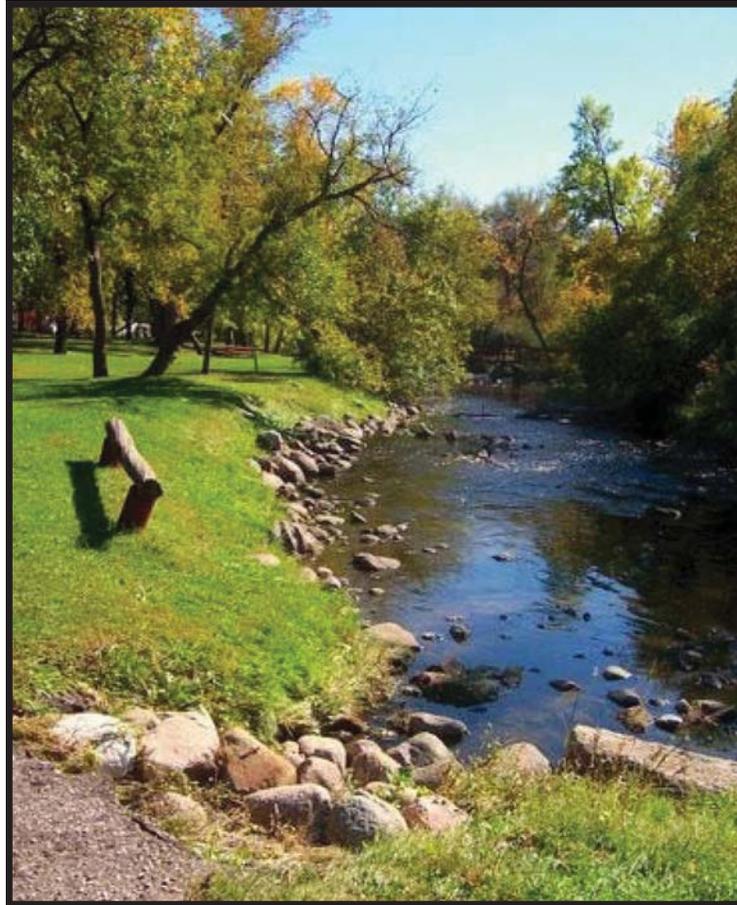
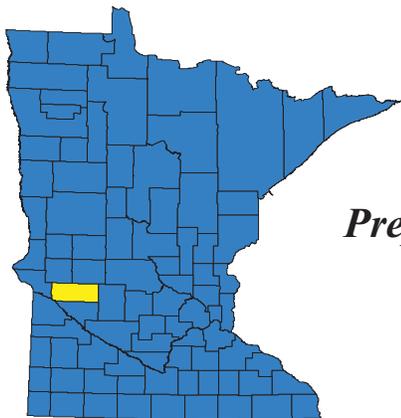


Swift County 2014-2023 Local Water Plan

~ With 5-Year Implementation Plan (2014-18) ~



Chippewa River



*Prepared by Swift County with assistance from
Midwest Community Planning, LLC*

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Swift County Water Plan:

Executive Summary

The Swift County Water Plan follows the provisions set forth in Minnesota State Statutes 103B.314 - Contents of Water Plan.

A. Purpose of the Local Water Plan

According to Minnesota Statute 103B, each county is encouraged to develop and implement a local water management plan with the authority to:

- Prepare and adopt a local water management plan that meets the requirements of this section and section 103B.315;
- Review water and related land resources plans and official controls submitted by local units of government to assure consistency with the local water management plan; and
- Exercise any and all powers necessary to assure implementation of local water management plans.

Pursuant to the requirements of the law, the Swift County Water Plan:

- Covers the entire area of Swift County;
- Addresses water problems in the context of watershed units and groundwater systems;
- Is based upon principles of sound hydrologic management of water, effective environmental protection and efficient management;
- Is consistent with comprehensive water plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or groundwater system; and
- Will serve as a 10-year water plan (2014-2023), with a 5-year implementation plan (2014-2018). In 2018, the implementation plan will be updated.

In addition, the Water Plan will also serve as the Swift County Soil and Water Conservation District's (SWCD) Comprehensive District Plan. This will be passed by the SWCD's Board of Supervisors by Resolution.

B. A Description of Swift County's Priority Concerns

The Swift County Water Plan Task Force, listed on the inside cover page, met on December 12, 2012, to review the Priority Concerns Input Forms received (Appendix A contains a copy of the Sign in Sheet). The Water Plan Task Force identified the following as Swift County's priority water planning issues (note: these issues are not ranked in order of priority):

1. Surface Water Management
 - a. Agricultural Drainage
 - b. Stormwater Management
 - c. Wetlands and Water Storage/Retention

2. Reducing Priority Pollutants ~ Surface Water Quality
 - a. TMDL Implementation
 - b. Feedlot/Livestock Management
 - c. Subsurface Sewage Treatment Systems
 - d. Erosion and Sediment Control

3. Groundwater Quality & Quantity

4. Plan Administration
 - a. Watershed Focus - Stakeholder Cooperation
 - b. Raising Public Awareness - Education

C. Summary of Goals, Objectives, Action Steps, and Estimated Costs

To address the priority concerns identified in the scoping process, the Swift County Water Plan Task Force held meetings and developed four goal areas. These four goal areas are further broken down into interrelated objectives that specific resource concerns. More importantly, each objective has a series of action steps designed to help address the priority concerns.

A summary of the County's Water Plan Goals, Objectives and Action Steps is provided below. Collectively they form the Implementation Plan for the County. In addition, a summary of annual estimated costs is provided. These estimated expenses are separated into Overall Costs and Local Costs. Overall Costs include all monies spent by water plan stakeholders, including the County, watershed districts, state agencies, and landowners. The Local Costs include funds spent and activities performed by Swift County (including items such as the County's 103E administrative costs) and the Swift County SWCD. The Swift County Water Plan Task Force recognizes that not all of the identified Action Items will be accomplished over the course of the

Water Plan's time-frame, however, the intent is to accomplish as many implementation activities as feasible. Also keep in mind the costs identified are only estimates, and actual direct and/or indirect costs may be more or less than indicated. Finally, many of the Action Items will be dependent upon receiving grants. Chapter Three contains the Water Plan's complete Goals, Objectives, and Action Steps, and Chapter Four provides additional details on administering the Water Plan.

Goal 1: To Ensure Swift County's Surface Water Resources Exceed Minimum Water Quality Standards

The first goal area focuses on addressing surface water quality issues. Objectives were developed for maintaining a watershed focus and removing waters off the MPCA's 303d list of Impaired Waters. Additional objectives address feedlots, Subsurface Sewage Treatment Systems (SSTS), and erosion and sediment control. Implementation steps under the first goal area include a wide range of the following initiatives and Best Management Practices (BMPs):

- **Watershed Focus/TMDLs.** Supporting watershed planning, monitoring, and implementation by providing financial and in-kind assistance; annually reviewing monitoring data and participating in the watershed restoration and protection strategy with the Chippewa River, Pomme de Terre, and Upper Minnesota River Watersheds; and seeking opportunities to refine watershed analysis and management through GIS and other technology.
- **Feedlots.** Target feedlot inspections in shoreland areas; host annual educational meetings with feedlot operators; and cost share ag/waste feedlot BMPS, including nutrient management plans, closing unused ag waste impoundments; and identifying where grazing management improvements are needed.
- **SSTS.** Work with approximately 30 homeowners annually on compliance inspections; provide low interest loans to upgrade noncompliant systems; cost-share upgrading four low income noncompliant systems annually; and inspect all SSTS in impaired subwatersheds.
- **Erosion and Sediment Control.** Installing 80 acres of vegetative buffer strips annually (target J.D. 19 and Shakopee Creek); annually install two water and sediment control structures, five alternative tile intakes, two stream bank stabilization projects, and 1,000 feet of living snow fences. In addition, work with the watersheds districts/projects on implementing their numerous erosion and sediment control projects.

The various action steps identified to address the first goal area of surface water quality improvements in Swift County are estimated to have an overall 5-year cost of \$2,325,000, which averages to approximately \$465,000 annually. Many of the implementation activities will be paid for through grants and in-kind expenses.

Goal 2: Surface Water Management Initiatives

The second goal area is aimed at effectively managing surface water resources for multiple purposes (surface water quantity). Separate objectives are included for agricultural drainage, stormwater management, and wetlands/surface water retention. The key implementation steps include the following:

- **Agricultural Drainage:** Re-determining the benefits on systems as requested; maintain and update a County Ditch Inventory; installing ten side inlets annually to control erosion; cost-sharing a wide range of drainage BMPs; and seeking funds to complete a drainage management plan.
- **Stormwater Management:** Assist with stormwater management planning; providing educational, technical, and financial support for the implementation of stormwater BMPs; and cost-sharing providing 50 rain barrels annually.
- **Wetlands/Water Retention:** Targeting impaired subwatersheds for wetland restorations and increasing the number of Wetland Reserve Program easements by two each year on marginal farmland.

The various action steps identified to address the second goal area of surface water management in Swift County are estimated to have an overall 5-year cost of \$600,000, which averages to approximately \$120,000 annually. Many of the implementation activities will be paid for through grants and in-kind expenses.

Goal 3: Groundwater Quantity and Quality Initiatives

The third goal area focuses on addressing groundwater quality and quantity issues. Objectives were developed for wellhead protection areas, ensuring there is an adequate supply of safe drinking water, and working with stakeholders to protect groundwater levels for multiple uses. Implementation steps include a wide range of the following groundwater Best Management Practices (BMPs):

- **Wellhead Protection Areas (WPA).** Target groundwater BMP Programs in Wellhead Protection Areas, such as RIM, CRP, manure management and nutrient planning, abandoned well sealing and proper SSTS compliance; and target sealing all abandoned wells in Wellhead Protection Areas.
- **Safe Drinking Water.** Complete a pesticide management plan and water conservation plan with each new irrigation system; incorporate Swift County’s sensitive groundwater recharge areas map into to the local land use decision making process; implement two groundwater BMP projects into the local and use decision making process annually.
- **Groundwater Quantity.** Continue to monitor 26 groundwater test sites annually; host a workshop every three years with the DNR and Minnesota Geological Survey on how best to incorporate the county’s geologic and groundwater information into the land use making process; pursue funding to establish a water conservation/drought contingency plan.

The various action steps identified to address the third goal area of groundwater quality and quantity in Swift County are estimated to have an overall 5-year cost of \$349,000, which averages to approximately \$69,800 annually. Many of the implementation activities will be paid for through grants and in-kind expenses.

Goal 4: Plan Administration Initiatives

The fourth goal area is aimed at effectively administering the Swift County Water Plan. A specific objective was developed to “Engage the Citizens and Stakeholders on key water planning issues and implementation opportunities.” Implementation steps include the following:

- **Ongoing Issues and Programs.** Properly raise awareness on key water planning issues and available BMP funding opportunities.
- **Water Plan Funding/Support.** Secure funding to properly implement the water plan and meet annually to review progress.
- **Watershed Focus and Stakeholder Cooperation.** Partner with watershed and stakeholder groups on implementation activities.

The various action steps identified to address the fifth goal area of effectively administering the Water Plan in Swift County are estimated to have an overall 5-year cost of \$65,000, which averages to approximately \$13,000 a year.

Summary of Estimated Costs

The four water plan goal areas and their corresponding estimated costs are summarized below in Table 1. The initiatives identified in Chapter Three are estimated to cost approximately \$3,339,000 over the five years, which averages to approximately \$667,800 annually.

**Table 1:
Summary of Swift County’s Water Plan
Estimated Overall and Local Costs**

	5-Year	Yearly
Goal Area One: Surface Water Quality	\$2,325,000	\$465,000
Goal Area Two: Surface Water Management	\$600,000	\$120,000
Goal Area Three: Groundwater Quality/Quantity	\$349,000	\$69,800
Goal Area Four: Plan Administration	\$65,000	\$13,000
Totals	\$3,339,000	\$667,800

**Note:* Please refer to Chapters Three and Four for a more detailed description of the estimated five-year and annual costs; expenses may seem exaggerated, but actually represent the numerous stakeholders involved and a collaboration of their corresponding activities and budgets.

D. Relationship to other Plans

The Swift County water planning process included feedback from local governmental units and stakeholders to ensure the Water Plan, and its corresponding Goals, Objectives and Action Steps, were developed to be consistent with existing plans and official land use controls. As a result, the updated Swift County Water Plan is believed to be consistent with the plans and official controls of the other pertinent local, State and regional plans and controls. In conclusion, there are no recommended amendments to other plans and official controls to achieve consistency with this Water Plan.

Chapter One: Swift County

Water Plan Priority Concerns Scoping Document

Section One: Introduction to the Water Plan & Swift County

A. Water Plan Background

The original Swift County Water Plan was approved in 1991. Since then, the Water Plan has been updated in 1995, 2003, and 2008. As a result, this Plan is considered Swift County’s fifth generation Comprehensive Local Water Plan (CLWP). The entire Plan will cover a ten-year period (2014–2023), with the action steps (or implementation steps) covering a five-year period (2014–2018). In 2018, the action steps will need to be updated. According to Minnesota Statute 103B, each county is encouraged to develop and implement a local water management plan with the authority to:

1. Prepare and adopt a local water management plan that meets the requirements of this section and section 103B.315;
2. Review water and related land resources plans and official controls submitted by local units of government to assure consistency with the local water management plan; and
3. Exercise any and all powers necessary to assure implementation of local water management plans.

Pursuant to the requirements of the law, this Swift County Water Plan:

- Covers the entire area of Swift County;
- Addresses water problems in the context of watershed units and groundwater systems;
- Is based upon principles of sound hydrologic management of water, effective environmental protection and efficient management;
- Is consistent with comprehensive water plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or groundwater system; and
- Will serve as a 10-year water plan (2014-2023), with a 5-year implementation plan (2014-2018). In 2018, the implementation plan will be updated.

B. Swift County Profile

The County is located in West Central Minnesota, approximately 120 miles west of the Minneapolis-St. Paul metropolitan area and 30 miles west of the City of Willmar. Map 1A shows the location of Swift County's cities and townships, along with the County's location in the State. The Minnesota River helps to form the County's southwestern border. In addition, the County shares borders with Stevens and Pope Counties to the north, Kandiyohi County to the east, Chippewa County to the south and Big Stone County to the west.

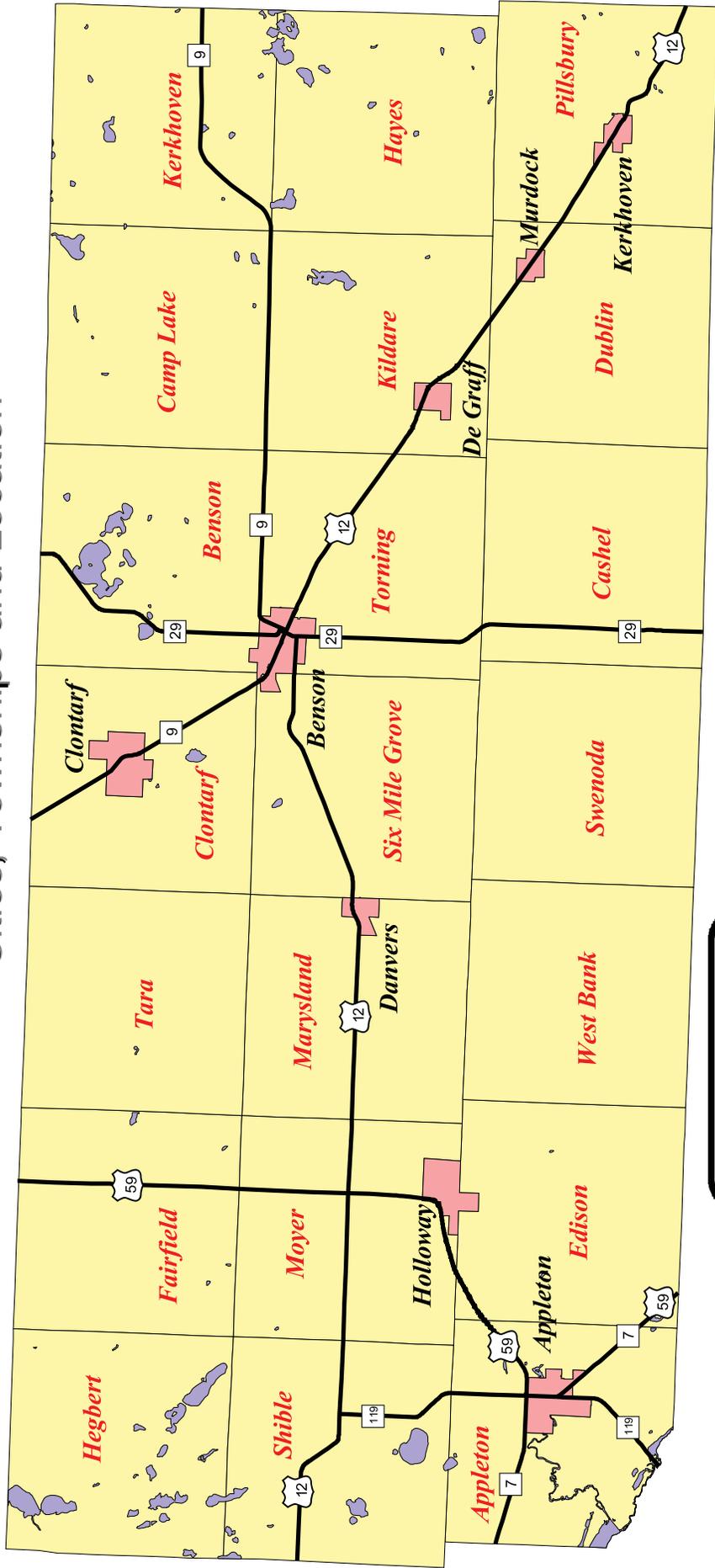
Swift County is located within three major watersheds: the Upper Minnesota River, the Pomme de Terre River, and the Chippewa River Watersheds (see Map 2A in Chapter Two). All three watersheds are part of the Minnesota River Basin.

According to the 2000 Census, Swift County has a total area of 752.35 square miles, of which 743.53 square miles (or 98.83%) is land and 8.82 square miles (or 1.17%) is water. Agricultural land is currently and will remain the dominant type of land use. Table 1 shows Swift County's Census population since 1960, which is currently around 9,783 residents (2010 Census). Overall, Swift County has lost population since 1960, with the exception of the 2000 Census, when it gained approximate 1,232 residents during the 1990s. Swift County is projected to continue to lose population over the next 10 years. This is a common trend among rural counties throughout Minnesota and the upper Midwest.

Table 1:
Swift County's Population since 1960 (Source: U.S. Census)

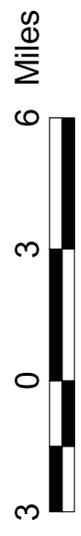
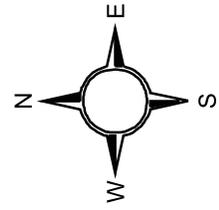
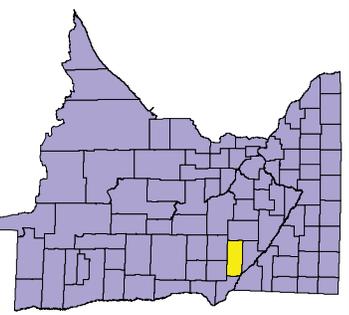
Area	Population	Change	
		#	%
1960	14,936	N/A	N/A
1970	13,177	-1,759	-12%
1980	12,920	-257	-2%
1990	10,724	-2,196	-17%
2000	11,956	1,232	11%
2010	9,783	-2,173	-18%
Totals since 1960		-5,153	-35%

Map 1A: Swift County's Cities, Townships and Location



Legend

- Major Roads
- Lakes
- Cities
- Townships



**Section Two:
Priority Concerns Scoping Document Planning Process**

C. Resolution to Update the Swift County Water Plan

The first step in the Water Planning Process was for the Swift County Board of Commissioners to approve a resolution indicating the County was officially updating its Water Plan. This action took place on June 5, 2012, at the regularly scheduled County Board meeting. A copy of the resolution appears in Appendix A.

D. Notice of Plan Update

An official “Notice of Plan Update” for the Swift County Water Plan was sent on August 9, 2012, to the contacts as prescribed by Minnesota Statutes 103B:

www.revisor.mn.gov/statutes

and according to the “Routing Information” contained on BWSR’s website under the Resource Management and Planning tab:

www.bwsr.state.mn.us/planning/routing.html

A copy of the Notice of Plan Update can be found in Appendix A.

E. Water Plan Public Meeting

Swift County hosted an open house on August 28, 2012, from 2:00 p.m. to 3:30 p.m. The purpose of the meeting was to invite Swift citizens to voice their concerns on which County water planning issues they would like to see addressed in the Swift County Water Plan. A copy of the sign-in sheet appears in Appendix A. The following issues were identified and discussed:

Swift County Water Plan Open House Topics

- A. Need to focus on assisting landowners with Best Management Practices (BMPS).
- B. Still need to seal abandoned wells.
- C. Septic Systems – low interests loans
- D. Importance of Wetlands
- E. Watershed Focus – Stakeholder Cooperation
- F. Erosion Control
- G. Water Bottle Refund

F. State & Local Stakeholder Comments

At the beginning of Swift County’s water planning process, the County’s key water planning stakeholders were asked to submit comments on priority water planning issues and suggested implementation activities. This was accomplished by completing either a Swift County Priority Concerns Input Form, or by simply submitting a letter. The following stakeholders submitted comments:

- The Minnesota Department of Agriculture
- The Minnesota Pollution Control Agency
- The Minnesota Board of Water and Soil Resources

Table 2 summarizes the priority concerns identified by each of the stakeholders. Based upon the stakeholders comments received, *Swift County’s top three priority issues are:*

- 1. Agricultural Drainage Management**
- 2. Surface Water Quality/TMDLs (Impaired Waters)**
- 3. Soil Erosion/Sediment Control**

Minnesota Department of Agriculture (MDA)

The MDA submitted a Priority Concerns Input Form for Swift County. A copy of the form, dated September 11, 2012, is contained in Appendix B. The MDA's identified the following five priority water planning concerns:

1. Agricultural Drainage, Wetlands and Water Retention
2. Groundwater and Surface Water Protection: Agricultural Chemicals and Nutrients/Water Use/Land Management in Wellhead Protection Areas
3. Manure Management and Livestock Issues
4. Agricultural Land Management
5. Targeting of BMPs, Aligning Local Plans and Engaging Agriculture

The MDA also created a webpage which communicates and profiles their top five priority water planning concerns. The webpage provides links to each of the five priority concern areas, including information on why the issue is important, what actions need to be taken, and links to more information on the subject. For more information, please visit the following MDA link:

www.mda.state.mn.us/protecting/waterprotection/waterplanning.aspx

Minnesota Pollution Control Agency (MPCA)

The MPCA submitted a letter outlining their top three priority concerns for Swift County. A copy of the map and letter, dated September 6, 2012, can be found in Appendix B. The MPCA submitted the following four priority concerns for Swift County:

1. Impaired Waters/Total Maximum Daily Loads (TMDL)
2. Watershed Approach
3. Agricultural Drainage Management
4. General Update of the LWM Plan information relative to MPCA Programs

**Table 2: Swift County Water Plan
Summary of Stakeholder's Priority Concerns
(Please refer the text)**

Priority Concern/Issue	Stakeholder		
	MN Dept. of Agriculture	MN Pollution Control Agency	BWSR
1. Ag. Drainage Management	Yes*	Yes	Yes
2. Surface Water Quality/TMDLS	Yes	Yes*	Yes*
3. Soil Erosion/Sediment Control	Yes		
Septic Systems (SSTS)			Yes
Wetlands/Water Retention	Yes*		Yes
Groundwater quality/quantity	Yes		
Feedlots/Nutrient Management	Yes		Yes
Best Management Practices (BMPs)	Yes		Yes
Stakeholder Cooperation	Yes	Yes	
Watershed Approach		Yes	
1. Surface Water Quality/TMDLS	Yes	Yes*	

** = Stakeholder's Top Priority Concern*

Minnesota Board of Water and Soil Resources (BWSR)

The BWSR submitted a Swift County Priority Concerns Input Form on September 14, 2012 (a copy of the correspondence can be found in Appendix B). BWSR identified the following four top priority concerns:

1. Erosion and Sediment Control; Nutrient Management on Agricultural Land
2. Feedlot Management and Non-Conforming Subsurface Septic Treatment Systems
3. Drainage Water Management Planning/Drainage System Maintenance and Repair
4. Address Accelerated Runoff Impacts via Wetland Restoration, Protection, and Enhancement/Water Storage

**Section Three:
Swift County
Priority Water Planning Issues**

G. Water Plan Task Force

Swift County maintains a Water Plan Task Force which meets regularly on water plan initiatives. In addition, the Task Force is used throughout the water planning process to help identify priority issues and to develop the water plan's Goals, Objectives, and Action Steps. Members of the Task Force are listed on the inside cover of the Plan.

H. Priority Water Planning Issues

The Swift County Water Plan Task Force met on December 12, 2012, to review the Priority Concerns Input Forms received (Appendix A contains a copy of the Sign in Sheet). The Water Plan Task Force identified the following as Swift County's priority water planning issues (note: these issues are not ranked):

1. Surface Water Management
 - a. Agricultural Drainage
 - b. Stormwater Management
 - c. Wetlands and Water Storage/Retention

2. Reducing Priority Pollutants ~ Surface Water Quality
 - a. TMDL Implementation
 - b. Feedlot/Livestock Management
 - c. Subsurface Sewage Treatment Systems
 - d. Erosion and Sediment Control

3. Groundwater Quality & Quantity

4. Plan Administration
 - a. Watershed Focus - Stakeholder Cooperation
 - b. Raising Public Awareness - Education

I. Priority Issues Not Addressed by this Water Plan

All of the priority issues identified in the Swift County Water Plan Survey and received in Swift County's Priority Concerns Input Forms, will either directly or indirectly be addressed in Swift County's updated Water Plan. This is particularly important to Swift County, since BWSR and the other State agencies have indicated that projects are less likely to receive grant money unless they are mentioned in Local Water Management Plans.

As a result of not excluding any priority concern identified by a water plan stakeholder, Swift County does not anticipate needing to resolve any differences between Swift County's Priority Water Plan Issues and other state, local and regional concerns.

**Section Four:
Swift County
Ongoing Water Plan Activities**

Swift County has numerous ongoing programs and land use controls that are directly linked to the County's Water Plan. These ongoing activities include educational efforts on key water planning issues, stream monitoring, and Best Management Practices (BMPs) implementation. In addition, County staff regularly attends water management meetings, educational conferences, and promotes water protection projects. The County also annually provides cost-share to fund various watershed groups and similar organizations. All of these activities directly are related to implementing the Local Water Management Program (i.e., "Water Plan").

In addition to implementing the County's Water Plan, the County also accomplishes numerous water plan initiatives through implementing the following County programs. **Table 3 shows that Swift County has spent over \$480,535 in funds on all of these ongoing activities between the five-year period of 2007 and 2011.**

- ***County Feedlot Program*** – Swift County has a county feedlot program, administered through the Minnesota Pollution Control Agency (MPCA). This means the county works with producers on registration, permitting, inspections, education, and complaint follow-up.
 - ***Subsurface Sewage Treatment System (Program SSTS)*** – Swift County enforces MN Rules Chapter 7080-7083 through the Swift County SSTS Ordinance. This Ordinance helps ensure that septic systems are designed and maintained properly, and includes a compliance inspection requirement when property is transferred (seller's responsibility).
 - ***Shoreland Management Program*** – Swift County assists the Minnesota Department of Natural Resources (DNR) with administering the Shoreland Management Act. This Act regulates land use development within 1,000 feet of a lake and 300 feet of a river and its designated floodplain.
 - ***Wetland Conservation Act Program (WCA)*** – Swift County assist the Minnesota Board of Water and Soil Resources (BWSR) with administering the Minnesota Wetland Conservation Act of 1991. The goals of the Act are to maintain a "no-net-loss of wetlands", minimize any impacts on wetlands, and to replace any lost wetland acres affected by development.

Table 3:
Swift County's
Natural Resource Block Grant Expenditures
~ 2007 – 2011 ~

Year - Category	2007		2008		2009		2010		2011		5-Year Totals		
	State	Match	State	Match	State	Match	State	Match	State	Match	State	Match	Overall
Feedlot¹	\$16,792	\$11,124	\$18,213	\$10,640	\$16,392	\$10,534	\$14,364	\$10,055	\$13,536	\$9,475	\$79,297	\$51,828	\$131,125
SSTS²	\$9,885	\$0	\$10,000	\$0	\$10,000	\$0	\$9,931	\$5,000	\$9,931	\$0	\$49,747	\$5,000	\$54,747
LWM³	\$19,816	\$2,743	\$19,816	\$3,090	\$19,816	\$19,816	\$20,609	\$3,445	\$14,798	\$4,141	\$94,855	\$33,235	\$128,090
Shoreland⁴	\$3,126	\$3,126	\$3,126	\$3,126	\$3,126	\$3,126	\$3,126	\$3,126	\$2,698	\$2,698	\$15,202	\$15,202	\$30,404
WCA⁵	\$13,806	\$13,806	\$13,806	\$13,806	\$13,806	\$13,806	\$13,806	\$13,806	\$11,915	\$13,806	\$67,139	\$69,030	\$136,169
Sub-Total	\$63,425	\$30,799	\$64,961	\$30,662	\$63,140	\$47,282	\$61,836	\$35,432	\$52,878	\$30,120	\$306,240	\$174,295	\$480,535
Totals	\$94,224		\$95,623		\$110,422		\$97,268		\$82,998		\$480,535		

Feedlot¹ – Refers to the County's Feedlot Program
SSTS² – Refers to the County's Subsurface Sewage Treatment Systems Program
LWM³ – Refers to the County's Local Water Management Program
Shoreland⁴ – Refers to the County's Shoreland Program
WCA⁵ – Refers to the County's Wetland Conservation Act Program

Chapter Two: Assessment of Priority Concerns

This Chapter provides an assessment of the priority concerns identified throughout the Water Plan's priority concerns scoping process. These concerns were identified by a variety of stakeholders and were selected by the Swift County Water Plan Task Force. Please refer to Chapter One of this Water Plan for more information.

The priority concerns scoping process identified numerous priority issues that can be categorized into four larger topic areas; Surface Water Quality; Surface Water Quantity; Groundwater Quality & Quantity; and Plan Administration. The Task Force acknowledges the priority issues could've been organized differently and they also realize that some priority issues pertain to more than one of the larger topic areas. This Chapter provides assessments for the first three categories. The fourth category, Plan Administration, is profiled in Chapter Four.

Swift County Priority Water Plan Concerns/Issues:

1. Reducing Priority Pollutants ~ Surface Water Quality
 - a. TMDL Implementation
 - b. Feedlot/Livestock Management
 - c. Subsurface Sewage Treatment Systems
 - d. Erosion and Sediment Control

2. Surface Water Management ~ Surface Water Quantity
 - a. Agricultural Drainage
 - b. Stormwater Management
 - c. Wetlands and Water Storage/Retention

3. Groundwater Quality & Quantity

4. Plan Administration
 - a. Watershed Focus – Stakeholder Cooperation
 - b. Raising Public Awareness – Education

Section One:

Surface Water Quality ~ Reducing Priority Pollutants

This section of the Water Plan provides an assessment of Swift County's surface water quality. To begin with is a subsection on Swift County's Watersheds, followed by subsections on Impaired Waters, Feedlots and Livestock Management, Subsurface Sewage Treatment Systems, and Erosion and Sediment Control.

A. Watersheds Assessment

Swift County is located within three major watersheds: the Chippewa River, Pomme de Terre, and the Upper Minnesota River Watersheds (see Map 2A). Each watershed is briefly described in this section, with additional contact information provided.

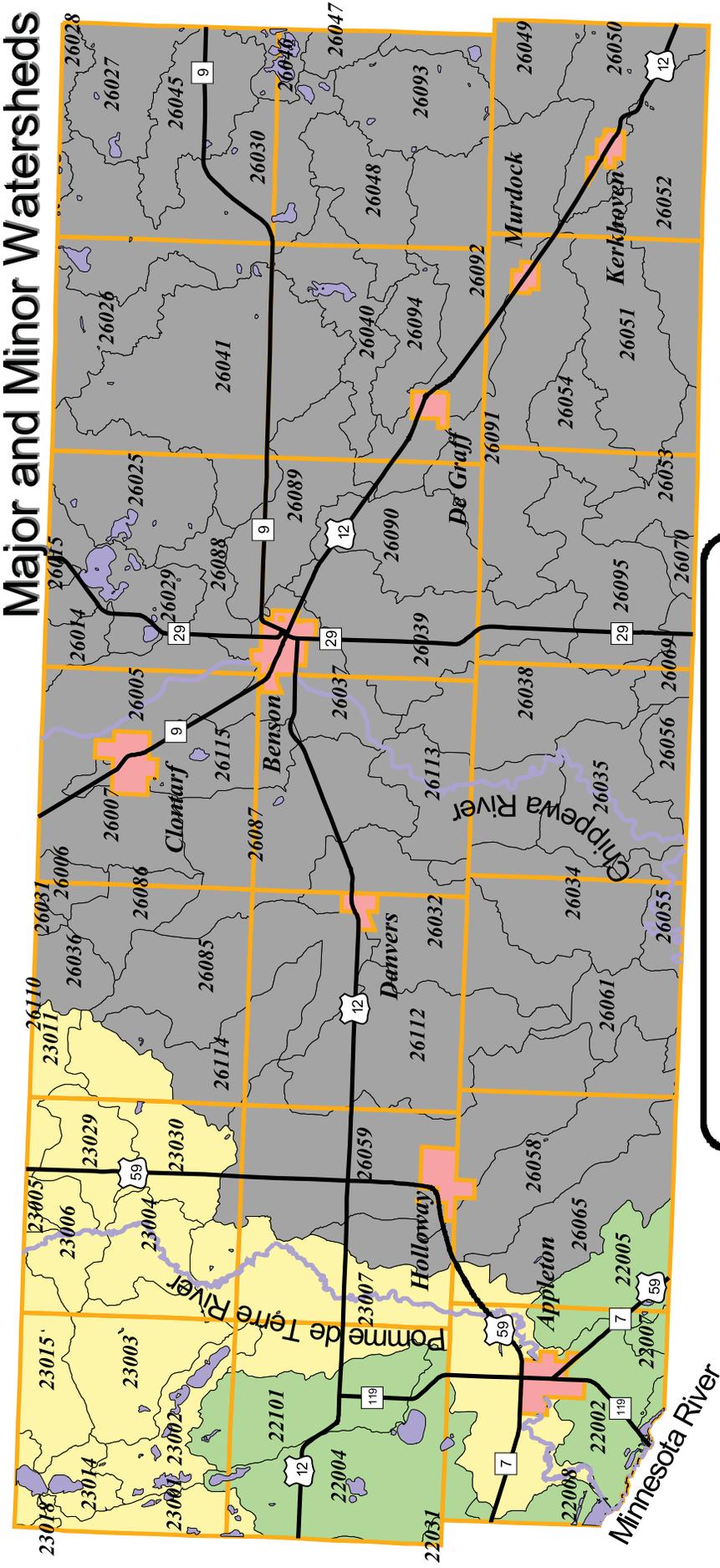
Chippewa River Watershed

The Chippewa River Watershed is the largest of Swift County's three major watersheds (refer to Maps 2A). The Chippewa River is one of 12 major tributaries of the Minnesota River. In total, the Chippewa River Watershed drains 2,080 square miles (1,3 million acres), including portions of Otter Tail, Grant, Douglas, Stevens, Pope, Swift, Kandiyohi, Chippewa, and Stearns Counties. The Chippewa River flows south to its confluence with the Minnesota River at Montevideo in Chippewa County. The total distance of the stream network is 2,091 miles of which 1,567 miles are intermittent streams and 525 miles are perennial streams.

Geomorphology of the Chippewa River Watershed includes a complex mixture of moraines, till, and outwash plains. The eastern half of the Chippewa River Watershed, extending from approximately Evansville in the north to just below the town of DeGraff in the south, lies within the North Central Hardwood Forest Ecoregion. More specifically, with the exception of a long, narrow section of the Belgrade-Glenwood outwash plain along the east edge of the basin, the eastern half of the watershed falls within the geomorphic setting of the Alexandria Moraine Complex. This morainal complex is composed of well drained, loamy, silty, sandy and mucky soils with moderate to steep sloping landscapes (6-45%), producing a large potential for sediment delivery to streams. Water erosion potential within this section of the watershed is classified as moderate to high. The section of the watershed situated in the Belgrade-Glenwood outwash plain, lying east of the line from Glenwood in the north to Lake Johanna in the south, is characterized by nearly level to gently sloping (2-6%), well drained landscapes with sandy-loamy soils of moderate water and wind erosion potential.

Lands in the western half of the Chippewa River Watershed fall within the Northern Glaciated Plains Ecoregion, primarily within three geomorphic settings: the Big Stone Moraine on the far

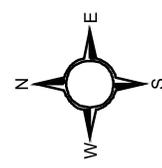
Map 2A: Swift County's Major and Minor Watersheds



Note
*Minor Watersheds are labeled with their
 corresponding 5-digit ID Number*

Legend

	Major Roads		Watersheds
	Rivers		Chippewa River
	Lakes		Pomme de Terre River
	Townships		Upper Minnesota River
	Cities		



western edge, the Appleton-Clontarf Outwash Plain along the lower Chippewa River, and the Benson Lacustrine Plain within the south-central section of the watershed. Landscapes within the Big Stone moraine are characterized as rolling (6-12 %), with well drained, silty and loamy soils. Water erosion potential within the moraine is generally classified as moderate. Lands within the Appleton-Clontarf outwash are characterized as being nearly level to gently sloping (2-6%), poorly drained, and extensively tiled. Water and wind erosion potentials are classified as moderate for this region. The Benson Lacustrine Plain is also nearly level (0-2%), poorly drained and extensively tiled. Soil textures in the lacustrine plain range from silty clay to silt loam, water erosion potentials are high for lands adjacent to streams and much of the plain has the potential for significant wind erosion.

Key Stakeholder: Chippewa River Watershed Project

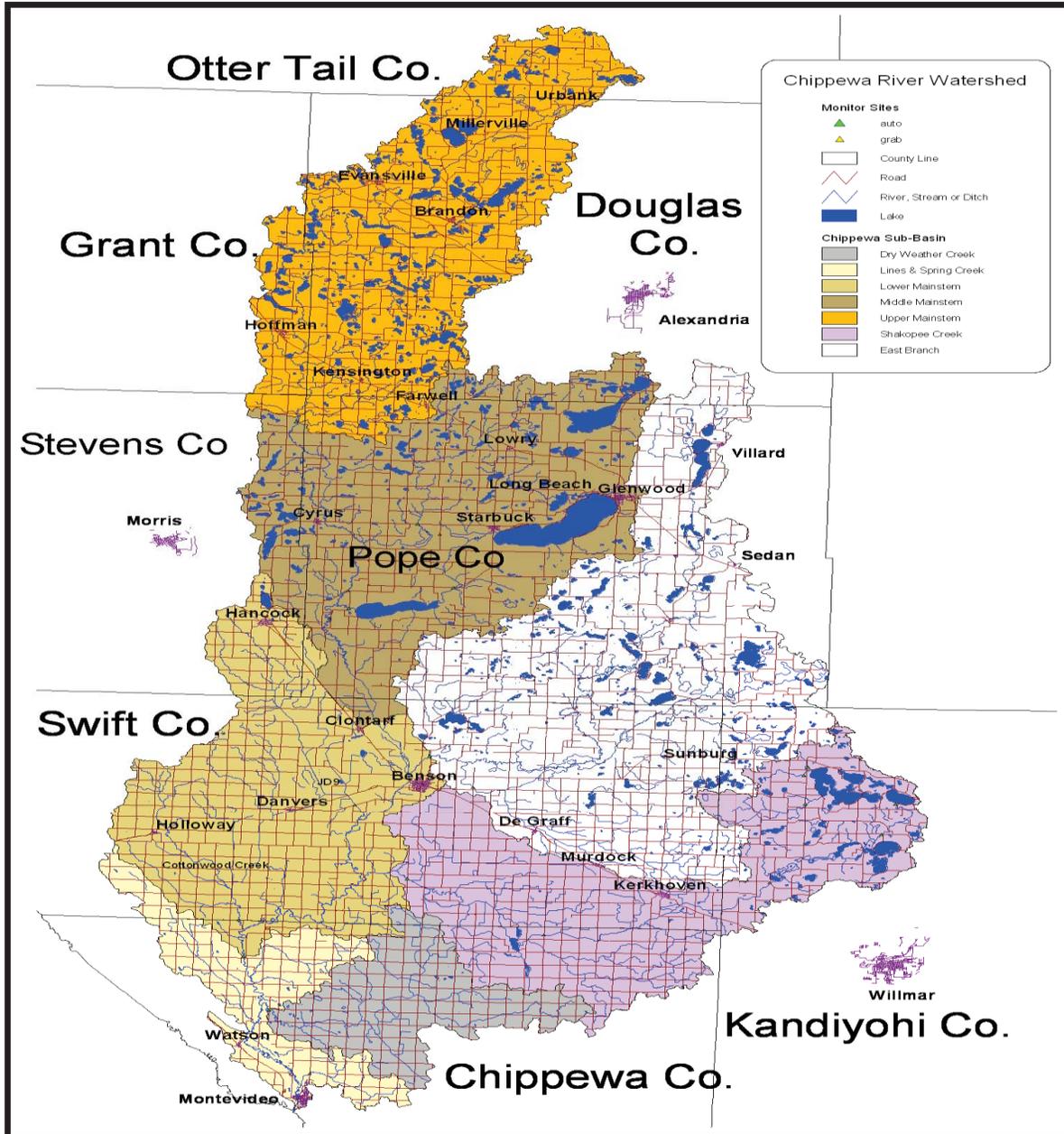
The Chippewa River Watershed is served by the Chippewa River Watershed Project (refer to Map 2B), which is a non-regulatory cooperative partnership and citizen based approach focused on improving water quality and watershed life in the Chippewa River and its tributaries. The CRWP is currently funded with state Clean Water Partnership Grants, Federal 319 Grant Dollars, and local water plan contributions. The CRWP also relies heavily on the volunteers and stakeholder participation. In 2011, Swift County joined the Chippewa River Watershed Project Joint Powers Board. For more information, visit http://www.chippewariver.com/about_proj.aspx.

The ten-year goals of the CRWP are:

1. To achieve the highest water quality attainable for ecoregion streams;
2. To increase the number of watershed residents taking an active role in enhancing and protecting the Chippewa River;
3. To continue to have the watershed community of agencies and organizations bonded together (across county boundaries) as a group working toward the common goal of improved water quality in the Chippewa River Watershed;
4. To develop the Chippewa River as a major recreational resource within the Minnesota River Basin.

In setting the watershed's goals and objectives, consideration was given to four important watershed characteristics. First, agriculture is the predominant land use in the watershed and improvements to water quality will require changes in agricultural practices, which requires education and presenting solutions that are economically viable to the agricultural community.

**Map 2B:
Chippewa River Watershed Project**



Second, pollutant transport in the watershed is primarily affected by uncontrolled runoff through the many hydrologic pathways present, such as the watershed’s extensive drainage system. Third, the Chippewa River holds enormous potential for being a recreational resource, but past and present conditions prevent it from being used to its full potential. And fourth, watershed residents, through their involvement and actions, hold the key to protecting and enhancing the

Chippewa River. To achieve each of these goals, continued and increased education of urban and rural watershed residents needs to be done through an intense outreach campaign. The long-term goal of the CRWP is to improve the water quality and flooding problems in the watershed, while also promoting a healthy agricultural, industrial and recreation-based economy for the region. The best management practices (BMPs) to be utilized include nutrient management, residue management, wetland restoration, buffer strips, water and sediment control basins, livestock waste management, individual sewage treatment systems, grassed waterways, streambank restoration, terraces, contour farming, grade control structures, pasture management, alternative tile inlets, RIM, CRP and shoreline naturalization. Urban practices to be promoted include recycling, directing downspouts to lawns, phosphorus free fertilizer for lawn care, construction site erosion control and storm water management. Implementation of these practices on the landscape will be accomplished through the work of the cooperating partners and through grant applications for funds targeted for specific sub-basins of the watershed.

