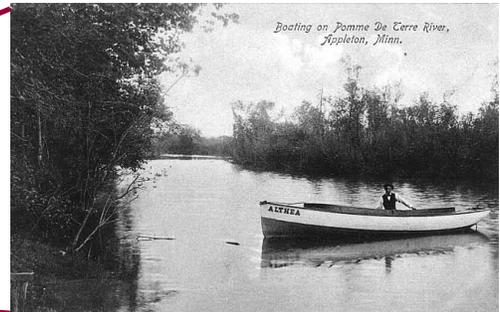
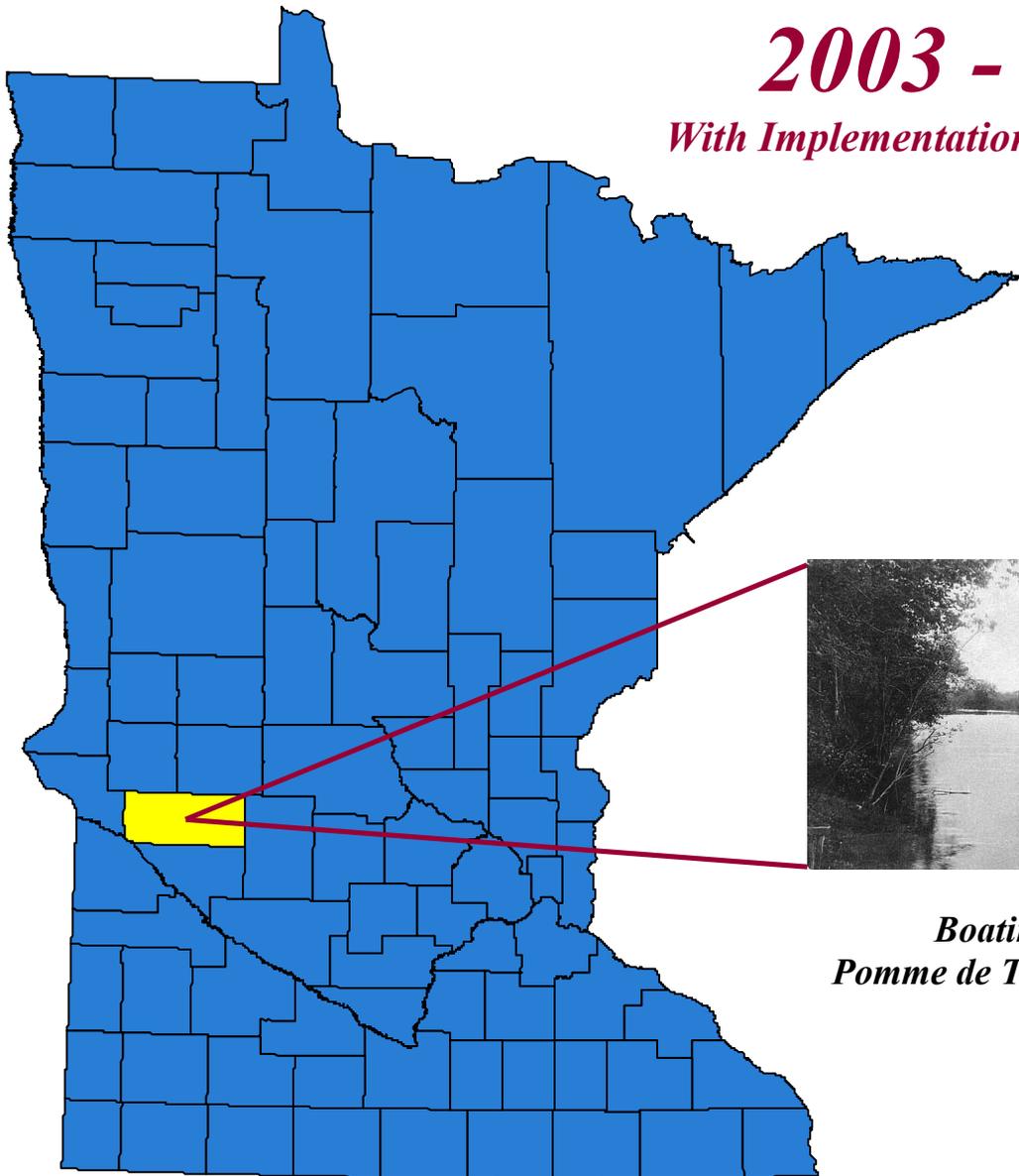


Swift County

Local Water Management Plan

2003 - 2012

With Implementation Update in 2008



*Boating on the
Pomme de Terre River, 1910*

*Prepared by
Midwest Community Planning, LLC, with assistance from
The Upper Minnesota Valley Regional Development Commission*

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Swift County Water Plan

Table of Contents

Introduction to the Swift County Water Plan	v
Chapter One: County Profile and Executive Summary	Ch. 1 Pg. 1
Role of the County Board, Water Planning Committee and Citizen Participation	1
Swift County Water Plan Committee Members	2
Swift County’s Population and Location.....	2
Previous Swift County Water Planning Accomplishments.....	4
Swift County Clean Water Partnerships/Watershed Projects.....	6
Chippewa River Watershed Project.....	7
Watershed Districts.....	9
Upper Minnesota River Watershed District	9
Lake Associations.....	10
Chapter Two: Swift County’s 55 Data Items.....	Ch. 2 Pg. 1
Data Item 1: Precipitation Gauging Stations	1
Data Item 2: Total Precipitation	1
Data Item 3: Seasonal Precipitation.....	1
Data Item 4: Hydrology.....	3
Data Item 5: Ground & Surface Water Interconnections	3
Data Item 6: Watersheds.....	4
Upper Minnesota River Watershed	6
Pomme de Terre Watershed	8
Chippewa River Watershed.....	9
Data Item 7: State Public Waters.....	11
Data Item 8: Soils	12
Data Item 9: Erosion Prone Soils	12
Water Erosion Prone	12
Wind Erosion Prone.....	14
Data Item 10: Original Vegetation	14
Data Item 11: Topography.....	4, 14
Data Item 12: Land Use.....	14
Data Item 13: Public Water, Storm Sewer & Sanitary Sewer Systems.....	18
Data Item 14: Community Public Water Supplies	18
Data Item 15: Land Ownership	18
Data Item 16: Water Resource and Related Easements	20
Conservation Reserve Program	20
Conservation Reserve Enhancement Program	20
Reinvest in Minnesota Reserve Program.....	22
Wetland Reserve Program	22
U.S. Fish & Wildlife Service Easements.....	23
Data Item 17: High, Mean & Low Flow of Streams	23
Data Item 18: Ordinary High Water Levels for Lakes	24

Table of Contents continued ...

