW	All
Objective C. Educate citizens on the importance of protecting ground water quality and conserving ground water resources.							
			Completion Date	Responsibility	Estimated Cost	Source of Funding	Watershed
Action Items	1	Coordinate/assist Kids' Groundwater Festival annually	2019	SWCD, LRM	NA	Existing Staff	All
	2	Promote the importance of water conservation.	2019	SWCD, LRM, DCLA, Cities	NA	Existing Staff	All
	2a	Support Municipalities in their adoption of water conservation rate structures.	2019	SWCD, LRM, Cities	NA	Existing Staff	All
	2b	Educate and encourage the public to use water efficient plumbing fixtures and appliances	2019	SWCD	NA	Existing Staff	All
	2c	Host workshops and promote the use of rain barrels	2019	SWCD	$5,000	Existing Staff	All
	3	Educate local officials and landowners on the benefits of reclaiming abandoned gravel pits to protect ground water recharge areas.	2019	SWCD, LRM	NA	Existing Staff	All

Ongoing Activities

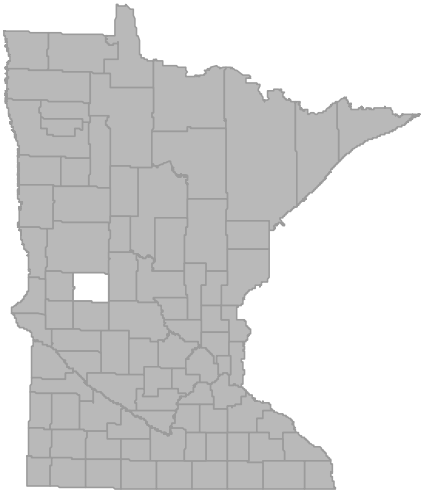
The following activities support the goals of the Douglas County Comprehensive Local Water Management Plan. These activities/programs should be supported and implemented on an ongoing basis.

Programs	Responsibility	Annual Estimated Cost	Watershed
Shoreland Management	SWCD, LRM, DNR	$170,000	All
Wetland Conservation Act	SWCD	$50,000	All
Feedlot Program	LRM, SWCD	$79,000	All
County-wide Zoning Administration	LRM	$275,000	All
SSTS Administration	LRM	$125,000	All
Sensitive Areas Mapping	LRM, SWCD	$25,000	All
State Cost Share Programs	SWCD	$22,000	All
Information and Education	SWCD, LRM, NRCS	$5,000	All
Ag BMP Loan Program	SWCD, LRM	$75,000	All
Ground water Monitoring	SWCD, MDH, MDA	$1,000	All
Tree Program	SWCD	Revenue Generating	All
Wellhead Protection Program	MDH	$2,000	All
Scholarship Essay Contest	SWCD, DCLA	$1,500	All
TMDL Studies and Implementation	SWCD, LRM, DCLA, MPCA	$50,000	All
USDA Conservation Programs (CRP, CCRP, EQIP, WHIP)	NRCS, FSA	$250,000	All
Alexandria Township Zoning Administration	Alex Twp	$75,000	All
City of Alexandria Zoning Administration	City of Alex	$250,000	All
Surface Water Monitoring	SWCD, DCLA	$10,000	All
	Total Estimated Costs	**$1,465,500**	

Appendix A.

Douglas County

Priority Concerns Scoping Document



Local Water Management Plan

January 1, 2009- December 31, 2019

Douglas County Local Water Management
Priority Concerns Scoping Document

Introduction

Douglas County is located in west-central Minnesota approximately 130 miles northwest of Minneapolis. Rich in water resources, Douglas County is home to nearly 200 lakes over 40 acres in size. The City of Alexandria serves as the county seat nestled within the Chain of Lakes area. The county's population in 2005 was estimated at 35,467, an 8.1% increase since 2000, and it is projected that the population will increase 41% by 2030. Douglas County experiences the common struggle of working to accommodate rapid growth and development while protecting valuable water resources. Agriculture, in the form of cultivated land, is the dominant land use within the county.

In 2005, the Douglas Soil and Water Conservation District (SWCD) became is the local government unit (LGU) responsible for the implementation of the Local Water Management Plan. All previous updates had been completed by Douglas County Land and Resource Management Department (LRM). The original Comprehensive Local Water Plan (CLWP) was adopted by the Douglas County Board of Commissioners on March 20, 1990. Resolutions to update the Plan were approved on November 23, 1994; August 3, 2004; and June 26, 2007. The current Plan expires on December 31, 2008.

List of Water Resource Concerns

Failing septic systems
Development pressures/issues
Need for more environmental education
Natural habitat destruction
Declining water clarity
Agricultural erosion
Over-application of fertilizers
Urban stormwater/drainage management
Contaminated runoff
Lack of regulations
Ground water contamination

Priority Concern Identification

Timeline of Douglas Water Plan update:

April 5, 2007 Water Plan Task Force met to discuss upcoming Water Plan related activities, local grant projects, and the Water Plan update process. A sub-

	committee was established to determine how public input would be gathered. See Appendix D.
May 7, 2007	Dan Steward, Board Conservationist, met with Jerome Haggenmiller, District Coordinator and Emily Siira, Water Plan Technician to discuss the water plan update process.
June 26, 2007	Douglas County Board of Commissioners passed a resolution to update the Local Water Management Plan.
July 11, 2007	Water Plan Update Committee met to determine how public input should be gathered. It was decided that in addition to a paper survey, an on-line survey should be made available to Douglas County residents. After the survey period, a public information meeting will be held.
July 23, 2007	Priority Concerns Input form mailed out. The parties were given 45 days to respond. The form was sent to 11 municipalities, 20 townships, four watershed organizations, four Soil and Water Conservation Districts, planning and zoning offices in the surrounding counties and representatives of BWSR, DNR, MPCA, MDA, MDH, EQB. In addition, forms were also sent to Vikingland Builders Association, Douglas County Lakes Association, Douglas County Farm Bureau, MN Corn Growers Assn, MN Soybean Growers Assn, Midwest Dairy Assn-Douglas County Board, MN Beef Council, MN Pork Producers Assn, and the Cattlemen's Assn.
August 2, 2007	Press release was sent to local media requesting public input via paper or on-line survey.
August 1-20, 2007	Survey period. Surveys were distributed to various public buildings in Alexandria including: City Hall, Douglas County Public Library, Douglas County Land and Resource Management (County Courthouse) and the Douglas Soil and Water Conservation District (USDA Service Center). Paper surveys were also available during the Douglas County Fair at the SWCD booth. The online survey was created using SurveyMonkey.com and could be accessed through a link on the Douglas SWCD website. Only one survey could be completed per computer. Total paper surveys: 49. Total completed online surveys: 14. Total number of respondents: 63.
Sept. 10, 2007	Water Plan Update Committee met to discuss results of the survey and determine a date for the public information meeting.
Sept. 25, 2007	Press release sent out to local media advertising the public information meeting. The article appeared in the October 5 issue of the Echo Press.
October 18, 2007	Public information meeting was held at the Public Works Building at 7 p.m. Representatives from BWSR, DNR, MPCA, and Douglas County Land & Resource Management Office were also invited to attend. Participants

were asked to make additional comments regarding the issues/concerns that received the highest "votes" during on the survey. The intention was to get a better understanding of the public perception behind the survey results. The discussion was transcribed on to large sheets of paper for all participants to view through out the meeting. All participants were asked for final comments or changes before the meeting adjourned. The transcribed discussion notes can be found in Appendix C-Public Information Meeting Minutes.

Participants included Jerome Haggenmiller-Douglas SWCD, Mike Weber-City of Alexandria, Rebecca Sternquist-Land & Resource Management, Bud Nielson-Lake Ida Association, Darren Hungness-Landteam, Inc., Sue Engstrom-Douglas County Lakes Assn (DCLA), Dick Kuehn-DCLA & Task Force, Kyle Hopkins, Gary Thoennes-La Grande Twp., Gary Larson-Urness Twp., Dave Rush-Director Land & Resource Management, Jon Schneider-Douglas SWCD Supervisor, and Dan Steward-BWSR.

October 31, 2007 Water Plan Task Force reviewed comments from the Public Information meeting, survey, and agency/LGU comments. Selected and reworded the top four priority concerns.

Priority Concern Selection

The priority concerns for Douglas County were selected after tabulating survey responses, reviewing agency comments, and discussion by the Water Plan Task Force. The results are as follows: development pressures/issues, natural habitat destruction, contaminated runoff, failing septic systems, and declining water clarity. After further review by the Task Force, several of the concerns were combined and reworded to help make Water Plan more clear and concise. These changes do not present any conflict between agency comments, survey results, or information gathered during the public information meeting. The following is the final list of Priority Concerns to be addressed in the updated Douglas County Local Water Management Plan.

Priority Concern 1: Development Pressures and Land Use
Priority Concern 2: Natural Habitat Destruction
Priority Concern 3: Wastewater and Stormwater Management
Priority Concern 4: Water Quality

The update committee and Task Force will continue to meet over the next six months to assist in the development objectives and tasks for each of the priority concerns.

Priority Concerns not addressed by the Plan

Some water management issues will not be addressed in the updated plan. As with the previous Water Plan, development pressures and land use issues quickly came to the foreground in most discussions and responses. Other concerns will be re-examined for higher prioritization at the next plan update or addressed as funding opportunities arise.

Supporting Documents

Appendix A. Local Government Units and State Agencies-Summary of Concerns
Appendix B. Citizen Survey-Summary of Results
Appendix C. Public Information Meeting minutes
Appendix D. Water Plan Task Force Members
Map A. Major Watershed of Douglas County
Map B. Land Use in Douglas County

PCSD Appendix A

LOCAL UNITS of GOVERNMENT and STATE AGENCIES
SUMMARY OF CONCERNS

Board of Soil and Water Resources

Priority Concern 1: Protection of Water Quality during and after land development in riparian areas.

- County leadership on lake water quality protection issues.
- Consistent application and enforcement of Douglas County shoreland rules.
- Continue work to develop new voluntary and regulator tools to protect water quality.
- Continue strong administration of the Wetland Conservation Act.
- Shoreland revegetation, develop strong working relationships between the county and lake associations through the water plan, track impervious by lake watershed, develop tools to protect mapped sensitive areas around lakes, conservation easements.

Priority Concern 2: Erosion and sediment control on developing areas throughout Douglas County.

- Vigilant inspection of sties where disturbance is occurring.
- Continue to develop the SWCD's expertise in the area of stormwater management technical assistance.
- Work to train realtors, developers, contractors, and local officials to the need of stormwater management.

Priority Concern 3: The trend towards development of marginal lands.

- Protection of key sensitive areas with conservation easements.
- Promote lake associations to develop conservation committees that work to protect critical areas with conservation easements.
- Continue to use the sensitive areas map as a key tool in plat and other development reviews.

Priority Concern 4: Agricultural soil erosion.

- Application of traditional best management practices can significantly reduce erosion and sediment from agricultural fields.
- Tillage practices play a major role in soil vulnerability to erosion.
- Buffers adjacent to receiving waters have proven to be effective at reducing nutrients and sediment in runoff.
- Wetland restorations can help improve the quality of runoff waters after it has left the field.

Minnesota Department of Agriculture

Priority Concern 1: Manure Management and ISTS.

- Seek additional funding sources to help assist landowners in upgrading ISTS in the county.
- Continue education and outreach efforts on manure management in the County.
- Provide technical and financial assistance for producers to assist them in adopting practices to reduce the impacts from manure runoff.

Priority Concern 2: Impaired waters and TMDLs (Chippewa River TMDL-Fecal Coliform, Long Prairie River Watershed TMDL-Low Dissolved Oxygen, Pomme de Terre-Fecal coliform).

- Continue education and outreach efforts on manure management in the County. Provide technical and financial assistance to producers to assist them in adopting practices to reduce the impacts of manure runoff.
- The following pollution reduction practices by landowners and local resource managers can help reduce pathogen transport and survival: feedlot runoff controls, effective subsurface sewage treatment systems, municipal wastewater disinfection, proper land application of manure, erosion control, rotational grazing, and urban stormwater management.