Because the Chippewa River is so large, it is necessary to prioritize sub-basins for the development of the Implementation Plan. The major tributaries of the Chippewa River create natural sub-basins making this delineation possible. Water quality monitoring data, watershed assessments and judgments about reasonable expectations for rivers and streams in this area of the State were used in ranking the sub-basins. Due to the high levels of nutrients (phosphorus and nitrogen), sediment and fecal coliform bacteria, the Shakopee Creek Headwaters (SCH) area was ranked as the watershed's first priority sub-basin. Other sub-basins of the Chippewa River include: East Branch Chippewa River, Lower Main Stem, Little Chippewa River, Dry Weather Creek, Spring Creek, Lines Creek, Cottonwood Creek and the Upper Main Stem. **In Swift County, Chippewa River's main subwatersheds are the Lower Main Stem, East Branch, and Shakopee Creek (refer to Map 2B).**

Chippewa River Watershed Water Quality Summary

The Chippewa River Watershed Project (CRWP) has been collection extensive water quality data since 1998. In 2011, the CRWP published the *Chippewa River Watershed Monitoring Summary 2009-2010:- Learning from the River*. This section of the water plan provides a summary of the key water quality information pertaining to Swift County. During 2009 and 2010 CRWP maintained 29 intensive chemical monitoring sites, 12 of which had automated flow tracking equipment monitoring river stage levels every 15 minutes. The 250 transparency transect sites received special attention over these last two years. Rather than monitoring them three times a year CRWP bumped the number of visits per year up to ten and added Dissolved Oxygen, pH, Conductivity and Temperature to the transect field measurements. CRWP staff added a randomized stream bank survey to its list of activities surveying 71 sections of river for stream bank erosion levels. The Minnesota Pollution Control Agency also did significant monitoring in the watershed. They surveyed 74 sites for fish and aquatic insects.

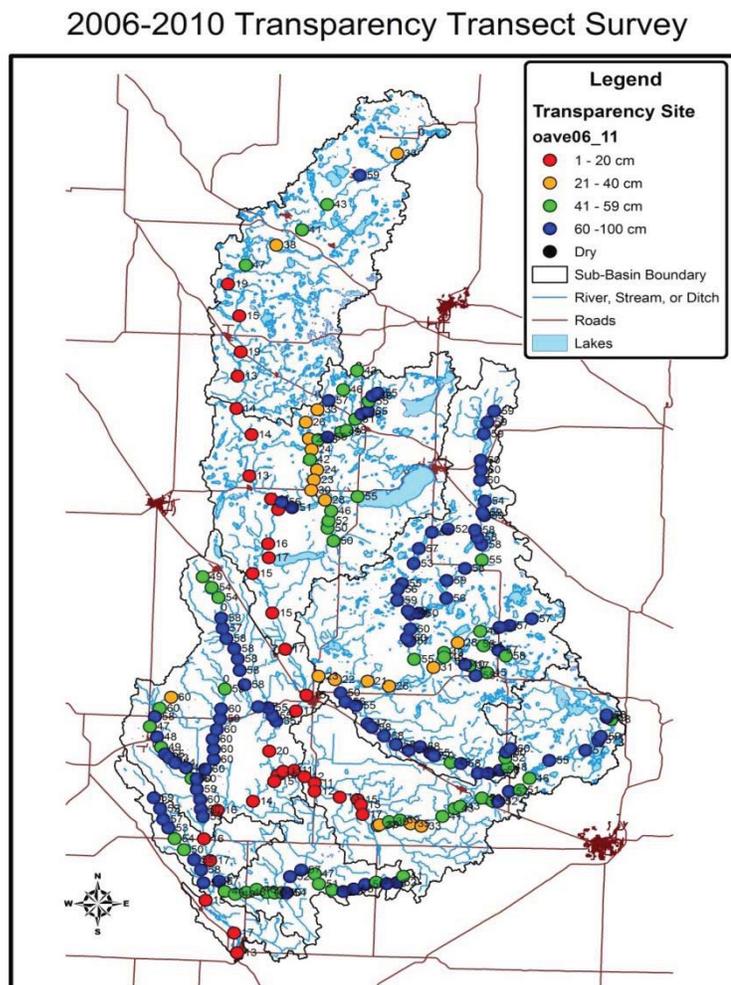
Transect Surveys: Transparency

In 2009 and 2010 CRWP increased its number of site visits from three a year to ten a year. In addition to monitoring transparency and bank buffer width CRWP added Dissolved Oxygen, pH, Conductivity and Temperature to the transect field measurements. This major increase in intensity was brought about through the support of the MPCA.

Transparency is a measurement of the clarity of stream water: how much sediment, algae, and other materials are suspended in the water. It is measured with a transparency tube, a clear 100 cm-long tube with a colored disk at the bottom for measuring the depth at which the disk is visible. CRWP transparency data has been very useful in pinpointing where suspended solids and turbidity problems begin, end or are not an issue. This information can be used to convince landowners and resource managers to take action in those areas where we see the problem. The information from the transects has shown that water quality problems are not everywhere. There are many parts of the Chippewa Watershed that have very good water quality when it comes to transparency. These areas should be protected.

The data presented is an assemblage of the last five years of monitoring. Generally, transparency is highest in the upstream reaches of a tributary. Sometimes the water maintains its high level of transparency for the full length of a tributary. In some cases the water's transparency drops. Once the transparency had dropped it is rare for it to recover. As water flows downstream it has more opportunities to pick up pollutants, thus lower stream stretches tend to have more polluted water and lower transparency.

Low Transparency during high flows is expected. The continuation of low transparency during low flow periods is concerning. The constant low transparency levels suggest that sediment and nutrient levels in the Chippewa



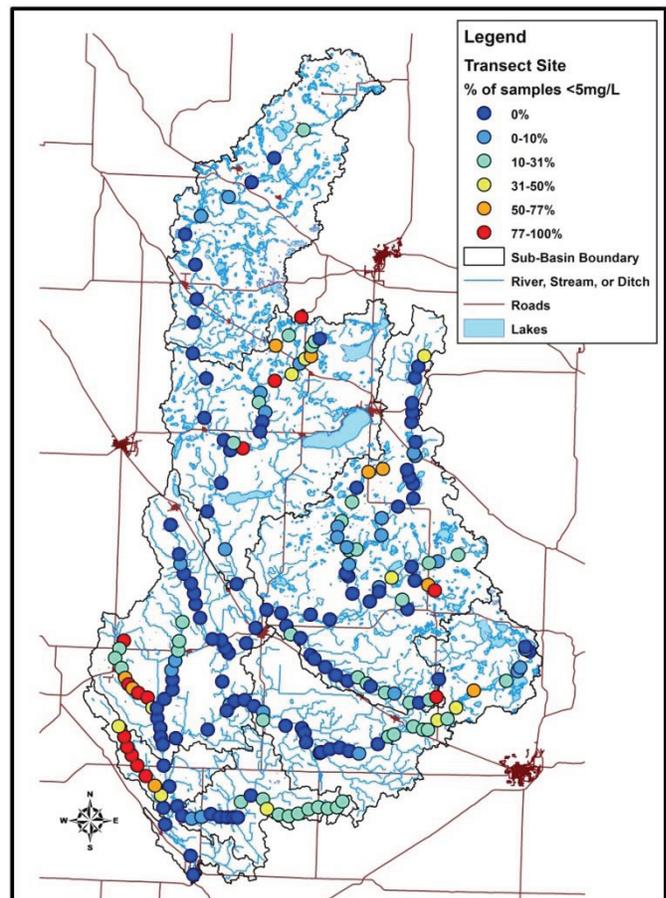
are a serious issue throughout the watershed. Low transparency during low flows has serious negative consequences for aquatic life and aesthetic enjoyment of the river.

Sites where the transparency level drops to 20 cm or below more than 10% of the time can be listed as impaired by the US EPA (given at least 20 sampling events). In 2009 and 2010, 17.4% of the measurements exceeded the standard. Basins that experienced problematic Transparency in 2009-2010 were the Lower Mainstem, the Middle Mainstem, The Upper Chippewa from Peterson Lake down, Downstream of Shakopee Lake on Shakopee Creek, the Little Chippewa before it enters Outlet Creek and the lower portions of the East Branch. Areas that experienced fair to good transparency included the Northern East Branch, the Upper Chippewa, JD19 (Swift County), Cottonwood Creek, and JD9 in Swift County. Dry Weather Creek also saw an improvement in transparency over previous years.

Transect Surveys: Dissolved Oxygen

In addition to increasing the number of monitoring sites from three to ten, the CRWP also added Dissolved Oxygen (DO) field measurements to their monitoring program. CRWP DO data has been very useful in identifying areas where DO is or is not an issue. This information combined with DO measurements taken at the automated sites can be used to identify the stressors causing difficulties for aquatic species. The information from the transects has shown that water quality problems are not everywhere. There are many parts of the Chippewa Watershed that have very good water quality when it comes to DO. These areas should be protected. The data presented in the map to the right was collected in 2009-10. The map presents a color code for each site representing the percentage of samples that were below the MN State Standard of 5 mg/L. Some low DO is natural and expected. In the southwest part of the watershed Lines Creek passes through a number of wetlands and low lying areas. Slow moving and stagnant water tend to lose their DO. Headwater regions of small streams tend to have lower DO due to their low and often short-lived flows. In some cases changes to the watershed have caused the water

Transect Dissolved Oxygen Survey
Percent of DO Samples below 5 mg/L, 2009-2010



What is Dissolved Oxygen?

Dissolved oxygen is one of the best indicators of the health of a water ecosystem. Dissolved oxygen can range from 0-18 parts per million (ppm), but most natural water systems require 5-6 parts per million to support a diverse population.

Oxygen enters the water by direct absorption from the atmosphere or by plant photosynthesis. The oxygen is used by plants and animals for respiration and by the aerobic bacteria which consume oxygen during the process of decomposition. When organic matter such as animal waste or improperly treated wastewater enters a body of water, algae growth increases and the dissolved oxygen levels decrease as the plant material dies off and is decomposed through the action of the aerobic bacteria. A decrease in the dissolved oxygen levels is usually an indication of an influx of some type of organic pollutant.

Source: Science Junction, NC State University

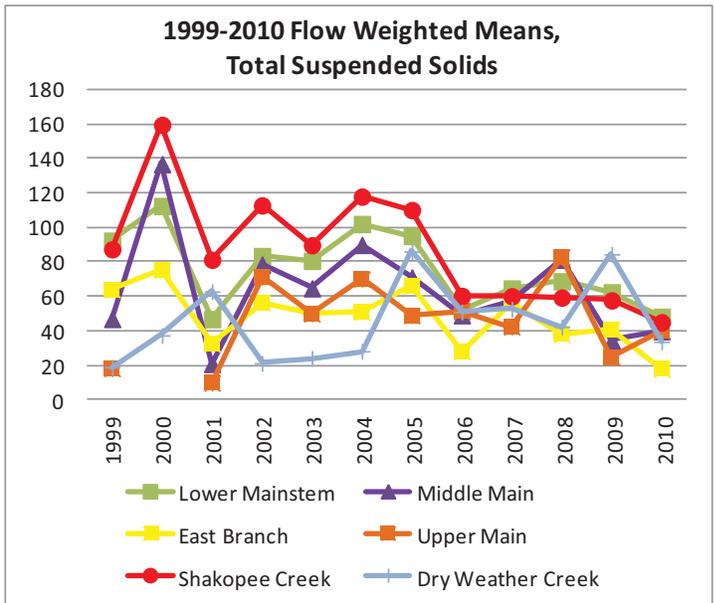
levels to run low or even dry up in later parts of the year. These developments have created the conditions for low DO. Persistent low DO levels have negative consequences for aquatic life and aesthetic enjoyment of the river.

On the positive side, locations where the DO was never observed below the 5mg/L represented 52% of the sites. These sites represent the vast majority of mainstem sites and the lower ends of the major tributaries. More concerning were the 35% of the sites where DO was observed to be below 5mg/L over 10% of the time. These low DO cases tended to cluster together suggesting a regional issue. The upper reaches of Cottonwood Creek, Lines creek, Pope CD15, and the Little Little Chippewa River deserve further attention to address their low DO levels.

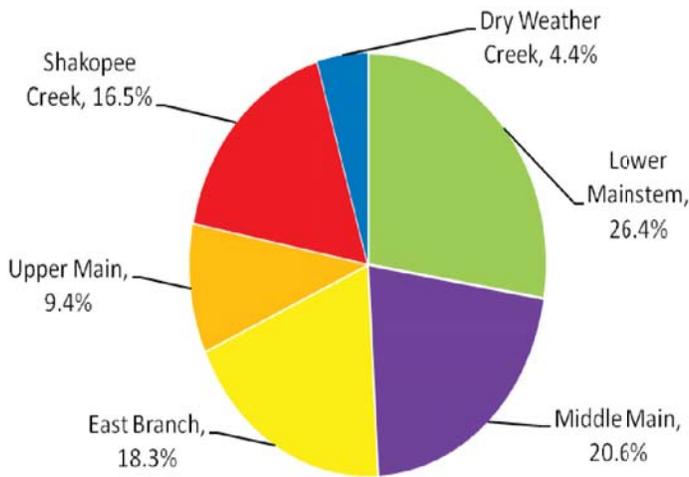
Total Suspended Solids

Total Suspended Solids (TSS) concentrations continued a declining trend in 2009 and 2010. In 2010 all of the sites actually came in under the 54 ppm target set for the watershed by the Minnesota Pollution Control Agency. 2009 would have been the same but for the notable exceptions of the Lower Mainstem, Dry Weather Creek and Shakopee Creek.

The big spring melts of both years had relatively low TSS levels. This brought the annual average down even though later season concentrations rose. As the spring melt ended, the algal component of TSS increased. This process is driven by water temperature and nutrient levels. As river levels drop the water saturated banks begin to fail and slump into the river this also contributes to later season increases in TSS.



TSS Source Distribution (where did it come from)



The main contributor to the TSS levels observed at Hwy 40 was the Lower Mainstem. Evidence from Transparency Transects and monitoring sites previously located on Cottonwood Creek and Judicial Ditch 9/County Ditch 3 indicate that more than 95% of the TSS from the Lower Mainstem comes from the region adjacent to the Chippewa River. Overall, in 2010 the Chippewa River delivered 143 tons of suspended sediment a day to the Minnesota River. That would be like seven 20-ton dump trucks dumping soil into the river every single day.

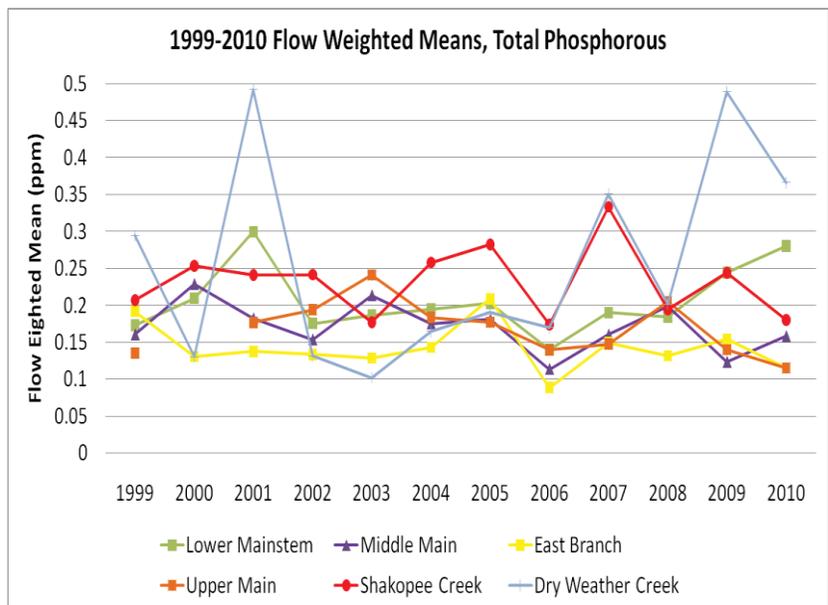
What are Total Suspended Solids?

The transport of sediment is a natural function of rivers. Modification of the landscape has accelerated the rate of soil into waterways. Increased runoff has resulted in stream bank erosion. Elevated sediment (suspended soil particles) has many impacts. It makes rivers look muddy, affecting aesthetics and swimming. Sediment carries nutrients, pesticides, and other chemicals into the river that may impact fish and wildlife species. Sedimentation can restrict the areas where fish spawn, limit biological diversity, and keep river water cloudy, reducing the potential for growth of beneficial plant species.

Source: "State of the Minnesota River 2002 Executive Summary"

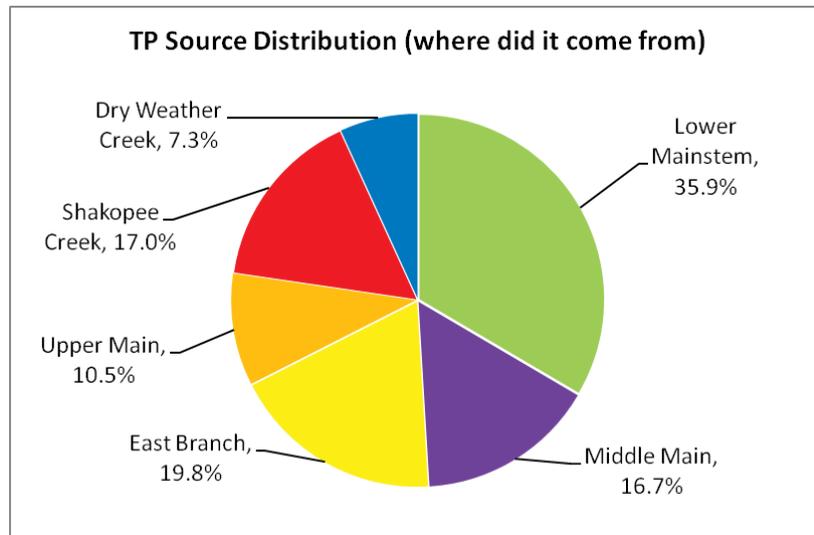
Total Phosphorous

Total phosphorous (TP) concentrations ranged widely across the watershed in 2009-2010. No basin was below the 0.1 mg/L desired goal set by the Environmental Protection Agency for prevention of algal growth. Dry Weather Creek, Shakopee Creek and the Lower Mainstem presented the highest concentrations of Phosphorous. Even though the Dry Weather



Creek produced the highest concentrations, the Lower Chippewa has been the largest overall contributor of actual phosphorous. In the last ten years the Lower Chippewa contributed 36% of the TP observed in the river. Considering that it only represents 16% of the Chippewa Watershed’s land area this is highly significant.

In 2010 at the outlet (Lower Mainstem) the 0.28ppm translated to 191.4 tons of phosphorous. 191 tons would have fertilized 10,914 acres of corn at 35 pounds/acre. It led to 191,400,000 pounds of algae in lakes and rivers.



What is Phosphorus?

Phosphorus is an important nutrient for plant growth. Total Phosphorous is the measure of the total concentration of phosphorous present in a water sample. Excess phosphorus in the river is a concern because it can stimulate the growth of algae. Excessive algae growth, death, and decay can severely deplete oxygen supply in the river, endangering fish and other forms of aquatic life. Low dissolved oxygen rates are of particular concern during low flow times or in slow moving areas such as reservoirs and the lower reaches of the river.

Point-source Phosphorous comes mainly from municipal and industrial discharges to surface waters. Non-point-source phosphorous comes from runoff from urban areas, construction sites, agricultural lands, manure transported in from feedlots and agricultural lands, and human waste from noncompliant septic systems.

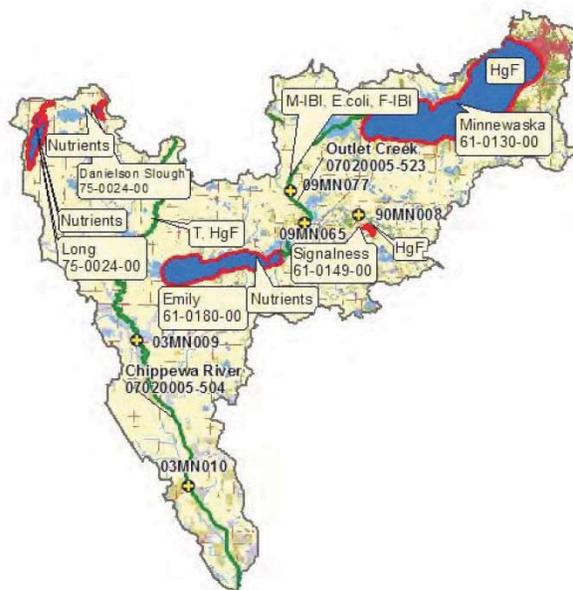
Source: “State of the Minnesota River 2002 Executive Summary”

Chippewa River Watershed Monitoring and Assessment Report

The Minnesota Pollution Control Agency published the *Chippewa River Watershed Monitoring and Assessment Report* in July 2012 after three years of intensive watershed monitoring. Ninety-six sites were sampled for biology at the outlet points of variable sized sub-watersheds within the Chippewa watershed. The Chippewa River Watershed Project also completed water chemistry sampling at the outlet points of seventeen major subwatersheds and lake water quality sampling focusing on basins greater than 100 acres in size. In 2010, a holistic approach was started to assess all of the watershed's surface water bodies for aquatic life, recreation and consumption use support. Where sufficient data was available, 112 stream reaches and 84 lakes were assessed in this effort. The following sections summarize the information presented in the report for the Chippewa River subwatersheds found in Swift County.

Lower West Branch Subwatershed -

The Lower West Branch Chippewa River Watershed unit encompasses parts of Pope, Stevens, and Swift Counties and has a drainage area of 193.1 square miles (refer to the figure on the right). The western half of the watershed is in the Northern Glaciated Plains Ecoregion, the eastern half is in the North Central Hardwoods Ecoregion, and the very southern tip is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with open water being the second most abundant. This includes Lake



Minnewaska which is the largest lake in the watershed and is the thirteenth largest in Minnesota. The Lower West Branch Chippewa HUC-11 is made up of two main parts, the Chippewa River and Outlet Creek. The Chippewa River flows north to south from just south of Cyrus to just north of Benson. The Outlet Creek flows southwest out of Lake Minnewaska and combines with County Ditch 2, which drains the Little Chippewa HUC-11 due to stream modification. Outlet creek continues southwest to Lake Emily then west to the Chippewa River. The outlet of this watershed unit is represented by site 03MN010 on the Chippewa River.

Stream biological assessment results - Two of the three assessed AUIDs in this watershed are not supporting of aquatic life and one AUID is supporting of aquatic life. The main stem of the West Branch Chippewa River is not supporting of aquatic life, similar to the two upstream HUC-11 watersheds. The main tributary, Outlet Creek, is also impaired. Signalness Creek which is a

tributary to Outlet Creek is fully supporting of aquatic life. The Outlet Creek and the West Branch Chippewa both have channelized reaches that have good biological scores. Habitat in this watershed is fair. Outlet Creek flows from Lake Minnewaska into Lake Emily, and both lakes are not supporting of aquatic recreation. The impaired lakes could affect the biology for the stream between them.

Stream water chemistry assessment results - Stream water quality data was available on three stream reaches in the Lower West Branch Chippewa River watershed unit. Lake Minnewaska to Lake Emily exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The Little Chippewa River to Unnamed Creek, which flows from the outlet of Lake Emily, was found to be impaired for aquatic life use based on excess turbidity. The reach directly downstream, Unnamed Creek to the East Branch of the Chippewa River exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life use based on excess turbidity.

Lake water chemistry assessment results - Five of the 14 lakes greater than four hectares (10 acres) were reviewed for aquatic recreation use in the watershed. Minnewaska and Signalness were both fully supporting of aquatic recreation. Minnewaska is a large, 3,144 ha, lake with only 30 percent littoral area. Efforts to keep phosphorus out of the lake with best management practices should be used to preserve the high water quality in this lake. Three lakes, Emily, Long, and Danielson Slough were found to be impaired for aquatic recreation use (excess nutrients). Lake Emily has a very large watershed and is shallow, allowing for internal loading. In addition reductions in nutrient run-off within the watershed will need to be addressed. Reducing phosphorus run-off and careful management of land use will be important in remediation of Long Lake and Danielson Slough.

East Branch Chippewa River Subwatershed -

The East Branch Chippewa River Watershed unit encompasses parts of Pope and Swift Counties and has a drainage area of 262.4 square miles (refer to the figure on the right). The majority of the watershed is in the North Central Hardwoods Ecoregion and the southwest tip is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. The East Branch Chippewa River HUC-11 flows south from near the Forada State



Wildlife Management Area to Terrace then turns southwest to Swift Falls. From Swift Falls the East Branch Chippewa River flows south to Camp Kerk State Wildlife Management Area then flow west to the Chippewa River. The outlet of this watershed unit is represented by site 09MN011 on the Chippewa River, but the outlet of the East Branch Chippewa River is represented by site 07MN041. The HUC-11 boundaries extended the East Branch Chippewa River to past the confluence with the West Branch Chippewa River. Two intensive water chemistry sites are in this HUC-11, one on the main stem Chippewa River and the other on the main stem East Branch Chippewa.

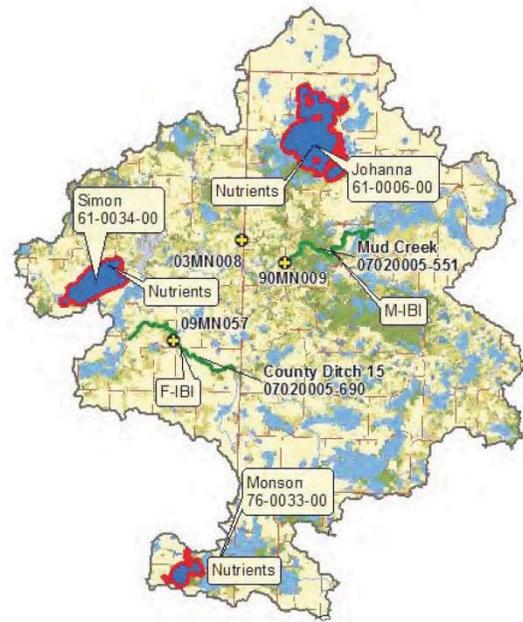
Stream biological assessment results - There are two assessed AUIDs for biology in this watershed. The upstream AUID on the East Branch Chippewa River fully supports aquatic life while the downstream section is not supporting of aquatic life. This watershed has a significant amount of channelization in it. The combination of many impaired lakes, fair to poor habitat scores, and the abundance of channelization may contribute to the low IBI scores in the most downstream AUID in the watershed.

Stream water chemistry assessment results - Stream water quality data was available on three stream reaches on the East Branch Chippewa River. The head waters of the East Branch Chippewa River and the Lake Amelia to Mud Creek segment exceeded the standard for bacteria and are considered impaired for aquatic recreation use. Mud Creek to the Chippewa River exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life use based on excess turbidity. The Chippewa River from the confluence of the East Branch of the Chippewa River to Shakopee Creek exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life use based on excess turbidity.

Lake water chemistry assessment results - Twenty of the 43 lakes greater than four hectares (10 acres) were reviewed for aquatic recreation use in the watershed. Lakes in the northern portion of the watershed make up the head waters of the East Branch of the Chippewa River. Lakes in the headwaters portion of the watershed, except for Leven, tend to have good water quality. Ten lakes, Linka, Scandinavian, Round, Marlu, State, Amelia, Villard, Hoff, Benson (61-0097), and Nelson were all fully supporting of aquatic recreation. Efforts to keep phosphorus out of these lakes will be necessary to preserve good water quality. Eight lakes, Swenoda, Leven, Gilchirst, Hanson, Rasmuson, Steenerson, Mary, and Edwards were found to be impaired for aquatic recreation use (excess nutrients). Gilchirst and Hanson likely act as reservoirs for nutrients from large contributing areas upstream in the watershed. Reductions in overland run-off and management of internal loading of phosphorus in shallow lakes will need to be addressed to see water quality improvements in these basins. Two lakes, Benson (61-0139) and Moore had some water quality information available, but the data sets were not strong enough for an assessment decision to be made.

North Mud Creek Subwatershed –

The North Mud Creek Watershed unit encompasses parts of Kandiyohi, Pope, Stearns, and Swift Counties and has a drainage area of 90.8 square miles (refer to the figure on the right). The entire watershed is in the North Central Hardwoods Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. The North Mud Creek HUC-11 flows west from the Stearns/Pope County line to the Swift/Pope County line just south of Lake Simon. North Mud Creek has the only coldwater AUID being assessed for biology in the entire Chippewa River HUC-8. The outlet of this watershed unit is represented by site 09UM014 on Mud Creek. The site is not within the boundaries of the North Mud Creek Watershed because of wetlands, so the site was added approximately 2 miles downstream of the outlet. There are no major tributaries to Mud Creek between the outlet and the site that represents the outlet.

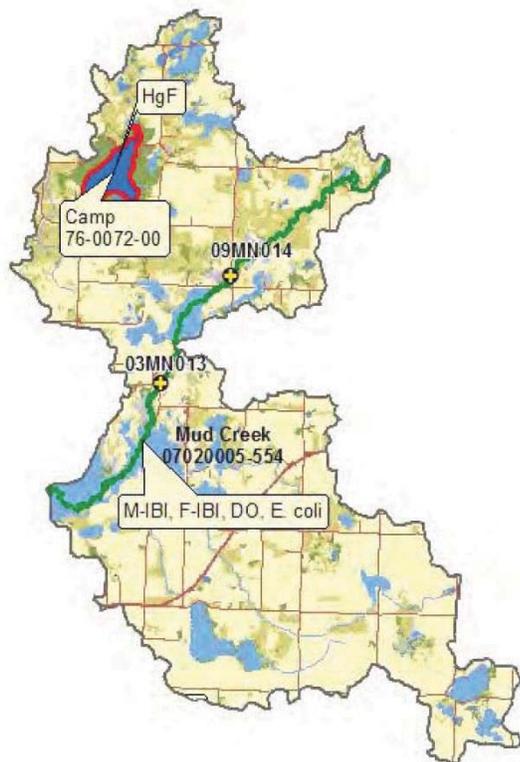


Stream biological assessment results - Three AUIDs in this watershed were assessed for biology. Two of them were not supporting aquatic life and one was fully supporting. The habitat for this watershed is good. There are three lakes with nutrient impairments which could contribute to the biological impairments. The impairment on the upstream section of Mud Creek is a coldwater stream where invertebrates are found to be impaired, but fish were not assessed. Due to the isolation of this coldwater stream from other populations of coldwater species, it is believed that the native coldwater fish community in the upper portions of Mud Creek are susceptible to local extinction events caused by natural disturbances such as drought and beaver impoundments (i.e., increasing the water temperature). Therefore, even though groundwater inputs into this stream may be sufficient for supporting a coldwater fishery, other natural factors may be precluding the establishment and/or maintenance of a coldwater fish community in Mud Creek, which is why this AUID was not assessed with the Fish IBI. Migration of coldwater invertebrate species, particularly insects, is not restricted to coldwater pathways and thus may repopulate after such extinctions.

Stream water chemistry assessment results - Stream water quality data was available on three stream reaches on the East Branch of the Chippewa River. The head waters of the East Branch of the Chippewa River and Lake Amelia to Mud Creek exceeded the standard for bacteria and are considered impaired for aquatic recreation use. Mud Creek to the Chippewa River exceeded the

standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life based on excess turbidity. The Chippewa River from the confluence of the East Branch of the Chippewa River to Shakopee Creek exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life based on excess turbidity.

Lake water chemistry results - Twenty of the 43 lakes greater than four hectares (10 acres) were reviewed for aquatic recreation use in the watershed. Lakes in the northern portion of the watershed make up the head waters of the East Branch of the Chippewa River, which travels the length of the watershed. Lakes in the headwaters portion of the watershed, except for Leven, tend to have good water quality. Ten lakes, Linka, Scandinavian, Round, Marlu, State, Amelia, Villard, Hoff, Benson (61-0097), and Nelson were all fully supporting for aquatic recreation use. Efforts to keep phosphorus out of these lakes will be necessary to preserve good water quality. Eight lakes, Swenoda, Leven, Gilchirst, Hanson, Rasmuson, Steenerson, Mary, and Edwards were found to be impaired for aquatic recreation use due to excess nutrients. Gilchirst and Hanson likely act as reservoirs for nutrients from large contributing areas upstream in the watershed. Reductions in overland run-off and management of internal loading of phosphorus in shallow lakes will need to be addressed to see water quality improvements in these basins. Two lakes, Benson (61-0139) and Moore had some water quality information available but the data sets were not strong enough for an assessment decision to be made.



Frank Lake Subwatershed - The Frank Lake Watershed unit encompasses parts of Pope and Swift Counties and has a drainage area of 27.3 square miles (refer to the figure on the left). The entire watershed is in the North Central Hardwoods Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. Mud Creek in the Frank Lake HUC-11 flows southwest from the Pope/Swift County line to the East Branch Chippewa River southwest of Camp Kerk Sate Wildlife Management Area. The outlet of this watershed unit is represented by site 03MN013 on the Mud Creek.

Stream Biological Assessment Results - One AUID was sampled twice for biology. The AUID was found not supporting of aquatic life. Habitat was fair to poor in the watershed and the upstream AUID impaired for aquatic life use. Upstream impairments may be playing a role in the state of the biology of this watershed.

Stream Water Chemistry Assessment Results - Stream water quality data was available on one reach of Mud Creek from County Ditch 15 to the East Branch of the Chippewa River. Dissolved oxygen exceeded the standard and the reach will be listed as impaired due to low DO levels. Turbidity does not look to be a biological stressor along this reach.

Lake Water Chemistry Assessment Results - One of the six lakes greater than four hectares (10 acres) was reviewed for aquatic recreation use in the watershed. Camp Lake was found to be fully supporting of aquatic recreation. Land use in Camp Lake Watershed is mostly forest and should be protected in order to prevent increased run-off that may cause nutrient levels in the lake to rise.

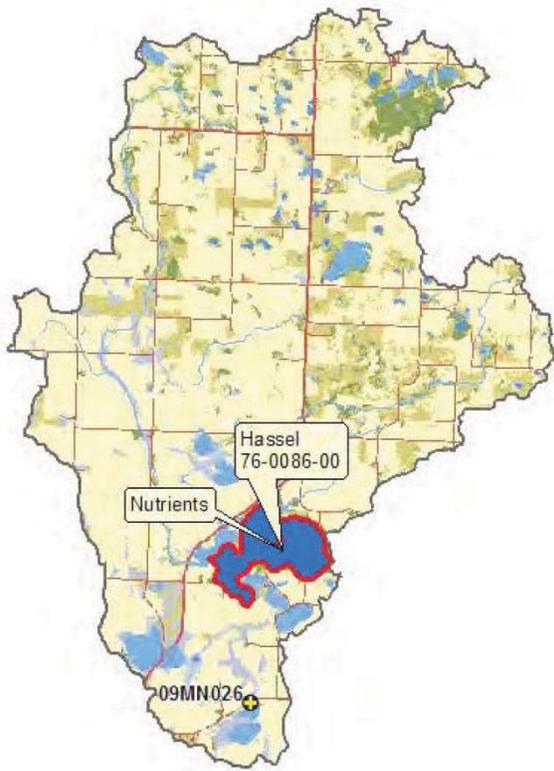
South Mud Creek Subwatershed - The South Mud Creek Watershed unit encompasses parts of Swift and Kandiyohi Counties and has a drainage area of 88 square miles (refer to the figure on the right). The northeast half of the watershed is in the North Central Hardwoods Ecoregion and the other half is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. The South Mud Creek HUC-11 flows northwest from the Swift/Kandiyohi county line, near Kerkhoven, to the East Branch Chippewa River near Benson. The outlet of this watershed unit is represented by site 07MN045 on Mud Creek.



Stream Biological Assessment Results - No AUIDs were assessed for biology in this watershed since all biological sites are on channelized reaches or limited resource waters. These reaches had fair biological scores and fair habitat scores.

Stream Water Chemistry Assessment Results - Limited stream water quality data was available within the South Mud Creek Watershed unit. Dissolved Oxygen (DO) ranged up to 17.79 mg/l indicating that it could be low in the early morning. A recording DO sondes should be placed at this site during August to ensure low DO is not impairing the stream.

Lake Water Chemistry Assessment Results - One of the two lakes greater than four hectares (10 acres) was reviewed for aquatic recreation use in the watershed. Hollerberg Lake was found to be impaired for aquatic recreation due to excess nutrients. Reductions in overland run-off and management of internal loading of phosphorus will need to be addressed to see water quality improvements in this lake.



Lake Hassel Subwatershed - The Lake Hassel Watershed unit encompasses parts of Pope and Swift Counties and has a drainage area of 39.9 square miles (refer to the figure on the left). The majority of the watershed is in the North Central Hardwoods Ecoregion, while the western edge is in the Northern Glaciated Plains Ecoregion and the southern tip is in the Western Corn Belt Plains Ecoregions. The predominant land use is cropland with rangeland being the second most abundant. Lake Hassel HUC-11 flows from the north to south from County Road 2, in Pope County, through Lake Hassel to the East Branch Chippewa River North of Benson. The outlet of this watershed unit is represented by site 09MN026 on Unnamed Creek, but no intensive water chemistry monitoring was done because this HUC-11 was less than 40 square miles.

Stream Biological Assessment Results - There is one biological station in this watershed. The site was not supporting aquatic life, but the AUID was over 90 percent channelized and was not listed for biology. Upstream of the biological site is Lake Hassel which is impaired due to excess nutrients, which could be a factor for the low fish IBI score.

Stream Water Chemistry Assessment Results - No Stream reaches were assessed for water quality in this watershed unit.

Lake Water Chemistry Assessment Results - Two of the six lakes greater than four hectares (10 acres) were reviewed for aquatic recreation use in the watershed. Hassel Lake was found to be impaired for aquatic recreation use due to excess nutrients. Hassel Lake has a very large watershed and is shallow allowing for internal loading to negatively impact water quality. In addition reductions in nutrient run-off with in the watershed will need to be addressed. An unnamed (61-0274) lake had some water quality information available but the data set was not strong enough for an assessment decision to be made.

Moore Township Branch Subwatershed - The Moore Township Branch Chippewa River Watershed unit encompasses parts of Stevens, Pope, and Swift Counties and has a drainage area of 91.4 square miles (refer to the figure on the right). The majority of the watershed is in the Northern Glaciated Plains Ecoregion and the very southern tip is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. The Moore Township Branch Chippewa River HUC-11 flows south from near Hancock to the Chippewa River between Danvers and Benson. The outlet of this watershed unit is represented by site 09MN012 on the County Ditch 3.



Stream biological assessment results - No AUIDs were assessed for biology in this watershed since all biological sites are on channelized reaches or limited resource waters. These reaches had fair to poor biological scores and poor habitat scores.



Stream water chemistry assessment results - Limited stream water quality data was available within the Moore Township Branch Chippewa River Watershed unit. Turbidity data looked to meet the standard; however, data was insufficient to list the reach as fully supporting aquatic life. Dissolved oxygen ranged up to 15.2 mg/l indicating that it could be low in the early morning. A recording DO sondes should be placed at this site during August to ensure low DO is not a cause of impairment.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.

Chippewa River Subwatershed - The Chippewa River Watershed unit encompasses parts of Swift and Chippewa Counties and has a drainage area of 110.8 square miles (refer to the figure on the left). The entire watershed is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with urban development being the

second most abundant. The Chippewa River HUC-11 flows south from near Danvers to the confluence with the Minnesota River in Montevideo. There is also a diversion channel northeast of Watson that flow west to the Minnesota River. There are two dams on the main stem Chippewa River and one on the diversion channel in this HUC-11. The outlet of this watershed unit is represented by site 09MN019 on the Chippewa River. The fish contaminants data and additional intensive water chemistry was also collected in this watershed unit at site 09MN001 upstream of the diversion channel.

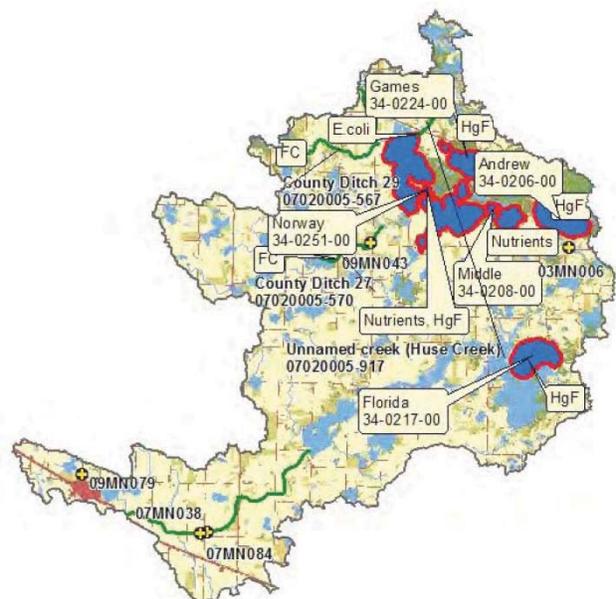
Stream biological assessment results - Three biological stations were assessed in this watershed. All three are not supporting aquatic life. All of the sites are on the main stem Chippewa River and all upstream AUIDs are also not supporting aquatic life. There were two biological stations on channelized reaches of the Chippewa River which had good biological scores. The habitat in this watershed is fair.

Stream water chemistry assessment results - Water quality data for assessment was available on three stream reaches in the Chippewa River Watershed unit. The East Branch of the Chippewa River to Shakopee Creek exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach shows excess turbidity as a stressor for biology. The Chippewa River from Shakopee Creek to Cottonwood Creek exceeded standards for turbidity and is considered impaired for aquatic life. Further downstream the Chippewa River from Cottonwood Creek to Dry Weather Creek exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life use based on excess turbidity.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.

Upper Shakopee Creek Subwatershed -

The Upper Shakopee Creek Watershed unit encompasses parts of Kandiyohi, Swift, and Chippewa Counties and has a drainage area of 125.4 square miles (refer to the figure on the right). The watershed is in the North Central Hardwoods Ecoregion and Western Corn Belt Plains Ecoregion. The predominant land use is cropland with rangeland being the second most abundant. The Upper Shakopee Creek HUC-11 flows southwest from the lakes in Sibley State Park to just southeast of Kerkhoven. The



outlet of this watershed unit is represented by site 09MN010 on the Shakopee Creek; the site is located in HUC 07020005150 because that was the best location to collect the best representation of water chemistry for the Upper Shakopee Creek Watershed unit.

Stream biological assessment results - One AUID was assessed for biology and it was fully supporting aquatic life, but it is located in the headwaters of the watershed. The channelized reaches best describe the majority of the watershed and they have fair to poor biological scores. The habitat scores are fair. There are many lakes at the headwaters of this watershed that are impaired which could contribute to the poor biological scores of the downstream AUIDs.

Stream water chemistry assessment results - Stream water quality data for assessment was available on five stream reaches in the Upper Shakopee Creek Watershed unit. All assessed reaches exceed the standard for bacteria and are considered impaired for aquatic recreation use. The impaired reaches are: Unnamed Creek (Huse Creek) from the headwaters to Norway Lake, Unnamed Ditch (Judicial Ditch #29) from the headwaters to Judicial Ditch #29, County Ditch #29, County Ditch #27, and Shakopee Lake from Swan Lake to Shakopee Lake. Dissolved Oxygen (DO) and turbidity also appear to be biological stressors in the Shakopee Lake to Swan Lake reach but were not listed as impairment causes. DO range up to 15.43 mg/l indicating that it could be low in the early morning. A recording DO sondes should be placed at this site during August to ensure low DO is not a cause of impairment.

Lake water chemistry assessment results - Ten of the 23 lakes greater than four hectares (10 acres) were reviewed for aquatic recreation use in the watershed. Four lakes, Florida Slough, Andrew, Florida, and Games were all fully supporting for aquatic recreation use. The Shakopee Creek originates at the outlet of Andrew Lake and flows through Florida Lake and Florida Slough all of which have good water quality. Middle and Norway were found to be impaired for aquatic recreation use (excess nutrients). This is unexpected because these two lakes flow into Games Lake which has good water quality. If forest land in the watershed of the lakes is converted to crop or developed increased run-off may cause nutrient levels in the lakes to rise. Forested areas near these lakes should be protected in order to buffer run-off that could potentially enter the lake.

Shakopee Creek Subwatershed - The Shakopee Creek Watershed unit encompasses parts of Swift and Chippewa Counties and has a drainage area of 194.4 square miles. The watershed is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with developed being the second most abundant. The Shakopee Creek HUC-11 flows northwest from near Kerkhoven to the Chippewa River near County Road 6. The outlet of this watershed unit is represented by site 03MN015 on Shakopee Creek.

Stream biological assessment results - No AUIDs were assessed for biology in this watershed since all biological sites are on channelized reaches. These reaches have good to poor biological scores with most being poor. These also have poor habitat scores with poor substrate and channel morphology. The Upper Shakopee Creek Watershed unit has impaired waters which also may influence this watershed.

Stream water chemistry assessment results - Water quality data for assessment was available on three stream reaches in the Shakopee Creek watershed unit. The Shakopee Creek reach from Swan Lake to Shakopee Lake, continues from the Upper Shakopee Creek Watershed unit. This reach exceeded the standard for bacteria and is considered impaired for aquatic recreation use. A tributary to Shakopee Creek, Unnamed Creek, is considered impaired for aquatic life based on excess turbidity. Shakopee Creek from Shakopee Lake to the Chippewa River exceeded the standard for bacteria and is considered impaired for aquatic recreation use. The same reach is considered impaired for aquatic life based on excess turbidity.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.



Holloway Creek Subwatershed - The Holloway Creek Watershed unit is in Swift County and has a drainage area of 32 square miles (refer to the figure on the left). The northern half of the watershed is in the Northern Glaciated Plains Ecoregion and the southern half is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with wetland being the second most abundant. Holloway Creek HUC-11 flows south from north of Holloway to County Road 6. The outlet of this watershed unit is represented by site 09MN027 on the Cottonwood Creek. This watershed was not sampled for intensive water chemistry because it is less than 40 square miles.