Data Item 19: Permitted Surface Water Appropriations	Appendix B & 25
Data Item 20: State Protected Levels and Stream Flows.....	25
Data Item 21: Water Use Conflicts.....	26
Data Item 22: Permitted Groundwater Appropriations	Appendix B & 25
Data Item 23: Known Well Interference Problems	26
Data Item 24: Observation Wells	26
Data Item 25: Water Quality Management Classifications	28
Data Items 26 & 27: Surface Water Quality Data (Including Informal Sources)	28
Lake Water Quality Assessment Reports	28
Citizen Lake Monitoring Program.....	29
Citizen Stream Monitoring Program	29
Total Maximum Daily Loads (TMDL)	30
STORET	30
Data Item 28: Groundwater Quality	31
Minnesota Pollution Control Agency	31
MDA Nitrate Water Testing Program	31
Data Item 29: Eroding Lands & Nonpoint Source Pollution.....	32
Data Item 30: Effects of Land Use & Cover on Runoff.....	32
Data Item 31: Irrigation Areas.....	33
Data Item 32: Irrigation over 1,000 Acres.....	33
Data Item 33 & 34: Public Drainage Systems.....	33
Data Item 35: Potential Pollutant Sources.....	33
Dumps and Sanitary Landfills	33
Federal Superfund Sites.....	34
Individual Sewage Treatment Systems (ISTS).....	34
Data Item 36: Feedlots, Unsealed Abandoned Wells, Underground Storage Tanks and Permitted Wastewater Dischargers.....	34
Feedlots (see Chapter 3, Page 8)	Ch.3 Pg. 8
Abandoned Wells	35
Underground Storage Tanks.....	36
Permitted Wastewater Dischargers.....	36
Data Item 37: Hazardous Waste Generators.....	36
Superfund Sites.....	37
Data Item 38: Special Geologic Conditions (see Data Items 4 & 5)	3
Data Item 39 & 40: Wetlands & Plans for Controlled Outlets.....	37
Data Item 41: U.S. Army Corps of Engineers, Section 404.....	41
Data Items 42, 43 & 44: Floodplains, Flood Prone Areas & Flood Damages	42
Data Items 45 & 46: Protected Waters and Shoreland Ordinances.....	44
Data Items 47 & 48: Water-Based Recreational Lands& Public Water Accesses.....	45
Data Item 49: State and Federal Wild and Scenic Rivers/Canoe and Boating Routes.....	45
Data Item 50: Wildlife Areas.....	47
Data Item 51: State Designated Trout Waters.....	47
Data Item 52: State Ecological & Management Classifications.....	48
Data Item 53: Biological Surveys.....	48
Data Item 54: Plans for Fish & Wildlife Areas	49
Data Item 55: Unique & Rare Features/Species.....	49

Table of Contents continued ...

Chapter Three: Water Planning Issues, Implications & Assessments..... Ch. 3 Pg. 1

Issue Identification Process 1
Public Informational Meeting Issues..... 2
State Agency Water Planning Issues 3
Reducing Priority Pollutants..... 4
 Total Maximum Daily Loads 4
 Minnesota River Basin Plan and Local Watershed Projects 5
 Feedlots..... 8
Water/Drainage Management..... 11
Groundwater Protection..... 15
 Observation Wells 15
 Minnesota Department of Health 15
 Well Interference 16
 Community Public Water Supplies 17
 Wellhead Projection 17
Storm Water Management..... ?
Flooding..... ?
Public Education & Outreach..... 20
 Learning How to Better Understand and Use Existing Informational Sources..... 20
 Raising Public Awareness on Key Water Planning Issues..... 22

Chapter Four: Goals, Objectives & Action Steps Ch. 4 Pg. 1

Chapter Definitions..... 1
Reducing Priority Pollutants..... 2
Water/Drainage Management..... 5
Groundwater Protection..... 7
Education & Outreach 9
Storm Water Management..... ?
Flooding..... ?

Chapter Five: Plan Administration Ch. 5 Pg. 1

Plan Implementation..... 1
Implementation Outline..... 1
Intergovernmental Conflicts 1
Major Plan Amendment Procedure 2
Minor Plan Amendment Procedure 3
Incorporating Amendments into the Plan..... 3
General Water Plan Information..... 4

Table of Contents continued ...

List of Maps

Map 1A: Swift County's Cities, Townships and Location	Ch.1 Pg. 3
Map 2A: Swift County's Major and Minor Watersheds.....	Ch. 2 Pg. 5
Map 2B: Swift County's Soils	Ch. 2 Pg. 13
Map 2C: Swift County's Pre-Settlement Vegetation.....	Ch. 2 Pg. 15
Map 2D: Swift County's Land Use	Ch. 2 Pg. 17
Map 2E: Swift County's Public Services.....	Ch. 2 Pg. 19
Map 2F: Swift County's Land Ownership.....	Ch. 2 Pg. 21
Map 2G: Swift County's DNR Observation Wells.....	Ch. 2 Pg. 27
Map 2H: Swift County's Wetlands.....	Ch. 2 Pg. 39
Map 2I: Swift County's Floodplains.....	Ch.2 Pg. 43
Map 3A: Swift County's Erosion Prone Soils	Ch. 3 Pg. 9
Map 3B: Swift County's Drainage Systems & Dams.....	Ch. 3 Pg. 13

List of Tables

Table 2A: Swift County's Precipitation Gauging Stations	Ch. 2 Pg. 2
Table 2B: Communities Served by Public Waters, Storm and Sanitary Sewers.....	Ch. 2 Pg. 18
Table 2C: Mean Stream Exceedence Value Ranges by Major Watershed.....	Ch. 2 Pg. 24
Table 3A: Swift County's TMDL Listing of Impaired Waters	Ch. 3 Pg. 5
Table 3B: Public Water Suppliers.....	Ch. 3 Pg. 18
Table 3C: Wellhead Protection Status	Ch. 3 Pg. 19
Table 3D: Key Organizations Providing Water-Based Education	Ch. 3 Pg. 22

List of Key Figures

Figure 2A: Minnesota Average Annual Precipitation	Ch. 2 Pg. 2
Figure 2B: Minnesota River Basins.....	Ch. 2 Pg. 4
Figure 2C: Upper Minnesota River Watershed	Ch. 2 Pg. 6
Figure 2D: Pomme de Terre Watershed	Ch. 2 Pg. 6
Figure 2E: Chippewa River Watershed	Ch. 2 Pg. 8
Figure 3A: Well Interference.....	Ch. 3 Pg. 16
Figure 3B: Public Water System Categories and Definitions.....	Ch. 3 Pg. 17

Appendices

Swift County Census Profiles	Appendix A
Water Appropriation Permits.....	Appendix B
Conservation Lands Summary.....	Appendix C

INTRODUCTION TO THE SWIFT COUNTY COMPREHENSIVE LOCAL WATER MANAGEMENT PLAN

The Comprehensive Local Water Management Act (Minnesota Statutes Sections 103B.301 to 103B.355) encourages counties to develop and implement a comprehensive water plan. Pursuant to the requirements of the law, this Plan:

- Covers the entire area of the 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
- This Water Plan is a third generation plan that covers a ten-year period (2003 – 2013), with the Goals, Objectives and Action Steps covering a five-year period (2003 – 2008).