Minnesota Pollution Control Agency

Priority Concern 1: Impaired waters/ Total Maximum Daily Loads (TMDL)

- Identify the priority the County places on addressing impaired waters, and how the County plans to participate in the development of TMDL pollutant allocations or implementation of TMDLs for impaired waters.
- Include maps of impaired waters and identification of the pollutant(s) causing the impairment(s).
- Address the commitment of the County to submit any data it collects to the MPCA for use in identifying impaired waters and data entry into the U.S. Environmental Protection Agency's STORET database. Projects funded through the MPCA's Clean Water Partnership, Section 319 and TMDL programs need to have this data entered into this database.
- Provide plans, if any, for monitoring as yet unmonitored waters for a more comprehensive assessment of waters in the County and
- Describe actions and timing the County needs to take to reduce the pollutants causing the impairment, including those actions that are part of an approved implementation plan for TMDL's.

Priority Concern 2: Alternative Shoreland Standards

- The County should consider adopting the DNR Alternative Shoreland Standards in order to provide for more flexible and innovative standards to accommodate the rapid development in the area.

Priority Concern 3: Best Management Practices

- Implementation of a rigorous program to increase buffering of water resources, improved tillage practices and other best management practices is recommended.

Priority Concern 4: Stormwater Management

- Improving stormwater management in rural areas and small communities within the County is recommended. Recommended actions include preparation of county wide, or township and city ordinances.

Priority Concern 5: Educational Opportunities

- Providing educational opportunities for the Douglas County Lakes Association regarding issues relating to water quality and land and water stewardship practices, should be considered to help retain high quality surface water resources within the County. Recommended actions are to establish educational seminars and the distribution of appropriate educational materials.

Minnesota Department of Natural Resources

Priority Concern 1: Outdated Land Use Plan

- The Local Water Management Plan should strongly promote a county land use plan redraft with greater sensitivity to potential environmental impacts, alternative designs or waste management systems, and site-specific "no build" areas.

Priority Concern 2: Runoff management and drainage

- The Water Plan should promote overhaul of State ditch laws and as possible, establish an active liaison with the County Ditch Board to promote alternatives to open ditches and tile inlets, abandonment and plugging of old non-maintained ditches, wetland restorations to retain runoff waters, incentive programs to sustain marginal croplands and CRP or other conservation programs, and other similar initiatives.

Priority Concern 3: Sewer service expansion

- Pros and cons of "big pipe" sewer treatment infrastructure should be identified and discussed in the county Water Plan. Plan actions could include supporting the County Land Use Plan to prepare for and guide development, identification and evaluation of feasible service alternatives, and ensuring completion of a comprehensive TMDL to determine potential water quality and hydrologic alterations to downstream basins in advance of proposed expansion of the ALASD treatment plant.

Chippewa River Watershed Project

Priority Concern 1: Reducing priority pollutants, focusing on erosion, sediment, bacteria, nitrogen, and phosphorus

- Work with the Chippewa River Watershed Project and the MPCA to get waters off the Clean Water Acts's TMDL 303d list of impaired waters.
- Establish a strategy to promote the use of phosphorous free fertilizer on lawns. Encourage municipalities to adopt ordinances that limit or prevent the use of phosphorous-based fertilizers.
- Assist with developing conservation plans to promote farming and recognize alternative farming methods.
- Through nutrient and pesticide management planning, such as precision agriculture, promote the timing rate, and placement of synthetic and/or organic fertilizers and pesticides using incentives.
- Promote practices to reduce stream-bank and ditch-channel erosion through developing a strategy identifying priority sites for alternative practices such as willow planting or stream barbs in critical areas.
- Seek __# of acres?__ new acres of filters/buffers along ditches and streams to capture sediment as it leaves the field. Enforce the minimum one-rod grassed area as it applies to drainage policy.
- Continue to support the upgrading of ISTS with the use of the state revolving fund low interest loans. Inventory the upgraded systems and through the use of the watershed monitoring, assess the areas that are showing high fecal coliform bacteria and seek additional funding to assist with upgrading systems in those critical areas.

Priority Concern 2: Water/drainage management

- Continue to digitize the drainage systems. Gather the history of each system to include the following: system name, watershed size, outlets to, date established, system type, repair history, construction improvement history, flow data, demonstration capacity, and monitoring data available. Assess the history to identify the erodible areas, flooding problem areas and storage potential.
- Promote the use of alternative intakes or the installation of intakes that promote efficient trapping of sediments and nutrients that enter drainage systems.

Priority Concern 3: Flooding

- Emphasize the need to protect non-farm wetlands (types 3, 4, and 5) and support the no-net-loss of wetlands. Promote voluntary restoration of drained wetlands.

Priority Concern 4: Education & Outreach

- Raise public awareness on a number of key water-planning issues.
- Continue to support watershed planning and implementation activities by providing financial and technical assistance. Annually review monitoring data and implementation accomplishment to continue coordinating future initiatives.
- Annually review MPCA's "State of the Minnesota River" report documenting annual monitoring results and long-term trend. Provide input and response to the report if necessary.

Priority Concern 5: Storm water management

- Meet with the local municipalities to determine which cities have adopted official controls to deal with storm water management.
- Raise public awareness on storm water pollution and ways to prevent/minimize it.
- In cooperation with the cities and neighboring counties, address common storm water issues and assess the need to be more proactive promoting storm water management
- Develop an educational program on the installation and removal of construction best management practices (i.e. for temporary erosion control structures).

Millerville Township Board

Priority Concern1: Mill Pond Dam (Section 13 of Millerville Township)

- Restrictions need to be placed to take it out of private controls. The level needs to be kept down lower so it doesn't also damage township road in event of heavy rains.

Priority Concern 2: Cleaning of old existing ditches

- Anyone along ditches should be allowed to clean ditches on their land as long as they are playing ditch taxes without the 7 year restriction.

Minnesota Department of Health

Priority Concern 1: Protect ground water-based drinking water sources within Douglas County.

- Acknowledgement and support of public water supply wellhead protection areas within the county. Currently there are four public water supply systems (Alexandria, Carlos, Evansville, and Osakis) with wellhead protection plans. Work with public water suppliers in development and implementation of wellhead protection activities. Upon request of public water supplier, support implementation of wellhead protection management activities.

Priority Concern 2: Sealing unused, unsealed wells

- Inventory where unused, unsealed wells may be located. Develop a cost share program to aid property owners in sealing unused, unsealed wells.

Priority Concern 3: Develop a local ground-water quality database.

- Evaluate the possibility of establishing a ground water database using local data.

PCSD Appendix B

CITIZEN SURVEY
SUMMARY OF RESULTS

1. Which watershed is your home/land located in?

Long Prairie	21
Chippewa	19
Don't Know	14
Sauk	5
Pomme de Terre	2

2. What are the top three water resource issues in Douglas County?

Development pressures/issues	32
Natural habitat destruction	25
Contaminated runoff	25
Failing septic systems	20
Declining water clarity	17
Urban stormwater/drainage management	14
Agriculture erosion	12
Need for more environmental education	9
Ground water contamination	9
Over-application of fertilizers	6
Lack of regulation	5
Other: Tiling	1
Other: Ditch cleanout	1

3. Which resource is the most threatened? Rank 1-5, with 1 being most threatened.

Lakes	85
Wetlands	109
Streams/Rivers	122
Ground water	134
Other	247

4. Additional Comments/Suggestions:

Wasn't listed, but sustained agricultural drainage & downstream impacts should be identified as a priority concern. Also concerned about potential conversion of CRP acres back into corn production to satisfy ethanol production and animal feed demands. Tends to be HEL soils.

Douglas County Land and Resource Management needs to expand their staff with a dedicated person for enforcement issues and to add a Final Inspection when a Land Use Permit is issued on a lake .

It was SO hard to pick the top three!! Even adults need environmental education. I just talked to a shore owner who was delighted to learn he SHOULDN'T be clearing the vegetation from his riprap. He thought he was being a "good neighbor"!!

Over-development of area lakes. Poor enforcement of regulations. Poor leadership to protect lakes (once developed improperly there's no going back.) Rubber stamping easements by county commissioners-constantly.

Lake Victoria has a junk yard right on the lake, its contaminating the lake.

From what I see happening the developers are allowed to build almost anywhere.

Conservation plans for county should have more aggressive goals and objectives for restoration and protection of our water related natural resources.

I support whatever needs to be done to leave clear water for the next generations.

Weeds increased each year in Le Homme Dieu

Wish we could get our lake cleaned up of the blue algae-it is bad-and the weeds are getting so thick in the lake

Living on the Chain of Lakes for the past 15 years has been enjoyable. I noted with interest the changes in water clarity due to the Federal Farm programs taking farmland out of production (specifically in the Lake Ida/Miltona/Darling area). As some of this land has come back into production I have noticed more algae blooms on the lakes. A concern not listed in question 2 was fertilizer runoff from farm fields. This is as important as the land use changes occurring in Douglas County. Suggestion: The SWCD hire a limnologist and a hydraulic engineer to begin quantifying lake Water Quality trends, documenting hydrology and hydrologic trends, creating nutrient and hydrologic budgets for target lakes. Developing water management plans (models). Until this is done the impacts of urbanization and changes in agricultural production cannot be quantified. I am way too tired of hearing "generalizations" about water issues in this county with no facts to back them up.

Survey Period: August 1-August 20, 2007
Completed Paper Surveys: 49
Completed On-line Surveys: 14
Total Number of Respondents: 63

Paper surveys were available at Douglas County Land & Resource, Library, SWCD, Alexandria City Hall, and during the County Fair. The on-line version was available through a link on the DouglasSWCD.com and was created using Survey Monkey.

PCSD Appendix C

PUBLIC INFORMATION MEETING

October 18, 2007

Present: Jon Schneider, David Rush, Gary Larson, Gary Thoennes, Kyle Hopkins, Dick Kuehn, Sue Engstrom, Darren Hungness, Bud Nielsen, Rebecca Sternquist, Mike Weber, Jerry Haggenmiller, and Emily Siira.

Development Pressures/Issues:

- Sensitive water resources are being targeted for development (wetlands, shallow lakes)
- Currently there is no model for planned growth within the county (for example 1 in 40 acre model, concentrate growth around existing infrastructure)
- Some newer developments have been built with shallow wells that have been running dry during recent droughts.
- Water Plan should work to minimize impacts on water resources
- Water Plan should promote low impact development (LID) and conservation development

Natural Habitat Destruction:

- Development of shore impact zones, wetlands, shallow lakes have lead to further habitat loss and/or fragmentation
- Water Plan should work to promote the setting aside of land, easements, CRP, buffers, etc. through financial incentives or the transfer of development rights. Also promote woodland incentive program (SFIA)-Dan Steward, BWSR.
- Water Plan should work to increase the public's awareness of the benefits of emergent vegetation
- Water Plan should deter the use of rip rap for shoreland erosion control
- Water Plan should increase its wetland restoration goal

Contaminated Runoff:

- Sources viewed as:
    - failed ISTS
    - development
    - lakeshore owners (fertilizer, removal of natural vegetation)
    - sediment (carrying pest waste, road chemicals, phosphorus, etc.)