Stream biological assessment results - No AUIDs were assessed for biology in this watershed since the one biological site is on channelized a reach. The reach has a poor biological score and fair habitat score. The amount of upstream channelization and lack of habitat could be a factor in the low biological scores.

Stream water chemistry assessment results - Limited water quality data was available within the Holloway Creek Watershed unit. DO data appeared to exceed standards in the lower reaches of Cottonwood Creek, however, because of channelization the data was insufficient to list as non-supporting for aquatic life.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.

Moyer-Edison Creek Subwatershed - Moyer-Edison Creek Watershed unit is in Swift County and has a drainage area of 18.5 square miles (refer to the figure on the right). The northern tip of the watershed is in the Northern Glaciated Plains Ecoregion and the southern half is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with wetland being the second most abundant. The Moyer-Edison Creek HUC-11 flows south from west of Holloway to County Road 6. The outlet of this watershed unit is represented by site 09MN028 on the tributary to Cottonwood Creek. This watershed was not sampled because of low flow. It was not sampled for intensive water chemistry, because it is less than 40 square miles. *No stream biological, stream water chemistry, and lake water chemistry assessments were conducted in this subwatershed.*



Judicial Ditch #8 Subwatershed - The Judicial Ditch #8 Watershed unit encompasses parts of Swift and Chippewa Counties and has a drainage area of 72.2 square miles (refer to the figure on the left). The northern half of the watershed is in the Northern Glaciated Plains Ecoregion and the southern half is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with urban development being the second most abundant. Judicial Ditch #8 HUC-11 flows south from northwest of Danvers State Wildlife Management Area to the Chippewa River near Big Bend. The outlet of this watershed unit is represented by site 09MN008 on Cottonwood Creek. The lower section of Cottonwood Creek is listed as cold water by the Minnesota DNR. Coldwater IBI scores were not used in this section because the MDNR and MPCA agreed that it is not a coldwater reach.

Stream biological assessment results - Two AUIDs were assessed for biology in this watershed. Both AUIDs are not supporting aquatic life. One of the AUIDs was previously listed and is still impaired for this reason. The channelized

reaches had fair (generally the invertebrates) to poor (generally the fish) biological scores and the habitat score for the watershed is fair. Fair to poor habitat and the abundance of channelized streams may contribute to the low biological scores.

Stream and Lake water chemistry assessment results - Limited stream water quality data was available within the Judicial Ditch #8 Watershed unit and no lakes were assessed for water quality in this watershed unit.

Dry Weather Creek Subwatershed -

The Dry Weather Creek Watershed unit encompasses parts of Swift and Chippewa Counties and has a drainage area of 106.3 square miles (refer to the figure on the right). The entire watershed is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with urban development being the second most abundant. The Dry Weather Creek HUC-11 flows west from County Road 6 to the Chippewa River, four miles northeast of Watson. The outlet of this watershed unit is represented by site 09MN009 on Dry Weather Creek.



Stream biological assessment results - No AUIDs were assessed for biology in this watershed since all biological sites are on channelized reaches. These reaches have poor biological scores and poor habitat scores. The abundance of channelized streams and poor habitat may contribute to the low biological scores.

Stream water chemistry assessment results - Water quality data was available on one reach of the Dry Weather Creek from the Headwaters to the Chippewa River. The Dry Weather Creek exceeded the standard for bacteria and is considered impaired for aquatic recreation use. Dissolved Oxygen (DO) ranged up to 19.2 mg/l indicating that it could be low in the early morning. A recording DO sondes should be placed at this site during August to ensure DO is not a cause of impairment.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.

Judicial Ditch #7 Subwatershed - The Judicial Ditch #7 Watershed unit encompasses parts of Swift and Chippewa Counties and has a drainage area of 29.1 square miles (refer to the figure on the right). The entire watershed is in the Western Corn Belt Plains Ecoregion. The predominant land use is cropland with wetland being the second most abundant. Judicial Ditch #7 HUC-11 flows southeast from four miles west of Hagen to the Chippewa River two miles north of Watson. The outlet of this watershed unit is represented by site 09MN002 on Unnamed Creek.



Stream biological assessment results - One AUID was assessed in this watershed. There were two biological stations on the AUID and it is not supporting aquatic life. Habitat for the stations is good to fair but there is a dissolved oxygen problem which may contribute to the low biological scores.

Stream water chemistry assessment results - Water quality data was available on one reach of a tributary (Unnamed Creek) to the Chippewa River. DO exceeded the standard and the reach will be listed as impaired due to low DO. Turbidity does not look to be a biological stressor along this reach.

Lake water chemistry assessment results - No lakes were assessed for water quality in this watershed unit.

The Upper Minnesota River Watershed

The Upper Minnesota River Watershed is one of the twelve major watersheds of the Minnesota River Basin. It is located in west central Minnesota within Swift, Chippewa, Lac qui Parle, Stevens, Swift, Traverse counties and northeastern South Dakota and southeastern North Dakota (refer to Map 2A). There are twelve municipalities in the watershed, with the City of Ortonville being the largest (2,158 residents according to the 2000 Census). The Upper Minnesota River watershed area is approximately 2,097 square miles or 1,341,917 acres, of which 487,068 acres are located in Minnesota and 854,849 acres are located in the Dakotas. The watershed is subdivided into 99 minor watersheds (also referred to as sub-watersheds). The minor watersheds range in size from 1,207 acres to 70,071 acres, with 13,555 acres being the average size.

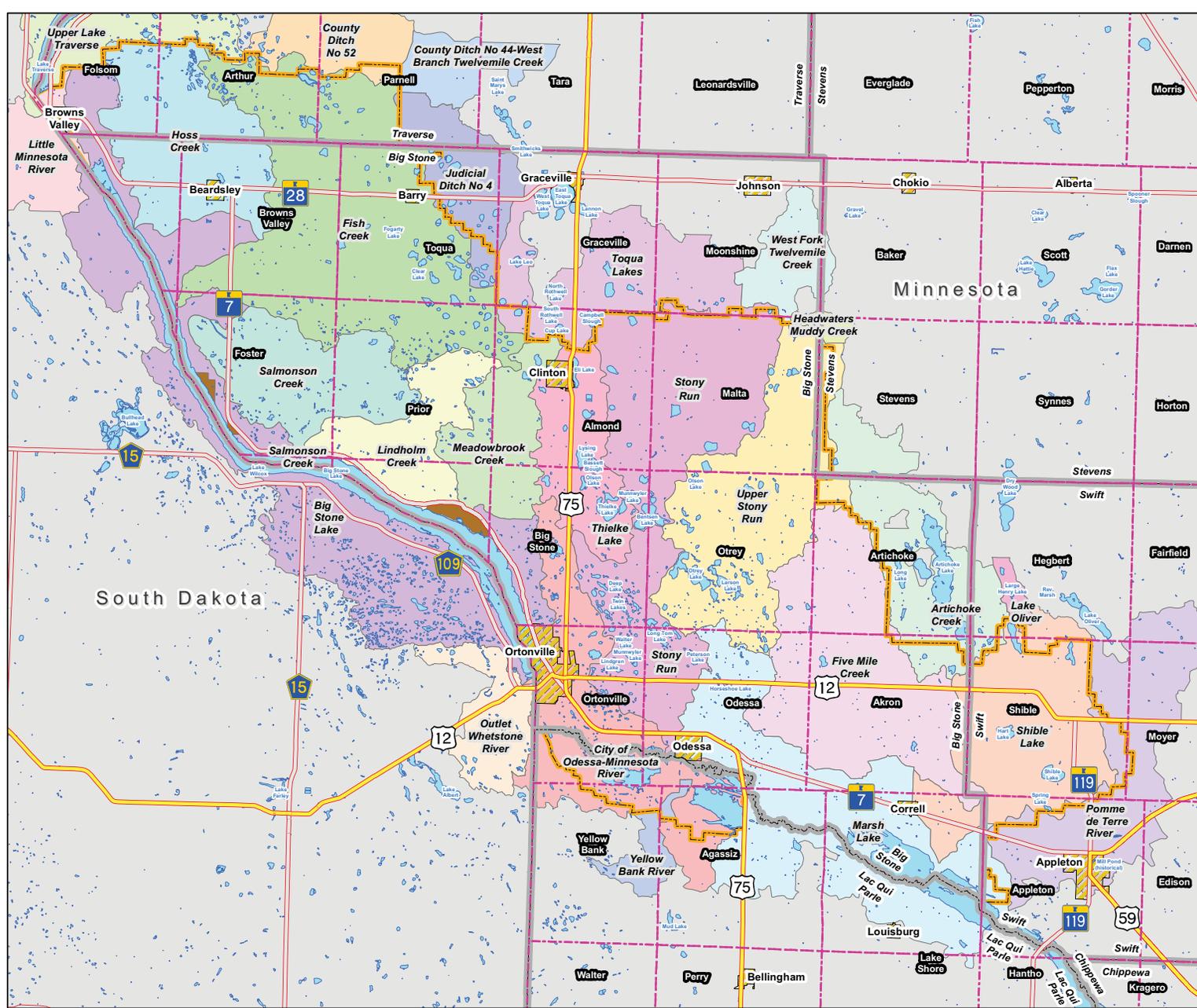
Situated within the Northern Glaciated Plains Ecoregion, the watershed can further be divided into three geomorphic settings: the headwaters flowing off the Coteau des Prairies, the lower basin-situated within the Blue Earth Till Plain and the Minnesota River Valley-carved by the glacial River Warren. The portion of the watershed within the Blue Earth Till Plain is represented by nearly level to gently sloping lands, ranging from 0-6% in steepness. Soils are predominantly loamy, with landscapes having a complex mixture of well and poorly drained soils. Drainage of depressional areas is often poor. As a result, tile drainage is common. The water erosion potential is moderate on much of the land.

The Coteau des Prairies (or “Highland of the Prairies” called by the French explorers) is a morainal plateau that occupies the headwaters of the Upper Minnesota River and several other rivers. In addition to being an impressive topographic barrier, the Coteau acts as an important drainage divide. Its well drained southwestern side sheds water into the Big Sioux River, while waters on the northeastern side flow into the Des Moines and Minnesota Rivers. The Coteau is characterized by landscapes with long northeast facing slopes which are undulating to rolling (2-18%). Soils are predominantly loamy and well drained.

Tributaries draining the Coteau and entering the Upper Minnesota River from South Dakota include the Little Minnesota River - headwaters of Big Stone Lake and the Whetstone River. Alluvial deposits at the mouth of the Whetstone River formed a natural dam and originally impounded Big Stone Lake. In 1973, a diversion was completed that directed flows of the Whetstone River directly into Big Stone Lake. Further modifications were made in the late 1980s with the completion of the Swift/Whetstone River Control Structure. This structure can redirect up to 1,460 cubic feet per second (cfs) of flow from the Whetstone directly into the Minnesota River, bypassing the deposition of unwanted sediments and nutrients into Big Stone Lake during high flow periods.

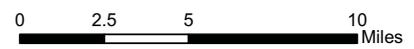
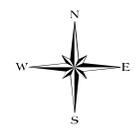
Below Ortonville, the Minnesota River passes through the Swift-Whetstone Reservoir (constructed during the 1970s). Further down, the Yellow Bank River, whose headwaters are also in South Dakota, enters into the Minnesota River. The Upper Minnesota then meets Marsh Lake and Lac qui Parle Lake (meaning “the Lake that Speaks”). Both Marsh and Lac qui Parle Lakes are natural impoundments, dammed by alluvial fans of sediment deposited at the mouths of two major tributaries, the Pomme de Terre and Lac qui Parle rivers respectively. The Pomme de Terre River comes down from the hills of the lake country to the north. The Lac qui Parle River originates in the Coteau des Prairies, flows northeast through the prairies of the southwest, then confluences with the Minnesota River near the City of Watson. Although they are natural reservoirs, the lakes were subject to some natural fluctuation; thus dams were built at the outlets for greater water control. The outlet of the Upper Minnesota River Watershed is below the Lac qui Parle Reservoir, 288 miles upstream from the mouth of the Minnesota River.

Upper Minnesota River Watershed District



Legend

- Townships
- US Highway
- State Highways
- Municipalities
- County Boundaries
- NHD Waterbody (Lakes)
- Big Stone Lake State Park
- Upper Minnesota River Watershed



Sources: MN DNR, SD DOT, MN DOT, NHD

Figure 2 12 Digit Subwatersheds

Scale: AS SHOWN	Drawn by: SMW	Checked by:	Project No.: 5304-006	Date: 1/31/2012	Sheet: 1 of 1
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- To improve the needed drainage, prevent excessive runoff or seepage, and provide needed soil and water conservation in the District.
- To provide funds to accomplish these objectives and to engage technical assistance and advice.
- Investigate the possibility of securing additional watershed area to operate within the natural boundary of the Upper Minnesota River.
- To preserve, maintain, and improve habitat for fish and wildlife.

The District’s Overall Plan established one main water quality goal, which is to “Maintain or improve water quality of all surface water and groundwater resources within the District.” To achieve the goal of maximizing water quality within the District, the following objectives are listed:

1. Promote advanced treatment of wastewater at all point sources within the District and promote advanced treatment of surface water discharge as new technologies become available.
2. Uphold the existing laws controlling discharge of conventional and toxic pollutants into surface waters from point sources.
3. Monitor water quality when necessary and feasible to protect surface and ground water resources.
4. Encourage responsible, efficient use of fertilizers and pesticides in agricultural and urban settings.
5. Encourage land use and agricultural practices that reduce the movement of nutrients, sediments and other substances off surfaces and into groundwater and surface water resources.
6. Encourage the maintenance, restoration, enhancement or creation of wetlands that may be important for nutrient entrapment.
7. Assist the Minnesota Pollution Control Agency with the assessment and creation of any TMDL’s necessary to address impaired waters with the District.
8. Assist with educating and informing District residents how individual actions may impact water quality. Involve citizens in water quality monitoring.

The Overall Plan contains the following statement which best summarizes the District's past and future priorities:

Maintaining and improving the water quality of Big Stone Lake has historically been the focus of the Upper Minnesota River Watershed District. The District has completed a number of activities oriented toward improving lake water quality, including the development of a work plan for continued improvement of lake water quality, bank stabilization projects along the shoreline, the implementation of agricultural conservation management practices, and addressing point source discharges within the watershed.

The emerging issues within the District are more related to potential conflicts between natural resource and water management issues associated with natural, modified and created watercourses than management of the lake. Many of the present legal drainage systems within the District have not been "maintained" and now exhibit some degree of natural resource value. Proposals to modify these waterways become controversial with natural resource agencies.

An important future direction for the District is becoming an integral component of the decision making process for these types of issues. Preference is to work with the Big Stone County Board of Commissioners to obtain responsibility for those financially solvent legal drainage systems. By integrating natural resource and water management issues, the District believes creative and innovative solutions, can be developed to address these complex issues (UMRWD Overall Plan 2013).

Upper Minnesota Watershed Water Quality Summary

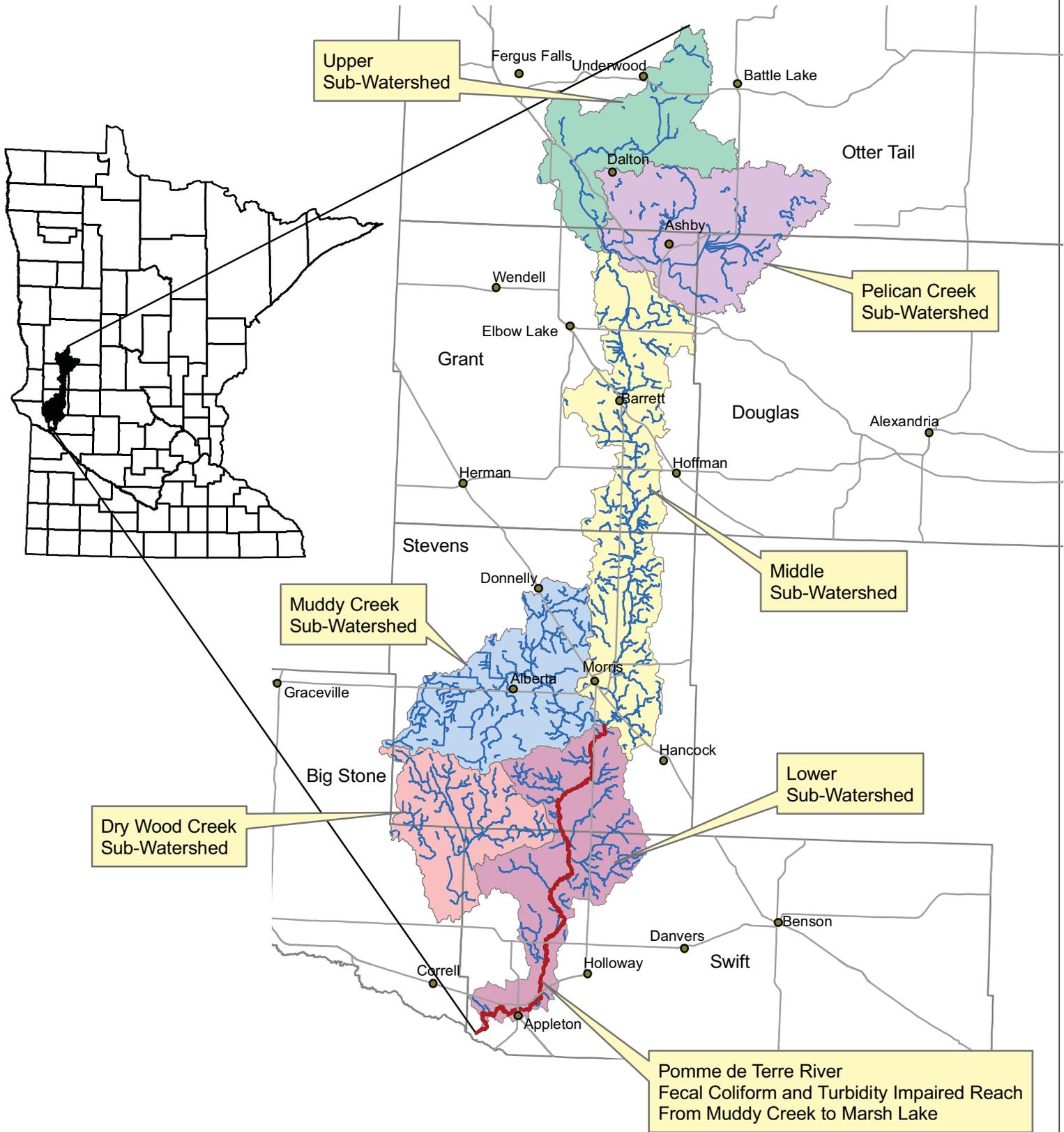
In 2013, the UPRWD updated its Overall Plan. Appendix D of the Overall Plan contains a large 53-page section on water quality data throughout the District. Most of the data presented, however, pertains to Big Stone Lake and subwatersheds not located in Swift County. The major highlights of the water quality data are linked off the District's website (www.umrwd.org).

Pomme de Terre River Watershed

The Pomme de Terre Watershed is approximately 875 square miles (599,966 acres), containing 52 minor watersheds. It is the most northern watershed in the Minnesota River Basin. The watershed begins in the North Central Hardwood Forest eco-region and flows into the Northern Glaciated Plains eco-region. The Pomme de Terre River flows through nine cities, with the largest populations being in Morris and Appleton. The watershed covers portions of six counties in West Central Minnesota: Otter Tail, Grant, Douglas, Stevens, Big Stone, and Swift. Approximately 14.84% of Swift County is located within the watershed (refer to Map 2D and Table 2A).

Map 2D: Pomme de Terre River Watershed

Fecal Coliform and Turbidity Impaired Reach from Muddy Creek to Marsh Lake



Otter Tail County, where the river begins, used to have many dairy farms but now the land is mostly used for cash grains. This northern area of watershed consists of mostly lakes, wetlands, cattails, woods and meadows. The river then flows into Grant County where the landscape begins to flatten out and more agriculture occurs along the edges of the river. The watershed continues to widen as it enters Stevens County where prairie and agricultural landscapes dominate. Finally, the river flows into Big Stone and Swift counties and into the Minnesota River. The majority (76.4%) of the watershed consists of agricultural/cultivated landscape. Although the river does not flow through Douglas County, it is considered in the watershed because Lake Christina drains into the Pomme de Terre.

**Table 2A:
Pomme de Terre River Watershed**

County	Acres in watershed	Square miles in watershed	Percent of county in watershed	Percent of watershed in county
Big Stone	18,116	28.3	5.35%	3.24%
Douglas	19,390	31.1	4.32%	3.56%
Grant	100,334	156.8	27.23	17.92%
Otter Tail	128,829	201.3	9.05%	23.01%
Stevens	221,334	345.8	60.07%	39.53%
Swift	71,421	111.6	14.84%	12.73%

Table data was compiled by the Minnesota River Basin Data Center

Key Stakeholder: Pomme de Terre River Association

The Pomme de Terre River Association of Minnesota was formed on May 27, 1981 with the purpose of improving water quality in the Pomme de Terre River. The river, located in west central Minnesota, is impaired for high levels of fecal coliform bacteria and turbidity. The association is a Joint Powers Board (JPB) consisting of a Soil and Water Conservation District supervisor and a county commissioner from each of the six counties within the watershed. The JPB is committed to engaging local people to become informed and active in cleaning up the Pomme de Terre River. Many other agencies, individuals, and organizations are involved with the Pomme de Terre River Association.

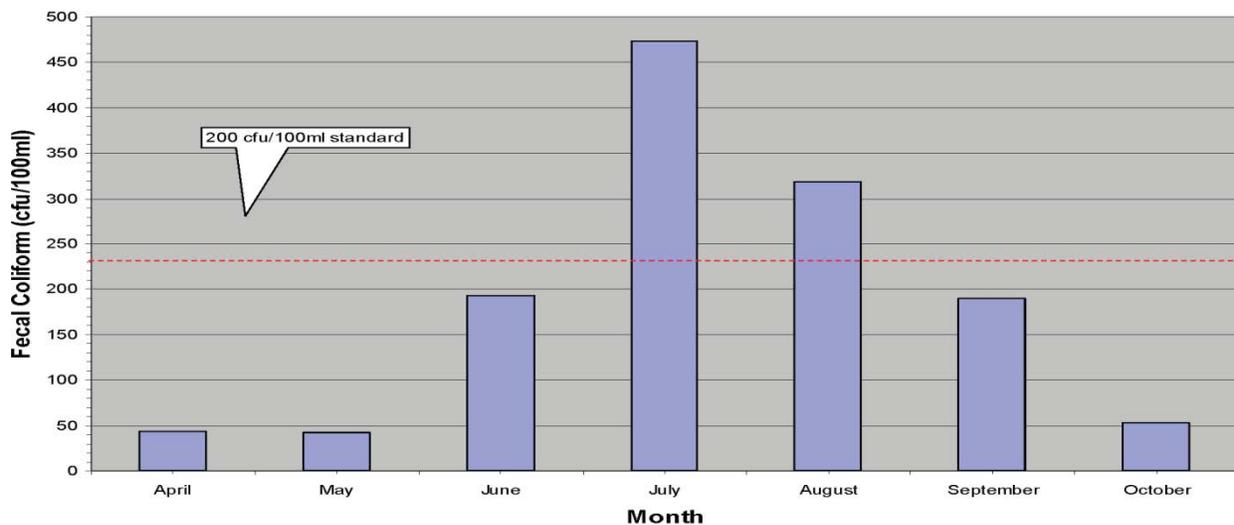
Pomme de Terre River Watershed Water Quality

The Pomme de Terre River Association has a variety of water quality information posted on their website (www.pdtriver.org). The following two figures summarizes the available data, although more can be found on the website. In addition, Section B of the Chapter describes the Watershed's Impaired Waters and what implementation steps are needed in order to properly address the identified pollutants.

During the period from October 5, 1983 to September 27, 1993, 74 fecal coliform observations and samples were done at the bottom of the Pomme de Terre Watershed at the USGS gauging site in Appleton, Minnesota. Of these samples, 23 were greater than 200 cfu/100ml. These samples containing excessive amounts of fecal coliform were all taken in the months from August to October. This data put the stretch of the Pomme de Terre, from Muddy Creek in Stevens County to Marsh Lake, on the EPA's impaired waters list under the 303(d) list. However, the data does not represent the effect that Muddy Creek has on the level of fecal coliform bacteria found in the river, and more research was needed to determine fecal levels.

Figure 2A shows the Pomme de Terre River's average fecal coliform concentrations (in colony-forming units per 100 milliliter) by month between 1997 and 2007. 200 cfu/100ml is considered the standard water quality benchmark for fecal coliform. Notice the Pomme de Terre River exceeds this standard on average for the months of July and August.

**Figure 2A: Pomme de Terre River
Fecal Coliform Concentration by Month (Geometric Means)
1997-2007**

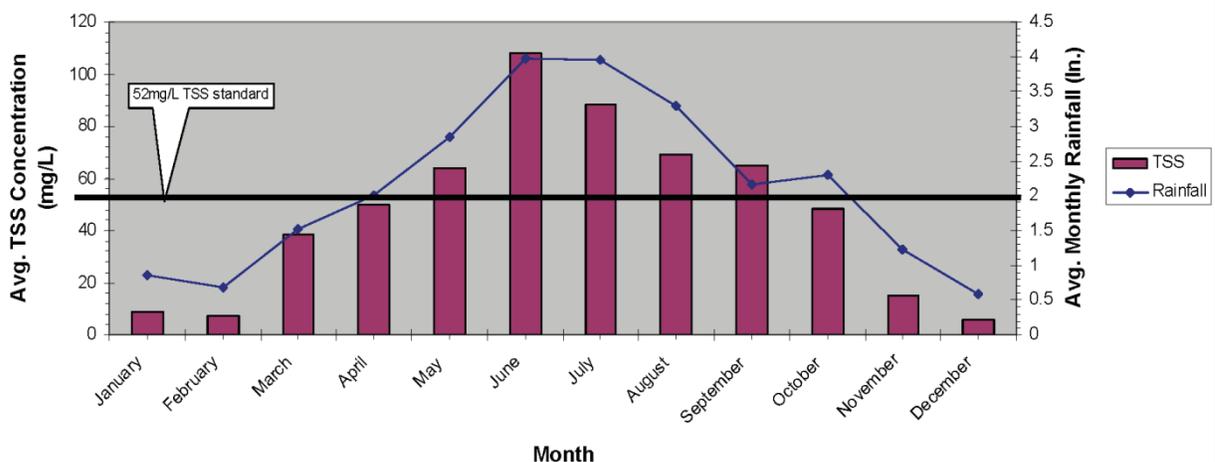


After data compilation, the Pomme de Terre Technical Advisory Committee determined that, although there is a large amount of water quality data, additional information is needed to make sound assessments of the watershed. Information currently being gathered includes flow data and water quality samples from both north and south of the Muddy Creek input into the Pomme de Terre. Water quality samples are being analyzed for total Phosphorus, Nitrate-Nitrogen, Nitrite-Nitrogen, total suspended solids, turbidity, and fecal coliform. Water quality samples and other information will be compiled into a TMDL report that will list sources of increased fecal material and best management practices for lowering levels of fecal coliform and returning the Pomme de Terre to a healthy state.

The focus of this project is to better characterize fecal coliform levels, identify the probable sources, and estimate the reduction required to meet TMDL water quality standards. The entirety of the project includes identifying and quantifying the point and nonpoint sources of fecal coliform and linking these sources to the river concentrations. The project has three goals. The first is the analysis of data that put the Pomme de Terre on the impaired waters list. Second, the effects of Muddy Creek on the lower Pomme de Terre watershed will be analyzed. The third goal is to develop and initiate an implementation plan to attain and maintain water quality standards of fecal coliform bacteria in the river.

Figure 2B shows a typical bell curve of how the Pomme de Terre River’s Total Suspended Solids (TSS) concentrations increase as rainfall amounts increase. Although this is fairly common, it also shows that more efforts need to be made to minimize erosion and sedimentation.

**Figure 2B:
Pomme de Terre River Average Monthly
Total Suspended Solids (TSS) Concentrations vs.
Average Monthly Rainfall Amounts (1997-2007)**



Clean Water Funds...after two straight years of Clean Water Fund awards, the Pomme de Terre River Association sought to continue the restoration and protection efforts in the watershed. In 2012, three grant funds were applied for to implement BMPs, to characterize the watershed through mapping, and to begin a Conservation Drainage initiative. Though only one application was successful, the Pomme de Terre was awarded \$480,000 in grant funds to continue the implementation momentum! Through the Clean Water Fund and BWSR, the Pomme de Terre is taking the lead role in conservation in the Upper Minnesota River basin. In 3 years of successful applications we've brought nearly \$1.1 million dollars in tax generated grant funds back to rural Minnesota.

Major Watershed Restoration and Protection Plan (MWRPP)

The newest development in the Pomme de Terre River Watershed is the proposed Major Watershed Study to address many different river impairments. The project was approved by the Joint Powers Board on April 15th, 2011 and is currently under way. The study will help to understand where problem areas are located, and what needs to be done to address the issue on a watershed level. The study will involve TMDLs, more intensive lake and stream monitoring, and the potential for increased funding for incentives programs.

The MPCA did what is called Intensive Watershed Monitoring on the Pomme de Terre and its tributaries from 2007 until 2010 so there's plenty of data to analyze. Work currently underway in the watershed includes both lake and stream monitoring. Details of other tasks within the plan are still being worked out but will likely include stakeholder meetings, and priority site determinations for future funding opportunities.

Potential impairments could include but are not limited to:

- ***Turbidity*** - Too much sediment causing reduced light penetration.
- ***Fecal coliform*** - Bacteria found in the intestines of warm blooded animals, causes sickness in humans who are exposed.
- ***Biological indicators*** - Too few of certain plant and animal species including bugs, fish, reptiles and amphibians.
- ***Excessive nutrient/Eutrophication*** - Nutrients causing advanced aging of lakes or streams.

B. TMDL - Impaired Waters Assessment

Why are Impaired Waters a Priority Concern? The Federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface and/or groundwater while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. When a water body cannot meet its designated uses due to pollution, it is considered an Impaired Water.

The Minnesota Pollution Control Agency (MPCA) produces a list of Minnesota's Impaired Waters every two years, referred to as the 303d List of Impaired Waters. The List identifies impaired water bodies and identifies the types of pollutants that exceed the State's minimum water quality standards, ranging from high Mercury levels, to Turbidity (suspended solids), to Fecal Coliform (bacteria).

What are the Risks? The various pollutants listed on the 303d List of Impaired Waters each pose a unique threat to aquatic life, human life, and/or wildlife. The major risk areas of concern can be summarized into the following categories:

- **Protection of Aquatic Life**
 - Main pollutants include trace metals, un-ionized ammonia, chloride, low dissolved oxygen, pH levels, turbidity, temperature, and various biological indicators.
- **Protection of Aquatic Consumption & Drinking Water**
 - Main pollutants include mercury, polychlorinated biphenyls, dioxins and chlorinated pesticides
- **Wildlife-Based Water Quality**
 - Main pollutants include DDT, Mercury and PCBs (human health standards are more stringent than for wildlife)
- **Protection of Aquatic Recreation**
 - Main pollutants include E. coli bacteria and lake eutrophication

Where are Swift County's Impaired Waters Located? The MPCA submitted a Priority Concerns Input Form that was profiled in Chapter One. The key component of the Input Form was a listing of the Impaired Waters found in Swift County. Table 2B provides a list of the information submitted (a copy of the correspondence and the list of Impaired Waters can be found in Appendix B). The MPCA publishes the list on their website (www.pca.state.mn.us), and also has an interactive mapping program, however, the maps cannot be printed in good quality.

**Table 2B:
MPCA's 303d List of Impaired Waters for Swift County (2012)**

Reaches

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Chippewa River, East Branch: Mud Cr to Chippewa R	07020005-514	AqRec	Fecal Coliform	TMDL Approved
Chippewa River, East Branch: Mud Cr to Chippewa R	07020005-514	AqLife	Turbidity	TMDL Required
Chippewa River: E Br Chippewa R to Shakopee Cr	07020005-506	AqCons	Mercury in Fish Tissue	TMDL Approved
Chippewa River: Shakopee Cr to Cottonwood Cr	07020005-507	AqCons	Mercury in Fish Tissue	TMDL Approved
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqLife	Fishes Bioassessments	TMDL Required
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqRec	Fecal Coliform	TMDL Approved
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqLife	Turbidity	TMDL Required
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqCons	Mercury in Fish Tissue	TMDL Approved
Dry Wood Creek: Dry Wood Lk to Pomme de Terre R	07020002-556	AqRec	Escherichia coli	TMDL Required
Dry Wood Creek: Dry Wood Lk to Pomme de Terre R	07020002-556	AqLife	Turbidity	TMDL Required
Judicial Ditch 8: Unnamed cr to Unnamed ditch	07020005-546	AqLife	Fishes Bioassessments	TMDL Required
Minnesota River: Marsh Lk to Lac Qui Parle Lk	07020001-516	AqCons	Mercury in Fish Tissue	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqLife	Oxygen, Dissolved	Removed from Inventory - New Analysis Shows Attainment
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqRec	Fecal Coliform	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqLife	Turbidity	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqCons	Mercury in Fish Tissue	TMDL Approved
Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqLife	Fishes Bioassessments	TMDL Required
Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqRec	Fecal Coliform	TMDL Approved
Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqLife	Turbidity	TMDL Required
Unnamed creek: Unnamed cr to Unnamed ditch	07020005-574	AqLife	Turbidity	TMDL Required

Table 2B:
MPCA’s 303d List of Impaired Waters for Swift County (2012)
continued...

Lakes

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Artichoke	06-0002-00	AqCons	Mercury in Fish Tissue	TMDL Approved
Hollerberg	76-0057-00	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required
Lac Qui Parle: NW Bay	37-0046-02	AqCons	Mercury in Fish Tissue	TMDL Approved
Marsh	06-0001-00	AqCons	Mercury in Fish Tissue	TMDL Approved
Oliver: east portion	76-0146-01	AqCons	Mercury in Fish Tissue	TMDL Approved
Oliver: west portion	76-0146-02	AqCons	Mercury in Fish Tissue	TMDL Approved

What actions are needed to properly address Impaired Waters? By definition, being listed as an impaired water for a pollutant means the water body cannot sustain itself naturally. As a result, collaborative measures need to be taken in order to give the water body a chance to become healthy again. Addressing Impaired Waters in County Water Plans is voluntary, however, Swift County anticipated being fully engaged in TMDL assessments and their anticipated implementation activities. Due to the varying types of pollutants, however, nearly all of the Swift County’s Water Plan stakeholders play some role in properly addressing impaired waters.

TMDL Best Management Practices (BMPs)

Dr. David Mulla of the University of Minnesota developed matrices to provide general planning-level guidance on the application of BMPs. The BMPs were developed through a focus group process that included experts from the University of Minnesota, Minnesota Pollution Control Agency, Minnesota Department of Agriculture, and the Minnesota Board of Water and Soil Resources. Four broad categories of management practices discussed include nutrient management, vegetative practices, tillage practices, and structural practices. Selection of appropriate management practices for the pollutant(s) of concern depends on site-specific conditions, stakeholder attitudes and knowledge, and on economic factors. This information is intended to be used as a starting point in the development of a custom set of BMPs to reduce sources of pollution generation and transport through improved management of uplands and riparian land within the TMDL project area. Reducing sediment generation and transport will

also lead to decreases in turbidity, bacteria concentrations, and improve Dissolved Oxygen (DO) in downstream reaches.

Each of the broad categories of management practices as it applies to TMDL implementation is briefly summarized:

Nutrient Management Practices - Nutrients have an effect upon algal and periphyton growth and subsequent death, decay, and development of SOD; and well as periphyton–developed diurnal swings in dissolved oxygen. Therefore, fertilization management is an important BMP component of the Dissolved Oxygen Implementation Plan.

Vegetative Management Practices - Vegetative practices include those focusing on the establishment and protection of crop and noncrop vegetation to minimize sediment mobilization from agricultural lands and decrease sediment transport to receiving waters. The recommended cropping practices are designed in part to slow the speed of runoff over bare soil to minimize its ability to entrain sediment. Grassed waterways and grass filter strips provide settling of entrained sediment which gets incorporated into both the soil and vegetation. Other practices, such as alternative crop rotations and field windbreaks are designed to minimize exposure of bare soils to wind and water which can transport soil off-site. Pasture management often emphasizes rotational grazing techniques, where pastures are divided into paddocks, and the livestock moved from one paddock to another before forage is over-grazed. As livestock are moved frequently, forage is able to survive.

Maintaining the vegetation, as opposed to bare soil, allows for greater water infiltration, reducing runoff and associated sediment transport. The Natural Resources Conservation Service offices and the Swift Soil and Water Conservation Districts facilitate the Environmental Quality Incentives Program (EQIP), state, and other cost-share programs to put Best Management Practices into place. There are a number of programs available to compensate land owners for moving environmentally sensitive cropland out of production for varying periods of time. These include the Conservation Reserve Program (CRP), Re-Invest in Minnesota (RIM) Reserve Program, and the Conservation Reserve Enhancement Program (CREP) or similar programs. Anticipated benefits in reducing soil erosion and improving water quality are key considerations in deciding what lands can be enrolled in each program. These easements are either Conservation Reserve Enhancement Program (CREP), Reinvest in Minnesota (RIM), Wetland Preservation Areas (WPA) and Wildlife Management Areas (WMA).

List of Primary BMP Vegetative Practices

- ✓ Grassed waterways
- ✓ Grass filter strip for feedlot runoff
- ✓ Buffers

- ✓ Wetland restoration
- ✓ Alternative crop in rotation
- ✓ Field windbreak
- ✓ Pasture management, intensive rotation grazing (IRG)
- ✓ Conservation Reserve Program (CRP) or Conservation Reserve Enhancement Program
- ✓ (CREP) or similar programs

Primary Tillage Practices - Certain kinds of tillage practices can significantly reduce the generation and transport of soil from fields. Conservation tillage techniques emphasize the practice of leaving at least some vegetation cover or crop residue on fields as a means of reducing the exposure of the underlying soil to wind and water which leads to erosion. If it is managed properly, tillage management can reduce soil erosion on active fields by up to two-thirds (Randall et. al. 2008). The Natural Resources Conservation Service office and Swift Soil and Water Conservation District facilitate Environmental Quality Incentives Program (EQIP) or other cost-share programs to put Best Management Practices into place.

List of Primary BMP Tillage Practices

- ✓ Chisel Plow
- ✓ One pass tillage
- ✓ No-till
- ✓ Strip-till
- ✓ Ridge till

Structural Practices - Structural practices emphasize elements that generally require a higher level of site-specific planning and engineering design. Most structural practices focus on watershed improvements to decrease sediment loading to the receiving water. For example, restoration of wetlands can create a natural method of slowing overland runoff and storing runoff water, which can both reduce channel instability and flooding downstream. In addition, the quiescent conditions of a wetland mean that they can be effective at settling out sediment particles in the runoff that reaches them, although accumulation of too much sediment too rapidly can compromise other important functions of the wetland. Livestock exclusion involves fencing or creating other structural barriers to limit or eliminate access to stream by livestock, and may involve directing livestock to an area that is better designed to provide limited access with minimal impact. Sediment load reduction structures such as basins, diversions and terraces trap sediment from migrating downstream into channels and ditches. The Natural Resources Conservation Service office and the Swift Soil and Water Conservation District facilitate Environmental Quality Incentives Program (EQIP) or other cost-share programs to put Best Management Practices into place.

List of Primary BMP Structural Practices

- ✓ Wetland creation
- ✓ Livestock exclusion
- ✓ Liquid manure waste facilities
- ✓ Water and sediment control basins
- ✓ Diversions
- ✓ Terraces

Feedlot Runoff Reduction - This strategy is presently under implementation through the MPCA's Open Lot Agreement (OLA) established in October 2000. The OLA has a Full Compliance goal to meet effluent limits in Minn. R. 7053.0305 by October 1, 2010. This program encourages producers to seek information and assistance for practical solutions to treat feedlot runoff that discharges into waters of the state from feedlots that do not require NPDES permits. There are a variety of options for improving open lot runoff problems that reduce diffuse source loading of bacteria and turbidity, including:

- ✓ Move Fences/Change Lot Area
- ✓ Eliminate Open Tile Intakes and/or Feedlot Runoff to the Intake
- ✓ Install Clean Water Diversions and Rain Gutters
- ✓ Install Grass Buffers
- ✓ Maintain Buffer Areas
- ✓ Construct a Solids Settling Area(s)
- ✓ Prevent Manure Accumulations
- ✓ Manage Feed Storage
- ✓ Manage Watering Devices
- ✓ Total Runoff Control and Storage
- ✓ Roofs
- ✓ Runoff Containment with Irrigation onto Cropland/Grassland
- ✓ Vegetated Infiltration Area
- ✓ Tile-Drained Vegetated Infiltration Area with Secondary Vegetated Filter Strip
- ✓ Sunny Day Release on to Vegetated Infiltration Area or Filter Strip

These practices can achieve a 50% to 90% reduction of suspended solids and phosphorus within a stream reach.

Manure Management Planning - Continued cooperation between the County and the MPCA through the County Feedlot Program ensures that feedlot owners get assistance to remain compliant with their permits. The Natural Resources Conservation Service office and the Swift Soil and Water Conservation District facilitate Environmental Quality Incentives Program

(EQIP) or other cost-share programs to put Best Management Practices into place. The development and update of manure management plans continue to reduce bacteria in runoff.

Stream and Channel Restoration - Other practices which may be considered for the project area involve making improvements to the structure of the receiving water to improve stability and decrease in-stream sources of sediment. In-stream structures need to be carefully designed to direct flow where appropriate under a wide range of discharge conditions and make sure that solution of one channel stability problem doesn't create another elsewhere. Also important is, where possible, making sure that the main stream channel can overflow into its floodplain at high flows to allow the stream to temporarily store water outside the streambank, reducing flow velocity and excessive scouring of the channel. Intact natural vegetation in the floodplain also acts to slow flow velocities and encourages deposition and permanent capture of sediment.

Waste Water Treatment Facilities - Counties, Regional Development Commissions and MPCA staff will work with Waste Water Treatment Facilities to ensure continued compliance.

Subsurface Sewage Treatment Systems (SSTS) - Low interest loan dollars are available to aid landowners in upgrading SSTS through the Swift County Environmental Services Office. These funds are administered by the State Revolving Fund (SRF) through the Minnesota Department of Agriculture and the Minnesota Pollution Control Agency.

C. Feedlots and Livestock Management Assessment

Why are Feedlots and Livestock Management a Priority Concern?

The Minnesota Pollution Control Agency (MPCA) regulates and controls pollution created by animal feedlots. The MPCA's feedlot rules were first adopted in 1971 and were amended in 1974, 1978 and again in 2000. The trend in agriculture has been toward fewer but larger livestock and poultry facilities. There has also been a trend of increasing awareness about the potential environmental effects of feedlots.

In accordance with MPCA feedlot regulations, the owner(s) of an animal feedlot or manure storage area with 50 or more animal units, or 10 or more animal units if in shoreland (less than 300 feet from a stream or river, less than 1,000 feet from a lake) needed to register with the MPCA.

Definition of an Animal Unit

A standardized measure to compare differences in the production of animal manure for an animal feedlot or manure storage area. A mature cow of about 1000 pounds (455 kg.) is the standard unit.

Swift County is a delegated county for the Feedlot Program which is ruled by the MPCA. Large Concentrated Animal Feeding Operations (CAFOs) are permitted through MPCA. All other feedlots that are required to be permitted hold a County permit. All feedlots in the County are also registered whether they need a permit or not when the amount of animal units dictates. As part of the feedlot program Manure Management Plans are a requirement for obtaining the initial permit for a feedlot with 100 animal units or more. MMP's are also required if the manure is applied to fields by non-certified animal waste technicians. MMP's are required by federal regulations for Concentrated Animal Feeding Operations (CAFOs). MMP's show how manure generated at a feedlot facility is going to be used during upcoming cropping year (s) in a way that maximizes the benefits of manure application to cropland and meets all rules and regulations and protects surface and groundwater quality. These regulations include proper setbacks from all rivers, streams, natural waterways, private and public wells, drainage ditches and drain tile intakes. This also includes the incorporation of liquid manure and regulations concerning application before known large rain events and the strict regulations for winter application when allowed by special permit.

What Risks do Feedlots and Livestock Management Issues Pose? Feedlot and livestock environmental issues are mostly concerned with manure management. Specifically, phosphorus and nitrogen runoff from manure can lead to water quality problems if not handled properly. In addition, livestock grazing can substantially increase erosion and sedimentation rates when best management practices are not followed.

Where are Swift County's Problem Feedlots Located? Like most agricultural counties, Swift County's feedlot located are vastly spread out across the rural landscape. According to the County's 2012 Feedlot report, Swift County has approximately 176 feedlots. The breakdown by category is shown in Table 2C:

**Table 2C:
Swift County 2012 Feedlots**

Feedlots registered in shoreland with 10 – 299 AU:	12
Feedlots registered outside shoreland with 50 – 299 AU:	105
Non-NPDES sites \geq 300 AU:	42
Feedlots registered with NPDES permits:	17
Total:	176

What actions are needed to address Feedlots and Livestock Management issues and Who are the Key Stakeholders?