To ensure that these objectives are realized, the Comprehensive Local Water Management Act further specifies the basic contents of the comprehensive water plan to contain:

- A description of the existing and expected changes to the physical environment, land use and development in the county;
- Available information about the surface water, groundwater and related land resources in the county, including existing and potential distribution, availability, quality and use;
- Objectives for future development, use and conservation of water and related land resources, including objectives that concern water quality and quantity, and sensitive areas, wellhead protection areas, high priority areas for wetland preservation, enhancement, restoration, and establishment, storm water management for developing areas, and related land use conditions, and a description of actions that will be taken in affected watersheds or groundwater systems to achieve the objectives;
- A description of potential changes in State programs, policies, and requirements considered important by the county to management of water resources in the county;
- A description of conflicts between the comprehensive water plan and existing plans of other local units of government, if any conflict exists;
- A description of possible conflicts between the comprehensive water plan and existing or proposed comprehensive water plans of other counties in the affected watershed units or groundwater systems, if any potential conflict exists;

- A program for implementation of the plan that is consistent with the plan's management objectives and includes schedules for amending official controls and water and related land resources plans of local units of government to conform with the comprehensive water plan, and the schedule, components, and expected State and local costs of any projects to implement the comprehensive water plan that may be proposed, although this does not mean that projects are required by this section; and
- A series of 55 data items, ranging in content from the County's average annual precipitation to the areas threatened and endangered species. Many of these data items make simple reference to where the current information can be found (i.e., a website, phone number or governmental agency contact). Chapter Two contains a matrix of Swift County's 55 data items.

Swift County Water Plan Contents

The Swift 2003 – 2013 Comprehensive Local Water Plan is divided into the following four chapters:

- **Chapter One: Water Plan Background and County Profile.** This Chapter provides an introduction to process used to develop the Swift County Water Plan. A brief County profile is included, along with a listing of some of the County's previous water planning accomplishments. Sections are also provided on the County's Clean Water Partnerships and watershed organizations.
- **Chapter Two: A Profile of the County's Water Resources.** This Chapter provides a profile of Swift County's 55 data items. The Data Items describe a number of the County's key water planning characteristics, ranging from annual precipitation to groundwater observation sites. The primary emphasis of Chapter Two is to describe what each Data Item is and explain how one can find the County's current information if needed.
- **Chapter Three: Water Planning Issues, Implications and Assessments.** This Chapter identifies Swift County's water planning issues and describes which ones are considered "high priority" between 2003 and 2008. An implication and assessment section is also included for each high priority issue. Some of the County's 55 data items that pertain to the County's high priority water planning issues are also found in this Chapter.
- **Chapter Four: Goals, Objectives and Action Steps.** This Chapter establishes Swift County's Goals, Objectives and Action Steps. These are based on each of the high priority water planning issues identified in Chapter Three. Swift County will implement the Goals and Objectives between 2003 and 2013. The Action Steps, however, will be implemented between 2003 and 2008. They will be simply updated in 2008 by crossing out Swift County's water planning accomplishments and creating new Action Steps to be pursued between 2008 and 2013.

CHAPTER ONE: COUNTY PROFILE AND EXECUTIVE SUMMARY



Swift County Bridge over the Minnesota River, 1905

Chapter One Contains...

Chapter One provides an introduction to Swift County and its Comprehensive Local Water Plan. This Chapter includes the following information:

- ✓ The role of the County Board, Water Planning Committee and Citizen Participation
- ✓ Swift County's Population and Location
- ✓ Previous Swift County Water Plan Accomplishments
- ✓ Clean Water Partnerships/Watershed Projects
- ✓ Watershed Districts

The role of the County Board, Water Planning Committee and Citizen Participation

In January 2002, the Minnesota River Headwaters Joint Powers Board (consisting of Big Stone, Chippewa, Lac qui Parle, Pope and Swift Counties) cooperatively agreed to update the member counties' Comprehensive Local Water Plans. After reviewing a number of proposals, the Joint Powers Board entered into a contract with the local Regional Development Commission, the Upper Minnesota Valley Regional Development Commission (UMVRDC), to coordinate the development of the five individual water plans. The UMVRDC thereafter subcontracted with Midwest Community Planning, LLC, to assist with the planning, facilitation and writing portion of the contract (the UMVRDC remaining responsibilities included mapping and various data collection). Midwest Community Planning, LLC, then assisted the individual counties with developing the specific contents of this Water Plan.

The water planning process for Swift County started with a Public Informational Meeting, held on March 25, 2002. The primary purpose of the meeting was to invite the public, local governmental units and various governmental agencies to identify and discuss local water planning issues. The issues identified were then discussed during regular meetings with a Local Water Plan Committee, created by the Swift County Board of Commissioners. The Committee included the following participants:

Water Plan Committee Members:

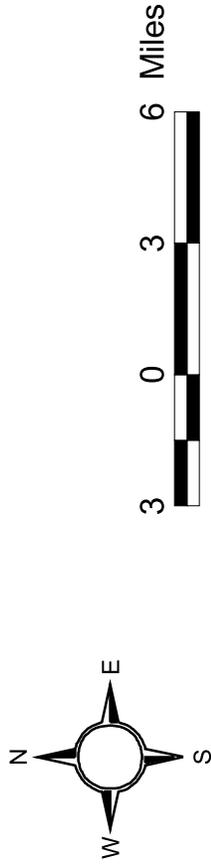
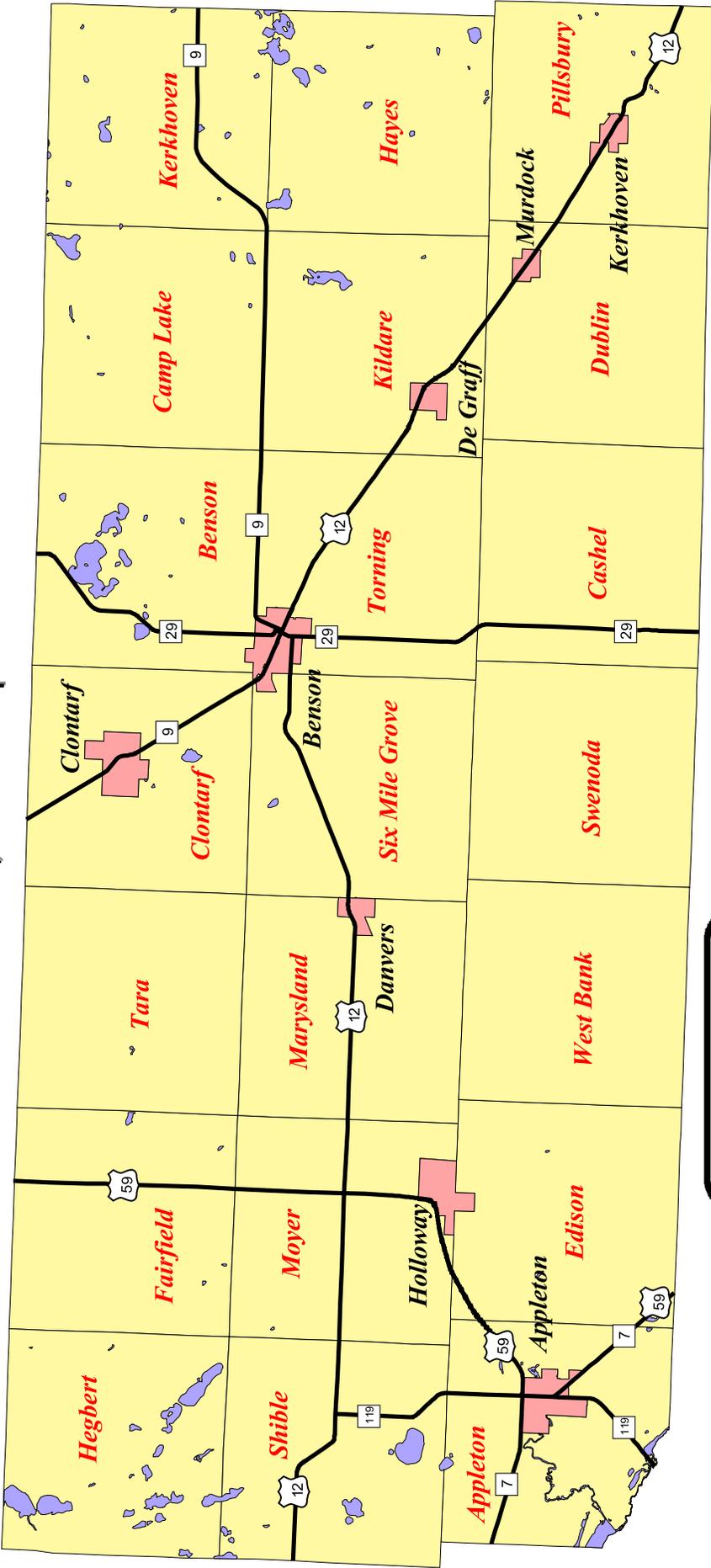
Scott Collins	Swift County Environmental Services
Dick Hanson	County Commissioner
Orvin Gronseth	Soil and Water Conservation District
Bert Koosman	Citizen
Mike Johnson	Swift County Parks & Drainage
Bill Hoberg	Citizen
Amy Faber	Pomme de Terre Watershed Coordinator
Kylene Olson	Chippewa Watershed Coordinator
Lyle Popma	Natural Resource Conservation Service
Rick Gronseth	Soil and Water Conservation District
Dave Soehren	Dept. of Natural Resources – Wildlife
David Sill	MN Board of Water & Soil Resources

The first draft of the Comprehensive Local Water Plan went out for public review on September 20, 2002. This review process included the general public, local governmental units (i.e., cities and townships) and governmental agencies. A public hearing was held with the County Board on November 19, 2002, to solicit public comment and to discuss all of the written comments received during the public review period. The Water Planning Committee then met one more time to incorporate the public and governmental comments into the final draft water plan. On January 10, 2003, the final draft was submitted to the Board of Water and Soil Resources for final state agency 90-day review. The final Swift Comprehensive Local Water Plan was approved by BWSR on May 28, 2003.

Swift County’s Population and Location

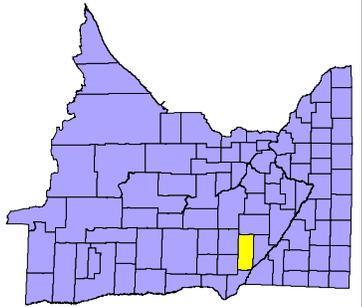
According to the 2000 Census, Swift County had approximately 11,956 residents living in 4,353 households. The City of Benson is the County’s largest City, with approximately 3,376 residents (Appendix A contains Swift County’s complete demographic profiles, including the following: General Demographic Profile, Selected Social Characteristics Profile, Selected Economic Characteristics Profile and Selected Housing Characteristics 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.

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



Legend

	Major Roads
	Lakes
	Cities
	Townships



Previous Swift County Water Planning Accomplishments

The Swift County Comprehensive Water Management Plan was developed to identify and address issues surrounding water quality in the County. This involved the input of local constituents, local governments, bordering counties and State agencies. Once these issues were identified an action plan was developed to deal with these issues.

This Water Plan is the second revision and is the third generation Water Plan. This update will be adopted in April 2003 and will be effective for a ten year period, with the implementation steps being updated in 2008. The original plan was approved in 1991 and updated in 1995. The CLWP is reviewed annually when the Natural Resource Block Grant reports are due. The Water Plan Advisory Committee makes recommendations on projects to be funded over the next year. The two-year work plans are written based on the committee's input and recommendations, with the County Board of Commissioners ultimately deciding where grant dollars will be spent. During this revision, the Water Plan Advisory Committee met over six months to review issues and priorities that should be addressed throughout the next ten years. A public informational meeting was held on April 8, 2002 where citizens discussed issues that should be addressed in the plan.

First Generation Accomplishments, 1991-1995

EDUCATION AND INFORMATION

- ▶ Fair booth on solid waste mgmt, water quality
- ▶ Radio ads to promote water plan activities
- ▶ Tree plantings and buffer strip promotion

MONITORING / DATA COLLECTION

- ▶ Well testing program
- ▶ Camp Lake water quality testing

INVENTORY / MAPPING

- ▶ Update land use map
- ▶ Well-head protection inventory

LAND AND WATER TREATMENT

- ▶ Well Sealing Cost Share Program
- ▶ Pesticide & Household Hazardous Waste collection
- ▶ Paint Exchange/collection

REGULATION, ORDINANCES AND PLANNING

- ▶ Shoreland Management Ordinance
- ▶ Solid Waste Ordinance
- ▶ Comprehensive Water Plan Update

TECHNICAL STAFF

- ▶ Bonanza Valley Education Center (in Big Stone County)
- ▶ Waste Busters formed
- ▶ Coordinate Chippewa River clean-up

PLAN COORDINATION / ADMINISTRATION

- ▶ Established Full Time Environmental Services Office to Implement Water Planning
- ▶ Created Water Plan Advisory Committee
- ▶ Participated and supported two watershed projects