- Water Plan should address the need for better enforcement and stricter sediment/erosion control measures during construction
- Water Plan should promote "zero runoff on new developments"
- Phosphorus coefficient (as land goes from natural vegetation to development, TP increases exponentially)-Dan Steward, BWSR

Failing Septic Systems:

- Water Plan should promote county-wide incentives/low interest loans/tax assessments
- Educate landowners about how septic systems work, definition of a "failed" system, maintenance schedules

Declining Water ~~Clarity~~ Quality:

- Promote shoreland restoration/habitat creation
- Effect on fisheries
- Rough fish (i.e. Carp)
- Introduction of non-native species (curly pondweed, Eurasian milfoil, zebra mussels, etc.), reintroduction of natives

Other Concerns/Issues:

- Need for more environmental education
    - Through lake associations
    - Newspaper articles
    - Repeat efforts

- Look into decreasing % impervious surfaces
- Enforcement on Erosion control
- Water Plan should recommend changes to any state programs (RIM, etc.)
- Prevention of winter kill in shallow lakes disrupts natural processes

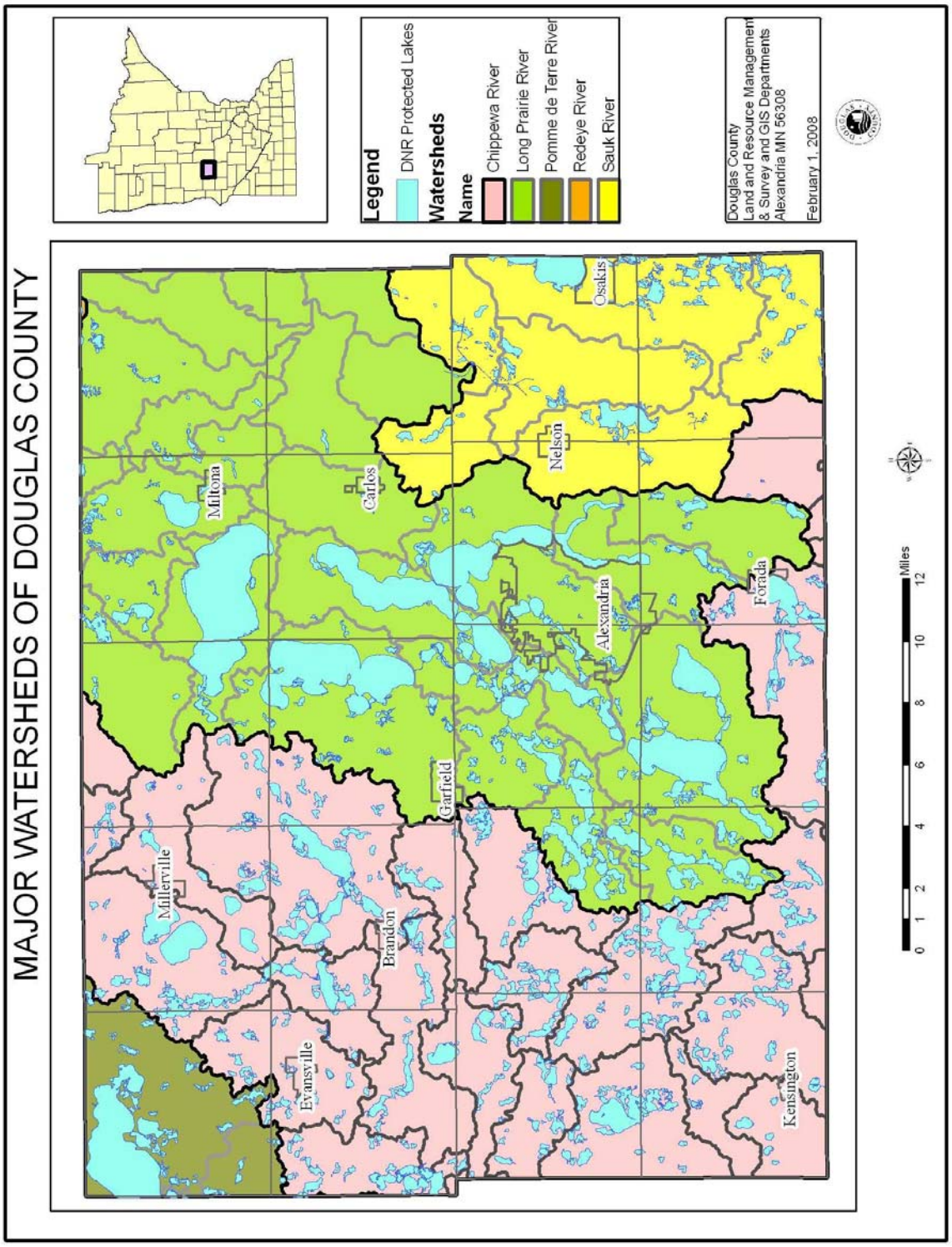
PCSD Appendix D

WATER PLAN TASK FORCE

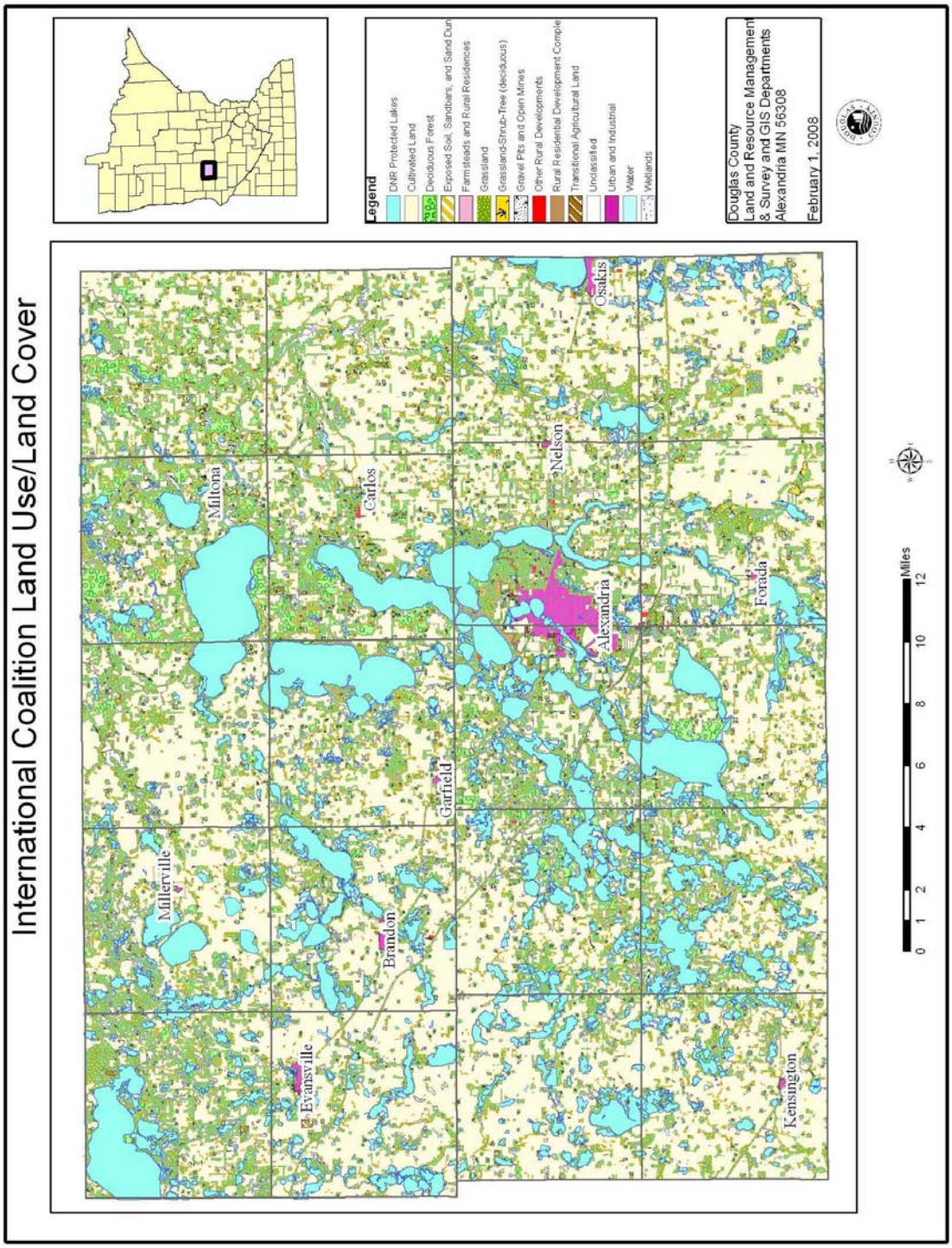
Julie Aadland	Area Hydrologist, DNR Waters
Tom Anderson	County Ditch Inspector
Marilyn Bayerl*	Bayerl Water Resources
Dean Beck	Area Supervisor, DNR Fisheries
Jim Casper	Le Homme Dieu Lake Association
Mark Dybdal	District Conservationist, NRCS
Sue Engstrom	Lake Darling/Douglas County Lake Association
Del Glanzer	Glanzer Consulting
Jerry Haggenmiller*	District Coordinator, Douglas SWCD
Jennifer Hoffman	Chippewa River Watershed Project
Bonnie Huettl	Lobster Lake/Douglas County Lake Association
Darren Hungness*	LandTeam Inc.
Lisa Scheirer	MPCA
Jerry Johnson	County Commissioner
Dick Kuehn*	Douglas County Lake Association
Vern Lorsung	Lake Latoka
Lynn Nelson*	Sauk River Watershed District
Bud Nielson	Lake Ida
Kylene Olson	Chippewa River Watershed Project
Chuck Pugh	Winona Shore Owners Association
Dave Rush*	Director, Land & Resource Management
Jon Schneider	Douglas SWCD Supervisor
Emily Siira*	Water Planner, Douglas SWCD
Rebecca Sternquist	Land & Resource Management
Gary Stevenson	Douglas County Surveyor
Dan Steward	Board Conservationist, BWSR
Gary Thoennes	Douglas SWCD Supervisor, La Grande Township
Mike Weber*	City of Alexandria
Vern Weiss	Lake Irene Preservation Association
Jerry Wendlandt	DNR
Scot Spranger	Alexandria Lakes Area Sanitary District

***Water Plan Update Committee**

PCSD Map A.

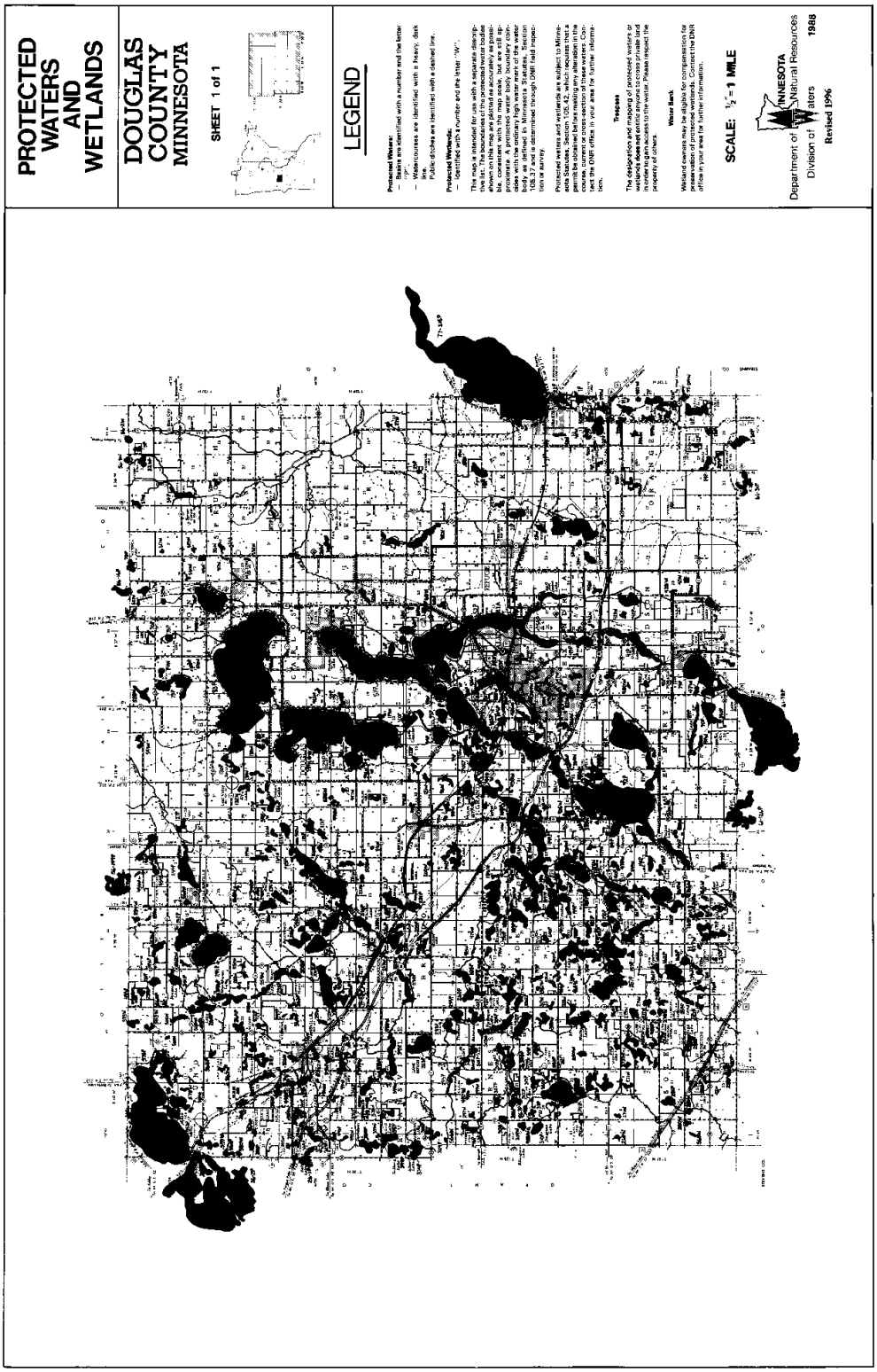

MAJOR WATERSHEDS OF DOUGLAS COUNTY
Legend
DNR Protected Lakes
Watersheds
Name
Chippewa River
Long Prairie River
Pomme de Terre River
Redeye River
Sauk River
Douglas County
Land and Resource Management
& Survey and GIS Departments
Alexandria MN 56308
February 1, 2008
Osakis
Nelson
Carlos
Miltona
Alexandria
Forada
Garfield
Millerville
Brandon
Evansville
Kensington
Miles
0 1 2 4 6 8 10 12

PCSD Map B.