Minnesota Department of Agriculture (MDA) - In addition to the MPCA and the County, the Minnesota Department of Agriculture (MDA) is also a key stakeholder in feedlot/livestock management issues. The MDA submitted a Priority Concerns Input Form during the Water Plan's scoping process (contained in Appendix B). The main comments concerning feedlots and livestock issues are as follows:

“Livestock manure used as fertilizer has benefited farmers for decades and if applied properly can meet crop nutrient requirements, build up soil organic material and decrease dependence on commercial fertilizers, increase soil fertility, and in some cases, reduce soil erosion. Manure as fertilizer is a constant reminder that we can reuse and recycle a product that was once thought of as a waste product with insignificant value. However, if manure is not properly applied it can lead to negative environmental impacts.

Manure, feed/silage leachate and milkhouse waste can be high in nutrient values, specifically pertaining to nitrogen and phosphorous. If improperly applied, manure does have the potential to contribute to nutrient loading and bacteria/viral levels of water sources. It is important for counties in the state to encourage the development of manure/nutrient management plans for the livestock producers within their borders. These plans address agronomic application rates for crops planted, buffered or protection areas around sensitive features, and reduce the potential of impacting surface or ground water.

Pasturing livestock is a common practice among livestock producers. Several studies and research through the University of Minnesota show that livestock grazing, if done properly, can enhance the quality of grazing lands. As your county is aware, pasture areas are often those areas that are not conducive to farming and generally contain sensitive landscape and surface water features. Nutrients left by livestock serve as a fertilizer source to pasture plant species, which then utilize and filter the nutrients rather than the nutrients being in excess and exiting the area in the form of runoff.

Types of vegetation, length of time in a pasture, stocking density and water availability are all issues livestock producers must be continued to be educated, in order to produce and utilize a productive, environmentally sound pasture or grazing system. Pastures or grazing systems not managed properly can restrict or eliminate vegetative growth and cover, which in turn can result in potentially negative water quality issues” (www.mda.state.mn.us).

D. Subsurface Sewage Treatment Systems Assessment

Why are Subsurface Sewage Treatment Systems a Priority Concern? Subsurface Sewage Treatment Systems (SSTS), commonly known as septic systems, pose a threat to public health and the environment if not properly installed and maintained. They are regulated by Minnesota Statutes 115.55 and 115.56. These regulations detail:

1. Minimum technical standards for individual and mid-size SSTS (Chapter 7080 and 7081);
2. A framework for local administration of SSTS programs (Chapter 7082) and;
3. Statewide licensing and certification of SSTS professionals, SSTS product review and registration, and establishment of the SSTS Advisory Committee (Chapter 7083).

What Risks do SSTS's Pose? According to the MPCA, “Expose to sewage through ingestion or bodily contact can result in disease, severe illness, and in some instances death from bacteria, viruses and parasites contained in waste. Therefore, it is important for sewage to be properly treated” (*Facts About Subsurface Sewage Treatment Systems, MPCA-June 2008*). In addition, high phosphorus levels normally found in sewage can also lead to excessive aquatic plant growth, causing a number of corresponding water quality problems.

Where are Swift County's SSTS Located? Although SSTS's are sometimes located within incorporated areas, SSTS's are commonly located throughout the rural areas of the County. They are the primary means of treating sewage on farmsteads, rural homesteads, and for lakeshore properties. Table 2D shows the number of SSTS permits by type since 2008.

**Table 2D:
Swift County SSTS Permits by Type and Year**

Year	New Residential	Other New	Replacement Residential	Replacement Other	Totals by Year
2008	30	0	0	0	30
2009	25	0	0	0	25
2010	22	0	0	0	22
2011	31	0	0	0	31
2012	27	0	0	0	27
Totals	135	0	0	0	147

What would happen if SSTS issues are not addressed? SSTS concerns need to be properly addressed in the Water Plan to minimize the potential for them to have negative effects on public health and/or the environment. In addition, proper SSTS management will also help to protect overall water quality and will help address some of the problems listed in the County’s impaired waters.

The Swift County Environmental Services Office assists with enforcing MN Rule Chapter 7080-7083 through the Swift County SSTS Ordinance. Two of the major components of the ordinance require a septic system disclosure form and a transfer agreement form upon property being transferred between the seller and buyer of property.

E. Erosion and Sediment Control Assessment

As an agricultural county, soils are one of Swift County’s most valuable resources. Soils develop from the breakdown of rock minerals, intermixed with plant and animal remains. The formation of a soil is an extremely long process, taking place over thousands of years. Swift County’s soils were formed from deposits originally left by glaciers more than 10,000 years ago. Map 2E displays the Swift County’s major soil associations. Chapter Three contains a map of Swift County’s erosion prone soils. More detailed information about Swift County’s soils can be found in the County’s Soil Survey or by contacting the Swift County Soil and Water Conservation District.

For administration of the State Cost-Share Program by the Swift County Soil and Water Conservation District the following definitions apply:

High Priority Erosion Problems – “High priority erosion problems” means areas where erosion from wind or water is occurring equal to, or in excess of, 2 x T tons per acre per year or is occurring on any area that exhibits active gully erosion or is identified as high priority in the comprehensive local water plan or the conservation district’s comprehensive plan.

High Priority Water Quality Problems – “High priority water quality problems” means areas where sediment, nutrients, chemicals, or other pollutants discharge to Department of Natural Resources designated protected waters or to any high priority waters as identified in a comprehensive local water plan or the conservation district’s comprehensive plan, or discharge to a sinkhole or groundwater. The pollutant delivery rate to the water source is in amounts that will impair the quality or usefulness of the water resource.

Water Erosion - Water erosion results from soil being moved from its original location by the force of water to the convex lower slopes and flats. Average tolerable soil loss for the County is three to five tons per acre per year. Erosion types are classified as sheet and rill, ephemeral and gully. Soil erosion affects cropland, urban areas, roadsides, lakeshores, stream banks and drainage systems.

Water erosion impacts the water quality of the County's water bodies, as well as develops detrimental conditions in the uplands and steeper slopes of the soil associations with erosion prone characteristics. Water erosion in Swift County generally occurs the most between the months of April and June, when fields have been tilled and planted, but a crop canopy has not developed to protect the surface. The USDA developed the Universal Soil Loss Equation (now replaced by RUSLE) to effectively predict the average rate of soil loss by sheet and rill erosion in tons per acre per year. One of the six factors used in the equation, erosion factor K, indicates the susceptibility of a soil to sheet and rill erosion. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion. Map 3A (previous water plan map) identifies the water erosion prone Swift County soil associations that have K factors equal to or greater than 0.28.

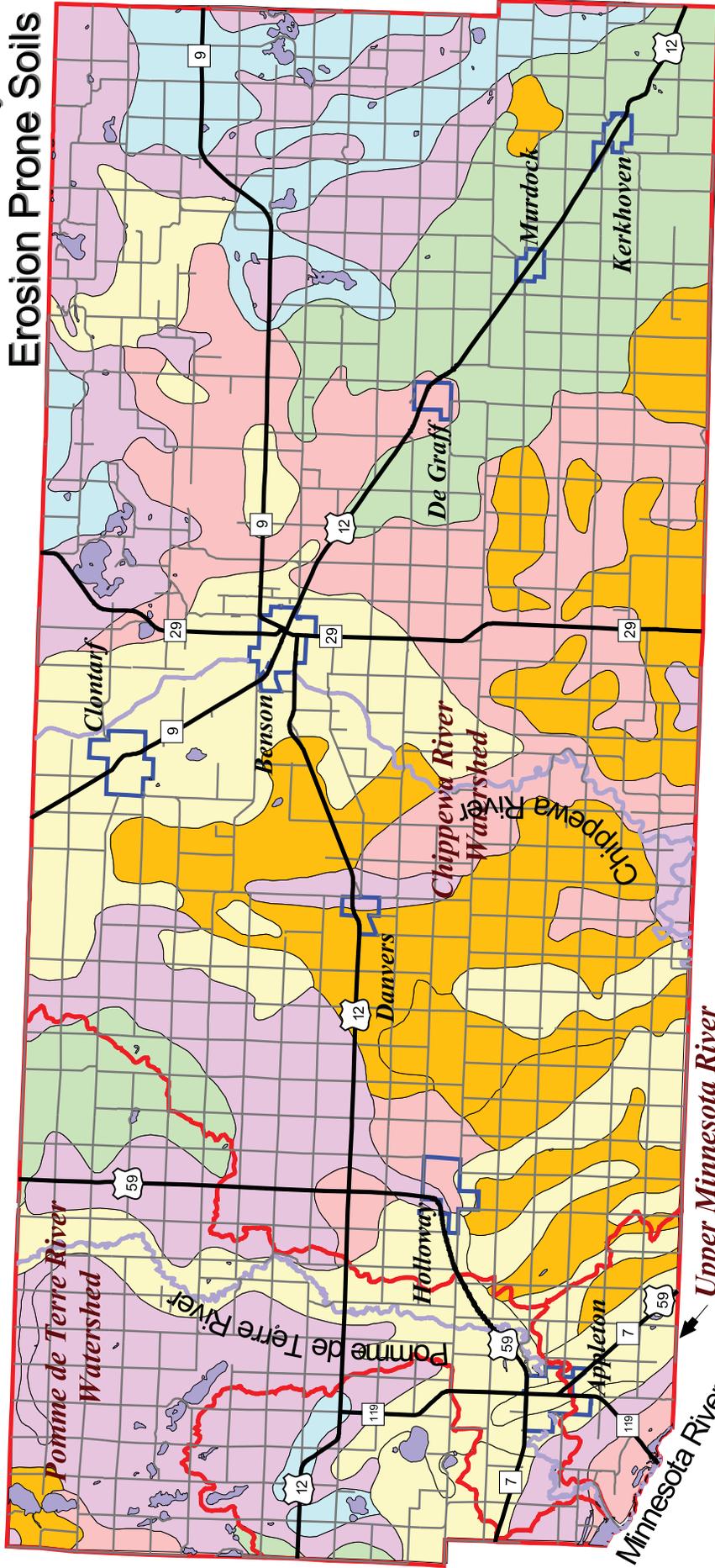
Wind Erosion - The potential for wind erosion occurs when wind velocities increase above 12 miles per hour. Wind speeds above this mark overcome the force of gravity and dislodge soil particles. Soil is most vulnerable when unprotected by vegetative cover. Soils with fine granulated structure are most susceptible to erosion, including sandy loam, loamy sand and sand. November through June is the worst time for wind erosion, when field surfaces are normally dry and strong northwest winds are prevalent. The USDA has classified soils into Wind Erodibility Groups, according to their susceptibility to wind erosion in cultivated areas. Wind Erodibility Groups range from 1-8. The lower the group number, the higher the vulnerability to wind erosion. Groups 4L or less are classified as highly susceptible to wind erosion.

Why is Soil Erosion and Sediment Control a Priority Concern?

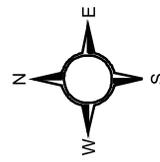
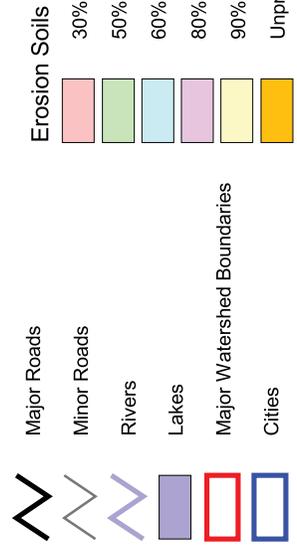
The Priority Concerns Scoping Document (Chapter One) identified that cultivated agricultural land is the single largest land use in the County. The Priority Concerns Input Form submitted by the Minnesota Board of Water and Soil Resources (BWSR) best summarizes the significance of having erosion and sediment control as a priority issue addressed in the Swift County Water Plan (see Appendix B):

“According to the “2003 – 2012 Swift County Comprehensive Local Water Plan”, the single largest land use in the County is cultivated agricultural land--approximately 82%. Farming practices change over the decades. What once was a diversified agricultural landscape is now primarily cash grain operations. Cash grain operations tend to have soils that are more susceptible to water and/or wind erosion, which can and do impact the quality and quantity of surface and ground water resources. The rivers, shallow lake/wetlands and streams of the County (and Minnesota) depend on best management practices to be implemented on these lands so water quality degradation from sediment of eroding lands does not occur. To provide for the long-term productive capacity of the County's soil resource base (and the quality of surface water), these agricultural soils need to be protected.”

Map 3A: Swift County's Erosion Prone Soils



Legend



Source: MNDNR Watersheds 1995, MNDOT Basemap '99,
 USDA Soil Survey 1973
 Date: June 25, 2003
 Produced By: UMWFRDC GIS Service Bureau

Section Two: Surface Water Management ~ Surface Water Quantity

This section of the Water Plan provides an assessment of Swift County's surface water management issues (and/or surface water quantity issues). Included are subsections on Agricultural Drainage, Stormwater Management, and Wetlands/Water Retention, although all of these subsections are interrelated. Consequentially, many points made as part of one resource assessment also pertains to the resource assessments for the other three categories.

F. Agricultural Drainage Assessment

Why is Agricultural Drainage a Priority Concern?

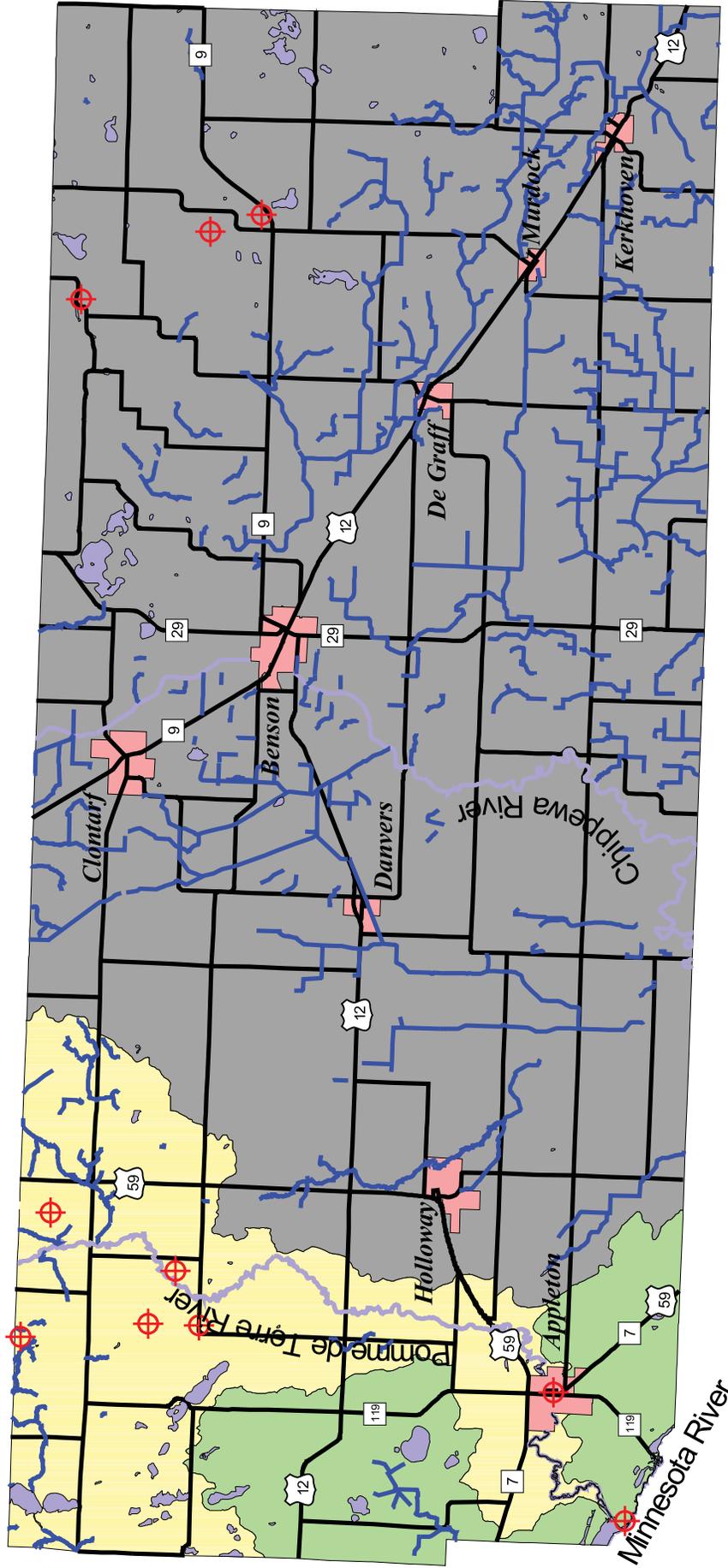
Swift County has an extensive agricultural drainage system, shown on Map 2F. These ditches were installed to provide drainage for agricultural lands, at a time when Federal and State policies were to increase agricultural production. Having adequate drainage for agricultural production is an essential component of our economy, however most of the drainage systems installed in the past were designed primarily to remove water as rapidly as possible, without regard to effects on surface water quality and quantity.

Best management practices (BMPs), such as filter strips and alternative drainage methods, need to be targeted on drainage systems to prevent exacerbating current water quality and quantity problems. Implementation of such practices would not only improve the quality of the County's surface water, but it would also reduce the need for expensive ditch cleanout and repair.

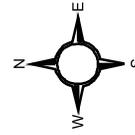
The Minnesota Department of Natural Resources (DNR) has observed more "flashy" stream flows throughout the State, meaning that both high and low flows are exaggerated. Because many drainage ditch systems were designed to remove large quantities of water in a short duration, flooding problems are occurring more frequently, especially following major storm events and during the spring snowmelt. To minimize flooding impacts, upland storage needs to be increased to reduce the overall volume of water transported by the drainage system.

Due to recent high crop prices, an increasing amount of farmland is being tilled. This presents itself the opportunity to install new conservation drainage systems and to make improvements to the existing system. The newer systems can be designed to reduce nutrient losses and also positively affect the timing of flows into surface waters.

Map 2F: Drainage



Map 3B:
Swift County's
Drainage Systems & Dams
 (originally created for the 2004 water plan)



Legend

- | | | | |
|--|-------------|--|----------------------------|
| | Dams | | Major Watershed Boundaries |
| | Lakes | | Chippewa River |
| | Drainage | | Pomme de Terre River |
| | Major Roads | | Upper Minnesota River |
| | Cities | | |

****Note****

Swift County's Ditches will be updated in a new digital format at the end of the year.

Source: MNDNR Waterbasins 1995, MNDOT Basemap '99,
 MN DNR Dam Safety Unit
 Date: June 25, 2003
 Produced By: UMWRC GIS Service Bureau

What are the Risks Associated with Agricultural Drainage? Although proper agricultural drainage is a necessary component in a healthy farming community, some negative environmental risks do exist if best management practices are not implemented properly. These sometimes include the following water-related problems:

- Loss of wetlands and water storage
- Increased flooding (due to loss of wetlands and water storage)
- Increased loss of nitrates through tile drains; increased phosphorus levels
- Increased soil erosion and turbidity
- Increased pesticides and farm chemicals in public waters

What actions are needed to properly address Agricultural Drainage issues and who are the Key Stakeholders in Swift County?

On the County level, the County Parks, Drainage and Wetlands Department is main contact for drainage issues. In recent years the amount of pattern tiling has dramatically increased within the County. While pattern tiling has definite water quality and quantity benefits over conventional open tile intakes, the increasing installation has raised numerous questions on what overall impacts it will have on the environment.

A number of drainage authorities in Minnesota have undertaken a systematic redetermination of benefits and damages for all of the Chapter 103E drainage systems under their jurisdiction, including surface ditches and subsurface tile systems. These drainage authorities include: Freeborn, Martin, Steele, Sibley, Kandiyohi and Faribault Counties. According to a BWSR (www.bwsr.state.mn.us/drainage), in a publication titled “Redetermination of Benefits and Damages for Drainage Systems:”

- Benefited lands and benefits of many public drainage systems have not been updated for decades, some for over a century.
- Drainage system benefits are determined at one point in time, with no provision in Chapter 103E to index for inflation over time. The cost of a repair cannot exceed the total value of benefits of the drainage system on record.
- The drainage system repair fund limit is 20% of the total assessed benefits of the system, or \$100,000, whichever is greater.
- Chapter 103E projects that require right-of-way (establishment, improvement, or repair by resloping of ditch side slopes) must have viewers appointed to determine associated benefits and damages. Partial system projects can create benefit inequities.

As new private drainage is outlet into a public drainage system, the total benefits of the system and the relative benefits to land parcels and other infrastructure change. These benefits and associated assessments for repairs can only be updated via a redetermination of benefits and damages.

Minnesota Board of Water and Soil Resources (BWSR) – BWSR has increasingly become an important stakeholder in assisting with agricultural drainage issues. One of the categories in the last BWSR Clean Water Fund competitive grant RFP (FY2013) was:

- ***Clean Water Conservation Drainage Management Grants*** ~ *the purpose of these grants is to facilitate the installation of conservation practices on drainage systems through planning and project implementation to improve water quality and local hydrologic conditions. For FY2014 and on - the installation of conservation practices on drainage systems are still eligible, however, they will simply be part of a larger category of Clean Water Funds called **BWSR Projects and Practices** and not a separate grant program.*

Projects developing a multipurpose drainage management plan for a public drainage system must involve participation of the applicable MN Statutes Chapter 103E drainage authority. The proposed projects were to contain the following components:

- **Outcomes and evaluation:** proposed projects must be conducted on a reach scale, field scale or another suitable scale such that project outcomes can be evaluated; projects must include a project evaluation plan,
- **Outreach:** project must include an outreach component. Examples include: (1) hosting public meeting(s)/workshop(s) to discuss project objectives, benefits and results; (2) developing project fact sheets that are distributed to landowners/operators; and (3) hosting field day(s) to show and discuss project objectives and outcomes on-site, and
- **Practice implementation:** proposed conservation drainage management grant projects must have an on-the-ground implementation component.

Eligible Activities - Proposed activities were to be conducted on existing drainage systems (e.g. retrofits) or new pattern tile systems. Eligible activities included:

- **Multipurpose Drainage Management Planning for public drainage systems:**
 - ✓ Planning to develop subwatershed (drainage system) scale implementation plans for multipurpose drainage management on Chapter 103E drainage systems to protect and improve water quality, together with adequate agricultural drainage, equitable flood protection, peak flow and erosion reduction, and wildlife habitat improvement. The subwatershed plan(s) should consider practices such as

grassed waterways, water and sediment control basins, culvert sizing (surface drainage coefficient of 1 inch per day or less), side inlets, controlled subsurface drainage, nutrient management, denitrifying bioreactors, constructed or restored wetlands, and other applicable hydrology management and water quality practices on a subwatershed basis that reduce peak flows, nutrient transport and erosion potential.

- ✓ Targeting of BMPs to critical areas of the landscape and encouraging use of other federal, state or local BMP implementation funds.
- ✓ Marketing of multipurpose drainage management to landowners within the public drainage system subwatershed(s).
- NRCS Conservation Activity Plan (CAP) 130 Drainage Water Management – including controlled subsurface drainage, denitrifying bioreactor, and nutrient management components.
- NRCS Practice 587 Structure for Water Control – to enable controlled subsurface drainage, including stop log structures and / or Agri Drain Water Gates structures, or equal.
- NRCS Practice 747 Denitrifying Bioreactor – for existing or new tile drainage systems.
- NRCS Practice 590 Nutrient Management
- Open tile inlet replacement – replacement of existing open tile inlets with water quality improvement inlets (e.g. perforated riser or dense pattern tile) in accordance with NRCS Practice 606 Subsurface Drain, as applicable.
- Side inlet controls – for existing drainage ditches and / or streams to reduce erosion, provide temporary detention, and sediment settling (NRCS Practice 410 Grade Stabilization Structure, Side inlet).
- Buffers – limited to locations adjacent to side inlets or tile inlets,
- Other innovative conservation drainage practices...

Ineligible Activities included the following:

- Ditching & Tile, except for dense pattern tile to replace existing open tile inlets,
- Culverts or bridges through roads, and
- Ambient water quality monitoring

G. Stormwater Management Assessment [partially recreated from www.pca.state.mn.us]

Why is Stormwater Management a Priority Concern and What are the Risks?

According to the Minnesota Pollution Control Agency, 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 phosphorus, toxic metals, litter, and disease-causing organisms. In addition, stormwater frequently overwhelms streams and rivers, scours streambanks and river bottoms and hurts or eliminates fish and other aquatic organisms.

To better manage stormwater across the state, the MPCA administers the requirements of the federal Clean Water Act in addition to its own State Disposal System requirements. At the MPCA, the Stormwater Program includes three general stormwater permits: the Municipal Separate Storm Sewer Permit, the Construction Stormwater Permit and the Industrial Stormwater Permit. Each program administers a general permit (and in some cases, individual permits) that incorporates federal and state requirements for Minnesota stormwater management.

Stormwater management has evolved substantially over the past 20 years. Historically, the goal was to move water off the landscape quickly and reduce flooding concerns. Now we are focusing on keeping the raindrop where it falls and mimicking natural hydrology in order to minimize the amount of pollution reaching our lakes, rivers and streams, and to recharge our ground waters. In order to successfully do so, standards are needed to create consistency in design and performance. In response to this need, and advanced by a diverse group of partners, the Minnesota Legislature allocated funds to “develop performance standards, design standards or other tools to enable and promote the implementation of low impact development and other stormwater management techniques.” (Minnesota Statutes 2009, section 115.03, subdivision 5c).

Minimal Impact Design Standards (MIDS) represents the next generation of stormwater management and contains three main elements that address current challenges:

- A higher clean water performance goal for new development and redevelopment that will provide enhanced protection for Minnesota’s water resources.
- New modeling methods and credit calculations that will standardize the use of a range of “innovative” structural and nonstructural stormwater techniques.
- A credits system and ordinance package that will allow for increased flexibility and a streamlined approach to regulatory programs for developers and communities.

The development of Minimal Impact Design Standards is based on low impact development (LID) — an approach to storm water management that mimics a site’s natural hydrology as the landscape is developed. Using the low impact development approach, storm water is managed on site and the rate and volume of predevelopment storm water reaching receiving waters is unchanged. The calculation of predevelopment hydrology is based on native soil and vegetation (Minnesota Statutes 2009, section 115.03, subdivision 5c).

What actions are needed to properly address Stormwater Management issues in Swift County and who are the Key Stakeholders?

The MPCA has put together a number of Best Management Practices (BMPs) guidelines for everyone from homeowners to industrial operations. Promoting them becomes an essential component of what Swift County can do to assist with minimizing stormwater pollution. The most effective solution to stormwater pollution is encouraging people to change the way they see and treat stormwater. The County should work with landowners in these areas to install BMPs to reduce runoff rates. The County should also consider developing a stormwater management ordinance, to set standards for the quality and quantity of runoff. Through land use controls, stormwater management plans should become increasingly important as a method to assist with minimizing pollution and managing temporary surface water.

Since the major stormwater management concerns are in the developed areas of the County, the various municipalities are the major stakeholders involved with properly addressing stormwater concerns. The Swift County Environmental Services Department and the Parks, Drainage, and Wetlands Department also play a large role in reviewing stormwater management plans for all types of rural development. At the State level, the Minnesota Pollution Control Agency is the largest stakeholder dealing with stormwater issues, largely due to its oversight responsibility with the Clean Water Act. For more information on MPCA’s stormwater rules, initiatives, and programs, please visit the following website:

www.pca.state.mn.us

H. Wetlands and Water Storage/Retention Assessment

Why are wetlands and water storage/retention a priority concern?

Wetlands in Swift County serve many important functions, including: flood attenuation, wildlife habitat, improved water quality, recreational opportunities and aesthetics. Although many of the County's Type 3 or larger wetlands remain, most of the County's Type 1 and 2 wetlands have been drained for agricultural production. Much of the wetland draining in the County occurred in the 1960s and early 1970s, when the Federal government's farm policies compensated agricultural producers up to 90 cents on the dollar to install artificial drainage systems. As result of these Federal government payments and policies, an extensive artificial drainage system was installed in Swift County. Recent developments in USDA's "Swampbuster" guidelines have led to a recent rise in agricultural wetland mitigation.

There are numerous water quality and quantity concerns directly related to wetlands and/or water retention issues. Their main water quantity value stems from the increasingly important water management philosophy of allowing water to be absorbed into the ground where it falls. Not only does this avoid overloading ditch systems and streams, thereby reducing erosion and flooding issues, they also provide an extremely value source of groundwater recharge. From a water quality perspective, wetlands provide a natural basin for stormwater management, acting as highly effective filters and providing erosion control. The vegetation found in wetlands help to remove phosphorous. This helps to minimize the unwanted growth of aquatic weeds and algae, which end up using the oxygen that plants and animals need to survive.

Retaining water in the upland will reduce the quantity and improve the quality of the water entering Swift County waterbodies. Water storage and retention practices will also help to reduce the quantity of water during peak flows, which can prevent damage to a waterbodies banks. In addition, residents and landowners located in floodplain zones would benefit from reduced peak flood elevations which can help to prevent damage to their property from overland flooding.

Wetlands Conservation Act

In 1991, the Minnesota Legislature passed Chapter 354, the Wetlands Conservation Act (WCA), which created a statewide "no-net loss" policy for wetlands (refer to Minnesota Rules 8420). The law requires anyone proposing to drain or fill a wetland to first try to avoid disturbing the wetland; second, try to minimize any impact on the wetland; and, finally, replace any lost wetland acres, functions and values. Certain wetland activities are exempt from the act, allowing projects with minimal impact or projects located on land where certain pre-established land uses are present to

proceed without regulation. A WCA exemption means the wetland area is exempt from the replacement provisions of WCA. It does not make it "free from regulation".

The WCA recognizes a number of wetland benefits deemed important, including:

- Water quality, including filtering pollutants out of surface water and groundwater, using nutrients that would otherwise pollute public waters, trapping sediments, protecting shoreline, and recharging groundwater supplies;
- Floodwater and stormwater retention, including reducing the potential for flooding in the watershed;
- Public recreation and education, including hunting and fishing areas, wildlife viewing areas, and nature areas;
- Commercial benefits, including wild rice and cranberry growing areas and aquaculture areas;
- Fish and wildlife benefits; and
- Low-flow augmentation during times of drought.

The Swift County Parks, Drainage, and Wetlands Department administers WCA locally. The Minnesota Board of Water and Soil Resources (BWSR) directs local governmental units statewide, provides technical assistance for WCA and oversight of the banking program.

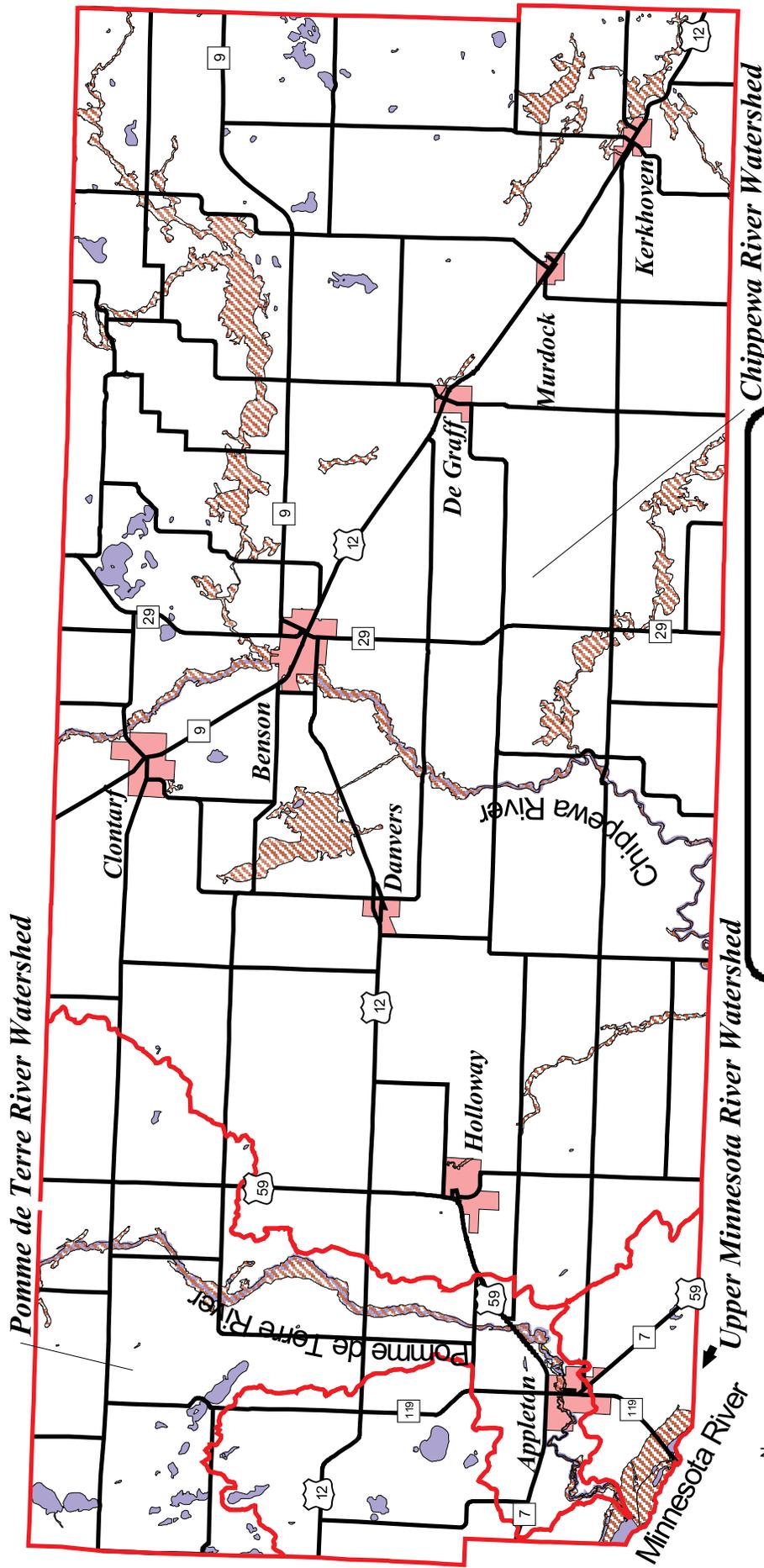
What actions are needed to properly address Wetlands/Water Retention issues in Swift County?

Today, due in part to regulations such as the WCA, the loss of wetlands has been greatly reduced. The State's Protected Waters Inventory, the Federal Swampbuster Act, and Section 404 of the Clean Water Act also largely contribute to protecting wetland resources. In addition, conservation programs, such as the Wetland Reserve Program (WRP) and Reinvest in Minnesota Program (RIM), provide landowners an opportunity to restore previously drained wetlands along with preserving existing wetlands. These programs, and others like them, should continue to be promoted to landowners within Swift County. Wetland restorations should also be targeted in conjunction with drainage ditch system improvements to assist with flood mitigation, water retention, and stormwater management.

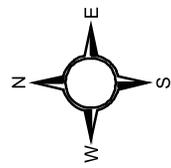
Flooding (Source: Swift County Hazard Mitigation Plan)

The most severe flooding in Swift County occurs along the Pomme de Terre and Chippewa Rivers when there is excess rainfall, ice blockage of the channels or rapid spring snowmelt (refer to Map 2G). Flood damage may also be associated with poorly maintained or undersized ditches, excess drainage or lack of retention structures. This affects agricultural land and road washouts.

Map 2G: Floodplain



	Major Watershed Boundaries		FEMA Floodplains
	Major Roads		100 year
	Lakes		500 year
	Rivers		
	Cities		



Source: MNDNR Waterbasins '1995, MNDOT Basemap '99,
 FEMA G3 Flood Data '1998
 Date: June 25, 2003
 Produced By: UMWVDC GIS Service Bureau

According to estimates by the US Army Corp of Engineers, Soil Conservation Service, and FEMA, there are approximately 26,761 acres in the 1% Chance Floodplain and 1,001 acres in the .05% Chance Floodplain in Swift County. Table 2E below identifies the number of floodplain acres throughout Swift County as determined by utilizing digital Flood Insurance Rate Maps from February 16, 2006.

**Table 2E:
Swift County's Floodplain Acres**

Jurisdiction	Total Acres	Acres in 1% Chance Floodplain	Acres in .05% Chance Floodplain	Total Acres in Floodplains	% of Jurisdiction in Floodplain
Swift County	481,502	26,761	1,001	27,762	5.8%
Appleton	1,325	96	23	119	9.0%
Benson	2,016	508	174	681	33.8%
Clontarf	1,344	63	0	63	4.7%
DeGraff	518	21	0	21	4.1%
Holloway	1095	70	0	70	6.4%
Kerkhoven	538	22	0	22	4.1%

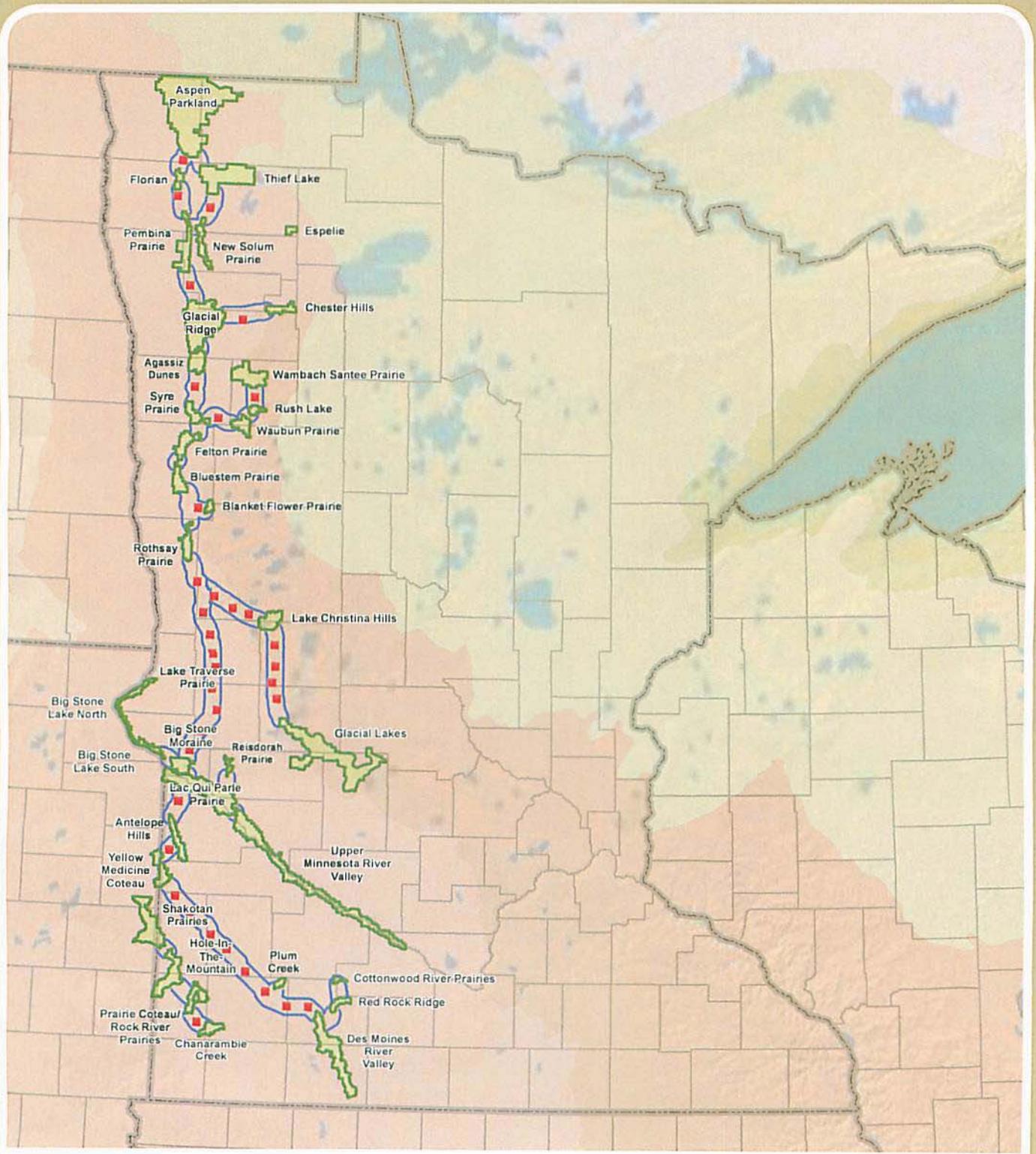
Source: FEMA dFIRM February 2, 2006

The cities of Appleton, Benson and Kerkhoven are particularly vulnerable to flooding. There is a 100-year floodplain along the Pomme de Terre River in Appleton. Benson and Kerkhoven have flooding due to seasonal buildup of ice or full drain basins. The townships of Big Bend, Hegbert, West Bank and Swenoda are also vulnerable to flooding.

Prairie Plan

the Minnesota Prairie Conservation Plan (2011) calls for three approaches to conservation in the Prairie Region of the State, which includes Lac qui Parle County. First, core areas with a high concentration of native prairie, other grasslands, wetlands, and shallow lakes were identified (refer to Map 2H). Within these core areas, partners will work to ensure a minimum of 40% grassland and 20% wetland with the remainder in cropland or other uses. Second, habitat corridors connecting core areas were designed that include grassland/wetland complexes nine square miles in size at about six mile intervals along and within the corridors. Within the corridor complexes a goal of 40% grassland and 20% wetland was set and for the remainder of the corridors, 10% of each legal land section is to be maintained in permanent perennial cover.

Map 2H: Prairie Core Areas



- Prairie Core Areas
- State
- County
- Potential Corridor Complexes
- Prairie Corridors



Third, in the remainder of the Prairie Region a goal to maintain 10% of each Land Type Association in perennial native vegetation was established. The existing wildlife management area plan, pheasant plan, duck plan and other resource plans provided guidance in setting goals for protection, restoration and enhancement in each conservation approach. These earlier plans set a habitat goal for the Prairie Region of protecting all 204,000 acres of native prairie while protecting and restoring a total of 2.0 million acres of grassland and savanna along with a 1.3 million acres of wetlands and shallow lakes.

Section Three: Groundwater Quality & Quantity

Why is Groundwater a Priority Concern?

Groundwater quality issues are at the forefront of environmental protection efforts, primarily due to groundwater being the main source of people's drinking water. The numerous multiple uses of groundwater, however, also contributes to groundwater quantity becoming an increasingly important resource concern. The farming community, for example, is dependent upon having adequate access to groundwater in order to produce high yield crops. Numerous business and industries are also dependent upon having adequate groundwater supplies. Poor groundwater quality and quantity supplies directly affect people's health and ability to generate income.

There is a vast amount of information available on both groundwater quality and quantity for Swift County. There are numerous stakeholders who are involved with groundwater issues, including the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, the Minnesota Department of Health, and the Minnesota Department of Agriculture. Their major roles regarding groundwater are explained and their groundwater data is summarized. The following groundwater information is separated into assessments for groundwater quality and groundwater quantity. Much of the information presented, however, applies to both assessments.

Did you know...?

- More than 70% of Minnesotans rely on groundwater for drinking water.
- As of 1990, an estimated 483,000 Minnesota residences used private wells to obtain water for their homes.
- As of 1990, there were 2,388 active community public water supply wells in Minnesota.
- In 1995, an estimated 700 million gallons of groundwater per day were withdrawn from Minnesota's aquifers (550 million gallons per day were permitted).
- As of 1989, contaminated groundwater cost 17 Minnesota cities and 18 Minnesota companies a total of \$67,072,000.
- As of 1994, there were an estimated 700,000 to 1.2 million unsealed, abandoned wells in Minnesota that could potentially serve as contamination pathways to harm Minnesota groundwater.
- As of May 1998, 100,000 unused wells have been sealed to protect Minnesota groundwater.

Source:

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/groundwater/groundwater-basics/about-groundwater.html>

I. Groundwater Quality Assessment

Minnesota Pollution Control Agency

In 1989, the Minnesota Pollution Control Agency (MPCA) received a grant from the Legislative Commission on Minnesota Resources (LCMR) to redesign Minnesota's ambient groundwater

monitoring program. The resulting program was called the Groundwater Monitoring and Assessment Program (GWMAP). GWMAP's primary objective was to meet statewide and local groundwater quality information needs. For over a decade the program endeavored to answer five basic questions about Minnesota groundwater quality:

1. What are background concentrations of chemicals in Minnesota's groundwater?
2. Where is the groundwater impacted by human activities?
3. What is the nature and severity of the impact?
4. Why is the groundwater impacted?
5. What can be done to minimize groundwater impacts?

Three components were created to facilitate answering these questions. The first component was a statewide baseline assessment of water quality in Minnesota's principal aquifers, conducted from 1990-1996. The second component involved conducting groundwater trend studies. The staff of GWMAP conducted a series of discussions and determined that changes in land use could be linked to trends in water quality. Consequently, GWMAP designed and conducted a variety of land use studies between 1996 and 2001. Groundwater studies were conducted throughout the State to evaluate impacts from different land use management strategies. The third and final component of GWMAP was the development of regional cooperatives. Between 1992 and 2001, GWMAP staff provided groundwater data and information to a variety of people and groups, as well as technical support to local groups conducting groundwater monitoring. The GWMAP program was discontinued in the summer of 2001. Although the program was discontinued, the results are still available by visiting the following website:

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/groundwater/groundwater-monitoring-and-assessment/index.html>

Swift County's GWMAP Results

In 1993 and 1994, the MPCA's Ground Water Monitoring and Assessment Program (GWMAP) sampled 132 primarily domestic wells in MPCA Region 4, which includes Swift County.