OTHER

- ▶ Member of the five county Minnesota River Headwaters Joint Powers Board
- ▶ Member of the thirty-seven county Minnesota River Basin Joint Powers Board

Second Generation Accomplishments, 1995-2001

EDUCATION / INFORMATION

- ▶ Supporting funds Bonanza Valley Education Center
- ▶ Develop radio ads to promote water plan activities
- ▶ Assist in establishing Area Science Learning Center
- ▶ Support area students at regional environmental science fair

INVENTORY / MAPPING

- ▶ Level II Feedlot Inventory
- ▶ Gravel Pit Inventory

MONITORING / DATA COLLECTION

- ▶ Chippewa River Watershed Project – monitoring and diagnostic study
- ▶ Pomme de Terre River Watershed Project – monitoring study, river clean-up

LAND AND WATER TREATMENT

- ▶ Annual Pesticide and Household Hazardous Waste Collections (Annually)
- ▶ Well Sealing Cost Share Program (Annually)
- ▶ Paint Exchange
- ▶ Pomme de Terre Canoe Route and public access established
- ▶ Chippewa River Erosion Control Project
- ▶ Set aside incentive for conservation
- ▶ Nutrient management cost-share incentive with landowners
- ▶ Manure management plans
- ▶ CREP promotion

REGULATION / ORDINANCE / PLANNING

- ▶ Feedlot Management Ordinance
- ▶ Nuisance Ordinance

TECHNICAL STAFF & SERVICES

- ▶ Manure Management Coordinator to assist feedlot operators
- ▶ Delegated county feedlot officer
- ▶ CREP cost-share coordinator with Swift County SWCD

PLAN COORDINATOR/ADMINISTRATION

- ▶ Water Plan Task Force Meetings
- ▶ Attend regional and state water plan meetings and conferences
- ▶ Maintain full time environmental services office

MDA STATE REVOLVING LOAN PROGRAM

- ▶ Since 1995, the Minnesota Department of Agriculture has allocated \$375,968 in 47 Agriculture Best Management Practices Loans. The county used the revolving loan funds to spend a total of \$450,008 for the following conservation activities:
 - Eight Ag Waste Management Loans
 - Twelve Conservation Tillage Loans
 - Twenty-seven for Septic Systems

OTHER

- ▶ Member five-county MN River Headwaters Joint Powers Board
- ▶ Member 37 county MN River Basin Joint Powers Board

Funds Brought into Swift County through Water Planning (1990-2002)

NRBG 1990-2002 CLWP	\$409,200
NRBG 1995-2002 WCA	\$97,600
NRBG 1994-2002 Shoreland	\$14,000
NRBG 1998-2002 Feedlot	\$40,000
NRBG 1999-2002 ISTS	<u>\$3,920</u>
NRBG Total	\$564,720
Well Sealing Grants (1995 & 1999)	\$7,500
Challenge Grants (1993 & 1995)	\$12,500
Challenge Grant – 1997 Feedlot	\$3,500
Grant Subtotal	\$23,500
	Total Non-Local Funds \$588,220
Required Levy	\$33,600
In-Kind Dollars	\$80,800
	Total Local Funds \$114,400
Total Water Planning Funds	\$702,620

Swift County Clean Water Partnerships/Watershed Projects *(see Data Item 6 in Chapter Two for a profile of Swift County's watersheds)*

The Clean Water Partnership (CWP) Program was created in 1987 to address pollution problems associated with runoff from agricultural and urban areas. The program is funded by the Minnesota Pollution Control Agency (MPCA) and provides local governments with resources to protect and improve lakes, streams and groundwater.

CWP projects begin with a desire by a local government to improve a water resource that has been polluted by land-use-related activities. Local leadership and expertise, combined with technical and financial resources from the State, create an effective program for controlling pollution and restoring water quality.

Funding for CWPs is awarded in two phases. In the first, or resource investigation phase, a diagnostic study and implementation plan are completed. As part of the diagnostic study, local sponsors work with the MPCA to collect data and information on the water resource and its watershed. This information is used to identify pollution problems and their causes and define water quality goals and objectives. The final step of the resource investigation phase is the development of an implementation plan that identifies the combination of education, management practices and other activities needed to protect or restore water quality.

The second phase of a CWP, called project implementation, involves the implementation of best management practices (BMPs) identified in the first phase. BMPs may include sedimentation ponds, manure management, conservation tillage, terraces, new ordinances, wetland restoration, fertilizer management, education or other methods designed to reduce nonpoint-source pollution.

Projects may be completed either partially or completely through the CWP program. To be eligible for CWP funding, the entire project must meet program requirements. This means that if the project sponsor intends to seek CWP funding for later phases, the MPCA must first approve a diagnostic study and an implementation plan.

The financial assistance available through the program falls into two categories: grants and low-interest loans. Grants are available for up to 50 percent of project costs. Loans can only be used for the project implementation phase and can cover the entire cost of implementation or supplement a grant. Local governments can also use loans to set up their own programs to provide pass-through loans to private parties. Local governments with the authority to generate cash revenues and adopt and enforce official controls are eligible to sponsor CWP projects and receive grant funding. To be eligible for a loan, a local government must also be able to secure the loan with a general obligation promissory note. In addition, the water of concern must be addressed in an approved local water plan. According to the MPCA, there has been the following two CWP funded projects in Swift County:

- Shakopee Creek Clean Water Partnership (sub-watershed of Chippewa) – Contact Rob Spitzley at (320) 231-0008, ext. 132, for more information.

- Chippewa River Watershed Project. Phase II CWP. Start date: February 13, 2001. End date: February 13, 2004. Grant amount: \$469,372. MPCA project manager: Wade Gillingham, Phone # (507) 537-7163.

Chippewa River Watershed Project

629 North 11th Street
Montevideo, MN 56265
(320) 269-2139

The Chippewa River Watershed Project (CRWP) is a cooperative effort of over 25 organizations, from County, State and Federal agencies, to non-profit organizations, lake associations, citizens and landowners throughout the 1.3 million acre watershed. Counties involved in the project include parts of Kandiyohi, Chippewa, Douglas, Grant, Ottertail, Pope, Stevens and Swift. The CRWP began in March 1998, when the Minnesota Pollution Control Agency (MPCA) awarded the project a Clean Water Partnership grant to conduct a three-year Phase I Diagnostic Study of the watershed. Extensive water quality monitoring and land use assessment was conducted from 1998 through 2001. The data collected was used in the development of an Implementation Plan for the watershed. The project received funding in the spring of 2001 for the first three years of implementation through the MPCA's Clean Water Partnership grant program.