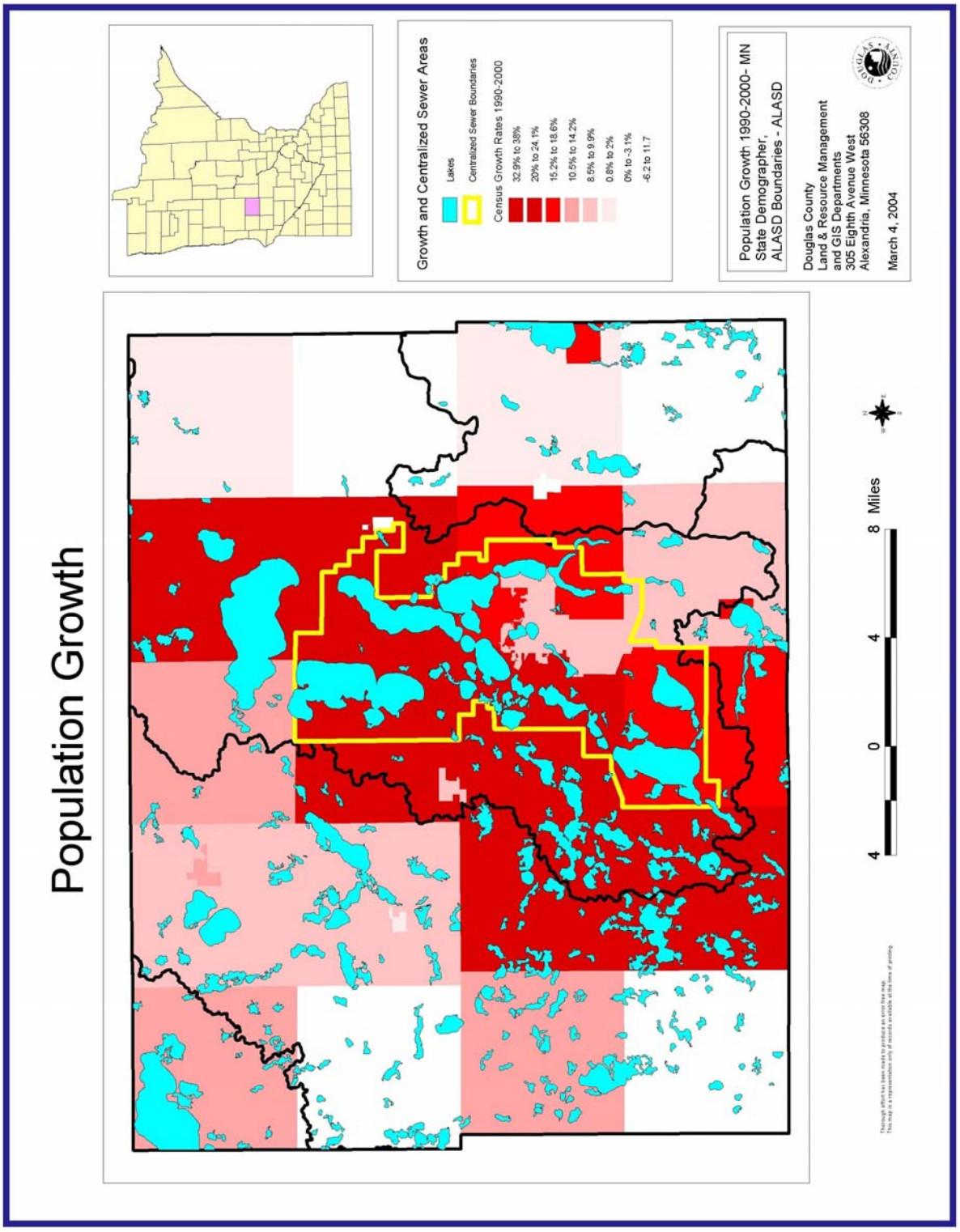

International Coalition Land Use/Land Cover
Legend
DNR Protected Lakes
Cultivated Land
Deciduous Forest
Exposed Soil, Sandbars, and Sand Dun
Farmsteads and Rural Residences
Grassland
Grassland-Shrub-Tree (deciduous)
Gravel Pits and Open Mines
Other Rural Developments
Rural Residential Development Comple
Transitional Agricultural Land
Unclassified
Urban and Industrial
Water
Wetlands
Douglas County
Land and Resource Management
& Survey and GIS Departments
Alexandria MN 56308
February 1, 2008
Miles
0 1 2 4 6 8 10 12
Osakis
Nelson
Miltona
Carlos
Alexandria
Foraida
Garfield
Millerville
Brandon
Evansville
Kensington

Appendix B-I. Additional Resource Information

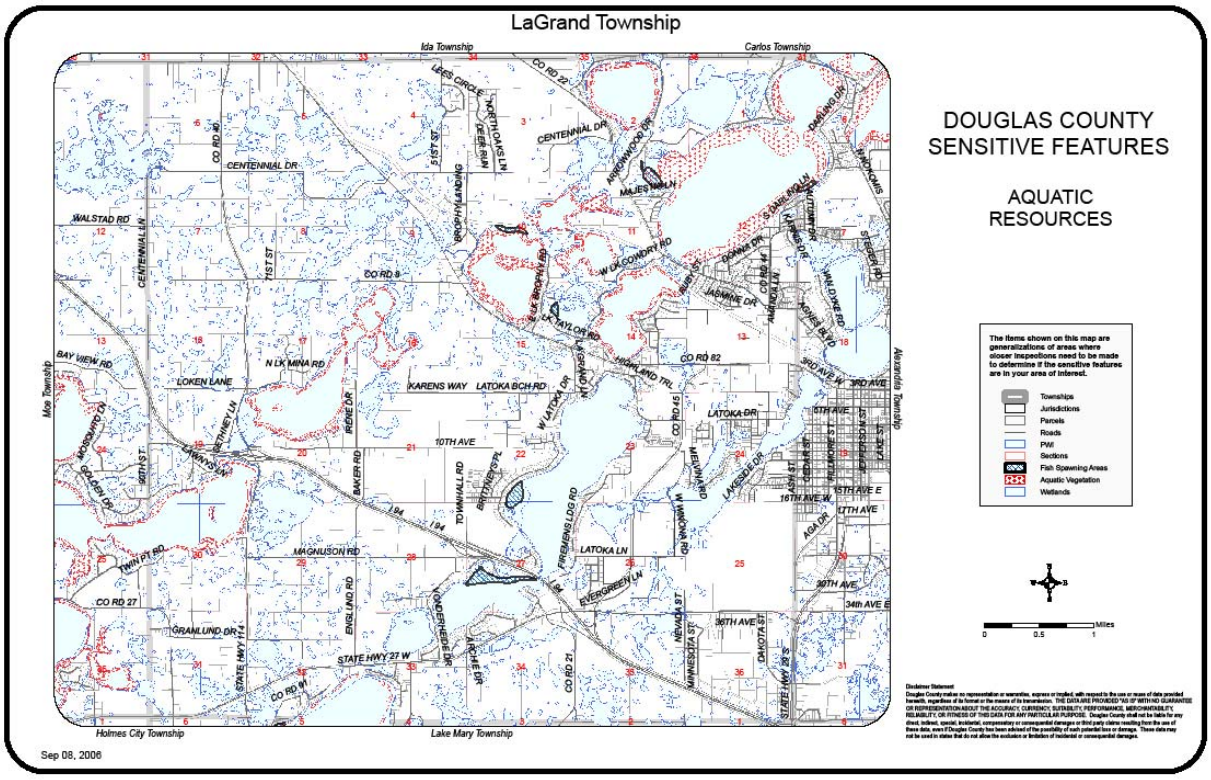
Appendix B. Douglas County Protected Waters and Wetlands (Source: DNR)