In summary, concentrations of most chemicals were greater in the surficial aquifers of Region 4 than in similar aquifers statewide. Nitrate was the primary chemical of concern in these aquifers. The major factors which increase the likelihood of having high nitrate concentrations are: agriculture, poor well construction (particularly large diameter wells), fractured bedrock near the land surface, groundwater recharge, and screening wells located near the top of aquifers.

For more information on GWMAP results for Swift County, visit the following link which takes you to the Baseline Results of Water Quality of Minnesota's Principal Aquifers for Region 4:

<http://www.pca.state.mn.us/index.php/view-document.html?gid=6294>

Minnesota Department of Agriculture

In 1989 the Minnesota Comprehensive Ground Water Protection Act (Minnesota Statutes 103H) expanded ground water protection responsibilities of the MDA, including specific direction regarding detection and trend monitoring following detection of agricultural chemicals. The Ground Water Protection Act mandated development of Best Management Practices (BMPs) for chemicals commonly found in ground water. Monitoring of the State's groundwater was to serve as the primary support to management decisions within that Plan. As a result, the MDA currently provides technical information and financial assistance to implement specific water-quality BMPs.

MDA Nitrate Water Testing Program - In 1993, the Minnesota Department of Agriculture developed a “walk-in” style of water testing clinics with the goal of increasing public awareness of nitrates in rural drinking and livestock water supplies. Results from the testing not only educate the participants, but also provide information on the occurrence of nitrate ‘hot spots’ across the State. This information is essential to help justify the significance of nitrate monitoring networks and programs. The clinic concept revolves around a number of simple principles: local participation is critical; testing is free to the public with immediate results; the overall program needs to be inexpensive; a non-regulatory atmosphere is important and well owners may remain anonymous; and the staff's most important goal is to provide the required technical assistance across a diverse audience of well owners. Since the beginning of the program, the Nitrate Water Testing Program has provided testing services and educational outreach to over 50,000 well owners. The concept has proven adaptable for county fairs, field day events, public school programs and ‘stand alone’ events. Past sponsors have been the Soil and Water Conservation Districts, U of M Extension Service, county health or environmental health services, county water planning, public schools, lake associations and farm organizations.

Swift County's 2011 Results (2012 summary results not yet available)

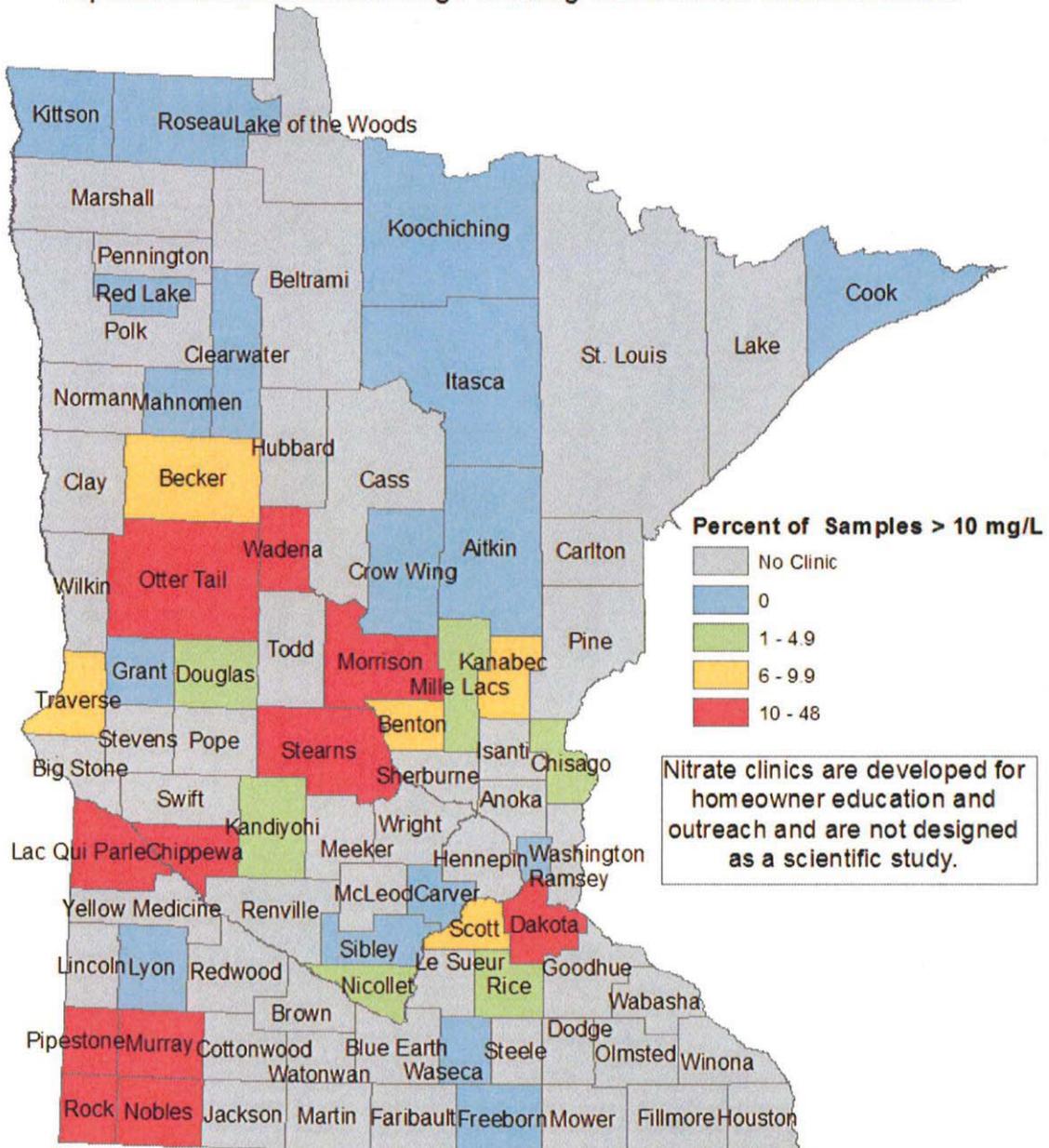
In 2011, over 2000 samples were analyzed from 41 counties throughout Minnesota, however, none took place in Swift County (see Map 2I). Table 2F shows the results of the 2011 Nitrate Testing Clinics for some of the counties near Swift County. Notice that statewide only 6.6% of tested wells had concentrations of nitrates over 10mg/L. The results were much higher for nearby counties, including Chippewa County (10%) and Lac qui Parle County (11.3%). For more information on MDA's Nitrate Testing Clinics, visit the following MDA website link:

<http://www.mda.state.mn.us/protecting/waterprotection/nitrate.aspx>

**Map 2I:
Statewide Map of Nitrate Clinics**

**2011 NITRATE CLINIC SUMMARY
PERCENTAGE OF NITRATE-N SAMPLES > 10 MG/L**

Be aware that nitrate clinic data have a high bias and do not represent Minnesota's average drinking water nitrate concentrations.



Prepared by the Minnesota Department of Agriculture 2012



Source: MDA's Nitrate Testing Clinic Program: 2011 Results Summary

**Table 2F:
2011 MDA Nitrate Clinics Testing Results for Nearby Counties**

County	Number of Samples	Minimum	Maximum	Median	Percentage of Nitrate Samples Over 10 mg/L
Chippewa	10	0	11.7	1.1	10.0
Grant	41	0	6.7	0.1	0.0
Kandiyohi	42	0	18.0	0.0	4.8
Lac qui Parle	53	0	13.7	0.0	11.3
Traverse	31	0	11.5	1.0	6.5
Overall	2093	0.00	72	0.7	6.6

MDA Pesticide Monitoring/Management Regions

In 2004 to facilitate water quality monitoring, pesticide management and BMP promotion, MDA, with assistance of the University of Minnesota, divided the state into 10 pesticide monitoring/management regions (PMRs). Swift County is in PMR 6, along with Stevens, Chippewa, Big Stone, Lac qui Parle, and Yellow Medicine counties.

The most sensitive ground water conditions in PMR 6 are alluvial river valley deposits of sand and gravel. A large outwash plain in the vicinity of Appleton is also of concern. The river valley deposits tend to be narrow and relatively thin with sandy surface soils and are highly valued where they exist. These areas display rapid infiltration of water from the soil surface to underlying ground water and contain little capacity to limit the downward movement of dissolved or suspended chemicals. Agricultural chemicals have been detected in these areas in reconnaissance sampling previously completed. PMR 6 currently contains 9 monitoring wells. Irrigated fields of corn and soybeans are prevalent in the areas of interest in PMR 6. Soils in the area typically have higher pH and low organic matter. Animal agriculture is increasing in the area although it is somewhat limited by the availability of adequate supplies of water. For more information on MDA’s pesticide monitoring, visit the following MDA website:

<http://www.mda.state.mn.us/chemicals/pesticides/maace.aspx>

MDA's Source Water Protection Web Mapping Application

The MDA has an online source water protection mapping application that was developed in cooperation between the Minnesota Department of Health (MDH) and intended for use as a visual aid to better understand where source water protection areas are located throughout Minnesota. The web map provides basic information to the general public of where their drinking water supply comes from, and probability to which it may be impacted by potential contamination sources. The web application identifies completed Wellhead Protection Areas (WHPA), Drinking Water Supply Management Areas (DWSMA), and Drinking Water Supply Management Area (DWSMA) vulnerability. Each of these categories is briefly described below. The interactive website can be viewed at the following address:

<http://gis.mda.state.mn.us/source/>

Wellhead Protection Areas

The fundamental goal of wellhead protection (WHP) is to prevent contaminants from entering public wells. To accomplish this goal, public well owners must first determine where the water supplying their well(s) is coming from this area is called the Wellhead Protection Area (WHPA). It can also be thought of as the recharge area to the public well and is ultimately the area to be managed by the WHP Plan. The process used to determine the WHPA boundaries is called delineation. An accurate WHPA delineation is critical to the overall success of WHP plans.

The WHP rule provides the framework and a minimum set of criteria to be considered for delineating WHPAs. These criteria are the technical factors which affect the size, shape, orientation, and location of the WHPA boundaries. There are five delineation criteria: 1) Time-of-Travel (TOT), 2) Aquifer Transmissivity, 3) Flow Boundaries, 4) Daily Volume of Water Pumped, and 5) Groundwater Flow. The Minnesota Department of Health (MDH) assigns staff in their Source Water Protection Unit to assist with preparing and implementing wellhead protection plans.

Drinking Water Supply Management Areas

The Drinking Water Supply Management Area (DWSMA) is the geographic area, including the Wellhead Protection Area (WHPA), which is to be protected and managed by the WHP Plan. Water suppliers use geographic landmarks, such as roads and property lines, to map the boundaries of the area so that it is identifiable to the general public.

Drinking Water Supply Management Area DWSMA Vulnerability

DWSMA Vulnerability identifies wells that should receive priority for source water protection efforts. Vulnerability assessments must address the following three components:

1. Geologic Sensitivity
2. Well Construction, Maintenance, and Use, and
3. Water Chemistry and Isotopic Composition (age dating).

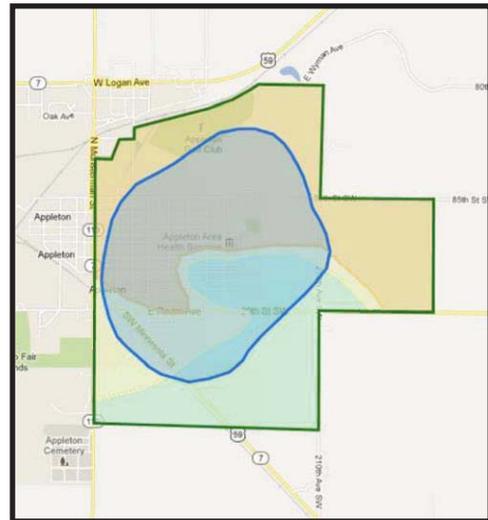
The Minnesota Department of Health (MDH) uses a vulnerability rating method in which points are assigned for conditions that represent a perceived risk to a well. Supply wells classified as *non-vulnerable* are required to manage contaminant risks that may enter the aquifer through other wells. Wells classified as *moderately vulnerable* must manage point source contaminant risks through other wells along with identifying underground hazardous chemical storage tanks. Wells classified *vulnerable* must manage all point source contamination risks and address land use activities that threaten the aquifer.

Swift County's Online Source Water Protection Areas

The MDA's online source water protection mapping application reveals two Source Water Protections Areas in Swift County for the cities of Appleton and Benson. The main information for each area is briefly summarized.

**Figure 2C: Source Water Protection Area
For the City of Appleton**

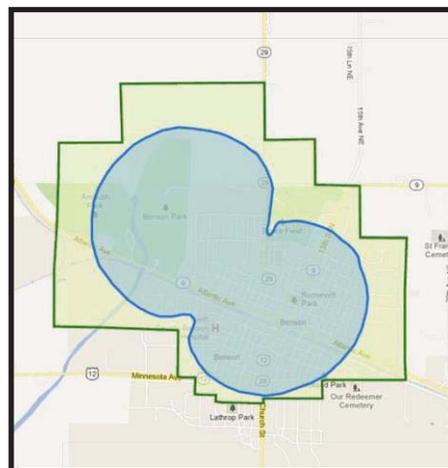
- **City of Appleton Source Water Protection Areas**
– The City of Appleton has a Wellhead Protection Area of approximately 506 acres that was delineated in 2007. This is shown as the inner blue circle in Figure 2C. It is estimated that it takes approximately 10 years for surface water to reach the aquifer. In addition, the City of Appleton has a Drinking Water Supply Management Area that is approximately 1,052 acres (the outer diagrammed boundary in Figure 2A). Of this, approximately 577 acres are classified as “High Vulnerability” to potential pollution, with an additional 162 acres classified with “Moderate Vulnerability.”



According to Minnesota State Statutes, all wells that are classified as high vulnerability must manage all point source contamination risks and address land use activities that threaten the aquifer. The moderate vulnerable wells must manage point source contaminant risks through other wells along with identifying underground hazardous chemical storage tanks.

**Figure 2D: Source Water Protection Area
For the City of Benson**

- **City of Benson Source Water Protection Areas -**
The City of Benson has a Wellhead Protection Area of approximately 852 acres that was delineated in 1999. This is shown as the inner blue circle in Figure 2B. It is estimated that it takes approximately 10 years for surface water to reach the aquifer. In addition, the City of Benson has a Drinking Water Supply Management Area that is approximately 1,458 acres (the outer diagrammed boundary in Figure 2D). All of the 1,458 acres are classified as “Moderate Vulnerability” to potential pollution.



Minnesota Department of Health’s Source Water Assessments

A Source Water Assessment (SWA) is a document - produced by the Minnesota Department of Health (MDH), provided to the public water system, and made available to the public - which summarizes a variety of information regarding the water sources used by a public water system. There are 26 areas in Swift County with SWAs (listed in Table 2G). SWAs normally include the following information:

1. A description of the drinking water source(s) used by the water system (i.e. your well or wells) and the area that contributes water to the source(s). This will include a map showing the location of the water source(s).
2. A determination of the "susceptibility" of your drinking water source to contamination. Susceptibility describes how likely it is that a water source may become contaminated. For wells, susceptibility is based on well construction, the type of aquifer that supplies the well(s) and previous water sampling results.
3. Drinking water contaminants of concern to anyone using the water source. For wells, this will be based on any detection of regulated contaminants during previous water sampling.

**Table 2G: Swift County's
Source Water Assessments**

Public Water Supply Name	Assessment ID	Known Contaminants of Concern?	Nearest City
DeGraff	1760004	None	DeGraff
Agralite Electric Cooperative	5760061	None	Benson
Kerkhoven	1760006	Potential	Kerkhoven
Brink's Beer Joint & Grill	5760083	None	Swift Falls
Web Cafe	5760076	Unknown	Benson
Lorenz Manufacturing Company	5760035	None	Benson
Fibrominn	5760085	None	Benson
Benson Municipal Airport	5760058	None	Benson
Claussen Properties, Inc.	5760060	None	Benson
Murdock	1760007	None	Murdock
St. John's Lutheran Church	5760069	Potential	Holloway
Prairie Pub	5760022	None	Clontarf
Ambush Park	5760081	None	Benson
Danvers Municipal Liquor Store	5760068	None	Danvers
Monson Lake State Park	5760063	None	Sunburg
Swift Falls Park	5760066	Potential	Swift Falls
PB & J's Bar and Grill	5760002	None	Sunburg
Trinity Lutheran Church	5760006	Potential	Holloway
Bethesda Lutheran Church	5760079	None	Murdock
Outdoors Inn	5760084	None	Benson
Benson	1760008	Potential	Benson
Appleton	1760001	Potential	Appleton
Ascheman Oil Company	5760059	None	Danvers
Chippewa Valley Ethanol Company	5760078	None	Benson
Holloway	1760005	Potential	Holloway
Shepherd of the Hills Lutheran Church	5760067	None	Benson

Source: <http://www.health.state.mn.us/divs/eh/water/swp/swa/swainfo/pdwgetpws.cfm>

Many of the sites identified in Table 2E are listed as having “potential” known contaminants of concern. This simply means that nearly potential pollutions sources are present in the inner wellhead management zone, such as an underground tank, sewer system, or similar potential pollution source. If “unknown” potential contaminants are listed, this simply means an inventory has not been completed.

Minnesota Department of Health

The Minnesota Department of Health’s (MDH) programs and monitoring activities have been mentioned throughout the Water Plan, but especially in the groundwater assessment section. This is because drinking water quality, and all of the subtopics that can be categorized under that, is the MDH’s main responsibility. Specifically, MDH is involved with the following water quality initiatives:

1. Maintaining Drinking Water Quality Data
2. Drinking Water Protection: Public Water Supplies
3. Drinking Water: Private Wells (Well Management Program)
4. Clean Water Funding Activities
5. County Well Index (online database)
6. Licensed/Registered Well Contractor Directory
7. Well Sealing/Unused Wells
8. Well Disinfection for Private Wells

In addition, the MDH produces an Annual Drinking Water Report, which is a summary of drinking water protection activities in Minnesota. According to the 2011 report (the most recent one online), fifteen community systems statewide were tested positive for bacteriological contamination (none in Swift County). Standard procedures were followed in all of these cases (i.e., disinfected, flushed, and retested) to ensure that any contamination problems had been eliminated. All of the residents served by the affected systems were informed of the situation. MDH’s website is full of a variety of water quality information and Best Management Practices. For more information on the Annual Drinking Water Report, visit the following website:

<http://www.health.state.mn.us/index.html>

Did you know...?

Unused wells that are not properly sealed can be a source of groundwater contamination, potentially affecting nearby drinking water wells. Groundwater is the main source of drinking water for three out of every four Minnesotans.

The Minnesota Department of Health (MDH) received \$500,000 from the Clean Water Fund for the 2012-2013 fiscal years (FY). This means \$250,000 for each year to use for sealing unused wells. This funding requires a 50 percent match from non-state sources. Well owners are paid up to half the cost of sealing unused wells.

The first \$250,000 was passed through to the Minnesota Board of Water and Soil Resources (BWSR) as part of their 2012 Clean Water Fund Competitive Grants. BWSR awarded nine grants to local governmental units to provide funding to well owners to seal unused private wells.

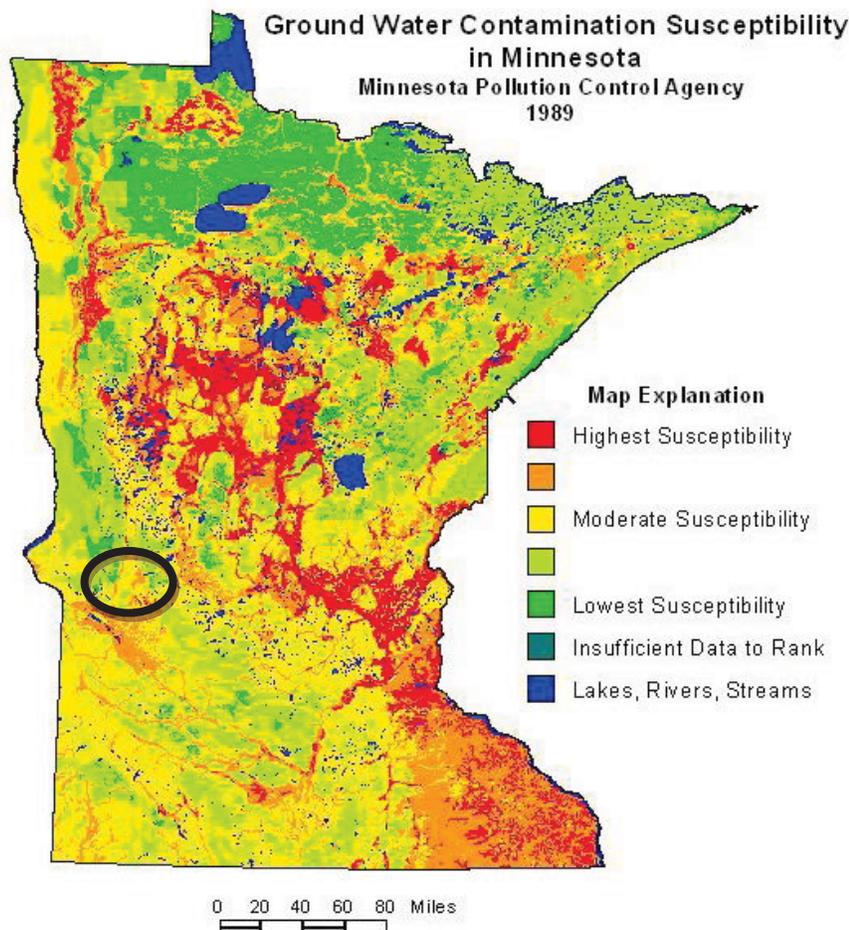
The second \$250,000 was awarded by MDH to seal 29 unused public water-supply wells for 19 different public water suppliers.

Minnesota Pollution Control Agency

In 1989, the Minnesota Pollution Control Agency published a statewide evaluation of ground water contamination susceptibility. The assessment, called “Groundwater Contamination Susceptibility in Minnesota, used four parameters (aquifer materials, recharge potential, soil materials, and vadose zone materials) to delineate areas of relative susceptibility to ground water contamination. The assessment method used Geographic Information System (GIS) technology.

Map 2E displays the results of the assessment. Notice that Swift County is located in an area of the State which is considered to have Moderate to High Susceptibility to groundwater contamination. For more information, visit the MPCA link listed below Map 2J.

Map 2J:
Groundwater Contamination Susceptibility



Source: www.dnr.state.mn.us/waters/groundwater_section/mapping/gwcontam_susceptibility.html

Minnesota's Groundwater Condition: A Statewide View (2007)

Ground water quality data collected in 2004 and 2005 by the MPCA and the Minnesota Department of Agriculture (MDA), served as the basis for evaluating the condition of Minnesota's ground water. The results were presented in the publication, "*Minnesota's Groundwater Condition: A Statewide View*" (2007). The following conclusions about ground water quality in Minnesota's vulnerable aquifers were made:

1. Ground water quality is generally good and in compliance with drinking water standards. However, human-caused impacts to ground water quality are apparent in many areas of the state.
2. In urban areas, especially the Twin Cities metropolitan area, Rochester and St. Cloud, elevated concentrations of chloride and nitrate and detectable concentrations of VOCs are common.
3. In rural and agricultural areas, nitrate concentrations are frequently elevated or exceed standards; and pesticides are commonly detected, though at concentrations that are nearly always less than applicable drinking water standards.
4. Areas of impacted ground water correlate well with land uses that are known to cause the observed quality impacts. The prevalence of elevated nitrate concentrations in ground water in regions dominated by agricultural land uses and in unsewered residential areas is particularly noteworthy.

According to the report, there are two key considerations for MPCA's future groundwater quality monitoring efforts that are worth highlighting:

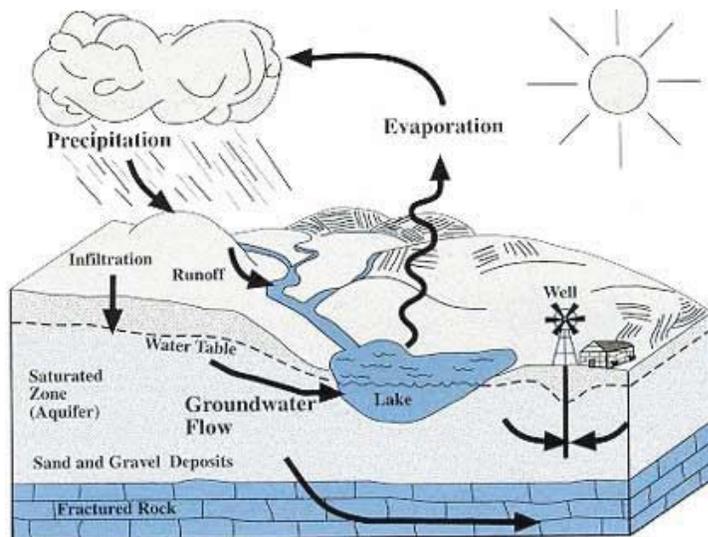
- There is a growing need to better incorporate ground water and surface water interaction into water resource management activities. Several Minnesota cities have struggled to maintain a reliable source of good quality water and found that their ground water quality problems resulted in part from the interaction with impacted surface water. The potential for ground water to improve (or potentially degrade) surface water quality is a factor that should be routinely evaluated as the MPCA undertakes investigation of Minnesota's impaired waters.
- Many new challenges will be faced by Minnesota's water resource managers as the 21st century unfolds. Chief among these is a changing and less predictable climate, rapid growth of impervious soil cover that reduces the land area where aquifers can be recharged, and an ever increasing demand for potable water. These challenges require that Minnesota water resource managers monitor ground water condition with an eye to the future, and make the critical step of linking land use activities with their impact on ground water, so that practices and guidelines can be developed that will protect this valuable resource.

J. Groundwater Quantity Assessment

Groundwater is an important part of the Hydrologic Cycle, commonly referred to as the water cycle (see Figure 2E). Groundwater is the part of precipitation that seeps down through the soil until it reaches rock material that is saturated with water. Water in the ground is stored in the spaces between rock particles. Groundwater slowly moves underground, generally at a downward angle (because of gravity). Some groundwater also seeps into streams, lakes, and other surface waters.

The world's total water supply is approximately 333 million cubic miles of water. Of this, over 96 percent is saline (or saltwater). The remaining 4 percent is freshwater. Over 68 percent of freshwater, however, is locked up in ice and glaciers. Another 30 percent of freshwater is in the ground. Fresh surface-water sources, such as rivers and lakes, only constitute about 22,300 cubic miles (93,100 cubic kilometers), which is about 1/150th of one percent of total water. Yet, rivers and lakes are the sources of most of the water people use every day.

Figure 2E:
The Hydrologic Cycle



For the most part, groundwater comes directly from precipitation or surface water that infiltrates into the subsurface (below the land surface). In turn, groundwater flows into many streams and lakes. Groundwater can be seen exiting from the subsurface as springs. But most commonly, we obtain groundwater from wells.

Source: www.pca.state.mn.us

Did you know...?

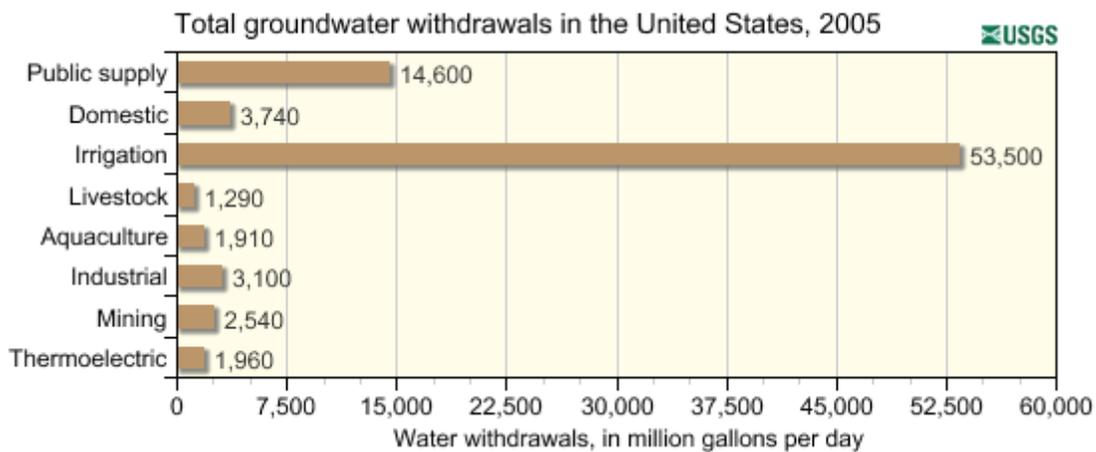
An article published in the Minneapolis Star Tribune on February 24, 2013, (***State Draining Water Supplies as Nature Can't Keep up with Demand***) highlights that groundwater quantity has increasingly become a problem. Wells are increasingly experiencing conflicts and in some cases are running dry. The compound problem is that demand is increasing in all sectors (i.e., residential, industrial, agricultural, etc.), while land use practices inhibit the replenishment of groundwater supplies. When surface water is drained and sent downstream, as is the case with drainage, it loses its ability to be recharged into groundwater supplies. Likewise, residential and commercial water uses are normally sent down the drain, which eventually ends up downstream.

United States Geological Survey (USGS)

The State Geological Survey (USGS) is a science organization that strives to provide impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change, and the core science systems that help us provide timely, relevant, and useable information. In 2005, the USGS produced a reported called, “*Estimated Use of Water in the United States in 2005.*”

According to the report, about 23 percent of the freshwater used in the United States in 2005 came from groundwater sources. The other 77 percent came from surface water. Groundwater is an important natural resource, especially in those parts of the country that don't have ample surface-water sources, such as the arid West. Figure 2F shows a bar chart of groundwater use by category for 2005. Most of the fresh groundwater withdrawals, 68 percent, were for irrigation, while another 19 percent was used for public-supply purposes, mainly to supply drinking water to much of the Nation's population. Groundwater also is crucial for those people who supply their own water (domestic use), as over 98 percent of self-supplied domestic water withdrawals came from groundwater.

**Figure 2F:
Groundwater Withdrawals by Category in 2005**



The USGS actively monitors streamflow data, drought conditions, and flooding status. Much of this information is updated regularly online, through the agency's WaterWatch Program. For more information on USGS and its role in water science, visit the following website:

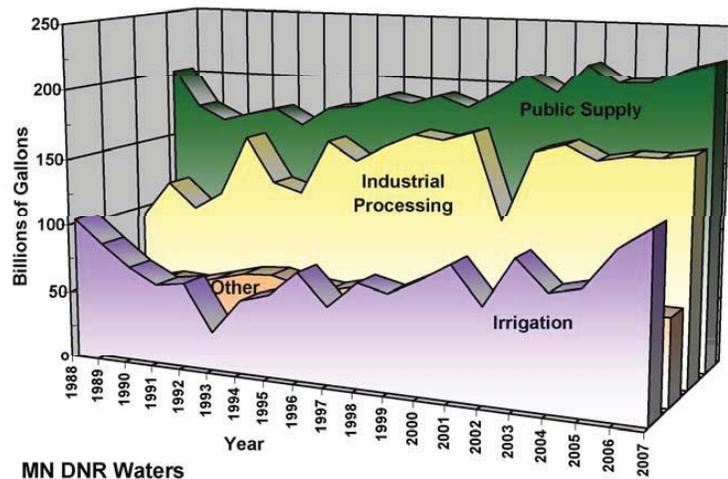
<http://www.usgs.gov/>

Minnesota's Groundwater Use

The Minnesota Environmental Quality Board (EQB) produced a report of statewide water availability in 2008, titled, “*Managing for Water Sustainability.*” According to the report, Minnesota water use has increased by 24% over the last 20 years as tracked by the Department of Natural Resources through the water permit program, while population has increased 22%. Figure 2G shows water use by major category in Minnesota from 1985-2007.

Figure 2G:

Minnesota Water Use
(excluding Power Generation) in Billions of Gallons



- **Public water supply.** Water distributed by community suppliers for domestic, commercial, industrial and public users. This category relies on both surface water and ground water sources. The increase in volume shown over the past 20 years correlates to a growth in population over the same period. Typically, residential water users consume 75 gallons per person per day. Public water supply accounted for approximately 16% of the total water used in 2007. It is estimated that water use from private household wells adds another 27.5 billion gallons to the public water supply annual use, representing slightly less than 2% of the total state water use.
- **Industrial processing.** Water used especially in mining activities, paper mill operations, and food processing, ethanol production, etc. Three-fourths or more of withdrawals are from surface water sources. Industrial processing used 12% of the total state water use for 2007. Based on ethanol facility water withdrawal reports provided to the DNR (1998-2006), Minnesota's ethanol industry achieved a 30% reduction in water demand; improving from an average of almost six gallons to about four gallons of water demand per gallon of ethanol produced. Progress has been made in reducing water use while also increasing the amount of ethanol produced from a bushel of corn.
- **Irrigation.** Water withdrawn from both surface water and ground water sources for major crop and noncrop uses. Nearly all irrigation is considered to be consumptive use. Of 7,000 active water appropriation permits, 73% are for irrigation. Irrigation represented 9% of the total permitted water use in the state, most of which (89%) came from ground water sources.
- **Other.** Large volumes of water withdrawn for activities, including air conditioning, construction dewatering, water level maintenance and pollution confinement. Collectively, these represented about 4% of Minnesota's 2007 total water use.

Land use within the Watershed is primarily agricultural, with 76% of the available acres utilized for production of grain crops, mainly corn and soybeans. Of these acres, approximately 15% have been tilled to improve poorly drained soils. The majority of the crop-lands (82%) are classified as moderately productive. Approximately 39% of the lands draining into the Upper Minnesota River have a high water erosion potential and 26% have the potential for significant wind erosion. Water erosion potential is highest on lands draining the Coteau region.

Key Stakeholder: Upper Minnesota River Watershed District

The Upper Minnesota River Watershed District is one of Minnesota's 46 active watershed districts (refer to Map 2C). The District was formed in 1967 and is especially important due to its role in managing the headwaters of the Minnesota River. There is approximately 505 square miles of land within the District. The area is distributed between the following five counties:

- Big Stone County – 410 square miles (81%).
- Traverse County, 40 square miles (8%).
- ***Swift County – 35 square miles (7%).***
- Lac Qui Parle County – 18 square miles (3%).
- Stevens County – 2 square miles (1%).

Subwatersheds within the District flow to the Minnesota River, some through Big Stone Lake and others directly to the Minnesota River. There are two main subwatersheds with that are partially located in Swift County: Artichoke Creek, Lake Oliver, Shible Lake, Marsh Lake, and Pomme de Terre River.

UMRWD Overall Plan's Objectives

According to the Upper Minnesota River Watershed District's Overall Plan (2013), the Watershed operates with the following objectives:

- To slow down weed and algae growth in the District's Lakes.
- To reduce the pollution of the water in the lakes and water courses within the District.
- To intelligently regulate the water levels of the managed lakes within the District.
- To keep adequate records of the water level, the chemistry, and other useful data.
- To enhance the recreational facilities and scenic beauty of the District.

The Minnesota Department of Natural Resources (DNR)

The Minnesota Department of Natural Resources (DNR) monitors the use of the State's water and allocates resources to assure there is sufficient quality and quantity to supply the needs for future generations. Under the DNR's Observation Well Network Program, groundwater levels are routinely measured in 750 wells statewide. The primary objectives of the observation well network are to:

- Place wells in areas of future or present high groundwater use while considering variations in geologic and other environmental conditions;
- Identify long-term trends in groundwater levels;
- Detect significant changes in groundwater levels;
- Provide data for evaluation of local groundwater complaints;
- Provide data to resolve allocation problems; and
- Identify target areas that need further hydrogeologic investigation, water conservation measures, or remedial action.

Swift County's DNR Observation Wells

There have been a total of 20 DNR observation wells located throughout Swift County since 1951. Table 2H provides an overview of the information regarding these wells contained in the DNR's online records. The Table reports on well depth, number of observations recorded, average depth to water, and the last recorded depth to water (including the date observed at the time of drafting this Chapter).

Minnesota Department of Health

The Minnesota Department of Health maintains the County Well Index database which has water-level data, such as location, depth, and static water level, from more than 300,000 wells statewide. Most of the data has been collected since 1974, when the program began. For example, Figure 2H shows the approximate well locations in Tara Township in Swift County. By clicking on each well online, one can view the Well and Boring Record. Information can also be searched by aquifer type. To access this data online, visit the following website:

<http://www.health.state.mn.us/divs/eh/cwi/>

**Figure 2H:
Online County Well Index**



Table 2H: Swift County’s Existing DNR Observation Wells

Number	Well Depth in feet	Nearest Town/Feature	1 st Monitored	Number of Observations	Average Depth to Water in feet	Last Recorded Depth to Water in feet (date)
76024	46	Appleton	1969	318	23	22 (5/6/13)
76025	132	Appleton	1969	317	18	17 (5/6/13)
76031	22	Appleton	1969	304	13	12 (5/6/13)
76048	37	Appleton	2010	25	22	24 (5/6/13)
76045	10	Appleton	1972	234	4	3 (5/9/13)
76047	22	Danvers	2010	25	8	8 (5/6/13)
76027	15	Danvers	1969	283	7	7 (5/6/13)
76016	157	Danvers	1979	352	16	14 (5/6/13)
76043	162	Clontarf	1989	235	10	8 (5/9/13)
76019	147	Benson	1979	354	9	10 (5/6/13)
76049	13	Benson	2010	25	4	2 (5/6/13)
76037	166	Clontarf	1984	294	4	5 (5/6/13)
76038	167	Clontarf	1981	234	2	1 (5/9/13)
76015	130	Benson	1979	354	7	6 (5/9/13)
76014	143	Benson	1979	327	11	9 (5/9/13)
76013	167	Benson	1979	376	8	12 (5/9/13)
76036	178	Benson	1984	295	13	14 (5/9/13)
76032	378	DeGraff	1980	297	5	8 (5/6/13)
76033	133	Swift Falls	1980	299	34	35 (5/9/13)
76034	231	Sunburg	1980	299	50	54 (5/9/13)

To access additional DNR’s groundwater quantity information, including more information on the DNR’s Observation Well Network, visit the following website:

http://www.dnr.state.mn.us/waters/groundwater_section/obwell/waterleveldata.html

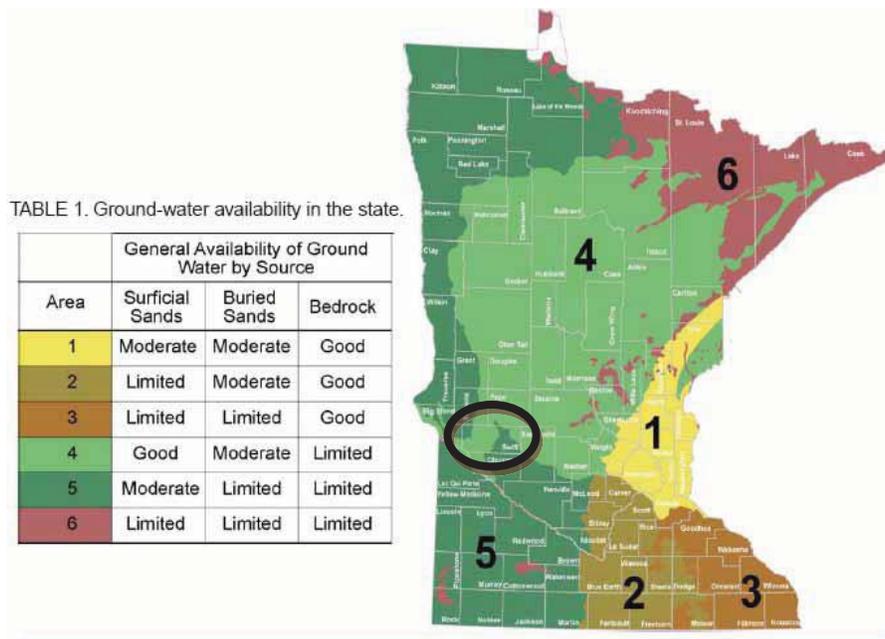
Did you know...?

An article published in the White Bear Press on July 18, 2012, titled, “DNR Considers Aquifer Action,” indicates the Minnesota Department of Natural Resources been holding staff-level discussions about whether to create one or more groundwater management areas in problem areas throughout Minnesota. According to the article, Minnesota Statute 103G.287 gives the DNR commissioner special authority to designate groundwater management areas, which could lead to changes in how groundwater is used. Furthermore, in 2010, the State Legislature mandated that public water suppliers serving more than 1,000 customers encourage its customers to reduce demand by adopting a water conservation rate structure. If groundwater management areas are formed, it will be a first for Minnesota.

Minnesota’s Groundwater Condition: A Statewide View

The Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Health (MDH) profiled Minnesota’s groundwater quantity in their 2007 report, “*Minnesota’s Groundwater Condition: A Statewide View.*” According to the report, groundwater, particularly ground water of adequate quality for drinking and other desired uses, has always been scarce in northwest and southwest Minnesota because of the natural geologic and hydrologic conditions in these areas. Figure 2I shows the availability of groundwater statewide. Notice that Swift County is rated as having mostly moderate to limited availability of groundwater.

**Figure 2I:
Availability of Groundwater in Minnesota (2005)**



County Atlas – Regional Assessment Program

The County Atlas - Regional Assessment Program exists to develop County Geologic Atlases and Regional Hydrogeologic Assessments. It is a joint program between the Minnesota Department of Natural Resources (DNR) and the Minnesota Geological Survey (MGS). The program creates maps and reports depicting the characteristics and pollution sensitivity of Minnesota’s groundwater resources. The main DNR online link for additional information is:

http://www.dnr.state.mn.us/waters/groundwater_section/mapping/index.html

County Geologic Atlas

A County Geologic Atlas is a systematic study of a county's geologic and groundwater resources (one has not been completed for Swift County). Geologic studies include both near-surface deposits and bedrock. Groundwater studies include flow systems, aquifer capacity, groundwater chemistry, and sensitivity to pollution. In some areas sand and gravel deposits, sinkholes, or other features are studied. The information is organized, analyzed, and displayed using GIS technology.

Atlas information is used in planning and environmental protection efforts at all levels of government. Source water protection and well sealing programs are examples of local programs that need geologic and groundwater information. Other typical uses include providing information for permit applications and plans and emergency response to contaminant releases. The information is also used by businesses and the general public.

Regional Hydrogeologic Assessment

A Regional Hydrogeologic Assessment is similar to an atlas in that both geology and groundwater are studied. However, a regional assessment covers a larger area--typically four to nine counties--in less detail. A regional assessment emphasizes near-surface geology, groundwater properties, and sensitivity to pollution.

Swift County's Map

Swift County was included in the Upper Minnesota River Basin Regional Hydrogeologic Assessment, which also included all of Chippewa, Lac qui Parle, and Yellow Medicine Counties, and parts of Big Stone, Lincoln, Lyon, Redwood, and Renville Counties. The Assessment can be divided into the following four mapped subsections, referred to as "Plates:"

Geology

1. Plate 1 – Surficial Geology (information contained in report or GIS layer)
2. Plate 2 – Quaternary Stratigraphy (information contained in report or GIS layer)

Hydrogeology

3. Plate 3 – Surficial Hydrogeology (map can be viewed online)
4. Plate 4 – Geologic Sensitivity to Pollution of Groundwater (map can be viewed online)

http://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/umrbrha.html

Groundwater Recharge Areas

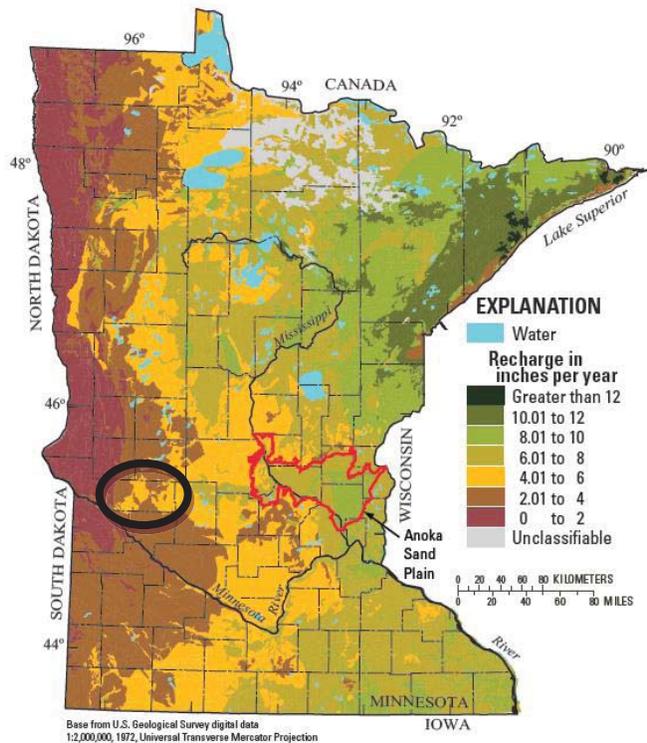
Groundwater recharge refers to how water enters back into groundwater supplies (refer to Figure 2E – The Hydrologic Cycle). Most potential water recharging the groundwater system moves rapidly into surface waters, however, some eventually reaches the aquifers. The USGS has produced a fact-sheet titled, “*Groundwater Recharge in Minnesota.*” Groundwater recharge is only between 2-6 inches per year in most of Swift County (refer to Figure 2J), compared to greater than 6 inches per year in the central and eastern parts of the State. This follows general trends in precipitation. In the western and northern parts of the State, where precipitation is the least (between 20-25 inches on average per year), recharge rates are also the least. In contrast, in the central and eastern parts of the State, where precipitation is greater than 30 inches per year, groundwater recharges rates increase to over 6 inches per year.