Through the Diagnostic Study, it was found that the Chippewa River carries high levels of sediment, nutrient (phosphorus and nitrogen) and bacteria pollutants, derived from rainfall-driven polluted runoff that occurs throughout most of the watershed. The usefulness and aesthetic qualities of the river are impaired and conditions are unlikely to improve unless changes are made in land use and water management practices within the watershed. Change can be accomplished through an implementation plan that reflects real problems occurring on the landscape and clearly identified solutions to those problems, while developing and organizing sufficient resources to attain meaningful and effective solutions.

In setting goals and objectives, consideration is 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. Second, pollutant transport in the watershed is primarily affected by uncontrolled runoff through the many hydrologic pathways present (i.e. the 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 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.

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 has been ranked as the Chippewa's first priority sub-basin. The Shakopee Creek Headwaters Project is discussed in more detail later in this document. 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.

The monitoring program established in the watershed during the Diagnostic Study will continue throughout the Implementation Phase. Water quality monitoring plays a key role in identifying priority areas and documenting changes, as well as gaining a greater understanding of the complexities of a watershed. In addition, a bio-monitoring program has been developed to engage high school students throughout the watershed.

The outreach and education program of the CRWP is based on the concept of "connecting people through their river". The Citizen Monitoring Network of the CRWP engages landowners in watershed activities. Other education efforts include a newsletter, annual meeting, monthly meetings, bus tours, seminars, workshops and creating new partnerships. Education efforts revolve around urban and rural BMPs to enhance water quality and water quantity issues, hydrology, watershed concepts and the connection of land use to the river.

Watershed Districts

Upper Minnesota River Watershed District

342 NW 2nd Street
Ortonville, MN 56278
(320) 839-3411

The Upper Minnesota River Watershed District was formed on September 7, 1967. The District is located primarily in Big Stone County, with smaller areas in Lac qui Parle, Stevens, Swift and Traverse Counties. The mission of District is to “serve its residents by wisely and judiciously managing water, in a manner that sustains and enhances the social, economic and natural resources of the District. The District prefers the use of innovative water management methods, which recognize the unique agricultural, community, lake and stream and natural resources within the District. These innovative approaches as reflected by the policies of the District should be oriented toward ensuring the economic viability of the District’s agrarian community.”

Each of the Counties located within the Upper Minnesota River Watershed District plays a vital role in the District’s activities. The Big Stone County Board of Commissioners appoints three of the District’s Board Managers, while the County Board of Commissioners for Swift and Traverse Counties each appoint one Board Manager. Each appointed Board Manager must be a resident of the District and is prohibited from being a public official of the County, State or Federal government. Each Manager serves a three-year term, which is renewable by approval of the County Board of Commissioners.

To enforce its adopted rules and regulations, the Upper Minnesota River Watershed District utilizes a permit system. Permits are required for a wide variety of construction activities that affect the water resources of the District. Any individual landowner, public entity, or governmental unit that contemplates a project impacting the water resources of the District, must secure a permit. Permit applications are considered at the regular monthly meeting of the Board of Managers. Board members and office staff are available to assist applicants in the permitting process. In addition to “in house” assistance, staff regularly assist applicants in field investigations to obtain recommendations on construction techniques and use of best management practices.

Lake Associations

A lake association is an organized group of people who have come together because of their common interest in a specific lake. Lake associations serve as an organized voice of their members to township and county government and are often a watchdog for enforcement of local ordinances. An association may monitor the condition of a lake, develop a lake management plan, educate shoreland property owners about individual and collective actions to protect a lake and provide volunteers to assist in lake and watershed projects. They may also work with the Department of Natural Resources (DNR) to improve fish habitat or fish stocking, get permits for aquatic plant removal, or maintain a lake access. The Camp Lake/Swift Falls Association (1140 65th St. NE; Benson, MN 56215) is the only lake association in Swift County that is a member of the Minnesota Lakes Association. Contact Michelle Hanson at (320) 842-3201 for additional information.

CHAPTER TWO: SWIFT COUNTY'S WATER PLANNING 55 DATA ITEMS

This Chapter describes each of the 55 data items outlined in the Board of Water and Soil Resource's (BWSR) Handbook for Comprehensive Local Water Planning. Most of the Data Items are presented in this Chapter, however, the primary emphasis is to describe how to find the data if needed. As a result, many of the Data Items provide a brief description of who to contact or which website to view if one is interested in acquiring the most current version of the information. There are also numerous references to Data Items presented in Chapter Three and the Appendices of this Plan.

Data Item 1. Precipitation Gauging Stations

Data Item 2. Total Precipitation

Data Item 3. Seasonal Precipitation

Because of its location near the center of North America, Swift County is subject to a variety of air masses that affect the amount of precipitation that falls within the County. During the winter months, cold, dry continental polar air dominates the region. Hot, dry continental tropical air masses from the desert southwest, along with warm, moist maritime tropical air masses that originate over the Gulf of Mexico, are common during the summer months. The spring and fall months serve as transition periods between summer and winter, composed of alternate intrusions of air from various sources.

Precipitation within Swift County is monitored through an interagency cooperative effort between the Minnesota Department of Natural Resources (DNR), the Swift County Soil and Water Conservation District (SWCD) and the National Weather Service (NWS). The Swift County SWCD and the NWS are responsible for recording and compiling precipitation data at the local level. Once information is collected, it is then forwarded to the DNR's State Climatology Office, where it is further analyzed and entered into a statewide database.

There were seven precipitation gauging stations in operation in Swift County between 1996 and 2001. The Swift County SWCD had a network of six precipitation gauging stations, while the NWS had one monitoring station. The geographic location of each monitoring site along with the six-year total and seasonal precipitation information is shown in Table 2A. According to the Table, the County's annual average participation is around 26 inches, with slightly over 16 inches occurring in May through September.