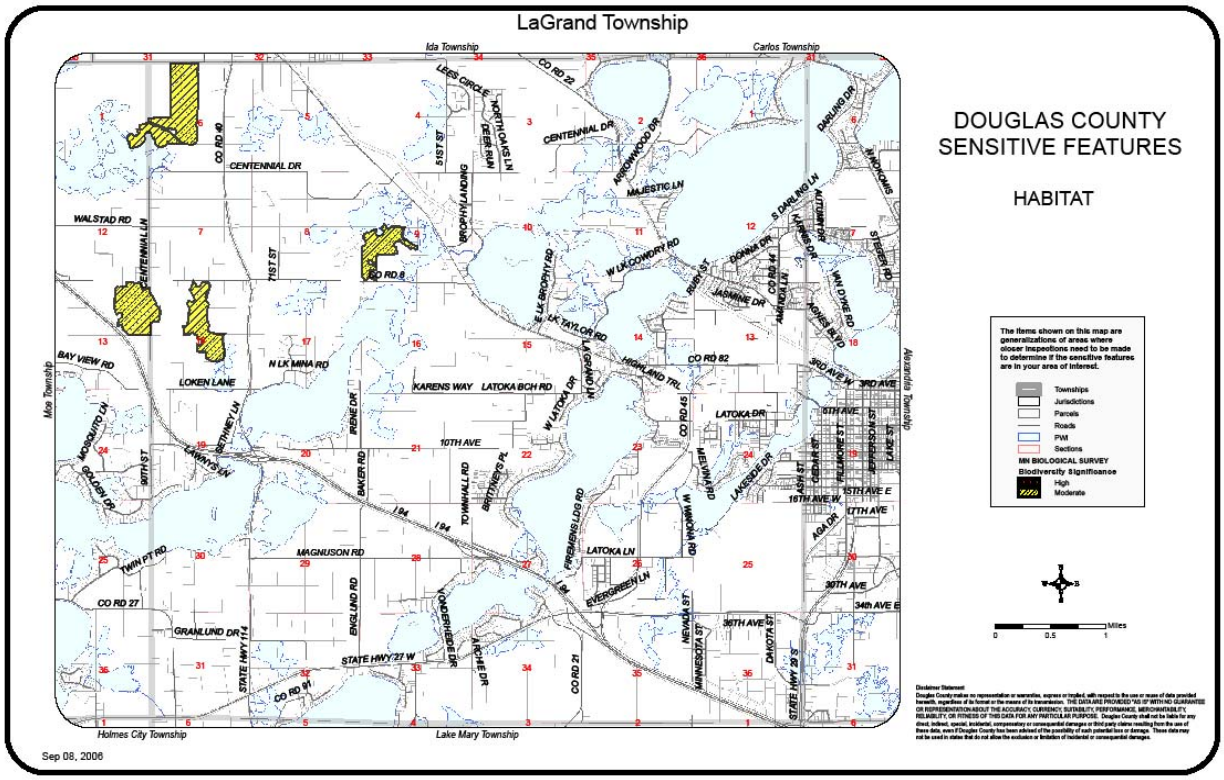


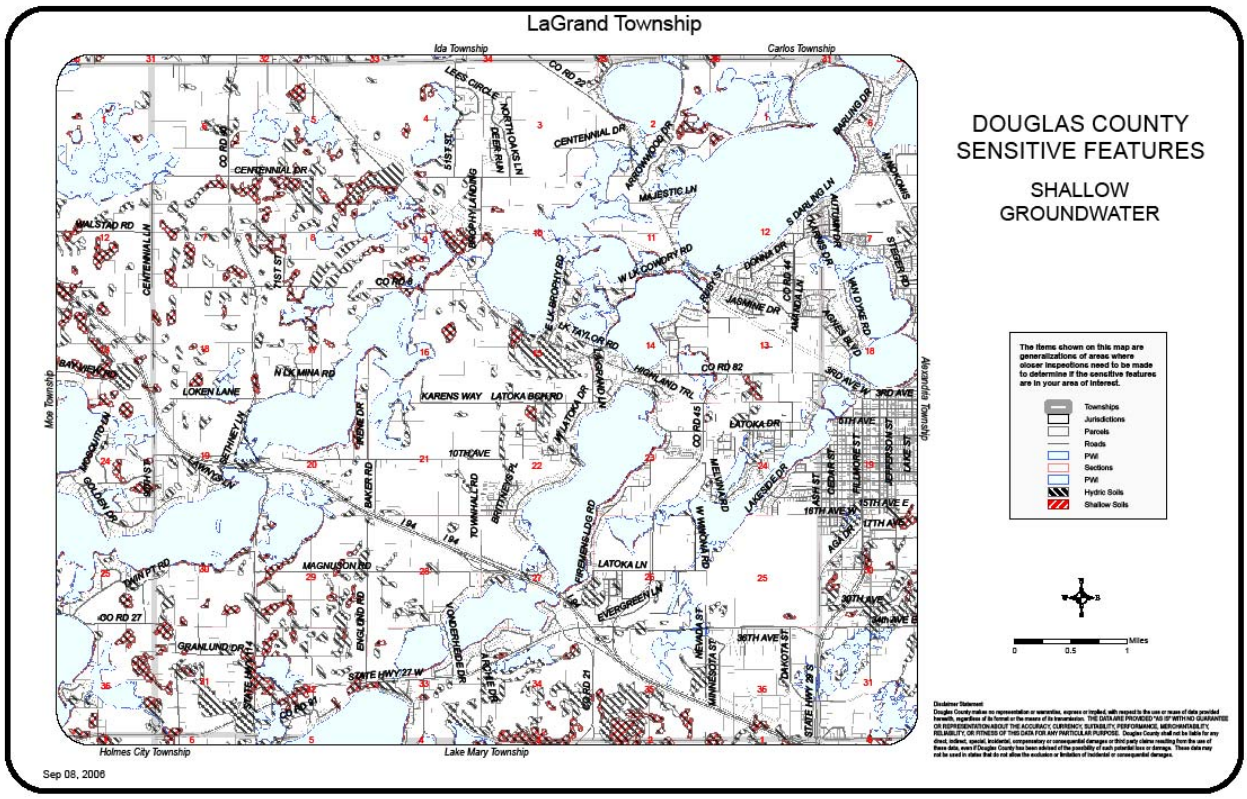
Appendix C. Population Growth (Source: 2004 Douglas County Local Water Management Plan)

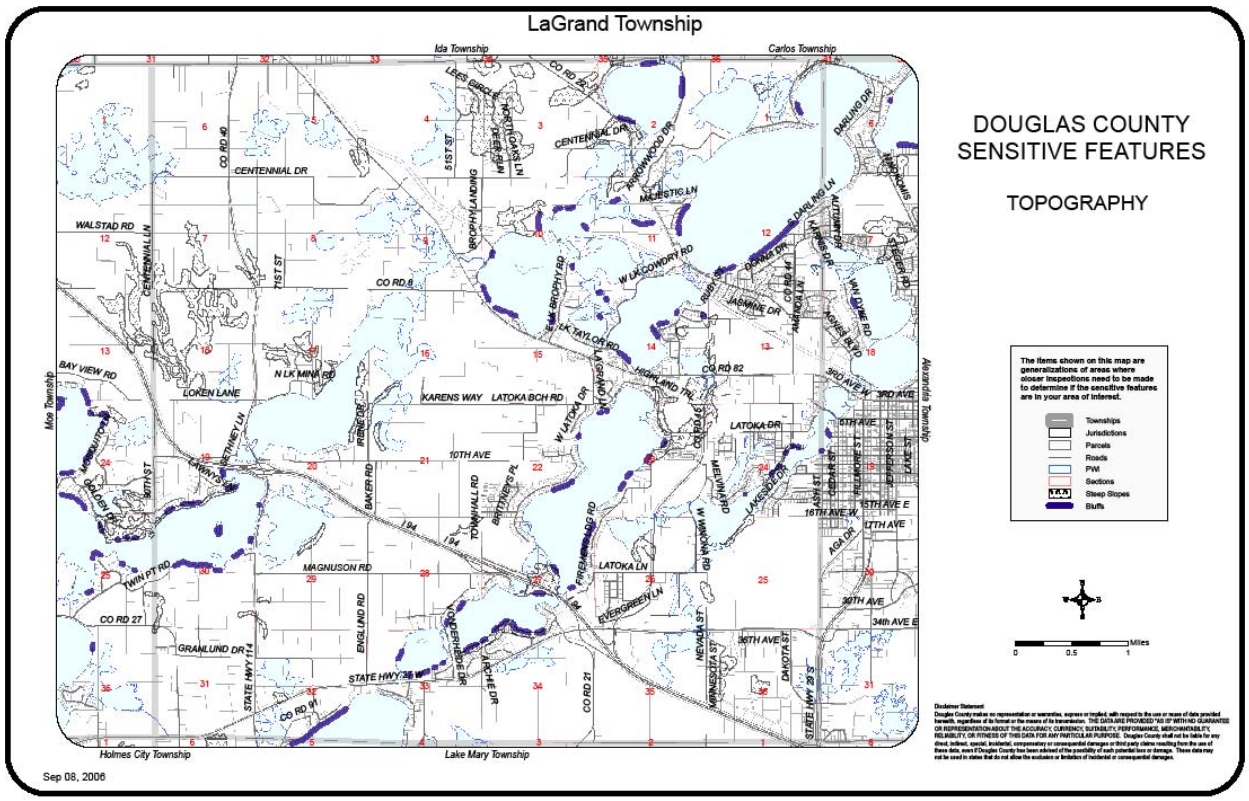


Appendix D. Sample of Sensitive Areas Maps available on County website
(Source: www.co.douglas. mn.us)






LaGrand Township
Ida Township
Carlos Township
Moe Township
Alexandria Township
Holmes City Township
Lake Mary Township
DOUGLAS COUNTY
SENSITIVE FEATURES
SHALLOW
GROUNDWATER
The items shown on this map are generalizations of areas where closer inspections need to be made to determine if the sensitive features are in your area of interest.
Townships
Jurisdictions
Parcels
Roads
PWI
Sections
PWI
Hydric Soils
Shallow Soils
Miles
0
0.5
1
Sep 08, 2006

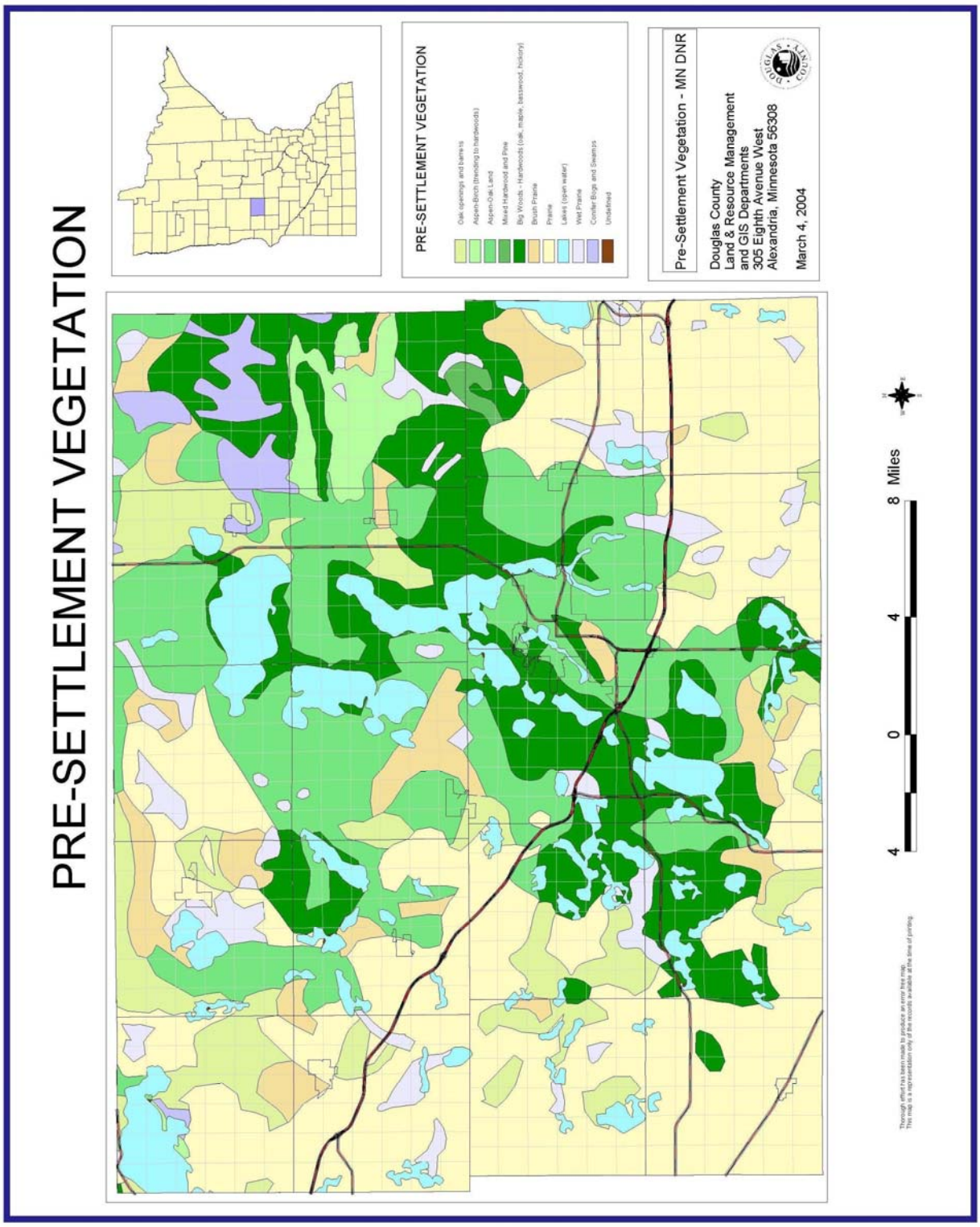

LaGrand Township
Ida Township
Carlos Township
Moe Township
Alexandria Township
Holmes City Township
Lake Mary Township
DOUGLAS COUNTY
SENSITIVE FEATURES
TOPOGRAPHY
The items shown on this map are generalizations of areas where closer inspections need to be made to determine if the sensitive features are in your area of interest.
Townships
Jurisdictions
Parcels
Roads
PWI
Sections
Steep Slopes
Bluffs
Miles
0
0.5
1
Sep 08, 2006

Appendix E: Impaired Waters List (Source: MPCA)