Recharge rates into unconfined aquifers are typically about 20-25 percent of precipitation. According to the United State Geological Survey (USGS), water at very shallow depths might be just a few hours old; at moderate depth, it may be 100 years old; and at great depth or after having flowed long distances from places of entry, water may be several thousands of years old.

The Minnesota Department of Agriculture submitted a Priority Concerns Input Form (found in Appendix B), that provided a number of key implementation suggestions for Swift County’s Water Plan. Of special significance, the MDA submitted Map 2K, which shows Swift County’s Water Table Sensitivity, commonly referred to as “groundwater recharge.”

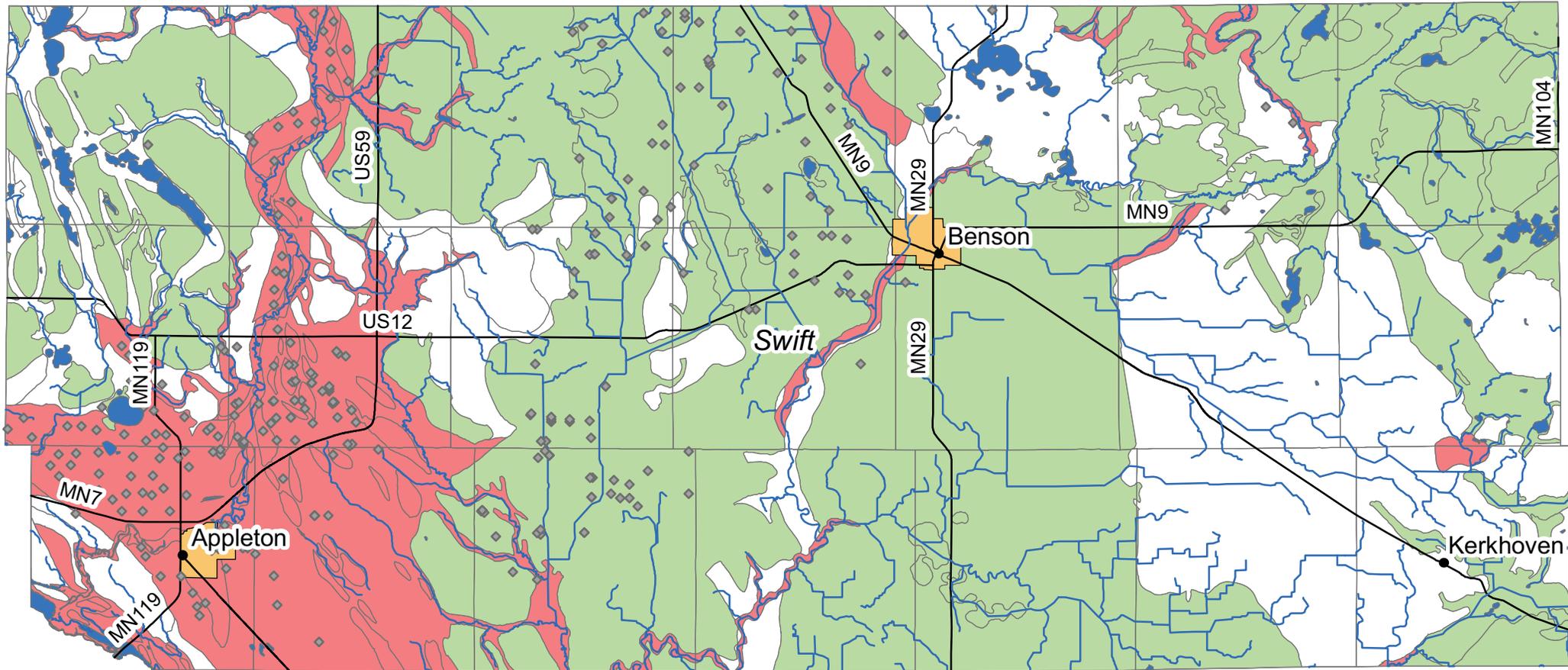
The map, shown on the next page, classifies the County into three aquifer sensitivity ratings: low, medium, and high. These reflect the likelihood that infiltration precipitation or surface water would reach the water table, potentially polluting the groundwater with surface contaminants.

Figure 2J:
Average Annual Groundwater Recharge Rates



Map 2K: SWIFT COUNTY WATER TABLE AQUIFER SENSITIVITY

Water Table Aquifer Sensitivity based on Sediment Association of Minnesota Geomorphology (DNR, 1997)



Legend

Water Table Aquifer Sensitivity

Rating

- No Rating
- Low
- Medium
- High

- Irrigation Wells
- DWSMA (MDH)

Landscape Features

- Streams and Ditches (DNR)
- Roads
- Water Features (DNR)
- Townships



Minnesota’s Groundwater: Is Our Use Sustainable?

The Freshwater Society, a public non-profit organization formed in 1968, published a special report in April 2013, titled, “*Minnesota’s Groundwater: Is Our Use Sustainable?*” The following highlights of the report are worth noting (also refer to Figure 2K):

- Minnesota cannot afford to continue increasing its groundwater consumption as we have over the last several decades.
- Pumping of Minnesota’s groundwater increased, on average, about 2.8 billion gallons each year from 1988 through 2011, a statistical analysis of reporting pumping estimates (refer to Figure 2H). Over that 23-year period, total reported groundwater use increased an estimated 31 percent, while the State’s population increased 24 percent. Pumping for agricultural irrigation increased about 1.5 billion gallons per year over that period, equaling a 73 percent increase.
- The DNR plans in 2013 to use a 3-year-old law to begin creating “groundwater management areas” in two heavily irrigated regions of the state, agency officials say. The agency hopes to win community support for intensive monitoring of the impact of existing pumping and, perhaps, support for future limitations on pumping.
- The connections between ground and surface water need to be studied. Specifically, groundwater recharge rates and the flow between aquifer systems need to be better understood.
- Agricultural irrigation is Minnesota’s second largest use of groundwater (behind municipal use), and it is by far the fastest growing segment of groundwater use.
- High commodity prices, high land prices, and incremental weather patterns, are likely to encourage more farmland to be irrigated.

Figure 2K:

MINNESOTA GROUNDWATER PUMPING TRENDS: 1988-2011

- Total groundwater pumping varied widely from year to year, but averaged about 235 billion gallons per year.
- Pumping by city water systems averaged 123 billion gallons per year, and averaged 53 percent of total reported groundwater pumping.
- Agricultural irrigation pumped an average of 63 billion gallons per year, averaging 26 percent percent of total reported pumping.
- Industrial pumping averaged about 22 billion gallons per year, averaging 9.5 percent of the total reported pumping.
- The next-biggest component of the total – a division the DNR calls “Special Categories” and that includes pollution containment, fish farms, snow making, livestock watering and sewage treatment – accounted for an average of 7.3 billion gallons pumped each year, about 3 percent of all groundwater use on average.
- Golf course sprinkling used an average of 4.7 billion gallons per year, 2 percent of total groundwater use on average.
- All other uses combined averaged about 14.7 billion gallons per year, 6 percent of the total on average.

Chapter Three: Swift County Water Plan Goals, Objectives & Action Steps (2014-2018)

This Chapter establishes the Swift County’s Water Plan Goals, Objectives, and Action Steps. Although the Water Plan will cover a span of 10 years (2014-2023), this Chapter of the Plan will guide the County in water resource management efforts over the first five years (2014-2018). Each Action Step has been assigned specific implementation information, including the priority watershed (if one was identified), stakeholders involved, and an estimated cost to implement the activity.

A. Definition of Goals, Objectives, and Action Steps

The Goals, Objectives, and Action Steps that are identified in this Chapter were developed with input from the public, various State and local governmental units/agencies, and the Swift County Water Plan Taskforce. The following provides a definition of these terms:

Goal: A goal is an idealistic statement intended to be attained at some undetermined future date. Goals are purposely general in nature.

Objective: An objective is an action-oriented statement that supports the completion of a goal. There may be more than one objective per goal.

Action Step: An Action Step is a specific activity that will be taken in order to achieve a goal and objective.

B. Action Step Information

Each Action Step identified in this Chapter has been assigned specific information on priority watershed(s), stakeholders involved, and the activity’s estimated cost. In addition, if a specific time-frame was identified (i.e., when the Action Step should be completed by) for each Action Step. Most of the Action Steps cover the entire 5-year duration of the implantation plan. The following Action Step descriptions also apply:

Priority Watershed(s): Details the areas within the County where the implementation of the initiative shall take place. “All” is listed for countywide implementation.

Stakeholder(s): This entails who potentially will be involved in the implementation of the identified initiative. An *Asterisk and Underline indicates lead responsibility. A listing of the most common coordinating agencies and their respective acronyms is provided:

All (refers to all water plan stakeholders)

Cities (Cities)

County (County)

- County Board (CB)
- Ditch Authority (DA)
- Environmental Services (ES)
- Parks, Drainage, and Wetlands (PD&W)
- Public Health (PH)
- Public Works (PW)
- Soil and Water Conservation District (SWCD)
- Water Plan Task Force (WPTF)

Minnesota Board of Water and Soil Resources (BWSR)

Minnesota Department of Agriculture (MDA)

Minnesota Department of Health (MDH)

Minnesota Department of Natural Resources (DNR)

Minnesota Geological Survey (MGS)

Minnesota Department of Transportation (MnDOT)

Minnesota Pollution Control Agency (MPCA)

Natural Resources Conservation Service (NRCS)

University of Minnesota Extension (UME)

United States Army Corps of Engineers (USACE)

United States Department of Agriculture (USDA) – Farm Service Agency (FSA)

United States Fish and Wildlife Service (USFWS)

Watersheds and Watershed Management-Like Organizations (WMLOs)

- Chippewa River Watershed (CRW) Project (CRWP)
- Pomme de Terre River (PdT) Association (PdTRA)
- Upper Minnesota River Watershed (UMRW) District (UMRWD)

Estimated Cost: This category divides the estimated costs of completing the Action Step into two columns: Overall and County. The Overall column provides an estimate of the total cost among all stakeholders (i.e., grants, cost-share, County match, etc.) to implement the Action Step. The County column represents the estimated cost incurred either directly or indirectly by Swift County to implement the Action Step, including by the Swift County SWCD. If an Action Item’s cost could not be estimated, a TBD appears in the column, which stands for To-Be-Determined. The costs are estimated over the five-year implementation time-span, which covers the period of 2014-2018. The tables also show the average annual amount which is simply the estimated overall five-year costs divided by five.

C: Goals, Objectives & Action Steps (2014-2018)

GOAL 1: TO ENSURE SWIFT COUNTY'S SURFACE WATER RESOURCES EXCEED MINIMUM WATER QUALITY STANDARDS				
Priority Watershed	Action Step	Stakeholders <i>*Local Lead</i>	Estimated...	
			Timeframe	Cost
Objective A: Maintain a Watershed Focus - Remove Swift County's water bodies from the MPCA's 303d List of Impaired Waters by 2030.				
Chippewa River & Pomme de Terre Watersheds	<p>1.A.1. Maintain a Watershed Focus. 1.A.1.a) Continue to work as a team to better understand, assess, and identify gaps related to the condition of the County's water resources.</p>	*ES, SWCD, CRWP, PdT, PD&W	2014-2018	\$10,000
Chippewa River & Pomme de Terre Watersheds	<p>1.A.2. Support Watershed planning, monitoring, and implementation. 1.A.2.a) Support Watershed planning, monitoring and implementation activities by providing financial (in-kind) assistance, technical assistance, and attending and participating in technical meetings (monthly) and special events.</p>	*ES, SWCD, CRWP, PdT, PD&W	2014-2018	\$75,000
Chippewa River, Upper Minnesota River & Pomme de Terre Watersheds	<p>1.A.3. Watershed Restoration and Protection Strategies. 1.A.3.a) Annually review monitoring data with the watersheds and implementation accomplishments to continue coordinating future initiatives. Participate and be informed via the watershed restoration and protection strategy; be an active participant as each watershed transitions to comprehensive watershed planning. i. <i>Pomme de Terre Watershed WRAP strategies – completed 2013.</i> ii. <i>Chippewa River Watershed WRAP strategies – planned draft 2014.</i> iii. <i>Upper Minnesota River Watershed intensive monitoring via MPCA beginning in 2015.</i></p>	*ES, SWCD, CRWP, PdT, PD&W, UMRW	2014-2018	\$10,000

Chippewa River & Pomme de Terre Watersheds	<p>1.A.4. Surface Water Quality Profiles. Work with stakeholders to profile surface water quality.</p> <p>1.A.4.a) Seek opportunities to refine watershed analysis and management strategies using detailed GIS information (Lidar & Terrain Analysis), water quality data, and other tools to guide plan actions, target implementation and augment funding from outside sources.</p> <p>i. <i>Support watersheds and County in obtaining needed GIS data.</i></p>	*ES, SWCD, CRWP, PdT, PD&W	2014-2018	\$50,000
Objective A 5-Year Overall Estimated Costs				
				\$145,000
Objective A Estimated Average Annual Costs				
				\$29,000

**GOAL 1: TO ENSURE SWIFT COUNTY'S SURFACE
WATER RESOURCES EXCEED MINIMUM WATER QUALITY STANDARDS**

Priority Watershed	Action Step	Stakeholders <i>*Local Lead</i>	Estimated...	
			Timeframe	Cost
Objective B: Partner with feedlot and livestock producers to identify priority sites to implement agricultural waste Best Management Practices.				
Countywide	<p>1.B.1. County Feedlot Program. Continue to locally administer the County Feedlot Program to assist feedlot operators in obtaining and maintaining compliance with State regulations.</p> <p>1.B.1.a) Target feedlot inspections in shoreland areas, focusing on the corridors of the Chippewa and the Pomme de Terre Rivers for open lot compliance.</p> <p>1.B.1.b) Inspect a minimum of 10% or 13 sites annually.</p> <p>1.B.1.c) Work with feedlot operators on registering sites.</p>	*ES, MPCA	2014-2018	\$170,000
Countywide	<p>1.B.2. Feedlot Education. Continue educational efforts focusing on current regulations, permit issues, and BMP programs.</p> <p>1.B.2.a) Host an annual educational meeting with feedlot operators.</p> <p>1.B.2.b) Include information in four (4) quarterly newsletters.</p>	*ES, SWCD, MPCA	2014-2018	\$10,000
East Branch Chippewa, Shakopee & Drywood Creeks	<p>1.B.3. Impaired Watershed Inspections. Prioritize annual inspections in Impaired Watersheds.</p> <p>1.B.3.a) Implement two (2) ag waste BMPs in impaired subwatersheds.</p>	*ES, SWCD, MPCA	2014-2018	\$15,000

<p>1.B.4. Feedlot BMP Implementation Program. Work with feedlot operators to implement ag waste/feedlot BMPs.</p> <p>1.B.4.a) Implement two (2) ag waste/nutrient management plans per year.</p> <p>1.B.4.b) Provide low interests loans for noncompliant feedlots. Target two (2) annually.</p> <p>1.B.4.c) Secure cost-share funding that includes technical assistance to install ag BMPs and nutrient management plans.</p> <p>1.B.4.d) Provide a \$1,000 cash incentive to producers with less than 300 animal units to update soil test records, manure tests and application records. Target three (3) producers annually.</p> <p>1.B.4.e) Upgrade one (1) feedlot annually with BMPs to eliminate runoff to nearby bodies of water.</p> <p>1.B.4.f) Provide cost-share for the closure of five (5) waste impoundments, such as lagoons or ponds, that are no longer being used for their intended purposes.</p> <p>1.B.4.g) Identify sites where grazing management improvements are needed. Provide cost-share for BMP's such as stream crossings, fencing, remote water systems, manage grazing plans, etc. Target one (1) landowner annually.</p> <p>1.B.4.h) Host a workshop on manure management and application.</p>	<p>*CRWP, PdT, ES, SWCD, NRCS, MPCA</p>	<p>2014-2018</p>	<p>\$125,000</p>
<p>Countywide</p>			

**GOAL 1: TO ENSURE SWIFT COUNTY'S SURFACE
WATER RESOURCES EXCEED MINIMUM WATER QUALITY STANDARDS**

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective C: Identify and mitigate pollution caused by wastewater and failing Subsurface Sewage Treatment Systems (SSTS).				
Countywide	<p>1.C.1. County SSTS Program. Continue to locally administer Swift County's SSTS Program.</p> <p>1.C.1.a) Work with 30 landowners annually on compliance inspections for new or existing systems.</p> <p>1.C.1.b) Host an annual meeting with SSTS installers and septic haulers on MN 7080 rules and regulations.</p> <p>1.C.1.c) Publish information in local newspapers and newsletters on proper maintenance and promote SSTS management plans.</p>	*ES, MPCA	2014-2018	\$350,000
	<p>1.C.2. Noncompliant Upgrades. Secure financial assistance programs to provide assistance for homeowners to upgrade noncompliant SSTSs.</p> <p>1.C.2.a) Secure MPCA and MDA funding to provide low interest loans to upgrade noncompliant SSTSs.</p> <p>1.C.2.b) Upgrade 10 noncompliant SSTS annually.</p> <p>1.C.3.c) Cost-share upgrading four (4) low income noncompliant systems annually.</p> <p>1.C.3.d) Inspect all SSTS in impaired subwatersheds.</p>	*ES, MPCA, CRWP, PdT	2014-2018	\$750,000
Objective C 5-Year Overall Estimated Costs			\$1,100,000	
Objective C Estimated Average Annual Costs			\$220,000	

**GOAL 1: TO ENSURE SWIFT COUNTY'S SURFACE
WATER RESOURCES EXCEED MINIMUM WATER QUALITY STANDARDS**

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective D: Work with landowner to identify priority sites to implement erosion and sediment control Best Management Practices.				
Countywide	<p>1.D.1. SWCD BMP Program. Provide educational, technical, and financial assistance, as available, to landowners for the implementation of erosion and sediment control BMPs.</p> <p>1.D.1.a) Install 80 acres of vegetative buffer filter strips annually. Target J.D. #19 and Shakopee Creek for participation.</p> <p>1.D.1.b) Install two (2) water and sediment control structures annually.</p> <p>1.D.1.c) Install five (5) alternative tile intakes.</p> <p>1.D.1.d) Install 1,000 feet of living snow fences annually.</p> <p>1.D.1.e) Install two (2) stream bank stabilization projects annually.</p>	*SWCD, MPCA, PD&W, CRWP, PdT, UMRW	2014-2018	\$110,000
Countywide	<p>1.D.2. Conservation Tillage. Promote conservation tillage and maintain existing acres throughout the County.</p> <p>1.D.2.a) Publish two (2) newspaper articles annually.</p> <p>1.D.2.b) Include information in annual newsletter.</p> <p>2.D.2.c) Make no till drills available to landowners/renters.</p>	* SWCD, MPCA, PD&W, CRWP, PdT	2014-2018	\$1,500
Countywide	<p>1.D.3. SWCD Tree Program. Continue with and expand the SWCD's Conservation Tree Program.</p> <p>1.D.3.a) Establish one mile of field windbreaks annually.</p> <p>1.D.3.b) Install five miles of weed control fabric annually.</p> <p>1.D.3.c) Produce an annual publication promoting the Tree Program.</p> <p>1.D.3.d) Establish ten (10) farmstead shelterbelts annually.</p>	*SWCD	2014-2018	\$38,000
Countywide	<p>1.D.4. Soil Health. Promote soil health by encouraging cover crops, no-till/minimum till, grazing, etc.).</p> <p>1.D.4.a) Publish information in annual newsletter.</p> <p>1.D.4.b) Target marginal land for BMP programs.</p>	*SWCD, NRCS, CRWP	2014-2018	\$500

Pomme de Terre Watershed	<p>1.D.5. Watershed Project Water Quality BMPs. Provide educational, technical, and financial assistance, as available, to landowners for the implementation practices in accordance to the Pomme de Terre Restoration and Protection Strategies document (completed 2013).</p> <p>1.D.5.a) Provide 75% cost share to install two (2) water and sediment control basins annually in the Drywood Creek subwatershed.</p> <p>1.D.5.b) Provide 75% cost share to install two (2) water and sediment control basins in the remaining watershed areas annually.</p> <p>1.D.5.c) Provide up to 75% cost share on alternative tile intake projects to prevent nutrient loading.</p> <p>1.D.5.d) Install five (5) stream bank protection or restoration practices to reduce soil erosion and turbidity which may include stream barbs, bankfull bench, and or other applicable practices</p> <p>1.D.5.e) Remove failed dam structure in Drywood Creek and identify other failed structures that may be removed (2014-15).</p>	*SWCD, PdT, NRCS	2014-2018	\$100,000
East Branch, Shakopec Creek, & Lower Mainstem Sub-basins of the Chippewa River Watershed	<p>1.D.6. Erosion Control BMPs. Partner with the Watershed Project on the promotion and implementation of focused BMP initiatives to manage erosion and sedimentation in impaired sub-basins.</p> <p>1.D.6.a) Install three (3) terrace structures.</p> <p>1.D.6.b) Install ten (10) water and sediment control basins.</p> <p>1.D.6.c) Provide up to 75% cost-share on intakes and pipe structures to control gully erosion on natural and designed channels. Goal: ten (10) structures annually.</p> <p>1.D.6.d) Target 500' of streambank for stabilization in an impaired stream segment and install bioengineering techniques such as tow mats, root wads and/or stream barbs to reduce erosion.</p> <p>1.D.6.e) Promote the use of cover crops in both row crop and grazing Systems; provide producers with a \$15 per acre incentive. Goal: Total acres with cover crops 3,000. Goal: Two (2) new land-owners participating each year. Landowners could participate multiple years.</p>	*CRWP, SWCD, PD&W	2014-2018	\$500,000
Objective D 5-Year Overall Estimated Costs				\$750,000
Objective D Estimated Average Annual Costs				\$150,000

**GOAL 2: TO EFFECTIVELY MANAGE SURFACE
WATER RESOURCES FOR MULTIPLE PURPOSES**

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...				
			Timeframe	Cost			
Objective E: Maintain the public drainage system to ensure agricultural production and environmental needs of water quality and habitat.							
Countywide	<p>2.E.1. Public Drainage System. Ensure that public drainage systems are operated and maintained in accordance with the State Drainage Law 103E.</p> <p>2.E.1.a) Identify where maintenance is needed and prioritize repairs.</p> <p>2.E.1.b) Re-determine the benefits on systems as requested.</p> <p>2.E.1.c) Maintain and update County Ditch Inventory to include details on each system. Continue to build electronic records.</p> <p>2.E.1.d) Investigate establishing a policy that would help to reduce negative impacts to a public drainage course from the improper installation and out-letting of private systems.</p> <p>2.E.1.e) Install ten (10) side inlets annually to control erosion and sedimentation and to maintain efficiency.</p> <p>2.E.1.f) Inventory, prioritize and recommend to ditch authorities areas suitable for filter strips.</p> <p>2.E.1.g) Submit Ditch Buffer Annual Report to BWSR as required. Work with non-compliant sites to meet compliance within one year (M.S. 103E.067).</p>	*DA, PD&W, SWCD	2014-2018	\$75,000			
	<p>2.E.2. Drainage Water Management BMP's. Provide educational, technical, and financial assistance, as available, to landowners for the installation of conservation drainage practices.</p> <p>2.E.2.a) Landowners utilizing public and private drainage will be urged to consider the use of new technologies in drainage water management such as, but not limited to: Saturated buffers, bio reactors, in line control structures, side inlets, and alternative intakes. Engage landowners one on one when requesting new drainage or maintenance projects.</p> <p>2.E.2. Continued...</p>				*SWCD, NRCS PdT, CRWP, PD&W	2014-2018	\$225,000

<p>2.E.2. Continued...</p> <p>2.E.2.b) Provide up to 75% cost-share on intakes and pipe structures to control gully erosion on natural and designed channels prioritized based on current water quality impairments and monitoring data. Implement ten (10) structures annually.</p> <p>2.E.2.c) Provide up to 75% cost-share to remove open tile intakes and replace with alternative intakes in priority subbasins prioritized based on current water quality impairments and monitoring data. Replace thirty (30) tile intakes annually.</p> <p>2.E.2.d) Provide up to 75% cost-share on water management control practices such as: Saturated buffers, bio reactors, in line control structures. Work with two (2) landowners annually.</p> <p>2.E.2.e) Annually engage contractors and tile installers on resources available to landowners regarding conservation drainage.</p>			
<p>2.E.3. Drainage Water Management Planning.</p> <p>2.E.3.a) Seek funding through the Clean Water Fund – Conservation Drainage Management to complete multipurpose drainage management planning for public drainage systems.</p> <p>2.E.3.b) With Chippewa County, seek funding to hire drainage engineering assistance to complete a public drainage system survey, inventory, and evaluation for J.D. 18 (Shakopee Creek and its ditch-shed).</p>	<p>*PD&W, DA CRWP, NRCS</p>	<p>2014-2016</p>	<p>\$100,000</p>
<p>Objective E 5-Year Overall Estimated Costs</p>			<p>\$400,000</p>
<p>Objective E Estimated Average Annual Costs</p>			<p>\$80,000</p>

**GOAL 2: TO EFFECTIVELY MANAGE SURFACE
WATER RESOURCES FOR MULTIPLE PURPOSES**

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective F: Manage stormwater pollution by identifying key stormwater issues and potential solutions.				
Countywide	2.F.1. Stormwater Management Plans. Encourage the development and implementation of Stormwater Management Plans providing draft guidance to small communities.	*ES, SWCD, PdT, CRWP, MPCA, Cities	2014-2018	\$20,000
Chippewa River Watershed, Pomme De Terre Watershed	2.F.2. Stormwater BMPs. Provide educational, technical, and financial support, as available, for the implementation of stormwater BMPs. 2.F.2.a) Design and install a demonstration rain garden in Appleton, Benson & Kerkhoven (2014). 2.F.2.b) Cost-share the design and installation of three (3) rain gardens annually in Appleton, Benson and Kerkhoven (2015-18). 2.F.2.d) Include educational and cost-share information in biannually newsletters. 2.F.2.e) Cost-share providing 50 rain barrels annually targeting municipalities.	*ES, CRWP, SWCD, PdT	2014-2018	\$45,000
Objective F 5-Year Overall Estimated Costs				\$65,000
Objective F Estimated Average Annual Costs				\$13,000

**GOAL 2: TO EFFECTIVELY MANAGE SURFACE
WATER RESOURCES FOR MULTIPLE PURPOSES**

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective G: Identify opportunities to preserve and restore wetlands and other water retention sites.				
Countywide	<p>2.G.1. Wetland Conservation Act Administration. Continue to locally administer the Minnesota Wetland Conservation Act.</p> <p>2.G.1.a) Ensure that wetlands are protected or mitigated properly during land use activities.</p>	*PD&W, SWCD BWSR	2014-2018	\$40,000
Countywide	<p>2.G.2. Wetland Restorations. Actively restore wetlands where water quality and quantity benefits outweigh the costs.</p> <p>2.G.2.a) Target the impaired subwatersheds for wetland restorations.</p> <p>2.G.2.b) Increase the number of Wetland Reserve Program easements by two (2) each year by targeting marginal farmland.</p> <p>2.G.2.c) Promote various wetland banking programs, such the Agricultural Wetland Bank program establish in 2012.</p> <p>Increase the number of wetlands in these programs by two (2).</p>	*SWCD, BWSR, CRWP, PdT, UMRW	2014-2018	\$20,000
Chippewa River Watershed	<p>2.G.3. Watershed Project Wetland Restorations. Work with stakeholders to restore wetlands.</p> <p>2.G.3.a) Implement five (5) wetland restorations.</p>	*CRWP, BWSR SWCD	2014-2018	\$50,000
Pomme de Terre Watershed	<p>2.G.4. Watershed Project Wetland Restorations. Work with stakeholders to restore wetlands.</p> <p>2.G.4.a) Implement two (2) wetland restorations.</p>	*PdT, BWSR SWCD	2014-2018	\$20,000

<p>Glacial Lake Core & LqP Prairie Core</p>	<p>2.G.5. Prairie Plan implementation. Participate in implementation of the Prairie Plan via prairie core area based conservation. 2.G.5.a) Assist in prioritizing parcels with local technical team. 2.G.5.b) Contact landowners. 2.G.5.c) Technical staff will be well versed in program options – helping landowners navigate program options.</p>	<p>*PdT, BWSR SWCD</p>	<p>2014-2018</p>	<p>\$5,000</p>
<p>Objective G 5-Year Overall Estimated Costs</p>				<p>\$135,000</p>
<p>Objective G Estimated Average Annual Costs</p>				<p>\$27,000</p>

GOAL 3: TO PROTECT SWIFT COUNTY'S AQUIFERS

Priority Watershed	Action Step	Stakeholders <i>*Local Lead</i>	Estimated...	
			Timeframe	Cost
Objective H: Implement Best Management Practices in Wellhead Protection Areas.				
Swift County Cities	<p>3.H.1. Wellhead Protection. Participate in the preparation and implementation of wellhead protection plans for public water suppliers in Benson and Appleton.</p> <p>3.H.1.a) Target groundwater BMP Programs in Wellhead Protection Areas, such as RIM, CRP, manure management and nutrient planning, abandoned well sealing and proper SSTS compliance.</p> <p>3.H.1.b) Incorporate Wellhead Protection Areas into local zoning maps. Make the maps available online and update annually.</p> <p>3.H.1.c) Work with cities on mutually agreed upon ordinance language for Wellhead Protection Areas.</p> <p>3.H.1.d) Target sealing all abandoned wells in Wellhead Protection Area. Implement two (2) annually.</p>	*ES, *SWCD, MDH, Cities	2014-2018	\$25,000
Objective H 5-Year Overall Estimated Costs				\$25,000
Objective H Estimated Average Annual Costs				\$5,000

GOAL 3: TO PROTECT SWIFT COUNTY'S AQUIFERS

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective I: Implement Best Management Practices to protect the quality and quantity of groundwater and ensure there is an adequate supply of drinking water.				
Countywide	<p>3.I.1. Groundwater BMP Program. Provide educational, technical and financial assistance, as available, to landowners for the implementation of groundwater protection BMPs.</p> <p>3.I.1.a) With each new irrigation system a conservation plan including nutrient management plan, pesticide management plan and water conservation plan will be completed.</p> <p>3.I.1.b) Incorporate Swift County's sensitive groundwater recharge areas map into to the local land use decision making process.</p> <p>3.I.1.c) Implement two (2) groundwater BMP projects into the local land use decision making process annually.</p> <p>3.I.1.d) Seal four (4) abandoned wells annually.</p> <p>3.I.1.e) Cost-share converting conventional irrigation systems to conservation systems. Implement ten (10) projects annually.</p> <p>3.I.1.f) Increase acres in Irrigation Management Program by 1,600 acres annually.</p>	*ES, NRCS, SWCD, MDH, MDA, UME, DNR	2014-2018	\$250,000

Countywide	<p>3.1.2. Groundwater Quality Monitoring. Assist with groundwater quality monitoring efforts and proactively enact measures to protect water supplies.</p> <p>3.1.2.a) Annually review monitoring data from the MDA, MDH and the MPCa and disseminate the information to the public.</p> <p>3.1.2.b) Request information from state agencies regarding gaps in groundwater quality monitoring. If gaps exist, partner with state agencies to establish additional monitoring wells and collect data.</p> <p>3.1.2.c) Continue to promote drinking water testing through the County's Public Health Department. Target four townships per year.</p> <p>3.1.2.d) Annually promote and conduct a Nitrate Testing Clinic with the MDA.</p>	<p>*ES SWCD, MDH, MPCA, PH, MDA, DNR</p>	<p>2014-2018 2014-2015 2014-2018 2014-2018</p>	<p>\$15,000</p>
Countywide	<p>3.1.3. Pesticide Container Collection. Environmental Services will inform/educate public regarding pesticide container collection opportunities.</p>	<p>*ES, PD&W, MDA</p>	<p>2014-2018</p>	<p>\$1,000</p>
Countywide	<p>3.1.4. Hazardous Waste. Promote the use of the Kandiyohi Regional Household Hazardous Waste (HHW) Facility – Willmar.</p>	<p>*ES</p>	<p>2014-2018</p>	<p>\$25,000</p>
Objective I 5-Year Overall Estimated Costs				
Objective I Estimated Average Annual Costs				
				<p>\$291,000</p>
				<p>\$58,200</p>

GOAL 3: TO PROTECT SWIFT COUNTY'S AQUIFERS

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective I: Work with Stakeholders to protect groundwater levels for multiple uses.				
Countywide	<p>3.I.5. Groundwater Quantity Monitoring. Assist with groundwater quantity monitoring efforts and proactively enact measures to protect water supplies, when appropriate.</p> <p>3.I.5.a) Continue to monitor 26 groundwater well test sites annually.</p> <p>3.I.5.b) Review data and make information available to public.</p> <p>3.I.5.c) Work with state agencies to inform the public on groundwater usage and irrigation impacts.</p>	*SWCD, DNR, MDA	2014-2018	\$20,000
Countywide	<p>3.I.6. County Geologic Atlas. Host a workshop every three years with the DNR and Minnesota Geological Survey on how best to incorporate the county's geologic and groundwater information into the land use decision making process.</p>	*ES, SWCD, DNR, MGS	2014, 2017	\$5,000
Countywide	<p>3.I.7. County Water Conservation Plan. Pursue funding to establish a Water Conservation/Drought Contingency Plan.</p>	*DNR, SWCD, ES, MDA	2015	\$8,000
			Objective I Average Annual Costs	\$33,000
			Objective I 5-Year Overall Estimated Costs	\$6,600

GOAL 4: TO EFFECTIVELY ADMINISTER THE WATER PLAN

Priority Watershed	Action Step	Stakeholders *Local Lead	Estimated...	
			Timeframe	Cost
Objective J: Engage the Citizens and Stakeholders on key water planning issues and implementation opportunities.				
Countywide	<p>4.J.1. Ongoing Issues and Programs. Properly raise awareness on key water planning issues and available BMP funding opportunities.</p> <p>4.J.1.a) Publish newsletters twice per year with County, SWCD, and Watershed partners.</p> <p>4.J.1.b) Promote water plan initiatives in the newspaper and radio a minimum of four times annually.</p> <p>4.J.1.c) Biannually update websites with current information.</p> <p>4.J.1.d) Annually plan to participate in a demonstration, tour, and/or workshop with partners that promote water plan initiatives.</p> <p>4.J.1.e) Annually host workshops on priority water planning issues.</p> <p>4.J.1.f) Annually promote BMP practices and available funding at the County Fair.</p>	*ES, SWCD, CRWP PdT	2014-2018	\$30,000
Countywide	<p>4.J.2. Water Plan Funding. Secure funding and stakeholder cooperation to properly implement the Water Plan's Action Steps.</p> <p>4.J.2.a) Seek Clean Water Funds and similar funding mechanisms to implement Action Steps.</p> <p>4.J.2.b) Ensure the County and other local partners are prepared to provide matching funds in order to qualify for BMP grants.</p>	*ES, SWCD, CRWP PdT	2014-2018	\$10,000
Countywide	<p>4.J.3 Watershed Focus and Stakeholder Cooperation. Partner with watershed/stakeholder groups on implementation activities.</p> <p>4.J.3.a) Annually attend watershed/stakeholder meetings. Participate in regular scheduled (monthly) technical advisory committee meetings.</p> <p>4.J.3.b) Invite watersheds/stakeholders to participate with local water plan initiatives.</p>	*ES, SWCD, CRWP, PdT, PD&W	2014-2018	\$15,000

Countywide	<p>4.J.4 Water Plan Task Force. Annually meet with the Task Force to review progress and to discuss current programs, upcoming projects and water plan activities.</p> <p>4.J.4.a) Implement base grant funds annually through the Natural Resource Block Grant.</p> <p>4.J.4.b) Update the Water Plan's Action Steps before the Plan expires in 2018.</p>	*ES, WPTF, CRWP, PdT	2014-2018	\$10,000
Countywide	<p>4.J.5 Continue to implement the County's Land Use Controls.</p> <p>4.J.5.a) Continue to implement the County's land use controls which include Floodplain, SSTS, Shoreland, Feedlot, and Solid Waste. Administer the programs locally and provide annual reporting to MPCA, DNR, and BWSR.</p> <p>4.J.5.b) Administer the Wetland Conservation Act (County & SWCD) and provide annual reporting to BWSR.</p>	*ES, PD&W, SWCD	2014-2018	\$ figures identified in previous actions
Objective J Average Annual Costs				\$65,000
Objective J 5-Year Overall Estimated Costs				\$13,000

Chapter Four: Water Plan Administration

Chapter Four contains information regarding the administration of the Water Plan, including plan coordination, implementation process and timeline, role of the County and other agencies in implementation, recommended changes to State programs, intergovernmental conflicts/resolution process, major and minor plan amendment procedures, and general information.

A. Plan Coordination

Managing Swift County's water resources involves cooperation with many local, State and Federal agencies, as well as citizens and special interest groups. For any water planning activity to be successful, a well-coordinated effort is needed. Swift County is committed to working with each of these entities to ensure proper management of its water resources.

Throughout the Water Plan, County departments, local government units, special interest groups, and State and Federal agencies are listed pertaining to specific water planning topics. In addition, each Action Step found in Chapter Three under the County's Water Plan Goals and Objectives, identifies the potential stakeholders involved with implementing each Action Step listed. It is hoped that the valuable cooperation that has been established in the past years will continue and be enhanced through properly implementing this Water Plan.

Swift County will ensure coordination and implementation of its Comprehensive Local Water Plan through the County's Environmental Services Department, along with support from the Parks, Drainage, and Wetlands Department. The Water Plan Task Force will also meet as needed to review progress, identify emerging problems, and to discuss needed grants. The Water Plan will also be supported by the County Board.

B. Implementation Plan and Priorities

Coordination of Water Plan activities will commence with the County Board adoption of the Plan. These activities will be conducted throughout the planning period identified as 2014 – 2023. Chapter Three of the Water Plan shall serve as the County's official Implementation Plan, and shall cover the first five years of the Plan (2014-2018). In 2018, Chapter Three will need to be updated to cover the years 2018-2023.

The SWCD annually prepares a Work Plan that is reviewed and approved by the Swift County SWCD Board of Supervisors. Many of the Action Steps identified in Chapter Three represent

commitments on behalf of Swift County that will take place on an ongoing basis. For example, administering the State’s Feedlot and SSTs regulations translates into being responsible for a variety of ongoing responsibilities. Conversely, many of the Action Steps identified in Chapter Three represent specific projects that would be implemented within a single year or over a few years. Table 4A provides a list of Swift County’s project implementation priorities (selected from the action items listed in Chapter Three) for the years 2014-2018.

**Table 4A:
Swift County Water Plan Project Implementation Priorities**

Priority	Action Step Number and Brief Description (refer to Chapter Three for more details)	Implementation Year Target
<i>Medium</i>	1.A.4.a) Watershed Analysis. Seek opportunities to refine watershed analysis and management strategies using detailed GIS information (Lidar & Terrain Analysis), water quality data, and other tools to guide plan actions, target implementation and augment funding from outside sources.	2014
<i>Medium</i>	1.B.1.a) Feedlot Inspections. Target feedlot inspections in shoreland areas, focusing on the corridors of the Chippewa and the Pomme de Terre Rivers for open lot compliance.	2014-15
<i>High</i>	1.B.4.g) Grazing Management. Identify sites where grazing management improvements are needed. Provide cost-share for BMP’s such as stream crossings, fencing, remote water systems, manage grazing plans, etc.	2015
<i>High</i>	1.C.2. Noncompliant Upgrades. Secure financial assistance programs to provide assistance for homeowners to upgrade noncompliant SSTs. 1.C.2.a) Secure MPCA and MDA funding to provide low interest loans to upgrade noncompliant SSTs. 1.C.2.b) Upgrade 10 noncompliant SSTs annually. 1.C.3.c) Cost-share upgrading four (4) low income noncompliant systems annually. 1.C.3.d) Inspect all SSTs in impaired subwatersheds.	2014-2018
<i>High</i>	1.D.1. SWCD BMP Program. Provide educational, technical, and financial assistance, as available, to landowners for the implementation of erosion and sediment control BMPs. 1.D.1.a) Install 80 acres of vegetative buffer filter strips annually. Target J.D. #19 and Shakopee Creek for participation. 1.D.1.b) Install two (2) water and sediment control structures annually. 1.D.1.c) Install five (5) alternative tile intakes. 1.D.1.d) Install 1,000 feet of living snow fences annually. 1.D.1.e) Install two (2) stream bank stabilization projects annually.	2018

Table 4 A *continued...*

<i>High</i>	1.D.5. Watershed Project Water Quality BMPs. Provide educational, technical, and financial assistance, as available, to landowners for the implementation practices in accordance to the Pomme de Terre Restoration and Protection Strategies document (completed 2013).	2014-15
<i>High</i>	1.D.6. Erosion Control BMPs. Partner with the Chippewa River Watershed Project on the promotion and implementation of focused BMP initiatives to manage erosion and sedimentation in impaired sub-basins.	2015
<i>High</i>	2.E.3. Drainage Water Management Planning. 2.E.3.a) Seek funding through the Clean Water Fund – Conservation Drainage Management to complete multipurpose drainage management planning for public drainage systems. 2.E.3.b) With Chippewa County, seek funding to hire drainage engineering assistance to complete a public drainage system survey, inventory, and evaluation for J.D. 18 (Shakopee Creek and its ditch-shed).	2014
<i>Medium</i>	2.G.5. Prairie Plan implementation. Participate in implementation of the Prairie Plan via prairie core area based conservation.	2014-2018
<i>High</i>	3.H.1.a) Groundwater BMPs. Target groundwater BMP Programs in Wellhead Protection Areas, such as RIM, CRP, manure management and nutrient planning, abandoned well sealing and proper SSTS compliance.	2015-2016
<i>Medium</i>	3.I.7. County Water Conservation Plan. Pursue funding to establish a Water Conservation/Drought Contingency Plan.	2015

C. Types and Sources of Water Plan Funds

Swift County recognizes the importance of comprehensive local water planning and the key role the County, township and city government must play in water planning decisions that impact water resources. The Water Plan’s Goals, Objectives and Action Steps are a reflection of the water resource concerns in the County. Implementation will be based on current needs, funding, and availability of staff.

The annual work plan will provide basic information on the actions intended to be implemented. The County realizes that completion of all Goals and Objectives requires staff and funds beyond the County’s budget. It is also understood that State funding cannot provide the funding for all

Goals and Objectives, therefore total stakeholder cooperation will be required. The County, through various sources, will pursue outside funding opportunities as they become available. To properly fund the implementation of the Water Plan and related activities, Swift County will rely on a combination of the following types and sources of funding:

- **Natural Resource Block Grant Funds**, including but not limited to:
 - ❖ **MPCA Feedlot Permit Program** - This program was created to protect water quality by improving animal waste treatment systems on feedlots. A county feedlot program is established by transferring of regulatory authority from the Minnesota Pollution Control Agency to the county. This transfer of authority is granted by statute and it allows the Minnesota Pollution Control Agency to "delegate" administration of certain parts of the feedlot program to counties. County feedlot programs have the responsibility for implementing state feedlot regulations including: registration; permitting; inspection; education and assistance; and compliance follow-up.
 - ❖ **Local Water Management Program** - The Comprehensive Local Water Management Program is a voluntary program that requires counties to use local task forces to develop and implement water plans based on local priorities.
 - ❖ **DNR Shoreland Management Program** - the State Shoreland Management Program was established to promote the wise development of shorelands in order to preserve and enhance the quality of surface waters, preserve the economic values of shorelands, and ensure the wise use of water and related resources.
 - ❖ **MPCA Subsurface Sewage Treatment Systems (SSTS)** - Based on 1997 changes to Minnesota Statutes, all counties are required to pass ordinances regulating Individual Sewage Treatment Systems countywide. In return, Swift County receives money annually to implement the SSTS Program.
 - ❖ **Wetland Conservation Act (WCA) Implementation** - The purpose of the Wetland Conservation Act (WCA) is to maintain and protect Minnesota's wetlands and the benefits they provide. The Board of Water and Soil Resources requires that under this grant program, a county must transfer a minimum of \$5,000 to the SWCD for WCA activities or a greater amount as agreed upon by the County and SWCD.
- **State, Local, and Federal Grants** – numerous grant funds and programs are made available to implement local water plan or related initiatives, including but not limited to Minnesota’s Clean Water Fund.
- **Local Governmental Unit (LGU) Funds/In-Kind** – Some water planning initiatives will require funds spent by the various LGUs involved. This will include cities,

townships, and watershed districts, along with Swift County. Numerous grant programs count the time spent by LGU representatives as an In-Kind expense.