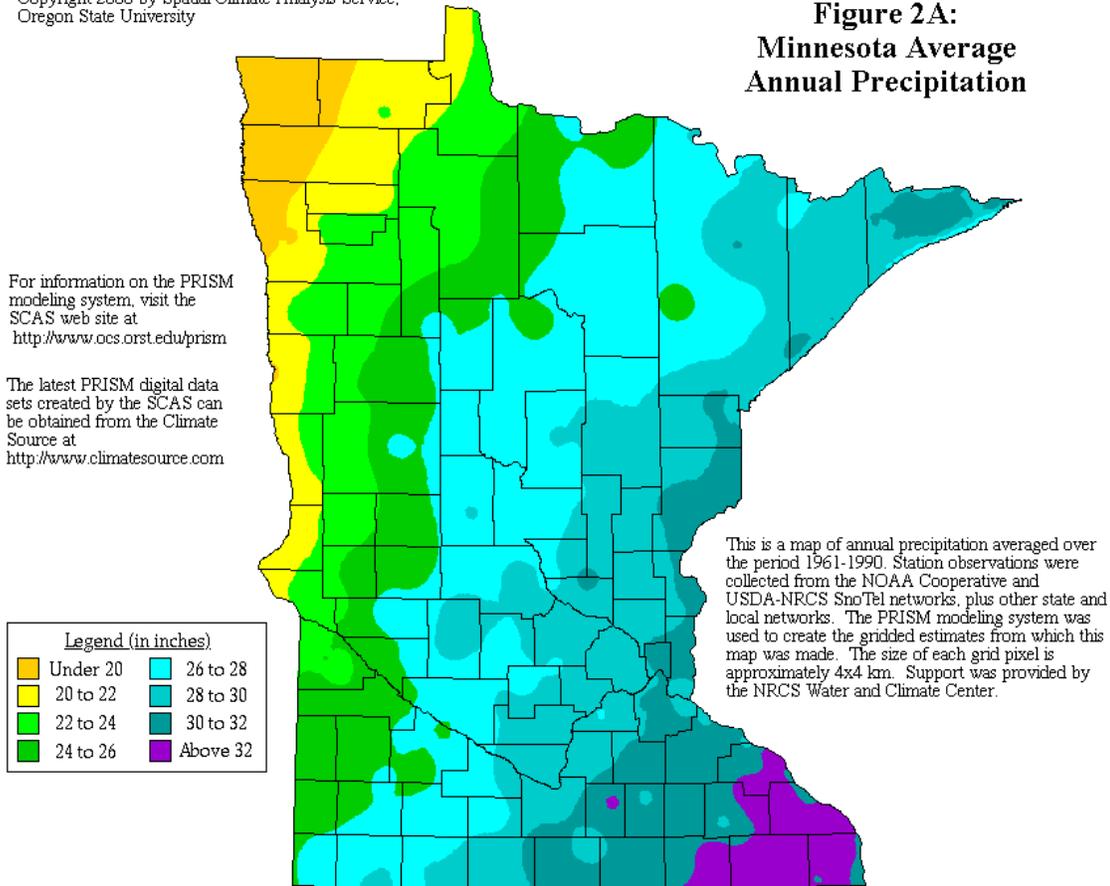
Figure 2A shows a map of the State's average annual precipitation from data collected between 1961 and 1990. Notice that the northwestern corner of Swift County received an average of between 22 to 24 inches annually, the western half (excluding the northwestern corner) received an average of between 24 to 26 inches, with the eastern half of the County averaging between 26 to 28 inches. This is consistent with the 1996-2001 information presented in Table 2A.

**Table 2A:
Swift County's Precipitation Gauging Stations**

Type	Township	Range	Section	1996-2001 Annual Average	Growing Season (May-September)
SWCD	120N	37W	15	29.20	18.1
SWCD	120N	40W	29	24.51	16.14
SWCD	120N	43W	23	25.84	15.45
NWS	121N	39W	8	25.44	15.57
SWCD	121N	41W	3	25.03	15.34
SWCD	122N	38W	31	25.90	16.75
SWCD	122N	42W	19	25.98	15.81
1996-2001 Averages				26.02	16.11

Copyright 2000 by Spatial Climate Analysis Service,
Oregon State University

**Figure 2A:
Minnesota Average
Annual Precipitation**



For more information on the County's climate, contact the State Climatology Office at (651) 296-4214 or visit their website at:

www.climate.umn.edu

Data Item 4. Hydrogeology

Data Item 5. Ground and Surface Water Interconnections and Recharge Areas

Swift County was recently included in a Regional Hydrogeologic Assessment (RHA), along with Lac qui Parle and Chippewa Counties, and the southern half of Big Stone County. A RHA is currently being developed for the northern half of Big Stone County (scheduled to be completed in 2003). A Regional Hydrogeologic Assessment is a formal study of an area's geology and groundwater resources, emphasizing the investigation of shallow geologic, groundwater and pollution sensitivity conditions. RHA's should not be confused with County Geologic Atlases, which investigate the properties and distribution of rocks and unconsolidated earth materials beneath the land surface. A Regional Hydrogeologic Assessment normally covers an area in size of between four to nine counties, while a Geologic Atlas is specific to one county. Each Regional Hydrogeologic Assessment or County Geologic Atlas produces a series of information and products, including the following:

- ✓ County Well Index Database
- ✓ Geology Maps
- ✓ Water Chemistry and Groundwater Maps
- ✓ Pollution Sensitivity Maps
- ✓ Geographic Information System Files
- ✓ Interpretive Reports

The Regional Hydrogeologic Assessment is an excellent source of information, however, local decision-makers and County staff need to have a better understanding of how to use it. The County's long-term goal is to actually use the RHA in the decision-making process. For example, it could be used to help locate a proposed water-intensive industry in an area of the County with suitable groundwater concentrations. In response to this issue, the County has created an Action Step in Chapter Four to learn how to interpret and use the RHA and other water-based information in the decision-making process (with State agency participation). For more information on Swift County's Regional Hydrogeologic Assessment, contact the Minnesota Geological Survey or the Department of Natural Resources at the following location:

Geology and Atlas Use

Minnesota Geological Survey
2642 University Avenue
St. Paul, MN 55114-1057
(612) 627-4780
<http://www.geo.umn.edu/mgs>

Groundwater and Pollution Sensitivity

DNR Waters
500 Lafayette Road
St. Paul, MN 55155-4032
MN Toll Free 1-888-646-6367
<http://www.dnr.state.mn.us>