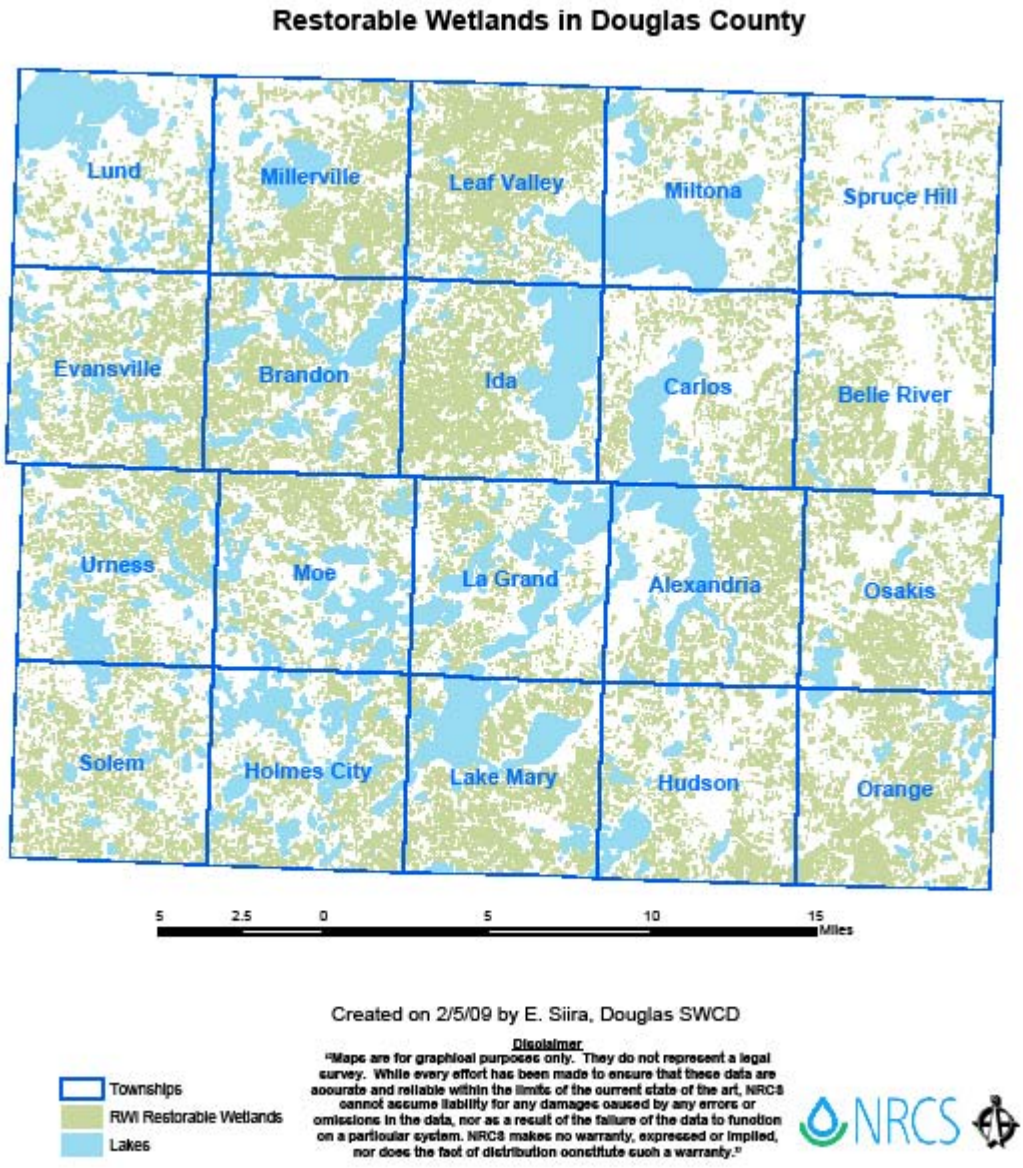
Name	Description	Stream AUID	Lake AUID	Affected Use	Pollutant/Stressor
Agnes	Lake or Reservoir		21-0053-00	Aquatic Consumption	Mercury in Fish Tissue
Andrew	Lake or Reservoir		21-0085-00	Aquatic Consumption	Mercury in Fish Tissue
Burgen	Lake or Reservoir		21-0049-00	Aquatic Consumption	Mercury in Fish Tissue
Carlos	Lake or Reservoir		21-0057-00	Aquatic Consumption	Mercury in Fish Tissue
Chippewa	Lake or Reservoir		21-0145-00	Aquatic Consumption	Mercury in Fish Tissue
Christina	Lake or Reservoir		21-0375-00	Aquatic Consumption	Mercury in Fish Tissue
Clifford	Lake or Reservoir		21-0003-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Darling	Lake or Reservoir		21-0080-00	Aquatic Consumption	Mercury in Fish Tissue
Ida	Lake or Reservoir		21-0123-00	Aquatic Consumption	Mercury in Fish Tissue
Irene	Lake or Reservoir		21-0076-00	Aquatic Consumption	Mercury in Fish Tissue
Jennie	Lake or Reservoir		21-0323-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Latoka (North Bay)	Lake or Reservoir		21-0106-01	Aquatic Consumption	Mercury in Fish Tissue
Latoka (South Bay)	Lake or Reservoir		21-0106-02	Aquatic Consumption	Mercury in Fish Tissue
Le Homme Dieu	Lake or Reservoir		21-0056-00	Aquatic Consumption	Mercury in Fish Tissue
Lobster (East Bay)	Lake or Reservoir		21-0144-01	Aquatic Consumption	Mercury in Fish Tissue
Lobster (West Bay)	Lake or Reservoir		21-0144-02	Aquatic Consumption	Mercury in Fish Tissue
Maple	Lake or Reservoir		21-0079-00	Aquatic Consumption	Mercury in Fish Tissue
Mary	Lake or Reservoir		21-0092-00	Aquatic Consumption	Mercury in Fish Tissue
Miltona	Lake or Reservoir		21-0083-00	Aquatic Consumption	Mercury in Fish Tissue
Osakis	Lake or Reservoir		77-0215-00	Aquatic Consumption	Mercury in Fish Tissue
Osakis	Lake or Reservoir		77-0215-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators

Pelican	Lake or Reservoir		26-0002-00	Aquatic Consumption	Mercury in Fish Tissue
Red Rock	Lake or Reservoir		21-0291-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Reno	Lake or Reservoir		61-0078-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Smith	Lake or Reservoir		21-0016-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Victoria	Lake or Reservoir		21-0054-00	Aquatic Consumption	Mercury in Fish Tissue
Whiskey	Lake or Reservoir		21-0216-00	Aquatic Consumption	Mercury in Fish Tissue
Winona	Lake or Reservoir		21-0081-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Unnamed creek (Freeborn Lake Inlet)	to Freeborn Lk	07020005-901		Aquatic Life	Turbidity
Long Prairie River	Spruce Cr to Eagle Cr	07010108-505		Aquatic Life	Fish Bioassessments
Long Prairie River	Spruce Cr to Eagle Cr	07010108-505		Aquatic Consumption	Mercury in Fish Tissue
Long Prairie River	Spruce Cr to Eagle Cr	07010108-505		Aquatic Life	Oxygen, Dissolved
Long Prairie River	Headwaters (Lk Carlos 21-0057-00) to end of Wetland (CR 65)	07010108-534		Aquatic Consumption	Mercury in Fish Tissue
Long Prairie River	Headwaters (Lk Carlos 21-0057-00) to end of Wetland (CR 65)	07010108-534		Aquatic Life	Oxygen, Dissolved
Long Prairie River	End of Wetland (CR 65) to Spruce Cr	07010108-535		Aquatic Consumption	Mercury in Fish Tissue
Long Prairie River	End of Wetland (CR 65) to Spruce Cr	07010108-535		Aquatic Life	Oxygen, Dissolved
Crooked Lake Ditch	Unnamed cr to Lk Osakis	07010202-552		Aquatic Life	Aquatic macroinvertebrate bioassessments
Chippewa River	Stowe Lk to Little Chippewa R	07020005-503		Aquatic Recreation	Fecal Coliform
Chippewa River	Stowe Lk to Little Chippewa R	07020005-503		Aquatic Consumption	Mercury in Fish Tissue
Chippewa River	Stowe Lk to Little Chippewa R	07020005-503		Aquatic Life	Turbidity

Appendix F. Pre-settlement Vegetation



Appendix G. Restorable Wetlands



Appendix H. Natural Resource Values (Source: Minnesota Statewide Conservation and Preservation Plan)

Figure 2. Natural resource values assessment of policy and action recommendations

Natural Resource Values Assessment of Recommendations

LEGEND: ● - Critical Impact ◑ - Significant Impact ○ - Negligible Impact

	Number	Recommendation	Air Quality	Water Quality/Quantity	Terrestrial Habitat Quality	Soil/Land Quality	Human Health	Biodiversity	Aquatic Community Health	Economic Health	Recreational/Cultural/ Spiritual/Aesthetic Value	Climate Change Mitigation/ Adaptation
HABITAT	H2	Protect critical shoreland of streams and lakes	◇	●	●	●	●	◇	●	●	●	●
	H1	Protect priority land habitats	○	●	●	●	●	○	●	●	◑	●
	H4	Restore and protect shallow lakes	○	●	●	●	◑	○	●	●	●	◑
	H5	Restore land, wetlands and wetland-associated watersheds	◇	●	●	●	◑	◑	●	●	◑	●
	H6	Protect and restore critical in-water habitat of lakes and streams	◇	●	●	●	◑	◑	●	●	◑	●
	H7	Keep water on the landscape	◇	●	●	●	◑	◇	●	●	◑	●
	H8	Review and analyze drainage policy (ditch laws)	◇	●	●	●	●	○	●	○	◑	●
	H3	Improve connectivity and access to recreation	○	○	●	●	○	●	◑	○	●	○
LAND USE	LU1	Fund and implement a state Land Use Development and Investment Guide	◑	◑	◑	◑	○	○	○	◑	◑	◑
	LU2	Support local and regional conservation-based community planning	◑	◑	◑	◑	○	○	○	◑	◑	◑
	LU3	Ensure protection of water resources in urban areas	○	◑	◑	○	○	○	○	○	○	○
	LU4/14	Transition renewable fuel feedstocks to perennial crops	○	◑	◑	◑	◑	○	○	◑	◑	◑
	LU5	Reduce streambank erosion through reduction in peak flows	○	◑	◑	◑	◑	○	○	◑	○	○
	LU6	Reduce upland and gully erosion through soil conservation practices	○	◑	◑	◑	◑	○	○	◑	○	○
	LU8	Protect large blocks of forest land	○	○	◑	◑	◑	○	○	○	○	○
	LU10	Support and expand sustainable practices on working forested lands	○	○	◑	◑	◑	○	○	○	◑	◑
TRANSPORTATION	T1	Align transportation planning across all agencies, streams and integrate environmental transportation project review	●	◑	◑	◑	◑	●	◑	◑	◑	◑
	T2	Reduce per capita vehicle miles of travel	◑	◑	◑	◑	◑	◑	○	○	○	◑
	T3	Develop and implement transportation policies that minimize impacts on natural resources	○	○	◑	◑	○	○	○	◑	○	○
ENERGY	E1	Develop coordinated laws, policies and procedures across state agencies	●	●	●	●	●	●	●	●	●	●
	E13	Invest in research and policies for "green payment" program	○	●	●	●	●	◇	●	●	○	●
	E17	Promote policies and incentives that encourage C-neutral businesses, homes, communities and other institutions	●	◑	◑	◑	◑	◑	◑	○	●	◑
	E2	Invest in farm and forest preservation to prevent fragmentation due to development	○	◑	●	●	●	○	◑	○	◑	◑
	E18	Implement policies and incentives to lower energy use of housing stock	◑	◑	○	○	○	●	○	○	●	◑
	E16	Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production	●	◑	○	○	◑	●	○	○	◑	○
	E21	Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options	◑	◑	○	○	○	◑	○	◑	◑	◑
	E19	Promote policies and strategies to implement smart meter and smart grid technologies	◑	○	○	○	○	◑	○	○	●	◑
	E14	Investigate opportunities to provide tax incentives for individual renewable energy investors	◑	◑	○	◇	○	◑	◇	○	◑	○
	E20	Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction	◑	◑	○	○	○	◑	○	○	○	◑
	E15	Invest in efforts to develop community-based energy platforms	○	◑	○	○	○	○	○	○	◑	◑

Note: Policy and action recommendations are grouped by topic (Habitat, Land Use, etc.) and then ordered starting with those recommendation having the broadest impact across multiple resource values followed by those having more targeted impact.