- **Swift County Staff** – Swift County will continue to maintain a trained staff to properly implement the various Water Plan initiatives. This expense is normally considered as a cash contribution towards implementing various State and Federal Grant Programs.
- **Landowner Expenses** – Although many Water Plan Action Steps can be completed at no cost to landowners, some projects may require landowners to contribute a portion of the overall costs.
- **Stakeholder Participation** – The various stakeholders involved with implementing the Water Plan will also contribute funds and staffing, as available.

D. Recommended State Cooperation

In order to implement the goals and objectives set forth in the Swift County Water Plan, continued cooperation between the County and various State agencies is necessary. In an effort to increase coordination in this effort, the County makes the following recommendations:

1. Counties should continue to be notified of State agency program changes and the availability of funding; and
2. Data collected by State agencies should be readily shared with the County and other water plan stakeholders to avoid duplicative efforts; and
3. State agencies should continue to provide local and/or regional staff to assist local officials with agency programs; and
4. Fees collected at the County level should be allowed to remain within the County to administer and implement water-related programs; and
5. An annual listing of State agency staff that are assigned to water management planning should be created to facilitate increased coordination between local officials and agency staff; and
6. State agencies should provide greater flexibility to counties in setting annual work plan priorities. Priorities should be based upon current needs, funding, availability of staff and changes in State initiatives and regulations.

E. Intergovernmental Conflicts/Resolution Process

In the development of this Plan, there were no intergovernmental conflicts that arose. In the event that an intergovernmental conflict over the Water Plan does occur, the Swift County Board of Commissioners shall request the Swift County Water Plan Task Force to attempt to negotiate resolution of the conflict. If the Task Force does not resolve the conflict, the County shall petition the Board of Water and Soil Resources (BWSR) for a contested case hearing.

F. Water Plan Amendment Procedure

The Swift County Comprehensive Local Water Plan is intended to extend through the year 2023. If the County need to revise the Plan for any reason prior to a new Plan being developed, the County will need to follow Minnesota Statute 103B.314, Subdivision 6. In summary, copies of the proposed amendments (along with the date of the public hearing) need to be sent to BWSR, and local governmental units, and the State agencies for review. After the public hearing, BWSR must approve the amendments and copies shall be sent to the various stakeholders identified by State Statute.

G. Water Plan Key Stakeholders

The success of the County's Water Plan depends upon the collaborative efforts of multiple water plan stakeholders. This section briefly outlines some of Swift County's key Water Plan Stakeholders, including a link to the stakeholder's current website. *It should be noted that watershed organizations were profiled in Chapter Two.*

Swift County Soil & Water Conservation District (SWCD)

Swift SWCD is a local unit of government established under state law to carry out conservation programs at the local level. The SWCD works with Swift County landowners to help them manage and protect land and water resources on all private land and also assist with a variety of natural resource concerns. The Mission of the Swift Soil & Water Conservation District is "To promote, guide, and provide high quality technical assistance for Swift County and for the enhancement and protection of land and water resources through implementation projects that will lead toward effective conservation of soil and water." The Swift SWCD is responsible for administering the County's Water Plan. The SWCD office is co-located with the *USDA Natural Resource Conservation Service (NRCS)*. For more information on the Swift County SWCD, visit the following website:

www.swiftswcd.org

Swift County Environmental Services

The Swift County Environmental Services office provides three essential services for Swift County residents: Solid Waste; Planning and Zoning; and Water Planning activities. In addition, the County's Water Plan is housed in this department. The Environmental Office provides solid waste services which include:

- recycling
- composting
- landfilling
- household and hazardous waste

The Planning and Zoning area duties include:

- enforcement of the zoning ordinance and issuance of zoning permits
- feedlot ordinance compliance
- septic system inspections and permit issuance
- dealing with the administrative end of conditional use
- variance and rezoning and amending applications and procedures

For more information on Swift County's Environmental Services Department, please visit the following website:

www.swiftcounty.com

Natural Resource Conservation Service (NRCS)

The Natural Resources Conservation Service (NRCS) draws on a long history of helping people help the land. For more than 75 years, NRCS and its predecessor agencies have worked in close partnerships with farmers and ranchers, local and state governments, and other federal agencies to maintain healthy and productive working landscapes. The main connection to the Water Plan is the NRCS administers many of the Farm Bill's conservation initiatives. The Swift County NRCS is co-located with the Swift County SWCD. For more information, visit the following website:

<http://www.mn.nrcs.usda.gov/>

State Agencies

Many of Minnesota's State Agencies are involved with some form of environmental protection efforts, especially when it pertains to protecting Minnesota's water resources. A brief synopsis of their major water planning efforts are summarized below.

Board on Water and Soil Resources (BWSR) - The Minnesota Board of Water and Soil Resources (BWSR) was created in 1987, when the Legislature combined the Soil and Water Conservation Board with two other organizations with local government and natural resource ties: the Water Resources Board and the Southern Minnesota Rivers Basin Council. Upon inception, its membership included 17 members: representing soil and water conservation districts; watershed management organizations, counties, citizen members, agency members (University of Minnesota Extension Service, the Minnesota Department of Natural Resources, the Minnesota Department of Agriculture, the Minnesota Department of Health, and the Minnesota Pollution Control Agency). BWSR provides oversight of local Water Management Plans. For more information, visit BWSR's website:

<http://www.bwsr.state.mn.us>

Minnesota Department of Natural Resources (DNR) – The Department of Natural Resources (DNR) is a key water plan stakeholder in many ways. They assist with monitoring ground and surface water quantity, they are the permitting agency for water appropriations, and they are the main agency working with preventing the spread of Aquatic Invasive Species. In addition, they work with a variety of stakeholders, including the general public, on providing a vast amount of water resource education. For more information, visit the DNR website:

<http://www.dnr.state.mn.us/water/index.html>

Minnesota Pollution Control Agency (MPCA) - The Minnesota Pollution Control Agency (MPCA) helps protect our water by monitoring its quality, setting standards and controlling what may go into it. They assist with water surface and groundwater quality protection programs including ground water monitoring, stormwater management, municipal wastewater permitting, identifying Impaired Waters, solid and hazardous waste management, Subsurface Soil Treatment System (SSTS) management, and animal feedlot registration and enforcement. They also provide a vast amount of technical and educational assistance on Best Management Practices (BMPs) related to water quality protection and land use practices. For more information, visit MPCA's website:

<http://www.pca.state.mn.us/index.php/water/index.html>

Minnesota Department of Health (MDH) – The Minnesota Department of Health (MDH) is the primary State agency involved with monitoring and protecting ground and drinking water supplies. They have a vast amount of ground water quality data, and take the lead in developing Wellhead Protection Plans for public water suppliers. They also provide information on the importance of sealing abandoned wells and testing household wells for a variety of contaminants. For more information on MDH’s activities, visit MDH’s website:

<http://www.health.state.mn.us/macros/topics/environment.html>

Minnesota Department of Agriculture (MDA) – As a leading agricultural state with more surface waters than any other of the 48 contiguous states, and an abundance of clean drinking water, Minnesota is committed to helping farmers, homeowners, and industry protect these water resources. The MDA is responsible for or involved in many water quality programs and initiatives. These include, but are not limited to, the following:

- Agricultural Best Management Practices Loan Program. A low interest loan program administered by the MDA that helps finance water quality practices.
- Minnesota Clean Water Legacy Act. The MDA currently oversees several research projects aimed at making cleanup efforts more effective.
- Comprehensive Groundwater Protection Act of 1989. The MDA regulates most matters relating to pesticides and fertilizers.

The MDA has also developed the following website to assist with County Water Plans:

<http://www.mda.state.mn.us/en/protecting/waterprotection/waterplanning.aspx>

Appendix A:

Water Plan Supporting Documents

~ Resolution to Update the Swift County Water Plan ~

~ Notice of Plan Update ~

~ Water Plan Public Informational Meeting Sign-In Sheet ~

~ Water Plan Task Force Meeting Sign-In Sheet – 12-12-12 ~

RESOLUTION TO UPDATE THE SWIFT COUNTY COMPREHENSIVE WATER MANAGEMENT PLAN

WHEREAS, Minnesota Statutes, Chapter 103B.301, Comprehensive Local Water Management Act, authorizes Minnesota Counties to develop and implement a local water management plan, and

WHEREAS, the Act requires that a county update and revise their local water management plan on a periodic basis, and

WHEREAS, the Act encourages that a county coordinate its planning with contiguous counties, and solicit input from local governmental units and state review agencies, and

WHEREAS, the Act requires that plans and official controls of other local governmental units be consistent with the local water management plan, and

WHEREAS, Swift County has determined that the revision and continued implementation of a local water management plan will help promote the health and welfare of the citizens of Swift County, and

NOW, THEREFORE, BE IT RESOLVED, that the Swift County Board of Commissioners resolve to revise and update its current local water management plan.

BE IT FURTHER RESOLVED that Swift County will coordinate its efforts in the revision and update of its plan with all local units of government within the county, and the state review agencies; and will incorporate, where appropriate, any existing plans and rules which have been developed and adopted by watershed districts having jurisdiction wholly or partly within Swift County into its local water management plan.

BE IT FURTHER RESOLVED that the Swift County Board of Commissioners authorizes the establishment of a Water Management taskforce with the responsibility of revising and updating the plan and who shall report to the County Board on a periodic basis.

BE IT FURTHER RESOLVED that the Swift County Board of Commissioners delegates Swift County Environmental Services office the responsibility of coordinating, assembling, writing and implementing the revised local water management plan pursuant to M.S. 103B.301.

CERTIFICATION

**STATE OF MINNESOTA
COUNTY OF SWIFT**

I do hereby certify that the foregoing resolution is a true and correct copy of a resolution presented to and adopted by the County of Swift at a duly authorized meeting thereof held on the

5th day of June, 2012.


Name


Title

Notice of Decision to Revise & Update Swift County's Water Plan

Swift County Water Plan Stakeholder:

Swift County is currently in the process of updating their Comprehensive Water Plan. As a valuable water plan stakeholder, you are being asked to complete the attached Swift County Priority Concerns Input Form. Please feel free to only complete as much of the information as you want (you may have to "Enable Content" after you open the file in order to complete the form...Microsoft Word should prompt you to do this). Simply input your answers by typing into the boxes, save a copy of the document, and e-mail me back a copy by September 14, 2012. The County Water Plan Task Force will then use this information to help write the County's Water Plan.

In addition to completing a Priority Concerns Input Form, Swift County is holding an Open House for the County Water Plan on August 28, 2012. The Tuesday, August 28 open house will take place from 2:00 to 3:30 at the Swift County Courthouse in the Commissioner's Room. The meeting will be facilitated by Matthew Johnson from Midwest Community Planning, LLC.

Swift County has also created an online Water Plan Survey which can be accessed by the following link: <http://www.surveymonkey.com/s/Y88DTTY>

If you have any comments or questions, please contact Matthew Johnson at [\(320\) 212-2042](tel:3202122042) or by e-mail at midwestplanning@gmail.com

Please feel free to forward this email to anyone else who may be interested in Swift County's Water Plan. Thank you!

Matt Johnson, on behalf of Swift County

--

Matthew Johnson
Midwest Community Planning, LLC
P.O. Box 541 ~ Willmar, MN 56201
midwestplanning@gmail.com
[\(320\) 212-2042](tel:3202122042)

Swift County Water Plan

12-12-12

Name	Representing
Matt Johnson	Midwest Planning
Rick Gronseth	NRCS - USDA
Dary Klemm	Commisn Dist 2
SCOTT Collins	SWIFT Co.
Mike Johnson	Swift Co. P&D

Appendix B:

Water Plan Priority Concerns Input Forms

- **The Minnesota Department of Agriculture**
- **The Minnesota Pollution Control Agency**
- **The Minnesota Board of Water and Soil Resources**

Sep 11

Sip, Rob (MDA) <rob.sip@state.mn.us>

to **Jeff**, me, David, Scott

Matt,

The MDA has developed the following Water Plan website to discuss and illustrate MDA priority concerns and recommended courses of action for local county water plans. So, instead of a lengthy letter of recommendations and priority concerns, please go to the new website for MDAs information and guidance. Please also share this email with Swift County water plan staff. Once you and Swift County staff have a chance to review the website, please let me know what your thoughts are on the website. Your feedback will be helpful and is useful as the MDA further refines its recommendations and priority concerns in the future.

<http://www.mda.state.mn.us/en/protecting/waterprotection/waterplanning.aspx>

A map will be forthcoming for Swift County that relates to the Groundwater/Surface Water priority concern and the map intent is discussed at that section of the MDA water plan website above. Also, one other item of interest that is not highlighted in the weblink above is the issue of water conservation in all sectors of the local economy in light of the current drought situation. There is discussion about irrigation management but the MDA recommends additional

consideration given towards other non-agricultural areas that can reduce water usage.

Lastly, the MDA recommends that Swift County review its drainage policy if one exists or develop a drainage policy that utilizes the approaches discussed at the MDA water planning assistance weblink below. Incentives currently exist for landowners to implement a variety of drainage BMPs. The MDA encourages Swift County to work with the local SWCD and NRCS offices on outreach regarding the implementation of drainage BMPs.

<http://www.mda.state.mn.us/protecting/waterprotection/waterplanning/agdrainage.aspx>

Thank you and please contact me with any comments or questions.

Robert L. Sip
Environmental Policy Specialist
Pesticide and Fertilizer Management Division
Minnesota Department of Agriculture
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Water Planning Assistance

County Water Plans

In the State of Minnesota, the Board of Water and Soil Resources (BWSR) has oversight to ensure that county water plans are prepared and coordinated with existing local, and state efforts and that plans are implemented effectively. County Water Plans are a major tool for addressing water resource concerns in Minnesota. The Minnesota Department of Agriculture (MDA), through this website and via input on County Water Plans, seeks to provide current planning guidance and references to support the planning process.

The MDA has a role in protecting water quality as it relates to agricultural pesticides and fertilizers. We can provide technical information, financial assistance to implement specific programs, and education and outreach assistance.

At the beginning of the County Water Plan Update Process, State Agencies, including the Minnesota Department of Agriculture are invited to provide input, in the form of Priority Concerns to the County. MDA has selected five Priority Concerns to focus on in Minnesota.

The MDA has redeveloped its process to comment on local water plans and to provide comments to local units of government. The MDA appreciates the opportunity to work with counties and other partners on these local plans. This information is general guidance primarily focused on counties that are conducting 10-year water plan re-writes. The MDA will provide more specific comments to counties that are going through this process. Information provided may not specifically be applicable for 5-year water plan updates. For those counties working on the 5-year updates, the MDA may also provide detailed comments or guidance. In any case, MDA will work closely with the local unit of government to provide information.

Priority Concerns

[Agricultural Drainage, Wetlands & Water Retention](#)

[Agricultural Chemicals & Nutrients in Ground & Surface Water](#)

[Livestock & Manure Management](#)

[Agricultural Land Management](#)

[Targeting BMPs, Aligning Local Plans & Engaging Agriculture](#)

[MDA Contacts](#)



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Agricultural Drainage, Wetlands and Water Retention

Why is it important the plan focus on this concern?

Adequate drainage can be a critical component of a successful farm operation. High crop and land prices have the potential of increasing conversion of pasture and forage land to row crops, which in turn may lead to the installation of new drainage systems or drainage improvements to existing systems. New drainage and drainage improvements represent an opportunity to design and install systems in ways that help reduce nutrient losses into surface water and positively affect the timing and flows of drainage water into surface waters. These efforts combined with wetland restoration and water retention initiatives can have positive impacts upon water quality in agricultural landscapes.

What actions are needed for Agricultural Drainage?

Generally, local plans should provide guidance, objectives, goals and action items for further coordination of agricultural water management issues and Conservation Drainage (CD) implementation efforts at the local level. A number of CD practices exist to address water quality issues. There is no single CD practice that will address all agricultural drainage issues. However, multi-purpose approaches to managing water quality and quantity on the agricultural landscape using a suite of CD initiatives is the best approach. It is recommended that:

- Local plans discuss how CD practices can be utilized based on the drainage needs of the county coupled with associated water management issues.
- Local drainage authorities be proactive in encouraging the use of CD practices and designs during repairs and improvements of existing drainage systems.
- Redetermination of Benefits for ditch systems continue to be done in a proactive, consistent and systematic manner.
- Buffer initiatives continue to be implemented consistently and according to current drainage law.
- The local drainage authority continues to base drainage regulations on science and current best management practice knowledge.
- The local drainage authority consider multipurpose drainage approaches as developed by BWSR.

As a point of interest, a technical and scientific committee is currently addressing the effect of tiling upon flooding in the Red River Valley. Here's a [weblink](#) where two recent briefing papers can be viewed on this subject. This committee conducted an extensive literature review and developed a number of conclusions from the review in addition to a set of statements and recommendations from these papers. While this document and effort is specific to the Red River Valley, counties may find it useful to reference this report within the drainage discussion of draft water plan amendments or re-writes.

What actions are needed for Wetlands and Water Retention?

Properly locating wetlands and water storage or retention projects can be a strategic component of overall efforts to manage nutrients, sediments and water quantity issues. Counties may consider consulting with the Red River

Watershed Management Board – Flood Damage Reduction Workgroup to determine how flood damage reduction, retention and mitigation efforts have progressed in Northwest Minnesota in conjunction with wetland restoration (via various state and federal programs).

The Red River Valley has a long history of managing floodwater and constructing impoundments to manage floodwaters and significant insight could be gained by corresponding with this organization regarding water retention. A Technical and Scientific Advisory Committee as part of this Board has also developed a number of scientific papers on a variety of issues related to flood damage reduction. Specifically, counties should consider:

- Conducting/updating culvert inventories in conjunction with identifying where water retention projects can be constructed utilizing LIDAR and GIS technologies.
- Identifying projects where tile water from public drainage systems can potentially be used to augment long-term water levels in wetland restorations for water retention purposes.
- Working with local farmers on agricultural wetland mitigation banking initiatives and include agricultural sectors on overall wetland planning efforts.
- Identify areas where constructed wetlands can be located for treating tile drainage water.

What resources may be available to accomplish the actions for Agricultural Drainage, Wetlands and Water Retention?

- [MDA Drainage Information](#)
- [MDA Drainage Demonstration Sites](#)
- [Conservation Drainage Practices](#)
- [Conservation Drainage Designs](#)
- [University of Minnesota Drainage Research](#)
- [Board of Water and Soil Resources](#)
- [University of Minnesota Extension Service](#)
- [Red River Watershed Management Board](#)

What area(s) of the county is high priority?

All agricultural lands of the county.

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Groundwater and Surface Water Protection: Agricultural Chemicals and Nutrients/Water Use/Land Management in Wellhead Protection Areas

Why is it important the plan focus on this concern?

Agricultural chemicals may contribute to water pollution from runoff into surface waters or infiltration into groundwater. Contaminated groundwater and surface water can affect human health as well as ecosystem quality. The protection of drinking water is an important health issue as approximately 75 percent of Minnesotans obtain their drinking water from groundwater. In areas with vulnerable groundwater, nitrates may exceed the drinking water standard. Once the standard is exceeded, it may be difficult to reduce the levels of contaminants. Therefore, it is highly desirable to prevent contamination of groundwater from occurring through protective actions in areas with vulnerable aquifers.

In areas with elevated nitrates in groundwater it is important to reduce their concentration. Similarly, pesticides may be present in shallow vulnerable groundwater. Agricultural chemicals are also frequently a concern related to surface water impairments under the clean water act. The most common agricultural sources of excess nutrients in surface water are chemical fertilizers and manure. Such nutrients contribute to eutrophication in surface water and have been identified as a source of hypoxia in the Gulf of Mexico.

What actions are needed?

- Continue the sealing of abandoned wells in agricultural landscapes and prioritize efforts for ISTS upgrades in sensitive areas. Utilize the MDA Ag BMP loan program and cost-share programs to assist landowners in addressing these issues.
- Crop Irrigation - Encourage the conversion of older irrigation systems to low pressure. [MDA](#)

What resources may be available to accomplish the actions?

The MDA prepares specific maps for counties to assist in local groundwater protection efforts. The maps should be used to prioritize groundwater BMP implementation, protection and restoration efforts. The Water Table Aquifer Sensitivity map classifies the county into three aquifer sensitivity ratings: low, medium and high. These reflect the likelihood that infiltrating precipitation or surface water would reach the water table possibly bringing surface contaminants with it. Priority should be given to the Drinking Water Supply Management Areas (DWSAs), Wellhead Protection Areas and to the areas given a high aquifer sensitivity rating.

Nitrate concentrations found in MDA monitoring wells and wells in the County Well Index (CWI) are also shown on the map. Concentrations greater than 3 mg/L indicate nitrate concentrations above background levels, while concentrations greater than 10 mg/L are above the nitrate drinking water standard. Additional websites:

EVALUATE

- [Agricultural Chemical Monitoring and Assessment Programs](#)
- [Interactive Source Water Mapping Tool](#)
- [County Geologic Map Program](#)
- [Farm Nutrient Management Assessment Program \(FANMAP\)](#)
- [Nutrient Management Initiative](#)

PREVENT

- [Management Ideas for Wellhead Protection Programs](#)

[website on irrigation BMPs](#). The MDA recommends that this water plan consider the following items specific to irrigation:

- Develop and implement educational programs regarding water management in conjunction with nitrogen fertilizer management. Reference the following websites regarding coarse textured soils:
 - [Best Management Practices for Nitrogen on Coarse Textured Soils](#)
 - [Best Management Practices for Nitrogen Use - Irrigated Potatoes](#)
- Promote the establishment and data access of local climate stations to irrigators for ET (evapotranspiration) estimates.
 - [Water Quality BMPs for Agricultural Herbicides](#)
 - [Water Quality BMPs for Nitrogen Fertilizers](#)
 - [Private Well Testing for Pesticide Contamination](#)
 - [Nutrient and Manure Management Planning](#)
 - [Nutrient and Manure Management Tables](#)
 - [Precision Conservation](#)
- Promote the use and availability of irrigation scheduling software and record keeping.
- Promote the use of the county soil survey and other localized soils information in determining soil moisture holding capacity on a field-specific scale.
- Encourage the use of soil moisture sensors (moisture blocks, tensiometers, etc.) and other advanced tools for determining crop water stress.
- Fertigation (nitrogen applied through the irrigation water) is an excellent option for irrigators to distribute small amounts of nitrogen (20-30 lb/A). See the website above regarding coarse textured soils for details. Note that a fertigation permit and the proper backflow equipment is required by the MDA.
- Provide assistance in irrigation uniformity testing and nozzle calibrations.
- Provide nitrate testing services on irrigation water to help promote N crediting concepts and environmental protection. MDA staff can help provide equipment and technical assistance.
- Promote hybrid and crop selection that have lower water and/or nitrogen requirements.
- Conduct training sessions and workshops for farmers that have agricultural production activities within wellhead protection areas and drinking water supply management areas. Encourage the use of the Nutrient BMP Challenge, Nutrient Management Initiative and similar tools within these areas. More resources regarding [drinking water protection in agricultural settings](#).

What area(s) of the county is high priority?

Rural or agricultural areas that are actively growing crops/producing livestock, coarse textured soils areas and wellhead protection areas that have agricultural activity.

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[Home](#) > [Protecting Our Lands & Waters](#) > [Water Protection](#) > [Water Planning Assistance](#) > Livestock Manure Mgmt

Manure Management and Livestock Issues

Why is it important the plan focus on this concern?

Livestock manure used as fertilizer has benefited farmers for decades and if applied properly can meet crop nutrient requirements, build up soil organic material and decrease dependence on commercial fertilizers, increase soil fertility, and in some cases, reduce soil erosion. Manure as fertilizer is a constant reminder that we can reuse and recycle a product that was once thought of as a waste product with insignificant value. However, if manure is not properly applied it can lead to negative environmental impacts.

Manure, feed/silage leachate and milkhouse waste can be high in nutrient values, specifically pertaining to nitrogen and phosphorous. If improperly applied, manure does have the potential to contribute to nutrient loading and bacteria/viral levels of water sources. It is important for counties in the state to encourage the development of manure/nutrient management plans for the livestock producers within their borders. These plans address agronomic application rates for crops planted, buffered or protection areas around sensitive features, and reduce the potential of impacting surface or ground water.

Pasturing livestock is a common practice among livestock producers. Several studies and research through the University of Minnesota show that livestock grazing, if done properly, can enhance the quality of grazing lands. As your county is aware, pasture areas are often those areas that are not conducive to farming and generally contain sensitive landscape and surface water features. Nutrients left by livestock serve as a fertilizer source to pasture plant species, which then utilize and filter the nutrients rather than the nutrients being in excess and exiting the area in the form of runoff.

Types of vegetation, length of time in a pasture, stocking density and water availability are all issues livestock producers must be continued to be educated, in order to produce and utilize a productive, environmentally sound pasture or grazing system. Pastures or grazing systems not managed properly can restrict or eliminate vegetative growth and cover, which in turn can result in potentially negative water quality issues.

Producers in watersheds that are impaired due to fecal coliform/E coli impairments need to be encouraged to be involved in TMDLs developed in the region. Local producer involvement on water plan advisory committees and water quality initiatives will provide additional insight into how producers can work with agencies to improve water quality.

What actions are needed?

- Continue and renew education and outreach efforts on manure/nutrient/pasture management planning and implementation. Work closely with local NRCS staff on this issue as well as regional MPCA staff.
- Encourage livestock producers to work with Technical Service Providers and/or Certified Crop Advisors to better utilize and understand the value of using GIS/GPS technologies in developing:
 - Manure management plans.
 - Comprehensive nutrient management plans
 - Pasture management plans

- Rotational grazing plans
- Encourage involvement from livestock producers located within impaired watersheds and vulnerable areas in the landscape. One such approach may be the development of a [local agricultural advisory committee](#).
- Continue and/or make it a priority to provide technical and financial assistance for livestock producers to assist them with adopting best management practices to reduce impacts from manure runoff and manure storage structures or areas.
- Encourage livestock producers to participate in an on-farm environmental assessment program. A number of livestock producer groups in the state have specific programs that are available to their members. The [Livestock Environmental Quality Assurance \(LEQA\)](#) program is available to all livestock producers in Minnesota. LEQA is an on-farm environmental assessment and results in a water quality score for a farm.

As ecosystem services are better defined, producers that participate in an on-farm environmental assessment may be better situated to participate in future water quality or ecosystem services trading markets.

What resources may be available to accomplish the actions?

- [MDA Ag BMP Loan Program](#)
- [Sustainable Ag Loan Program](#)
- [NRCS Cost Share Programs](#)
- [BWSR Cost Share Funds](#)
- [MPCA 319 Grants](#)
- [Minnesota Rural Finance Authority Loans](#)
- [Livestock Environmental Quality Assurance Program \(LEQA\)](#)

What area(s) of the county is high priority?

Feedlots with open lots in shoreland or near sensitive water features and land where manure is applied in shoreland or near sensitive water features. Pasture areas located adjacent to shoreland areas.

Contacts/Resources:

[MDA Livestock Resources](#)

[MPCA Feedlot Program](#)

[University of Minnesota Manure Management and Air Quality Education and Research](#)

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Agricultural Land Management

Why is it important the plan focus on this concern?

The MDA recommends voluntary approaches to addressing soil loss and soil erosion issues and offers some suggestions as outlined below to engage agricultural producers in your county. Many advances have been made over the past decades to assist crop and livestock producers in managing their lands, including both from a technological and scientific standpoint. Advancements have also been made in recent years regarding seed technology, nutrient placement and timing of application, crop physiology research and overall land management, including improved soil and water management techniques. However, on certain soils, steep slopes, hydrologic settings or unique landscape features, there may be a need for additional voluntary measures to be implemented.

What actions are needed? What resources may be available to accomplish the actions?

The water plan should consider including discussion about how to further encourage voluntary initiatives, such as the use of:

- Enhanced use of [Precision Agricultural Technologies \(PCT\)](#). While adoption of PCT has been widely adopted and accepted by many agricultural producers, there may be additional opportunities to further encourage the voluntary use of PCT in various agricultural settings of the county.
- [Cover crops](#) when appropriate. The use of cover crops may not be conducive to every crop rotation or landscape setting. However, certain cover crops can be beneficial for soil quality improvements, erosion control and soil fertility.
- Innovative [residue management](#) techniques that are crop rotation appropriate and designed to fit the needs of individual farming operations.
- Survey tools. The MDA developed a diagnostic tool a number of years ago called [Farm Nutrient Management Assessment Process \(FANMAP\)](#) to get a clear understanding of existing farm practices regarding agricultural inputs such as fertilizers, manures and pesticides. The use of FANMAP or other survey tools may be useful in certain areas of the county when working on a minor watershed basis. Contact the MDA for more specifics about how FANMAP can be used in your county.
- Enhanced promotion of buffer strips, filter strips, water and sediment and control basins and grassed waterways in areas with steep slopes, coarse soils and other high priority areas. The MDA realizes that resources are needed to accomplish promotional and educational initiatives to encourage the adoption of these types of practices. Your county may want to partner with other local units of government in promoting higher levels of adoption for the above mentioned BMPs.

What area(s) of the county is high priority?

All agricultural areas of the county. Specifically important for areas with steep slopes or coarse soils.



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[Home](#) > [Protecting Our Lands & Waters](#) > [Water Protection](#) > [Water Planning Assistance](#) > Targeting BMPs

Targeting of BMPs, Aligning Local Plans and Engaging Agriculture

Why is it important the plan focus on this concern?

Technical, financial and staff resources are becoming more difficult to retain and obtain. As resources are scarce, the targeting of agricultural BMPs and conservation structures to the most vulnerable areas of the landscape is critical. The goal should be to target conservation practices to the areas of the landscape where they will be most effective to meet local and regional water quality and ecosystem goals and objectives.

New tools and technologies are making it possible to [target conservation practices](#) to specific areas of the landscape. State agencies are working together to support the development of new technologies and to make them available to local partners through training and online resources. This area of research is developing and more tools such as digital terrain analysis, are made available each year. These resources should be used whenever possible. A multi-faceted approach to implementing BMPs on the landscape is an important component of preserving, conserving, enhancing and sustaining water and natural resources. It is recommended that consideration be given towards further developing and enhancing relations with all local conservation partners to align goals, objectives and outcomes of local plans to meet local water quality goals.

It is recommended that the authors of the local water plan continually review and acknowledge areas of shared concern and opportunity between complementary plans and to foster new partnerships. Considerations should be given for further engaging the agricultural sector while developing new plans or updating existing plans. Agricultural producers involved with local TMDL implementation plans, local water management plan advisory committees, NRCS local workgroups and other local committees can provide additional insight into agricultural landscape management.

What actions are needed?

- Utilize targeting tools and technologies to locate BMPs and conservation structures using the targeting tools.
- Consider and implement multifaceted approaches to working with agricultural producers.
- Further engage local partners on conservation implementation such as NRCS staff, local conservation groups, lake associations, etc.
- Foster new relationships with the agricultural sector or enhance existing relations. Consider joint meetings of NRCS local work groups and local water management plan advisory committees.

What resources may be available to accomplish the actions?

Agricultural producers are key stakeholders in working with local, state and federal agencies on implementing positive changes within the agricultural landscape. The [Clean Water Fund Activities](#) website was developed to encourage producers to become involved at the local level with impaired waters issues.

The [Minnesota Conservation Funding Guide](#) provides more detailed information about funding opportunities. This guide complements, but does not replace the customized local expertise available via SWCDs and other local units

of government to landowners throughout Minnesota. The guide provides contact information for Minnesota's 90 local SWCDs and other organizations that help landowners plan and implement conservation.

The [Minnesota Agricultural Water Resource Center](#) may be able to provide additional expertise on engaging agricultural producers in your county.

What area(s) of the county is high priority?

All areas of the county.

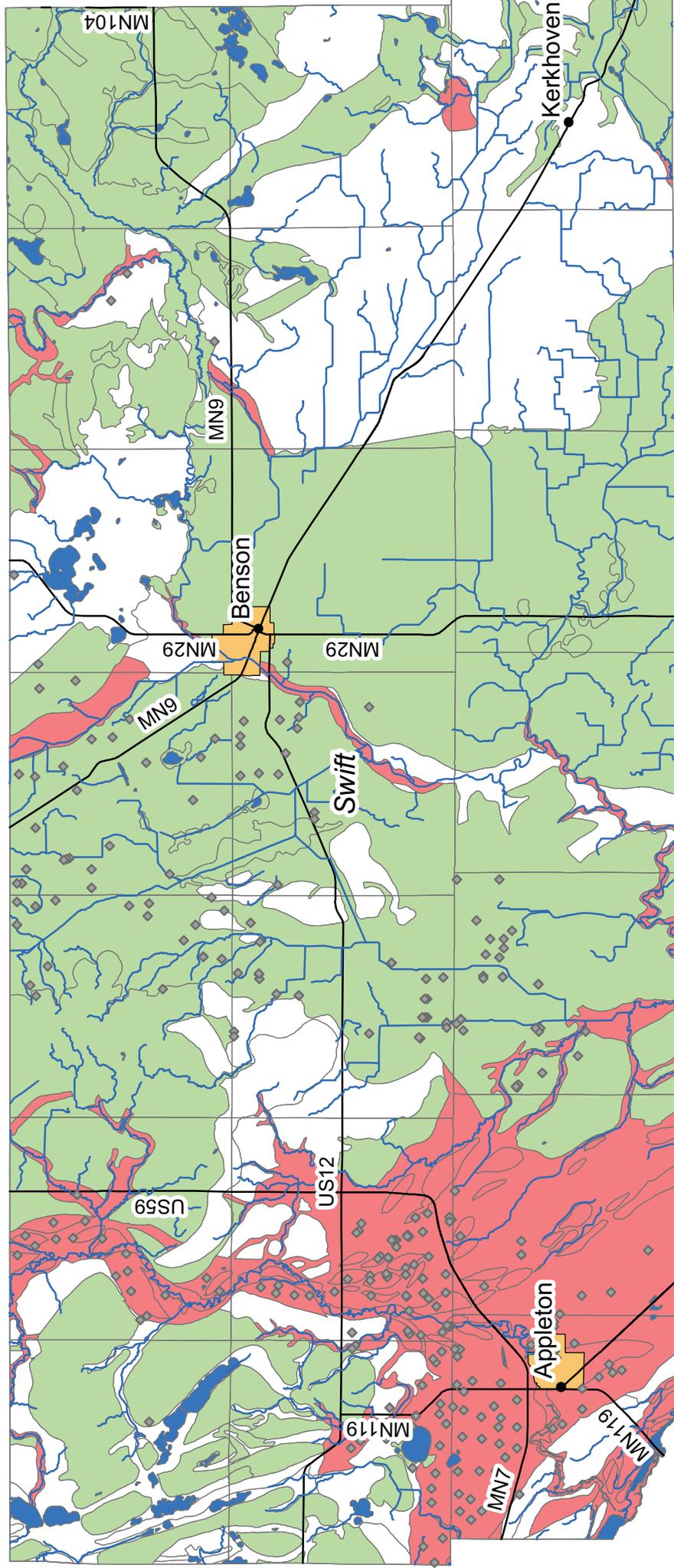
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SWIFT COUNTY WATER TABLE AQUIFER SENSITIVITY

Water Table Aquifer Sensitivity based on Sediment Association of Minnesota Geomorphology (DNR, 1997)



Legend

Water Table Aquifer Sensitivity	Landscape Features
Rating	Streams and Ditches (DNR)
■ No Rating	— Roads
□ Low	■ Water Features (DNR)
■ Medium	□ Townships
■ High	◆ Irrigation Wells
	■ DWSMA (MDH)

0 2.5 5 10 Miles





Minnesota Pollution Control Agency

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September 6, 2012

Mr. Matthew Johnson
Midwest Community Planning, LLC
P.O. Box 541
Willmar, MN 56201

RE: Swift County Priority Concerns
Local Water Management Program

Dear Mr. Johnson:

The Minnesota Pollution Control Agency (MPCA) is pleased to provide Priority Concerns for consideration in Swift County's (County) Local Water Management (LWM) planning efforts. We trust these Priority Concerns will be helpful with developing the forthcoming Priority Concerns Scoping Document (PCSD) and Local Water Management (LWM) Plan.

1. Impaired Waters/Total Maximum Daily Loads (TMDL)

The federal Clean Water Act requires states to adopt water quality standards to protect the nation's waters. These standards define how much of a pollutant can be in a surface and/or groundwater while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes. Many of Minnesota's water resources cannot currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources.

Addressing impaired waters in LWM plans is voluntary. However, the MPCA strongly encourages counties to consider how their LWM plans address impaired waters, as identified on the "Final List of Impaired Waters" available on MPCA's website at:

<http://www.pca.state.mn.us/water/tmdl/tmdl-303dlist.html#finalist>

It is suggested the LWM Plan:

- identify the priority the County places on addressing impaired waters, and how the County plans to participate in the development of Total Maximum Daily Load (TMDL) pollutant allocations and implementation of TMDLs for impaired waters
- include a list of impaired waters and types of impairment(s) (see table below)
- identify the pollutant(s) causing the impairment (see table below)
- address the commitment of the County to submit any data it collects to MPCA for use in identifying impaired waters, provide plans, if any, for monitoring as yet unmonitored waters for a more comprehensive assessment of waters in the County
- describe actions and timing the County intends to take to reduce the pollutant(s) causing the impairment, including those actions that are part of an approved implementation plan for TMDLs

Regional TMDL reports for mercury have been approved by the U.S. Environmental Protection Agency (EPA.) Therefore, MPCA recommends counties address waters listed for pollutants/stressors other than mercury in their LWM plans.

The 2010 list of Impaired Waters in the County is provided in the table below.

Clean Water Act Section 303 [d] List of Impaired Waters in the County.

Reaches

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Chippewa River, East Branch: Mud Cr to Chippewa R	07020005-514	AqRec	Fecal Coliform	TMDL Approved
Chippewa River, East Branch: Mud Cr to Chippewa R	07020005-514	AqLife	Turbidity	TMDL Required
Chippewa River: E Br Chippewa R to Shakopee Cr	07020005-506	AqCons	Mercury in Fish Tissue	TMDL Approved
Chippewa River: Shakopee Cr to Cottonwood Cr	07020005-507	AqCons	Mercury in Fish Tissue	TMDL Approved
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqLife	Fishes Bioassessments	TMDL Required
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqRec	Fecal Coliform	TMDL Approved
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqLife	Turbidity	TMDL Required
Chippewa River: Unnamed cr to E Br Chippewa R	07020005-505	AqCons	Mercury in Fish Tissue	TMDL Approved
Dry Wood Creek: Dry Wood Lk to Pomme de Terre R	07020002-556	AqRec	Escherichia coli	TMDL Required
Dry Wood Creek: Dry Wood Lk to Pomme de Terre R	07020002-556	AqLife	Turbidity	TMDL Required
Judicial Ditch 8: Unnamed cr to Unnamed ditch	07020005-546	AqLife	Fishes Bioassessments	TMDL Required
Minnesota River: Marsh Lk to Lac Qui Parle Lk	07020001-516	AqCons	Mercury in Fish Tissue	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqLife	Oxygen, Dissolved	Removed from Inventory - New Analysis Shows Attainment
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqRec	Fecal Coliform	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqLife	Turbidity	TMDL Approved
Pomme de Terre River: Muddy (Mud) Cr to Minnesota R (Marsh Lk)	07020002-501	AqCons	Mercury in Fish Tissue	TMDL Approved
Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqLife	Fishes Bioassessments	TMDL Required

Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqRec	Fecal Coliform	TMDL Approved
Shakopee Creek: Shakopee Lk to Chippewa R	07020005-559	AqLife	Turbidity	TMDL Required
Unnamed creek: Unnamed cr to Unnamed ditch	07020005-574	AqLife	Turbidity	TMDL Required

Lakes

Assessment Unit	ID	Impaired Use	Impairment Cause	Impairment Status
Artichoke	06-0002-00	AqCons	Mercury in Fish Tissue	TMDL Approved
Hollerberg	76-0057-00	AqRec	Nutrient/Eutrophication Biological Indicators	TMDL Required
Lac Qui Parle: NW Bay	37-0046-02	AqCons	Mercury in Fish Tissue	TMDL Approved
Marsh	06-0001-00	AqCons	Mercury in Fish Tissue	TMDL Approved
Oliver: east portion	76-0146-01	AqCons	Mercury in Fish Tissue	TMDL Approved
Oliver: west portion	76-0146-02	AqCons	Mercury in Fish Tissue	TMDL Approved

The County should consider participating with other units of government in the watershed to develop and implement TMDL implementation plans once TMDL studies receive final approval from the EPA. Grant funding applications for TMDL impaired water implementation projects may request citations from local water plans identifying water bodies as County priorities. This documented commitment by a county may improve an applications ranking and ultimately the County's ability to secure implementation funding.

Draft/public noticed TMDL studies and approved TMDLs and implementation plans can be viewed on MPCA's website at: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/tmdl-projects-and-staff-contacts.html>

Environmental Data Access

The water quality section of MPCA's Environmental Data Access (EDA) system allows visitors to find and download data from surface water monitoring sites located throughout the state. Where available, conditions of lakes, rivers or streams that have been assessed can be viewed. We encourage the County to visit this site for water quality monitoring data which may be useful with LWM planning efforts: <http://www.pca.state.mn.us/data/edaWater/index.cfm>

Areas of the County that should be considered priority waters are the impaired water bodies and reaches of impaired water bodies on the Clean Water Act 303 [d] TMDL List. We believe the County should consider impaired waters as a top priority for discussion in the LWM Plan.

2. Watershed Approach

Since 2007, the MPCA has been assessing waters by the process known as the Watershed Approach (<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/watershed-approach/watershed-approach.html>). The Watershed Approach process begins with Intensive Watershed Monitoring and Assessment. The Watershed Approach project area is at the 8 digit hydrologic unit scale (called a “major watershed”), and the goal is to develop Watershed Restoration and Protection (WRAP) strategies for waters in need of restoration and protection. The Pomme de Terre River WRAP project began this approach in 2007, Chippewa River WRAP project began in 2009, and the Upper Minnesota River is scheduled to start in 2015. The MPCA encourages the County to incorporate the Watershed Approach and WRAP for these watersheds.

Since 2007, the MPCA and its partners have begun implementing this approach, as recommended by the Clean Water Council and directed by the Minnesota Legislature
<http://www.pca.state.mn.us/index.php/view-document.html?gid=6125>

The Watershed Approach focuses on the watershed’s condition as the starting point for water quality assessment, planning, implementation, and measurement of results. This approach may be modified to meet local conditions, based on factors such as watershed size, landscape diversity and geographic complexity. This Watershed Approach will ultimately lead to a more comprehensive list of impaired and non-impaired waters. This list will be used to develop restoration strategies for impaired waters, protection strategies for non-impaired waters, and TMDLs. The development of strategies will rely greatly on County participation and counties will likely be asked to provide priority areas to target restoration and protection activities. Targeted priorities will be an important step toward receiving funding for implementation activities. Communication and coordination between counties located in the major watersheds will be essential to develop a comprehensive and effective implementation plan. Recommended actions include:

- **Monitor and gather data and information.** MPCA employs an intensive watershed monitoring schedule that will provide comprehensive assessments of all of the major watersheds on a 10-year cycle. This schedule provides intensive monitoring of streams and lakes within each major watershed to determine overall health of the water resources, to identify impaired waters, and to identify those waters in need of additional protection to prevent future impairments. It is suggested that the LWM Plan address Surface Water Assessment Grants (SWAGs) and additional County monitoring that may be used in the WRAP.
- **Assess the data.** Based on results of intensive watershed monitoring in step one, MPCA staff and its partners conduct a rigorous process to determine whether or not water resources meet water quality standards and designated uses. Waters that do not meet water quality standards are listed as impaired waters. It is suggested that the LWM Plan address data submittal and representation to participate in the assessment process for use in the WRAP.
- **Establish implementation strategies to meet standards.** Based on the watershed assessments, a WRAP with restoration and/or protection strategies is completed. Existing LWM plans and water body studies are incorporated into the planning process. It is suggested that the LWM Plan address participation in development of restoration and protection strategies developed through the WRAP as well as priority management zones.

- **Implement water quality activities.** Included in this step are all traditional permitting activities, in addition to programs and actions directed at nonpoint sources. Partnerships with state agencies and various local units of government, including watershed districts, municipalities, and Soil and Water Conservation Districts, will be necessary to implement these water quality activities. It is suggested that the LWM Plan address implementation of restoration and protection strategies once developed through the WRAP.

It is suggested the County maintain the current relationships with the Chippewa River Watershed Project (CRWP), Pomme de Terre River Association, and the Upper Minnesota River Watershed District for continued participation in the watershed projects. Financial resources for coordination and communication between counties could include, but not be limited to, grants from the Clean Water Fund (CWF), Clean Water Partnership (CWP), Surface Water Assessment Grant (SWAG), Legislative Citizen Commission on Minnesota Resources (LCCMR), and EPA Section 319. Technical assistance could be sought from an advisory group of local and state agency staff, local decision makers and landowners.