Appendix I. Public Water Suppliers (Source: MDH)

PWS CODE	PWS ID	NAME	ADDRESS	CITY
Community	1210001	Alexandria	316 Fillmore Street	Alexandria
Community	1210002	Hi View Park	2208 Highway 29 North, Lot A3	Alexandria
Community	1210009	Brandon	Brandon City Hall	Brandon
Community	1210010	Carlos		Carlos
Community	1210013	Evansville		Evansville
Community	1210017	Kensington	City Hall	Kensington
Community	1210020	Osakis	14 Nokomis Street East	Osakis
Community	1210021	Garfield		Garfield
Nonpublic	5210041	Sundown Shores	5168 Fish Hook Drive SW	Alexandria
Nonpublic	5210219	Windjammer Inn Resort	4860 County Road 42 NE	Alexandria
Nonpublic	5210407	Ida Rather Be Fishin'	7842 Lake Ida Way NW	Alexandria
Nonpublic	5210438	Smith Lake Mobile Home Park	3375 Smith Lake Road SE	Osakis
Nonpublic	5210533	Lakes Area Assisted Living	1313 County Road 22 NW	Alexandria
Nontransient Noncommunity	5210108	Miltona Elementary School	27 Dale Avenue	Miltona
Nontransient Noncommunity	5210298	New Testament Church and School	2505 Highway 29 North	Alexandria
Nontransient Noncommunity	5210332	Douglas County DAC	524 Willow Drive	Alexandria
Nontransient Noncommunity	5210333	Arrowwood Resort	2100 Arrowwood Lane NW	Alexandria
Nontransient Noncommunity	5210355	Contech	8301 State Highway 29 North	Alexandria
Nontransient Noncommunity	5210364	Brenton Engineering Company	4750 County Road 13 NE	Alexandria
Nontransient Noncommunity	5210473	SunOpta	601 Third Avenue West	Alexandria

Nontransient Noncommunity	5210476	Pro-Fab	8210 State Highway 29 North	Alexandria
Transient Noncommunity	5210001	Christina Lake Lutheran Church	22156 County Road 24 NW	Evansville
Transient Noncommunity	5210003	St. Nicholas Catholic Church	9473 County Road 3 NE	Carlos
Transient Noncommunity	5210006	Trinity Lutheran Church	5760 County Road 4W SW	Holmes City
Transient Noncommunity	5210009	Sheila's Place	17866 County Road 18 NE	Eagle Bend
Transient Noncommunity	5210010	Rose City Evangelical Free Church	16241 County Road 14 NE	Eagle Bend
Transient Noncommunity	5210014	Red Rock Golf Club	5167 County Road 25 SW	Hoffman
Transient Noncommunity	5210016	Sun Valley Resort Association	10045 State Highway 27 West	Alexandria
Transient Noncommunity	5210022	Shady Creek Resort	14563 Lakes Road NW	Brandon
Transient Noncommunity	5210034	Geneva Beach Resort	105 Linden Avenue	Alexandria
Transient Noncommunity	5210035	Lilac Lodge Resort	114 Lilac Lane	Alexandria
Transient Noncommunity	5210039	Lake Andrew Resort Association	8018 County Road 28 SW	Alexandria
Transient Noncommunity	5210044	Elmwood Resort Association	6567 State Highway 114 SW	Alexandria
Transient Noncommunity	5210057	Viking Trail Resort	2301 County Road 22 NW	Alexandria
Transient Noncommunity	5210060	Burgen Lake Wayside Rest MNDOT	I-94, Mile Point 105.1	Alexandria
Transient Noncommunity	5210066	Maryview Beach Resort	6082 North Lake Mary Drive SW	Alexandria
Transient Noncommunity	5210077	Berg's Resort	1315 Berg Avenue NE	Alexandria
Transient Noncommunity	5210081	Lazy Day Villa	250 Three Havens Drive NE	Alexandria
Transient Noncommunity	5210086	Weston Station	4417 East Highway 27	Alexandria
Transient Noncommunity	5210099	Corral Supper Club	117 Nelson Street North	Nelson
Transient Noncommunity	5210100	Diamond Jim's	221 North Nelson Street	Nelson
Transient Noncommunity	5210111	Jarheads	147 Main Street	Miltona

Transient Noncommunity	5210112	Mount Calvary Lutheran Church	149 Fourth Avenue	Miltona
Transient Noncommunity	5210114	Smith Lake Resort	3189 Smith Lake Road SE	Osakis
Transient Noncommunity	5210116	Church of Seven Dolors	16921 County Road 7 NW	Brandon
Transient Noncommunity	5210119	Miltona Municipal Liquor Store	223 Main Street	Miltona
Transient Noncommunity	5210121	Lake Lakota Rest Area MNDOT	I-94, Mile Point 99.4	Alexandria
Transient Noncommunity	5210124	Westwood Beach Resort	10397 Chippewa Heights NW	Brandon
Transient Noncommunity	5210133	Betsy Ross Resort	3791 Betsy Ross Road NW	Alexandria
Transient Noncommunity	5210138	Lake Miltona Golf Club	3868 County Road 5 NE	Miltona
Transient Noncommunity	5210140	Tip Top Cove Resort	13430 East Lake Miltona Drive NE	Miltona
Transient Noncommunity	5210141	St. Paul's Lutheran Church	19020 West Miltona Road NE	Parkers Prairie
Transient Noncommunity	5210154	Leaf Valley Mercantile	15233 County Road 6 NW	Garfield
Transient Noncommunity	5210155	Valley Creamery Association	5562 County Road 5 NW	Leaf Valley
Transient Noncommunity	5210156	Big Horn Cove Association	2548 Big Horn Bay Road NW	Alexandria
Transient Noncommunity	5210157	Ebenezer Lutheran Church	13070 Highway 6	Alexandria
Transient Noncommunity	5210158	Lucky Acres Campground	15133 Spring Lake Road NW	Miltona
Transient Noncommunity	5210162	Forada Supper Club	1380 County Road 4 SE	Forada
Transient Noncommunity	5210164	Sunset Beach Resort	11876 Forada Beach Road SE	Alexandria
Transient Noncommunity	5210194	Lake Geneva Christian Center	715 Birch Avenue	Alexandria
Transient Noncommunity	5210198	Floding's Resort	1532 Brophy Park Road NW	Alexandria
Transient Noncommunity	5210225	Vacationers Inn	1327 West Lake Cowdry Road NW	Alexandria
Transient Noncommunity	5210228	Viking Bay Resort	12844 East Lake Miltona Drive NE	Miltona
Transient Noncommunity	5210235	Shady Lawn Resort	1321 South Lake Darling Drive NW	Alexandria

Transient Noncommunity	5210252	Tamarac Bay Campground	1660 North Lake Miltona Drive NE	Miltona
Transient Noncommunity	5210256	Luther Crest Bible Camp	8231 County Road 11 NE	Alexandria
Transient Noncommunity	5210257	Pilgrim Point Camp	2059 Pilgrim Point Road NW	Alexandria
Transient Noncommunity	5210304	Forada Liquor Bar and Grill	1531 Fourth Street SE	Forada
Transient Noncommunity	5210312	Woodland Resort	13270 East Lake Miltona Drive	Miltona
Transient Noncommunity	5210314	First State Bank	229 Oak Street N	Miltona
Transient Noncommunity	5210323	Lake Brophy County Park	County Road 82 NW	Alexandria
Transient Noncommunity	5210324	Runestone County Park	8755 County Road 103	Kensington
Transient Noncommunity	5210325	Memorial Park	2547 County Road 42 NW	Alexandria
Transient Noncommunity	5210326	Spruce Hills County Park	13148 Spruce Hill Park Road NE	Miltona
Transient Noncommunity	5210327	Le Homme Dieu Beach	North Highway 29	Alexandria
Transient Noncommunity	5210328	Casey's Amusement Park	1305 Nokomis Street North	Alexandria
Transient Noncommunity	5210330	Chippewa Farms	10295 Nursery Lane NW	Brandon
Transient Noncommunity	5210334	Buttweiler's Do-All	4298 State Highway 114 SW	Alexandria
Transient Noncommunity	5210336	East Moe Lutheran Church	3531 East Moe Road	Garfield
Transient Noncommunity	5210337	West Moe Lutheran Church	16249 County Road 8 NW	Brandon
Transient Noncommunity	5210341	Lion's Club Park	County Road 3 South	Osakis
Transient Noncommunity	5210346	Our Savior's Lutheran Church	West Mill & South Nelson	Nelson
Transient Noncommunity	5210350	Miltona Auto Sales	109 Main Street	Miltona
Transient Noncommunity	5210352	Iverson Insurance Agency	119 Main Street	Miltona
Transient Noncommunity	5210356	Pearl Plaza Building	1309 Highway 29 North	Alexandria
Transient Noncommunity	5210358	North Branch Plaza	901 Highway 29 North	Alexandria

Transient Noncommunity	5210360	Gas Mart	8170 State Highway 29 NE	Alexandria
Transient Noncommunity	5210361	United Parcel Services	4603 Highway 27 East	Alexandria
Transient Noncommunity	5210365	Chippewa County Park	9461 County Road 108 NW	Brandon
Transient Noncommunity	5210366	Lake Carlos State Park	2601 County Road 38 NE	Carlos
Transient Noncommunity	5210371	Big Foot Resort	8231 State Highway 114 SW	Alexandria
Transient Noncommunity	5210375	Lookers	7919 Highway 29 North	Carlos
Transient Noncommunity	5210378	Casa Lago Association	9491 South Park Drive NE	Carlos
Transient Noncommunity	5210379	Chet's Lakeside Inn	15681 County Road 102 NE	Parkers Prairie
Transient Noncommunity	5210380	Chippewa Hills Resort	9991 Chippewa Heights Northwest	Brandon
Transient Noncommunity	5210385	Cottage Grove Resort Association	7870 Cottage Lane SW	Alexandria
Transient Noncommunity	5210386	Eden Acres Estates Association	5181 Fish Hook Drive SW	Alexandria
Transient Noncommunity	5210387	Eden Acres Hide-A-Way Resort	6153 State Highway 114 SW	Alexandria
Transient Noncommunity	5210394	Happy's Landing Co-op Association	8951 Twin Point Road Southwest	Alexandria
Transient Noncommunity	5210396	Hardees	509 50th Avenue West	Alexandria
Transient Noncommunity	5210399	Anderson's Outpost	9462 Highway 29 North	Alexandria
Transient Noncommunity	5210404	The Muddy Boot Bar and Grill	11070 Toby's Avenue SE	Forada
Transient Noncommunity	5210406	Johnson's RV Park	15344 Dittberner's Creek Road NW	Miltona
Transient Noncommunity	5210415	Millerville Municipal Liquor Store	County Road 7 Northwest	Millerville
Transient Noncommunity	5210416	Miltona Bay Estates	12935 Miltona Bay Road	Alexandria
Transient Noncommunity	5210417	Minnesouri Homes Association of Cottages	12852 Minnesouri Club Road NE	Alexandria
Transient Noncommunity	5210419	Mount Carmel Family Camp	998 Mount Carmel Drive NE	Alexandria
Transient Noncommunity	5210420	Nordic Trails Golf Course	4343 - 39th Avenue NE	Alexandria