Priorities by year (start-completion) include: Pomme de Terre River (2007-2011), Chippewa River (2009-2013), and Upper Minnesota River (2015-2019).

3. Agricultural Drainage Management

The MPCA recognizes the importance of agricultural drainage for maintaining crop production in Swift County. However, agricultural drainage can have unintended consequences on the hydrology and water quality of Swift County lakes and rivers. Public and private surface and subsurface drainage systems provide a direct conduit for transport of pollutants such as nutrients, pesticides and herbicides to water bodies degrading their recreational, aesthetic and functional value. In addition, drainage short-circuits the landscape's water storage potential resulting in flashier river systems with higher peak flows. The higher flows result in bank and channel erosion as the streams adjust to the increased energy and force. The down cutting and widening of the channel limits stream access to the natural floodplain reducing sediment deposition and increasing sediment transport.

The LWM Plan prescribes several practices to mitigate the effects of agricultural drainage including wetland restorations, alternative tile intakes and vegetated filter strips. The MPCA recommends that the County develop a comprehensive Drainage Management Plan (DMP) that addresses present and future drainage needs as well as methods to mitigate the unintended consequences as described above. To ensure the DMP is maintained and utilized, the MPCA recommends it be incorporated into the County LWM Plan and that it include explicit language that the County drainage authority should consult the plan with any petition to improve a public drainage system and consider options for mitigating increases in flow volume. A concerted effort by local decision makers, local and state agencies and landowners will be necessary to ensure sufficient drainage for crop production while maintaining and improving Swift County water quality.

Financial resources for development of a comprehensive DMP could include, but not be limited to, grants from the Clean Water Fund, LCCMR and EPA Section 319. Technical assistance for development of the plan could be sought from the state Drainage Management Team, Minnesota Department of Agriculture, and/or an advisory group of local and state agency staff, local decision makers and landowners.

High priority areas would include impaired water bodies and reaches of impaired water bodies on the Clean Water Act 303 [d] TMDL List, though any area with high resource value waters should be considered.

4. General Update of Water Plan Information Relative to MPCA Programs

Some information and terminology on MPCA programs is out of date (ex. STORET is now EQUIS; individual sewage treatment system (ISTS) is now subsurface sewage treatment system (SSTS).

Recommended actions include updating MPCA information and terminology as needed in the LWM Plan.

Resources that may be available to accomplish this action include MPCA website (www.pca.mn.us), and appropriate program staff.

If we may be of further assistance, please contact Joe Hauger in the Marshall Regional Office at 507-476-4273 or Dave L. Johnson in the St. Paul Office at 651-757-2470.

Thank you and we look forward to reviewing the forthcoming PCSD and LWM Plan.

Sincerely,



Rebecca J. Flood
Assistant Commissioner

RJF/DLJ:kb

cc: Scott Collins, Water Planner
Jeff Nielsen, Minnesota Board of Water and Soil Resources
Joe Hauger, Minnesota Pollution Control Agency, Marshall Office
Mark Hanson, Minnesota Pollution Control Agency, Marshall Office
Lee Ganske, Minnesota Pollution Control Agency, Mankato Office

Swift County Water Plan – Priority Concerns Input

Your Agency/Organization: Minnesota Board of Water and Soil Resources (BWSR)

Submitted by (name): David Sill

Submitted on: 9/14/12 (via e-mail)

1. Top Priority Concern: Erosion and sediment control; nutrient management on agricultural land

Why is it important the plan focus on this concern (include or cite relevant data)? According to the “2003 – 2012 Swift County Comprehensive Local Water Plan”, the single largest land use in the County is cultivated agricultural land--approximately 82%. Farming practices change over the decades. What once was a diversified agricultural landscape is now primarily cash grain operations. Cash grain operations tend to have soils that are more susceptible to water and/or wind erosion, which can and do impact the quality and quantity of surface and ground water resources. The rivers, shallow lake/wetlands and streams of the County (and Minnesota) depend on best management practices to be implemented on these lands so water quality degradation from sediment of eroding lands does not occur. To provide for the long-term productive capacity of the County’s soil resource base (and the quality of surface water), these agricultural soils need to be protected.

Agricultural runoff can be a significant source of nutrient loading to surface and ground waters. Commercial fertilizers as well as animal waste (manure) from livestock and hog producers are utilized for crop production on agricultural land. Proper application of commercial fertilizer and animal waste is critical in reducing loss of these nutrients to receiving waters. Preventing soil loss due to erosion and attached phosphorous from entering receiving waters will help to improve water quality.

The Minnesota Pollution Control Agency continues to update its Impaired Waters listing, which includes specific reaches of surface waters in the county. Implementation of best management practices are needed to protect and keep the productive soils in place, provide for proper utilization of chemical fertilizers and animal waste, and to retain precipitation on the land that aids in the control of surface water runoff.

What actions are needed?

- Continue and accelerate the promotion and marketing of state and federal conservation program opportunities to land owners/users – identifying priority waters and landscapes to target.
- Increase the assistance to landowners in implementing agricultural best management practices (structural and land use change).
- Continue and accelerate *technical assistance* to landowners planning and implementing agricultural best management practices within watershed or sub watershed areas.
- Continue the participation with watershed management projects and groups to pool financial and technical resources utilizing water quality monitoring data and trends, and targeting knowledge.
- Educate land owners and users to follow University of Minnesota nutrient management recommendations.
- Regarding non field erosion - investigate, gather and record gully and bank survey information via the Chippewa River Watershed Project and Pomme de Terre River Watershed Project regarding high priority erosion sites.
- Utilize LiDAR analysis to identify critical erosion areas, catchment areas, etc. to help prioritize and target implementation activity.

What resources may be available to accomplish the actions? (include contact names, funding sources, partnerships, citizen volunteers, etc.)

- USDA Farm Bill conservation provisions administered by NRCS (Natural Resources Conservation Service) and FSA (Farm Service Agency) at the county level.
- State Cost Share Program, Re-Invest in Minnesota Reserve (RIM) Program, etc. through local SWCD.
- State Clean Water Fund Program opportunities available through the County and local SWCD.
- State Revolving Loan Fund through Minnesota Department of Agriculture.
- Possible private grant opportunities.
- Conservation/implementation programs through Minnesota Pollution Control Agency.
- Ongoing educational opportunities provided by the University of Minnesota, Minnesota Department of Agriculture.
- Information available through MN Pollution Control Agency, MN Dept. of Agriculture, University of MN.

What areas of the county are high priority? Meet with the Chippewa River Watershed Project and Pomme de Terre River Watershed Project to identify targeted, priority areas (stream reaches/sub watersheds) for implementation - using the monitoring results and data from the completed TMDLs and tmdl implementation plans (or draft plans) ---(key in on available turbidity, suspended solids and nutrient data.)

2. Second Priority Concern: Feedlot Management and Non-conforming Subsurface Septic Treatment Systems

Why is it important the plan focus on this concern (include or cite relevant data)? The “2003 – 2012 Swift County Comprehensive Local Water Plan” identifies feedlots and Individual Septic Treatment Systems (ISTS), also called subsurface septic treatment systems (SSTS), as potential pollution sources in the County. These pollution sources if improperly managed will contribute to the nutrient and contaminate loading of water resources in the County. The County has capable staff in place to provide assistance to land owners for both resource issues. This assistance is a critical component in properly managing water resources. There are MN Statutes in place that provide for enforcement actions to address problems associated with feedlots and non-conforming septic systems. Enforcement action must take place as warranted, *but* incentives and assistance to obtain voluntary compliance is a better approach. Financial incentives opportunities are available. The County needs to continue to seek out these opportunities to help bring the land owners in to compliance.

What actions are needed?

- Continue to be a Feedlot Program delegated county.
- Accelerate County/SWCD staff assistance in engaging and assisting feedlot operators.
- Complete a Level III feedlot inventory.
- Continue to implement the County’s SSTS Program.
- Continue to provide County staff to administer the SSTS Program and assist land owners.
- Seek out Federal, State and other funding sources to provide cost-share assistance and loan program assistance to land owners/users.
- Educate the land owner/user and general public on feedlot and SSTS issues and health effects as well as water quality concerns.
- Review and revise local ordinances as needed.

What resources may be available to accomplish the actions? (include contact names, funding sources, partnerships, citizen volunteers, etc.)

- Technical: NRCS, SWCD, Technical Service Area (area SWCD engineering), private.
- Financial: Federal Farm Bill, State Cost Share, MN Clean Water Fund, MN Pollution Control Agency programs (Federal 319 program opportunities), MN Department of Agriculture Loan program.

What areas of the county are high priority? Note areas identified on the Impaired Waters list for fecal or E-coli and nutrients. Use Chippewa River Watershed and Pomme de Terre River Watershed TMDL data to identify the specific reaches identified for bacteria impairments in Swift County. (For feedlot issues a Level III feedlot inventory would provide prioritization of problem areas.) Also note – when seeking grant funding for these activities a riparian location will be a higher priority.

3. Third Priority Concern: Drainage water management planning / drainage system maintenance and repair

Why is it important the plan focus on this concern (include or cite relevant data)? According to the “2003 – 2012 Swift County Comprehensive Local Water Plan”, there is a significant system (miles) of county open public ditches in the County. Many of these systems probably date back to the early 1900s and require repair and maintenance. In many cases the systems were not designed for the current drainage volume. Private drainage of agricultural lands adds hundreds of miles of underground tile that tie to the county’s public system. The waters of these public (county) and private drainage systems make their way to streams and lakes, in turn impacting the water quality of these water resources. Many counties are beginning to complete a systematic redetermination of benefits for each of their county drainage systems. Swift County should consider this also. Drainage systems that require repair can make use of new drainage water management technologies that can aid in flood water control and water quality improvement as well as address the drainage needs for agriculture. Properly maintained and buffered drainage systems support the productive capability and erosion protection of the soil / landscape.

What actions are needed?

- Continue and accelerate the promotion and marketing of conservation buffers.
- Continue to promote and market State and Federal conservation programs (RIM, CRP, WRP, etc.).
- Develop and implement a plan to complete a systematic redetermination of benefits for each county drainage system.
- Continue to use and update a GIS-based county-wide public drainage system inventory to be used to compliment management efforts and use as a tool for current and future water resources management efforts.
 - Additional information could include identifying systems that are overloaded, areas needing filter/buffer strips, potential wetland restorations/water storage areas, potential sites via landowner expressed interest for drainage water management bmps, etc.
- Market and implement Drainage Water Management – Conservation Drainage bmps to land users.
- Select and assess several drainage systems to learn more about the water quality of each system.
- Overview the economic benefits and concerns of these selected systems.
- Identify areas of these systems that are overloaded and research the creation of water storage areas.
- Manage these systems at the watershed scale when repairs, maintenance or improvements are being considered.
- Seek out information from other county drainage authorities regarding management of their drainage systems.
- Make use of technologies that aid in flood water reduction and water quality improvement in the design and implementation of public drainage system repair and maintenance.
- Provide information and assistance to private drainage system operators to include technologies used on public drainage systems.

What resources may be available to accomplish the actions? (include contact names, funding sources, partnerships, citizen volunteers, etc.)

- Long-term set-aside programs such as RIM, CRP, WRP via local NRCS and SWCD office.
- Clean Water Fund application opportunities via County and local SWCD.
- Watershed projects, such as the Chippewa River Watershed Project, Pomme de Terre River Watershed Project, and Upper MN River Watershed District, etc.
- Utilize local ditch authority funding mechanism.
- University of MN Research and Outreach Centers (Waseca, Lamberton).
- MN Department of Agriculture / Conservation Drainage (contact Mark Dittrich).
- University of MN Agricultural Engineering Department.
- MN Board of Water and Soil Resources Drainage Engineering staff.

What areas of the county are high priority? County-wide application – but I would encourage some identification of several priorities or targeted county drainage systems that will be your focus over the next 5 – 10 years. Where do you want to place emphasis in the next 5 – 10 years – I would identify it as part of this priority concern.

4. Fourth Priority Concern: Address accelerated runoff impacts via Wetland Restoration, Protection and Enhancement / Water Storage

Why is it important the plan focus on this concern (include or cite relevant data)? Like many other agricultural counties, most of the pre-settlement wetlands were drained beginning in the early 1900s (the start of public ditching) and probably reached its peak in the mid-1900s. This effort was for the purpose of land improvement. We now know that wetlands and flood plains provide for a wide range of functions including: helping to control flooding; purifying waters by recycling nutrients, filtering pollutants, and reducing siltation; controlling erosion; sustaining biodiversity and providing habitat for plants and animals; recharging groundwater, augmenting water flow, and storing carbon.

Gains have been made in restoring lost wetlands through the efforts of the local SWCD and County, State agencies, Federal partners, landowners and sportsman groups via conservation programs and state/federal wetland protection programs. These efforts need to continue to balance ongoing land use demands from agricultural and development pressures. Retaining water on the landscape in the watershed by wetland protection and restoration, other water storage opportunities, and restoring existing flood plain connectivity will help address priority concerns of erosion control and storm water quantity and quality.

What actions are needed?

- Continue and accelerate the promotion and marketing of wetland preservation and restoration programs (RIM, CRP, WRP, etc.) – develop a strategy / priorities for drained wetland restoration.
- Continue administering the MN Wetland Conservation Act.
- Continue educational efforts on the function and value of wetlands.
- Consider targeted inventory and identification of high priority areas for wetland restoration/enhancement/water storage.
- Continue administration of shore land and flood plain ordinances.
- Identify and target natural corridors to be enhanced or protected – increase/restore floodplain connectivity.
- Determine protection level for targeted areas through local ordinance development and voluntary conservation programs.
- Focus stream bank restorations in headwater areas.

What resources may be available to accomplish the actions? (include contact names, funding sources, partnerships, citizen volunteers, etc.)

- Long-term set-aside programs such as RIM, CRP, WRP (Wetland Reserve Program) via local NRCS and SWCD office.
- Clean Water Fund grant opportunities.
- Wetland Inventory Guidebook - June 1991, available through MN BWSR and MN DNR (Dept. of Natural Resources).

What areas of the county are high priority? This can be determined more thoroughly as inventories and assessments are completed. I would encourage some targeted watershed or sub watershed areas to be identified for this priority concern and 5 year implementation window.

.....
Other Considerations.

When developing the county's Priority Concerns Scoping Document that will be distributed for state agency review and comment, don't forget to add a brief section that talks about implementing the County's ongoing programs and ordinances. Although these ongoing programs and ordinances may not be among the selected priority concerns for the next five or ten years, implementing them will work hand-in-hand with the selected priority concerns to protect and improve the natural resources of the county.

Note:

To have a useful, fundable plan (i.e. receive competitive grant funds) targeting and prioritization of priority concerns, and goals and actions will be needed. You will not be successful if your plan reflects implementation with a county wide or even watershed wide emphasis. A more targeted approach will be necessary!

Appendix C:
Swift County Water Plan
Public Review Documents

~ BWSR Review Letter and Conservation Lands Summary ~

~ September 3, 2013, Public Hearing Sign in Sheet ~

~ September 3, 2013, Public Hearing Minutes ~

~ September 17, 2013, Public Hearing Minutes ~

~ Summary of Water Plan Changes ~



Date: August 30, 2013

To: Scott Collins, Swift County Environmental Services

From: David Sill, BWSR Board Conservationist

RE: Comments – Draft Swift County Local Water Management Plan for Public Hearing

Enclosed are my comments regarding the Swift County Local Water Management Plan draft document (2014 – 2023) - public hearing on September 3, 2013, and continued to September 17, 2013:

- Page iv, Executive Summary – Please include a list of the Swift County Task Force.
- Page 2-6, end of second paragraph – Each Brach is spelled incorrectly – I believe you mean East Branch.
- Page 2-13, last paragraph – East Brach spelled incorrectly – I believe you mean East Branch Chippewa River Sub-watershed.
- Page 2-31, Map 2D Pomme de Terre Map is missing, please add.
- Page 2-42, second paragraph – Upstream Sources Does this paragraph apply to Swift County, maybe part of Big Stone or Lac qui Parle’s Plan but should not be part of Swift’s Plan?
- Page 2-53 – second paragraph – where you write --- BWSR has increasingly become an important stakeholder in assisting with agricultural drainage issues. One of the categories in the last BWSR Clean Water Fund competitive grant RFP (FY2013) was: Clean Water Conservation Drainage Management Grants – the purpose of these grants
This is correct wording and I would leave the text as written. *You may want to add this:* However for FY2014 and on - the installation of conservation practices on drainage systems are still eligible, in the future however they simply will be part of a larger category of Clean Water Funds called BWSR Projects and Practices and not a separate grant program.
- Pages 2-78 and 2-79, the second paragraph on page 2-78 – Swift County’s DNR Observation Wells – the narrative talks about 10 DNR observation wells; however the Table 2E on page 2-79 lists/identifies 20 observation wells. I believe the narrative on page 2-78 should be revised to match the Table 2E.
- Page 4-1 – 4-2, Implementation Plan and Priorities. Since the Swift County water plan actions in Chapter 3 identify the timeframe for implementation 2014-2018 for almost every action, please add some additional work and thought here (page 4-1-4-2). Please develop a table – *Project Implementation Priorities* - working with plan consultant to add some implementation year targets and High, Medium priority designations. Suggest working with plan consultant - see similar table in the Pope County Water Plan. (*Your table does not have to be as long or detailed but should reflect some prioritization of Swift County actions.*)
- Conservation Lands Summary – Statewide Table – On August 1, 2013 BWSR updated this table highlighting conservation lands throughout the state broken down by county. I would suggest adding this reference information in the appendix of your plan. I have attached this document for your use.

Bemidji	Brainerd	Duluth	Fergus Falls	Mankato	Marshall	New Ulm	Rochester
403 Fourth Street NW Suite 200 Bemidji, MN 56601 (218) 755-2600	1601 Minnesota Drive Brainerd, MN 56401 (218) 828-2383	394 S. Lake Avenue Suite 403 Duluth, MN 55802 (218) 723-4752	1004 Frontier Drive Fergus Falls, MN 56537 (218) 736-5445	12 Civic Center Plaza Suite 3000B Mankato, MN 56001 (507) 344-2821	1400 East Lyon Street Marshall, MN 56258 (507) 537-6060	261 Highway 15 South New Ulm, MN 56073 (507) 359-6074	3555 9 th Street NW Suite 350 Rochester, MN 55901 (507) 206-2889



CONSERVATION LANDS SUMMARY - STATEWIDE

BWSR Prepared: 08/1/13

COUNTY	TOTAL										OTHER DATA			
	CRP ACRES	CONTINUOUS CRP ACRES	CREP ACRES	RIM	RIM WRP	RIM WRP	WRP	RESOURCE ACRES	CROPLAND ACRES	PERCENT ENROLLED	USF&W ACO.	DNR WMA	COUNTY SIZE TOTAL ACRES	
AITKIN	71	566	0	15	0	0	0	652	77,035	0.8%	14,539	54,869	1,275,757	
ANOKA	0	161	0	0	0	0	0	161	44,633	0.4%	0	18,297	285,069	
BECKER	21564	5636	0	120	1,350	2,380	31,049	31,049	307,784	10.1%	54,534	6,693	925,043	
BELTRAMI	13981	347	0	94	0	0	14,422	14,422	143,725	10.0%	9,008	192,845	1,954,893	
BENTON	861	1543	0	477	0	0	2,881	2,881	133,397	2.2%	648	1,975	264,211	
BIG STONE	4075	3296	772	398	285	835	9,661	9,661	251,987	3.8%	24,095	11,877	338,272	
BLUE EARTH	3828	3297	5,402	707	390	899	14,522	14,522	392,239	3.7%	2,057	3,041	489,715	
BROWN	6268	5697	5,041	1,281	324	606	19,217	19,217	335,790	5.7%	0	3,693	395,590	
CARLTON	47	256	0	0	0	0	303	303	52,480	0.6%	0	3,659	559,738	
CARVER	1585	2417	135	626	116	481	5,361	5,361	137,078	3.9%	2,335	838	240,442	
CASS	209	353	0	33	0	0	596	596	80,935	0.7%	43	11,710	1,544,115	
CHIPPEWA	3108	5090	8,401	1,567	235	133	18,535	18,535	326,760	5.7%	469	12,199	376,390	
CHISAGO	135	329	0	41	0	0	505	505	97,257	0.5%	57	10,079	283,021	
CLAY	21300	2695	149	2,109	2,592	3,466	32,311	32,311	524,605	6.2%	15,734	8,298	674,342	
CLEARWATER	7152	1311	0	92	151	0	8,705	8,705	125,931	6.9%	1,425	4,649	658,995	
COOK	0	0	0	0	0	0	0	0	946	0.0%	0	1,734	1,027,613.04	
COTTONWOOD	7518	2934	3,441	2,125	136	48	16,201	16,201	360,943	4.5%	3,725	7,669	415,027	
CROW WING	0	52	0	26	0	0	78	78	60,183	0.1%	0	5,381	739,776	
DAKOTA	718	1755	10	54	0	0	2,536	2,536	207,049	1.2%	1,679	7,533	374,970	
DODGE	742	2002	123	59	0	0	2,927	2,927	226,716	1.3%	96	936	281,152	
DOUGLAS	10603	9306	2,306	1,647	783	1,022	25,666	25,666	236,375	10.9%	17,481	5,430	460,928	
FARIBAULT	849	1486	3,985	846	0	41	7,207	7,207	415,041	1.7%	959	3,566	461,613	
FILLMORE	13068	4229	309	474	0	0	18,080	18,080	346,876	5.2%	95	1,968	551,443	
FREEBORN	4137	5061	1,169	709	3,656	3,252	17,984	17,984	390,339	4.6%	2,319	2,696	461,946	
GOODHUE	4660	2103	440	869	0	113	8,184	8,184	305,255	2.7%	0	5,210	499,078	
GRANT	6459	18852	484	1,117	981	1,215	29,107	29,107	293,726	9.9%	14,832	3,548	368,557	
HENNEPIN	571	335	0	339	0	4	1,249	1,249	58,618	2.1%	2,675	214	388,090	
HOUSTON	10198	2280	188	2,330	0	175	15,172	15,172	149,239	10.2%	13,086	1,884	363,930	
HUBBARD	705	397	0	20	0	0	1,121	1,121	80,717	1.4%	14	3,925	639,514	
ISANTI	54	747	0	28	0	0	830	830	106,568	0.8%	125	5,672	288,723	
ITASCA	678	524	0	0	0	0	1,202	1,202	30,959	3.9%	0	9,131	1,872,320	
JACKSON	5241	2701	1,317	1,752	302	377	11,689	11,689	397,517	2.9%	5,123	5,867	460,250	
KANABEC	12	206	0	444	0	0	662	662	71,727	0.9%	472	11,204	341,274	
KANDIYOHI	16703	15473	3,017	2,923	2,592	81	40,788	40,788	377,217	10.8%	19,114	4,232	551,859	
KITSON	62931	25680	0	392	0	177	89,180	89,180	468,948	19.0%	140	57,360	706,925	
KOOCHICING	0	63	0	0	0	0	63	63	41,861	0.2%	612	1,647	2,017,005	
LAC QUI PARLE	12431	11405	8,006	926	185	0	32,953	32,953	410,614	8.0%	16,675	22,686	498,310	
LAKE	0	0	0	0	0	0	0	0	1,606	0.0%	0	601	1,463,540.58	
LAKE of the WOODS	714	616	0	0	0	124	1,454	1,454	90,826	1.6%	49,640	158,642	1,138,938	
LE SUEUR	9061	6454	1,070	1,248	171	60	18,064	18,064	210,106	8.6%	684	3,735	303,008	
LINCOLN	9681	13442	3,184	731	340	0	27,378	27,378	278,292	9.8%	5,172	8,905	351,283	
LYON	6412	3135	4,555	1,667	169	18	15,956	15,956	387,950	4.1%	2,301	10,319	462,067	

COUNTY	CRP ACRES	CONTINUOUS CRP ACRES	CREP ACRES	RIM	RIM WRP	WRP	TOTAL RESOURCE		CROPLAND ACRES	PERCENT ENROLLED	USF&W ACQ.	DNR WMA	COUNTY SIZE TOTAL ACRES
							ACRES	ACRES					
MCLEOD	1455	4231	865	940	1,082	410	8,982	255,423	3.5%	2,799	3,080	323,347	
MAHNOMEN	8898	1858	0	0	2,299	1,144	14,200	160,029	8.9%	12,771	10,300	373,523	
MARSHALL	123973	19227	0	882	1,180	6,232	151,494	806,893	18.8%	62,412	115,325	1,161,043	
MARTIN	1433	1710	4,977	846	207	0	9,172	411,001	2.2%	649	3,137	466,598	
MEEKER	10247	6390	0	5,328	387	151	22,504	277,071	8.1%	7,581	2,782	412,467	
MILLE LACS	93	466	0	260	0	0	819	86,683	0.9%	664	36,597	435,718	
MORRISON	3450	2856	0	797	0	0	7,103	237,829	3.0%	2,717	6,130	737,760	
MOWER	143	5201	730	1,213	571	486	8,343	381,564	2.2%	138	1,862	454,995	
MURRAY	9855	6554	4,023	1,470	45	0	21,948	388,780	5.6%	2,361	10,362	460,659	
NICOLLET	1132	1931	1,107	1,980	127	1,176	7,454	234,169	3.2%	0	4,724	298,528	
NOBLES	2234	6363	233	439	0	0	9,269	399,176	2.3%	669	4,681	462,630	
NORMAN	22267	4950	0	1,915	2,624	750	32,507	481,471	6.8%	1,584	6,188	561,574	
OLMSTED	5920	1198	79	318	48	0	7,563	253,019	3.0%	0	4,131	418,726	
OTTER TAIL	44748	21972	790	1,039	764	1,120	70,433	630,659	11.2%	40,932	13,523	1,423,923	
PENNINGTON	45674	4347	0	38	744	0	50,803	302,392	16.8%	301	3,329	395,629	
PINE	76	151	0	2	0	0	229	129,121	0.2%	1,001	3,727	917,133	
PIPESTONE	3360	3258	327	569	0	0	7,514	242,801	3.1%	135	3,024	298,515.0	
POLK	88437	14446	27	791	52	25,547	129,299	1,000,146	12.9%	40,573	23,675	1,279,437	
POPE	19038	10009	4,857	2,871	2,257	1,332	40,364	285,591	14.1%	25,161	3,883	458,938	
RAMSEY	0	0	0	0	0	0	0	5,935	0.0%	160	0	108,730.70	
RED LAKE	28817	724	12	226	0	5	29,784	205,986	14.5%	261	2,264	277,184	
REDWOOD	5105	4791	8,021	3,043	625	28	21,614	510,646	4.2%	62	6,679	564,173	
RENVILLE	1601	5253	10,375	5,256	621	1,079	24,186	575,177	4.2%	1,932	2,006	631,718	
RICE	9560	2074	236	1,421	327	53	13,672	224,642	6.1%	1,024	2,596	329,901	
ROCK	636	1644	184	830	0	0	3,294	257,381	1.3%	1,077	949	309,146	
ROSEAU	103042	19384	0	34	0	593	123,052	549,220	22.4%	28,369	94,668	1,074,125	
ST. LOUIS	0	87	0	0	0	0	87	61,533	0.1%	0	7,127	43,120.19	
SCOTT	1219	859	118	889	0	21	3,105	105,357	2.9%	4,765	1,994	235,501	
SHERBURNE	639	851	0	0	0	51	1,541	93,107	1.7%	29,638	1,086	288,256	
SIBLEY	1106	2078	810	1,708	579	30	6,311	323,296	2.0%	1,159	1,746	384,128	
STEARNS	17042	9440	0	818	0	212	27,512	511,177	5.4%	11,395	6,287	889,248	
STEELE	3960	6084	249	513	2,024	1,442	14,272	231,158	6.2%	667	1,680	276,467	
STEVENS	4112	9044	972	1,198	1,724	4,688	21,738	315,465	6.9%	10,956	3,139	368,346	
SWIFT	15688	8534	6,378	1,593	655	520	33,368	400,611	8.3%	10,258	10,289	481,440	
TODD	9950	2276	0	28	209	0	12,462	272,396	4.6%	845	10,127	626,752	
TRAVERSE	1465	13640	330	323	539	276	16,573	335,488	4.9%	5,595	1,855	375,277	
WABASHA	6804	446	0	822	0	0	8,072	183,651	4.4%	19,031	6,507	351,360	
WADENA	1211	2380	0	49	0	0	3,640	113,085	3.2%	54	5,492	347,597	
WASECA	2407	3903	2,087	954	399	326	10,075	235,099	4.3%	260	2,431	276,934	
WASHINGTON	319	21	0	25	0	0	365	68,738	0.5%	0	1,793	270,637	
WATONWAN	1775	2063	2,914	769	81	0	7,601	251,650	3.0%	225	1,755	281,242	
WILKIN	6561	4634	100	1,988	590	4,483	18,356	407,406	4.5%	2,837	6,191	481,178	
WINONA	6362	1003	854	833	38	0	9,089	186,348	4.9%	2,473	22,817	410,310	
WRIGHT	5454	2826	0	830	0	79	9,189	220,990	4.2%	3,606	5,345	457,171	
YELLOW MEDICINE	8070	8080	5,697	2,468	39	369	24,722	424,077	5.8%	3,284	6,330	488,646	
STATE TOTAL	903,666	393,467	110,858	76,601	35,590	68,108	1,588,289	23,071,285	6.9%	624,342	1,170,027	53,993,362	

Sources: (Continued)
 USF&W Acquisitions: 2013 Unpublished Data
 DNR WMA: 2013 Unpublished data
 RIM (BWSR): 6/30/13

w:\Marshall Docs\Conservation Land Summary\August 2013\CLS Statewide Summary 8.1.13
 CRP Acres: 7/2013 USDA FSA
 CREP Acres: 6/30/13 (BWSR)
 WRP Acres: NRCS (7/2013)
 Cropland Acres: FSA - 2001
 RIM-WRP Acres: 6/30/13 (BWSR)

Swift County

Water Plan Public Hearing

~ September 3, 2013 ~

Please Sign In

Representing

2nd

1st

1. Matt Johnson Midwest Community Planning

* 2. ERIC RUDNINGEN DISTRICT 5 SWIFT CO.

* 3. Gary Hendrickx City Comm

4. Mike Pogue-Weaver County Administrator

* 5. Jae Jae City Comm

* 6. Dary Klemm City Comm

* 7. Peter Peterson Co. Comm

8. Scott Collins SW. Dist

9. Dylin N. Spahr Swift Co. Atty

10. Robert Olson Farmer

11. Bernie Janda GRAIN FARMER

12. Tom Hughes FARMER

13. James Payne Farmer

14. Amanda Ness County General Assistant

15. John Holtz Sheriff

16. _____

17. _____

18. _____

SWIFT COUNTY BOARD MINUTES

September 3, 2013

Chairman Fox called the meeting to order at 9:00 AM with all members present as well as County Administrator Mike Pogge-Weaver, County Attorney Robin Finke, County Auditor Kim Saterbak, Payroll Officer/General Assistant Amanda Ness and several guests.

Chairman Fox asked if there were any additions to the Agenda. There were none.

09-03-13-01 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve the agenda. Motion carried unanimously.

09-03-13-02 Commissioner Peterson moved and Commissioner Klemm seconded to approve the Consent Agenda which consisted of the Board Meeting Minutes of August 20, 2013 and setting the 2013 tax forfeiture sale for October 2, 2013 at 9:00 AM. Motion carried unanimously.

The board reviewed the Commissioner warrants and no questions or comments were made.

09-03-13-03 Commissioner Rudningen moved and Commissioner Klemm seconded to approve the Commissioner warrants as follows: Revenue: \$43,320.92; and Solid Waste: \$2,115.39 which includes the following bills over \$2,000: Marsden Bldg Maintenance LLC, \$4,877.78; Pioneerland Library System, \$28,312.50; and Michel Pogge-Weaver, \$3,283.09. Motion carried unanimously.

Board and Committee Reports were given as follows: Chairman Fox reported on the Hospital Finance Committee, Hospital Board, and Southern Prairie Community Care (SPCC). Commissioner Klemm reported on Prairie Lakes Youth and the meeting with Blue Cross Blue Shield (BCBS) and our service cooperative. Commissioner Peterson reported on the Joint Engineer Review Committee meeting with Yellow Medicine County, 6W Corrections, and Prairie Five Community Action Council. Commissioner Rudningen also reported on the Joint Engineer Review Committee meeting with Yellow Medicine County. Commissioner Hendrickx reported on SPCC and the Minnesota Association of County Health Plans.

Administrator Pogge-Weaver reported on the FEMA kickoff meeting regarding the spring wind storm that hit Swift County. He further discussed the meeting between BCBS and our service cooperative and suggested the commissioners be represented at a meeting on Thursday, September 5th at 9:00 AM with Lincoln, Lyon, and Murray Counties to discuss joining them in an RFP to look at alternative health care providers. He also reported on the Joint Engineer Review Committee meeting with Yellow Medicine County and is working with the Administrator of that county on the topics discussed.

A public hearing was declared by Chairman Fox to discuss the County's ten year water plan. Environmental Services Director Scott Collins along with Matt Johnson of Midwest Community Planning, LLC presented the plan to the board, discussed the reason for the plan, and asked for comments. Tony Hughes of 655 Montana Avenue in Benson wanted to know who the stakeholders are in the plan. Mr. Johnson stated that the key stakeholders are the SWCD, the Chippewa River Watershed Project, and the Pomme de Terre Watershed District. Other stakeholders include the farming community and lake associations. Mr. Hughes also questioned the part in the summary regarding the 80 acre buffer strips. Director Collins explained that the task force was told specific sizes needed to be included in the plan in order to not have the plan thrown out when requesting funding. Bernie Zinda of 311 King Street in Holloway commented that he sat through the TMDL study process and it didn't prove that anything specifically was the problem and doesn't want to see the farmers hurt by a water plan.

09-03-13-04 Commissioner Hendrickx moved and Commissioner Rudningen seconded to continue the public hearing to the September 17, 2013 meeting at 11:00 AM. Motion carried unanimously.

Sheriff John Holtz brought the second reading of the Social Host Ordinance to the board along with a Frequently

Asked Questions handout. Commissioner Klemm pointed out that, even with the County passing it, the ordinance would need to be passed by the City in order for it to be enforced within city limits. He also stated that he received no positive feedback regarding passing the ordinance and said that his constituents already feel “too policed” and didn’t want to add any further rules. Commissioner Peterson said that he received both positive and negative feedback but that most of the negative feedback was due to misinformation regarding access to a person’s home. Commissioner Klemm also pointed out worries from his constituents about being held criminally responsible when they aren’t even home during the party. Sheriff Holtz pointed out that the person being charged would be the person who planned the party and that person might not necessarily be the property owner. James Payne of 380 90th Street SW, Benson asked Sheriff Holtz who is liable if the child has a party while the parent is away and someone gets hurt. County Attorney Finke stated that the ordinance doesn’t change the civil liability which means the property owner is still liable. He also pointed out that this ordinance is to stop a person from offering a minor the means to have a party with underage drinking. The criminal intent has to be there though. This is either by the intent to host a party for underage drinkers or by finding out about an underage party and doing nothing to stop it. The only exception to this is a parent allowing their own child to consume alcohol in their own home. Attorney Finke also reiterated that the Sheriff would decide whether or not to charge the individual, the Attorney would decide whether or not to prosecute, the Judge would decide whether or not to throw out the case, and the jury would decide whether the person was guilty or not so it is not giving one individual any more control than already exists. Rita Wersinger stated that she sometimes get calls from minors that have been drinking asking for her assistance and wanted to know how this ordinance would affect that. Attorney Finke pointed out that assisting the minor after they have been drinking would not fall under this ordinance as long as she had no knowledge of the drinking before or during the consumption of the alcohol. Restorative Justice Coordinator Jacquie Larson expressed that she is in favor of the ordinance as it would force parents to not allow the drinking and also not look the other way when they know about it. Bernie Zinda also said the ordinance would be a good thing as we are more educated today about the consequences of underage drinking and need to take more precautions that help educate the younger generations as well.

09-03-13-05 Commissioner Peterson moved and Commissioner Hendrickx seconded to approve the final reading of the Social Host Ordinance. Motion carried 4-1 with Commissioner Klemm opposing.

County Engineer Andy Sander asked the board to consider approving a resolution requesting transfer of state aid construction funds.

09-03-13-06 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve a resolution requesting transfer of state aid construction funds from 2014 to 2013 related to CSAH 17. Motion carried unanimously.

RDA Director Jen Frost presented the board with a \$30,000 revolving loan fund request for Headwaters Media, LLC to purchase the Benson radio station. It would be a ten year loan with monthly payments at 3.5% interest with a shared second behind the bank on business assets.

09-03-13-07 Commissioner Peterson moved and Commissioner Klemm seconded to approve the \$30,000 loan to Headwaters Media, LLC. Motion carried unanimously.

Administrator Pogge-Weaver gave an overview of the preliminary 2014 budgets and levies for the County, HRA, and RDA. He also went over options related to the preliminary budgets.

09-03-13-08 Commissioner Hendrickx moved and Commissioner Klemm seconded to approve increasing the Solid Waste Assessment from \$35 to \$50. Motion carried unanimously.

09-03-13-09 Commissioner Hendrickx moved and Commissioner Peterson seconded to approve Administrator Pogge-Weaver’s second option for reducing the preliminary budget which includes reducing Environmental Services reserves by \$104,355. Motion carried unanimously.

09-03-13-10 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve the resolution for the 2014 preliminary budget and levies. Motion carried unanimously.

09-03-13-11 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve increasing the HRA levy from \$35,000 to \$45,000. Motion carried unanimously.

09-03-13-12 Commissioner Klemm moved and Commissioner Peterson seconded to approve increasing the RDA levy from \$77,000 to \$87,000. Motion carried unanimously.

09-03-13-13 Commissioner Rudningen moved and Commissioner Peterson seconded to approve setting the Truth-in-Taxation Hearing for December 3, 2013 at 6:00 PM. Motion carried unanimously.

09-03-13-14 Commissioner Peterson moved and Commissioner Rudningen seconded to approve setting the regular board meeting for December 3, 2013 at 4:00 PM. Motion carried unanimously.

Administrator Pogge-Weaver also brought up the 800MHz tower's ongoing maintenance cost and the future of the 911 dispatching center. Sheriff Holtz will gather more information for the board to review before making a decision.

Administrator Pogge-Weaver discussed capital expenses in smaller departments such as the purchase of the GPS and a truck for Parks and Drainage. After discussing the current way of taking the funds from reserves and then paying the funds back and Administrator Pogge-Weaver's suggestion of budgeting for the capital assets prior to their purchase the general consensus of the board was to set the funds aside and make the purchase when the funds are available for it.

Administrator Pogge-Weaver presented the board with a policy for the purchase and reimbursement of tablet computers for the Commissioners. The reimbursement could also cover a case, keyboard, and software needed. Training and setup would also be available.

09-03-13-15 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve the County Board Tablet Computer Reimbursement Policy 108. Motion carried unanimously.

Courthouse office changes were also discussed including moving the Administrator and Payroll Officer positions into the Auditor's office in order to keep them in the loop. The board also further discussed moving to a one-stop-shop and discussed rearranging staff and offices in order to make that happen. The board's general consensus was to make this happen as soon as possible and to leave it up to Administrator Pogge-Weaver to work out the details with each department affected.

09-03-13-16 Commissioner Peterson moved and Commissioner Rudningen seconded to adjourn. Motion carried.

Meeting adjourned at 11:24 AM

WITNESSED:

Joe Fox, Chair

ATTEST:

Michel Pogge-Weaver, County Administrator

SWIFT COUNTY BOARD MINUTES

September 17, 2013

Chairman Fox called the meeting to order at 11:00 AM with all members present as well as County Administrator Mike Pogge-Weaver, County Auditor Kim Saterbak, County Recorder Mary Amundson and Payroll Officer/General Assistant Amanda Ness.

Chairman Fox asked if there were any additions to the Agenda. There were none.

09-17-13-01 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve the agenda. Motion carried unanimously.

09-17-13-02 Commissioner Peterson moved and Commissioner Hendrickx seconded to approve the Consent Agenda which consisted of the Board Meeting Minutes of September 3, 2013, to approve a contract with e Recording Partners Network LLC as an e-recording submitter, and to approve the purchase of a skid loader for Environmental Services. Motion carried unanimously.

The board reviewed the Commissioner and Auditor warrants and no questions or comments were made.

09-17-13-03 Commissioner Rudningen moved and Commissioner Klemm seconded to approve the Commissioner warrants as follows: Revenue: \$41,927.62; Solid Waste: \$24,088.59; Road and Bridge: \$87,840.33; Welfare and Human Services, \$458.33; and Ditches, \$49,874.36 which includes the following bills over \$2,000: AccuSteel, \$17,236.00; Agralite Cooperative, \$8,043.15; Benson Food Shop, \$2,171.09; Commerford Construction Inc, \$42,182.00; Computer Professionals Unlimited Inc, \$4,519.29; Contech Construction Products, \$12,159.36; Clifford W. Emmert, \$2,013.35; Duininck Inc, \$17,002.04; Northside Automotive Supply, \$2,202.15; Pflipsen Trucking LLC, \$11,632.56; Riley Brothers Companies, \$7,021.94; Ron Ringquist, \$3,229.47; Soil Conservation Office, \$2,431.07; Swift County DAC, \$2,016.09; Waste Management of Northern Minnesota, \$8,444.20; and Ziegler Inc, \$5,948.86. Motion carried unanimously.

Board and Committee Reports were given as follows: Chairman Fox reported on the Revolving Loan Fund, the AMC Policy Meeting, Restorative Justice, Woodland Centers, and Private Industry Council. Commissioner Klemm reported on a meeting with Redwood, Lincoln, and Murray counties to consider changing our health insurance and a meeting with employees to discuss our health insurance options and a SCMO meeting. Commissioner Peterson reported on Countryside Public Health and 6W Corrections. Commissioner Rudningen also reported on the AMC Policy Meeting and the meeting about our health insurance options as well as the Transportation Committee and Lean 101 Training. Commissioner Hendrickx reported on the AMC Policy Meeting, Human Services, Woodland Centers, Revolving Loan Fund, and Planning and Zoning Committee.

Administrator Pogge-Weaver reported on the AMC Policy Meeting, the health insurance meetings, and Lean 101 Training. He also pointed out that he would be out of the office from September 24th through September 27th.

Environmental Services Director Scott Collins brought to the board the continuation of the Public Hearing regarding the Water Plan 10 year update from the September 3, 2013 meeting.

09-17-13-04 Commissioner Hendrickx moved and Commissioner Rudningen seconded to approve the 2014-2023 local Water Plan. Motion carried unanimously.

Director Collins also brought Conditional Use Permit #4362 to the board for Gerald Tofte to expand his swine barn operation. The Board of Adjustment met regarding the permit and granted a variance. The township gave their support and the city of Kerkhoven was notified and took no action officially.

09-17-13-05 Commissioner Klemm moved and Commissioner Rudningen seconded to approve Conditional Use Permit #4362 to allow Gerald Tofte to construct a 208' x 101'8" total confinement hog finishing barn with a concrete pit. Motion carried unanimously.

09-17-13-06 Commissioner Hendrickx moved and Commissioner Peterson seconded to accept the letter of resignation from Josh Owen. Motion carried unanimously.

Administrator Pogge-Weaver asked the board to approve sending a letter to Southwest West Central Service Cooperative to terminate our membership. He also asked the board to consider approving Swift County's portion of the cost involved with the professional services and development of a Joint Powers Agreement for purchasing health insurance.

09-17-13-07 Commissioner Rudningen moved and Commissioner Hendrickx seconded to approve the termination of health insurance services with Southwest West Central Service Cooperative and to spend up to \$5088.00 from the board discretionary fund for bidding health insurance coverage through a Joint Powers Agreement. Motion carried unanimously.

County Auditor Kim Saterbak brought the proposed 2014 Ditch Assessments to the board for review.

09-17-13-08 Commissioner Peterson moved and Commissioner Rudningen seconded to adjourn. Motion carried.

Meeting adjourned at 11:47 AM

WITNESSED:

Joe Fox, Chair

ATTEST:

Michel Pogge-Weaver, County Administrator

Summary of Final Swift County

Water Plan Changes

Based upon feedback received during the public draft review period and at the public hearing, which took place on September 3 and September 17, 2013, the following summary of changes were made to the Swift County Water Plan:

1. The cover was revised to show the duration of the plan (2013-2023) with a five-year implementation plan (2013-2018).
2. The Table of Contents was updated.
3. Chapter Two: Assessment of Priority Concerns
 - a. Added Pomme de Terre River Watershed Map
 - b. Clarified language regarding BWSR's role in agricultural drainage issues.
4. Chapter Three: Goals, Objectives and Action Steps
 - a. Changed Pomme de Terre River Watershed Project (PdTWP) to Pomme de Terre River Association (PdTRA).
5. Chapter Four: Water Plan Administration
 - a. Added Table 4A: Swift County Water Plan Project Implementation Priorities.
6. Added new Appendix C (Public Review Documents)