Transient Noncommunity	5210421	Oak Park Campground	9561 County Road 8 NW	Garfield
Transient Noncommunity	5210424	Miltona Beach Resort Association	2481 North Lake Miltona Drive NE	Miltona
Transient Noncommunity	5210427	Eddy's Interlachen Inn	4960 County Road 42 NE	Alexandria
Transient Noncommunity	5210434	Shady Oaks Campground	3139 County Road 78 SE	Osakis
Transient Noncommunity	5210439	Sunset Camping	11970 Forada Beach Road Southeast	Alexandria
Transient Noncommunity	5210441	The Hayloft	7931 State Highway 29 North	Carlos
Transient Noncommunity	5210442	Melby Outpost	24033 County Road 24	Evansville
Transient Noncommunity	5210447	Val Halla Villa Resort	1301 South Darling Drive NW	Alexandria
Transient Noncommunity	5210452	Westridge Shores Resort	6907 State Highway 114 Southwest	Alexandria
Transient Noncommunity	5210453	Two Mile Trailer Park	451 County Road 10 SE	Osakis
Transient Noncommunity	5210469	Good Shepherd Lutheran Church	2702 Highway 29 North	Alexandria
Transient Noncommunity	5210470	Fahlun Lutheran Church	3550 County Road 74	Nelson
Transient Noncommunity	5210474	Midwest Clinic of Dermatology	110 County Road 44 NW	Alexandria
Transient Noncommunity	5210479	Nokomis Market	1700 North Nokomis NE	Alexandria
Transient Noncommunity	5210480	Lee Motors, Inc.	5803 State Highway 29 South	Alexandria
Transient Noncommunity	5210483	Alexandria Golf Club	2300 North Nokomis NE	Alexandria
Transient Noncommunity	5210484	Broken Arrow Resort	3408 Highway 27 E	Alexandria
Transient Noncommunity	5210486	Living Waters Assembly of God	1310 North Nokomis NE	Alexandria
Transient Noncommunity	5210487	Pine Ridge Golf Course	13955 County Road 16 NW	Evansville
Transient Noncommunity	5210491	Arrowwood Resort-Golf Pro Shop	3421 Arrowwood Lane NW	Alexandria
Transient Noncommunity	5210492	Hilltop Lumber	1405 North Nokomis NE	Alexandria
Transient Noncommunity	5210497	House of Prayer Christian Outreach Cntr.	3020 Rosewood Lane SE	Alexandria

Transient Noncommunity	5210501	Trophy's	350 State Highway 27 West	Nelson
Transient Noncommunity	5210504	Faith Lutheran Church	310 County Road 14	Miltona
Transient Noncommunity	5210506	Andes Tower Hills	4505 Andes Road SW	Kensington
Transient Noncommunity	5210508	Smokey Timbers	15567 NW Smokey Timbers Road	Miltona
Transient Noncommunity	5210510	Mill Lake Resort	3551 West Mill Lake Road SW	Farwell
Transient Noncommunity	5210511	Geneva Golf Club	4181 Geneva Golf Club Drive	Alexandria
Transient Noncommunity	5210513	Green Iguana Bar and Grill	14566 State Highway 29 South	Glenwood
Transient Noncommunity	5210514	Bug-A-Boo Bay	2800 North Nokomis Street NE	Alexandria
Transient Noncommunity	5210515	Oscar Lake Lutheran Church	14619 Church road	Farwell
Transient Noncommunity	5210516	East Mill Nine	8446 County Road 27 SW	Alexandria
Transient Noncommunity	5210517	Nelson Memorial Ballpark	Hope Road	Nelson
Transient Noncommunity	5210518	Alexandria Shooting Park	6527 County Road 87 SE	Alexandria
Transient Noncommunity	5210521	Lake Geneva Estates	1080 East Lake Geneva Road NE	Alexandria
Transient Noncommunity	5210524	Jim & Judy's	12321 Highway 29 North	Alexandria
Transient Noncommunity	5210525	Miltona Custom Meats	Second Street West	Miltona
Transient Noncommunity	5210526	Three Havens General Store	3907 County Road 42 NE	Alexandria
Transient Noncommunity	5210527	Jim and Joan's Campground	10196 County Road 36 NE	Miltona
Transient Noncommunity	5210529	Jill's Gas and Grocery	550 South Nelson Street	Nelson
Transient Noncommunity	5210530	Wildridge RV Association	2221 Reuben's Lane Southwest	Farwell
Transient Noncommunity	5210531	Clara's Place		Alexandria
Transient Noncommunity	5210532	Long Lake Lodge	16021 Long Lake Road	Brandon
Transient Noncommunity	5210534	Brophy Bay Village RV Park	4178 County Road 82 SW	Alexandria

Transient Noncommunity	5210535	Runestone Office Center	910 Highway 29 North, No. 103	Alexandria
Transient Noncommunity	5210536	Sharon's Senior Service Inc.	1441 Rosewood Lane SE	Alexandria
Transient Noncommunity	5210537	Angelina's	1215 Highway 29 North	Alexandria
Transient Noncommunity	5210540	Country Garden B& B	360 Karens Way NW	Alexandria
Transient Noncommunity	5210541	Friends Forever Retreat	904 County Road 56	Garfield
Transient Noncommunity	5210542	Geneva Lodge	4301 Geneva Golf Club Drive	Alexandria
Transient Noncommunity	5210543	Miltona Outpost	4350 County Road 14 NE	Miltona
Transient Noncommunity	5210544	Carlos Creek Winery	6693 County Road 34 NW	Alexandria
Transient Noncommunity	5210545	Miltona Community unity Center	300 County Road 14	Miltona

Glossary of Terms

Source: BWSR (July 2008)

303(d) - The section of the Clean Water Act that has the TMDL requirements. The 303(d) list is a list of all impaired or threatened waters within the jurisdiction of a State, Territory, or authorized Tribe.

305(b) - The section of the Clean Water Act requiring states to report on progress in meeting the "fishable, swimmable" goals of the act.

Adaptive Management – Adaptive management incorporates research into conservation action. Specifically, it is the integration of design, management, and monitoring to systematically test assumptions in order to adapt and learn.

Biotic impairment - A divergence from the expected biological condition of a lake, stream, or wetland. Practical methods exist for assessing impairment to a biological community, and they must be tested and refined for application to Minnesota. The methodology for Minnesota is being used as it is developed.

Clean Water Act – An act passed by the U.S. Congress to control water pollution (formerly referred to as the Federal Water Pollution Control Act of 1972). Public Law 92-500, as amended. 33 U.S.C. 1251 et seq.

Clean Water Legacy Act – The purpose of the Clean Water Legacy Act is to protect, restore, and preserve the quality of Minnesota's surface waters by providing authority, direction, and resources to achieve and maintain water quality standards for surface waters as required by section 303(d) of the federal Clean Water Act, United States Code, title 33, section 1313(d), and applicable federal regulations.

Condition monitoring - The purpose of this monitoring is to establish status and trends. Condition monitoring is designed to assess the condition of the state's waters, both in general and specific. This monitoring will identify problems, but may not collect enough data to identify the causes or sources of the problems. With adequate design considerations, condition monitoring can be used to determine trends over time or across areas of the state.

Designated Uses - Specific uses identified for all water bodies in the state, both surface water and ground water. Waters of the state are protected for multiple uses and water quality standards exist to protect those uses. Examples of designated uses are drinking water, aquatic life and recreation, agriculture, wildlife, industrial consumption, aesthetic enjoyment, and navigation.

DO - dissolved oxygen. Oxygen is necessary to maintain a healthy ecosystem for fish and other aquatic life in a water body.

Effectiveness monitoring - The purpose of this monitoring is to determine the extent to which purposeful interventions had an effect on water conditions.

Eutrophic - high in nutrients, with high organic production. Eutrophic lakes contain more phytoplankton (algae) than other lakes, and are common among more naturally fertile lowland regions in which human activity provides an increased supply of nutrients.

Exceedences - The number of times a water quality standard or a permit limit was exceeded. Violations of a permit limit or a water quality standard.

Fecal Coliform bacteria - Bacteria that originate in the intestinal tract of a mammal. Not all fecal coliform bacteria cause disease, but this relatively simple test is used as an indicator that fecal matter is getting into the water body, and that other potentially harmful contaminants may be also be entering the water body. The main sources of these bacteria are from animal and human waste. Animal sources of bacteria include feedlot and manure runoff, urban runoff, and wildlife. Improperly treated human waste may come from overflows from sewage treatment systems in cities and towns, unsewered areas with inadequate community or individual wastewater treatment, or a single home with a failing septic system.

Geometric Mean - The geometric mean of 'n' fecal coliform samples is the nth root of their product. For example, the geometric mean of 5 values is the 5th root of the product of the 5 values.

IBI - The index of biotic integrity is a regionally based index used to measure the integrity of rivers and streams, and to determine the level of their biotic impairment. The IBI relies on multiple parameters (termed "metrics") based on fish community structure and function, to evaluate a complex biotic system. In order to implement biological criteria, a formal method for sampling the biota of streams, evaluating the resulting data, and clearly describing the condition of sampled stream reaches is needed. The IBI incorporates professional judgment with quantitative criteria that enables determination of a continuum between very poor and excellent conditions. An important key to successful restoration, mitigation and conservation efforts is having an objective way to assess and compare the biological integrity of damaged sites. The IBI provides a tool for doing so and, at the same time, allows managers to set specific biological integrity targets for restoration programs.

Impaired water body - A water body that does not meet water quality standards and designated uses because of pollutant(s), pollution, or unknown causes of impairment.

Load - The quantity that is or can be carried at one time, as compared to a concentration. A pollutant load is the quantity of a pollutant that a water body is carrying measured at a point in time.

Mercury - A metal that recycles between land, air and water. Mercury accumulates in fish and often results in fish consumption advisories for lakes and rivers. Mercury can have toxic effects on the nervous system of animals, including humans that eat large quantities of fish. Mercury is naturally occurring, but most of the mercury entering water bodies comes from mercury released by human activities. The main pathway of mercury to surface water is through atmospheric deposition. Major sources of mercury to the atmosphere include the burning coal and petroleum, metal smelting, and the use of mercury in manufacturing and products (such as switches, dental amalgam, and measuring instruments).

MN R Ch 7050 & 7052 - Minnesota Rules Chapters 7050 and 7052. These chapters contain the water quality standards for all waters of the state, both surface water and ground water. Chapter 7050 has the overall water quality standards for the state as well as specific standards for water bodies, and Chapter 7052 has the water quality standards for waters in the Lake Superior Basin.

Nonpoint Sources - Pollution in runoff and seepage from land areas. The major origins of nonpoint source pollution include agricultural runoff; pesticide and fertilizer use; feedlot runoff; urban runoff from streets, yards, and construction sites; leachate from septic systems; runoff from forestry and mining activities; highway de-icing chemicals; and dredging and drainage activities.

NTU - nephelometric turbidity units. A unit of measure for turbidity values. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

Point Sources - Pollution from municipal and industrial facilities, usually entering a water body via discharge from a pipe or a discrete channel.

Pollutant - Any sewage, industrial waste, or other wastes, discharged into a disposal system or to waters of the state.

Pollution - Pollution of water, water pollution, or pollute the water means: (a) the discharge of any pollutant into any waters of the state or the contamination of any waters of the state so as to create a nuisance or render such waters unclean, or noxious, or impure so as to be actually or potentially harmful or detrimental or injurious to public health, safety or welfare, to domestic, agricultural, commercial, industrial, recreational or other legitimate uses, or to livestock, animals, birds, fish or other aquatic life; or (b) the alteration made or induced by human activity of the chemical, physical, biological, or radiological integrity of waters of the state. [Mn. Chapter 115.01; Subd. 5]

Reference conditions - The chemical, physical, or biological quality or condition exhibited at either a single site or an aggregation of sites that are representative of the least-impacted and attainable condition. Reference conditions are used to describe reference sites.

Suspended Solids - Suspended solids limit sunlight, inhibit oxygen uptake by fish and alter aquatic habitat.

TMDL - Total maximum daily load. The maximum amount of a pollutant that a water body can receive and still meet water quality standards. TMDL also refers to the process of allocating pollutant loadings among point and nonpoint sources. EPA's proposed definition is: "A written plan and analysis of an impaired water body established to ensure that the water quality standards will be attained and maintained throughout the water body in the event of reasonably foreseeable increases in pollutant loads."

TMDL Implementation Plan – An implementation plan is a document, guided by an approved TMDL, that provides details of the actions needed to achieve load reductions, outlines a schedule of those actions, and specifies monitoring needed to document action and progress toward meeting water quality standards.

Turbidity - Measures particles in the water, such as sediment and algae. Related to the depth sunlight can penetrate into the water. Higher turbidities reduce the penetration of sunlight in the water and can affect species of aquatic life that survive in the water body.

Un-ionized Ammonia ($NH_{3)}$ - A form of ammonia that is toxic to fish.

Resources

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