Data Item 5. Watersheds

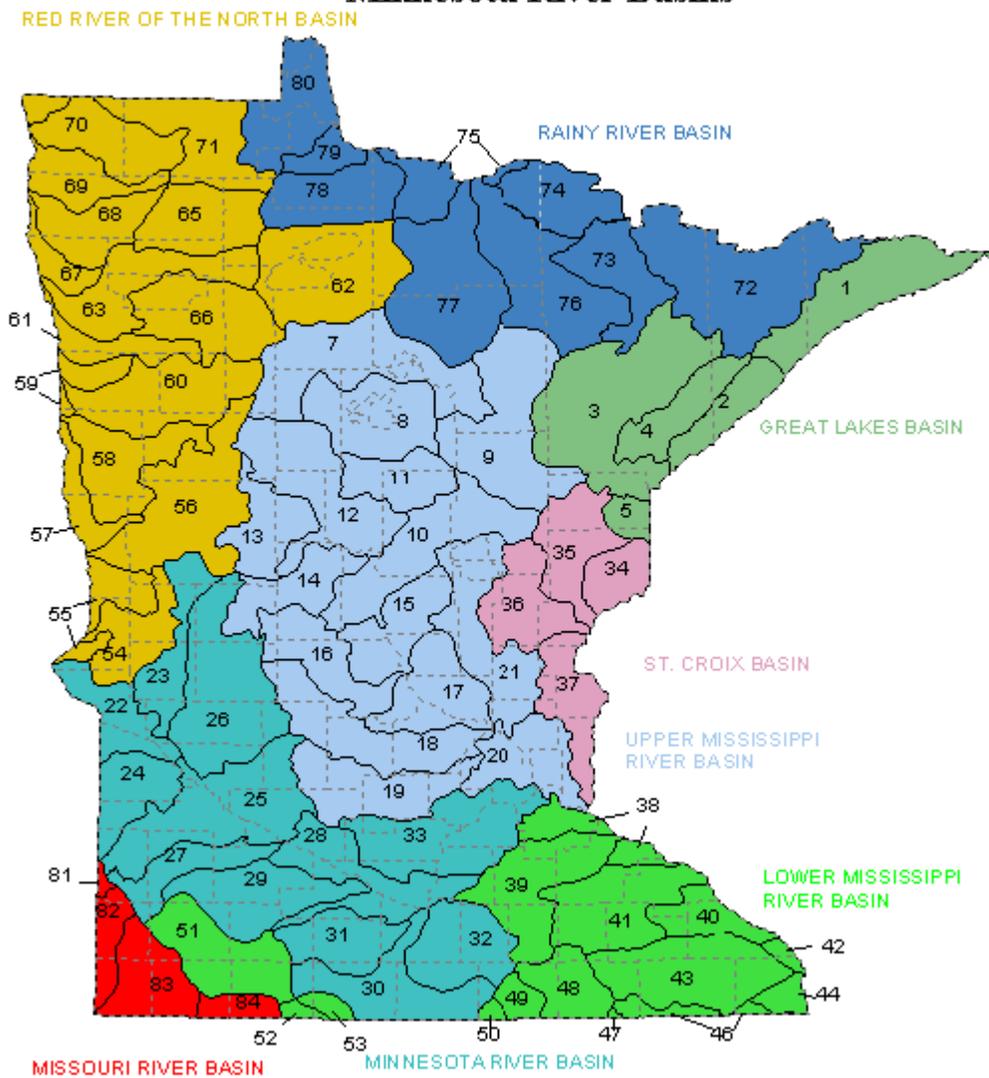
Data Item 11. Topographic Description of Watersheds

Swift County is located within three major watersheds: the Upper Minnesota River, Pomme de Terre River and Chippewa River Watersheds (see Map 2A). All three watersheds are part of the Minnesota River Basin (see Figure 2B). This section of the Water Plan provides a profile of each watershed adopted from the following websites

Minnesota Pollution Control Agency: <http://www.pca.state.mn.us/water/basins/index.html>

Minnesota River Basin Data Center: <http://mrbdc.mankato.msus.edu/>

**Figure 2B:
Minnesota River Basins**

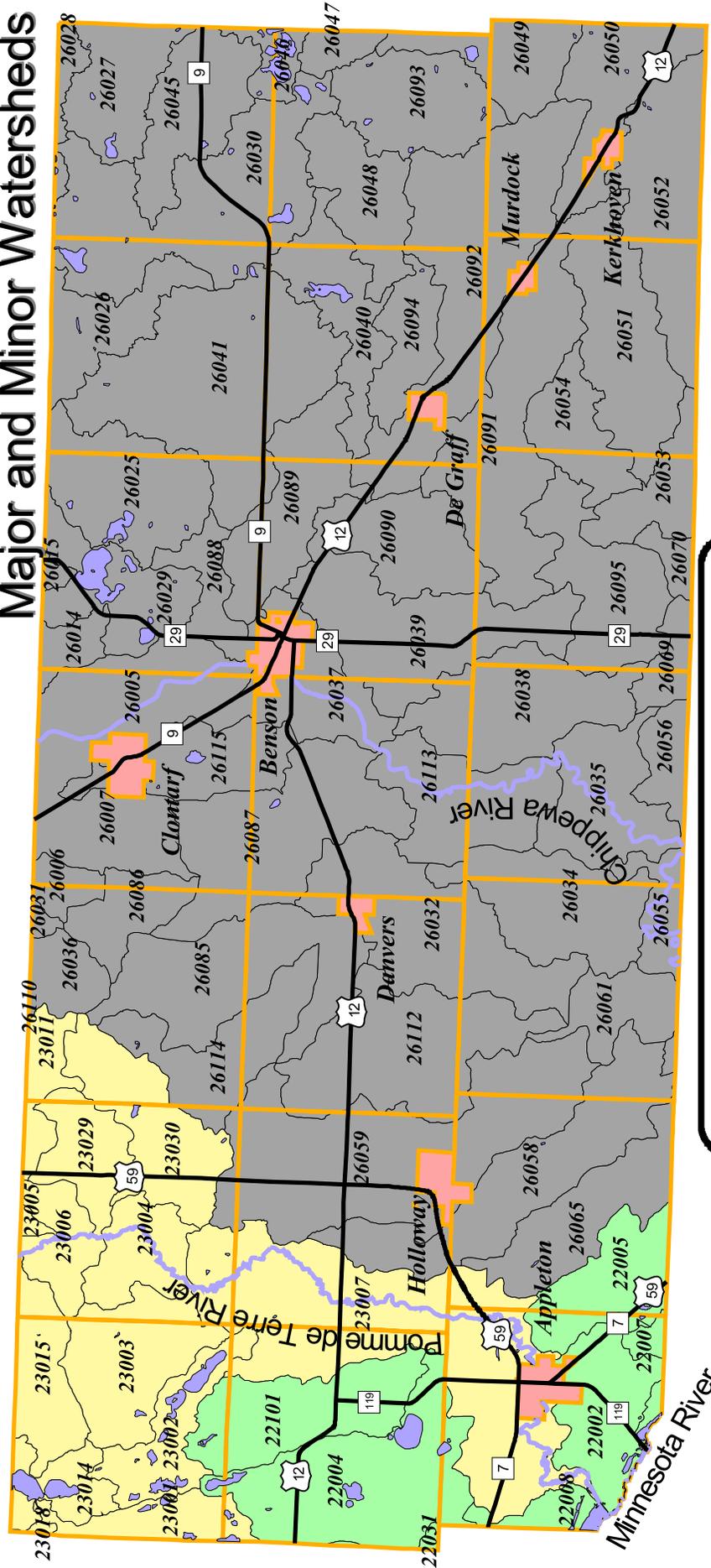


22 = Upper Minnesota River Watershed

23 = Pomme de Terre Watershed

26 = Chippewa River Watershed

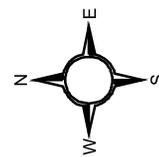
Map 2A: Swift County's Major and Minor Watersheds



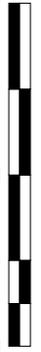
Legend

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

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

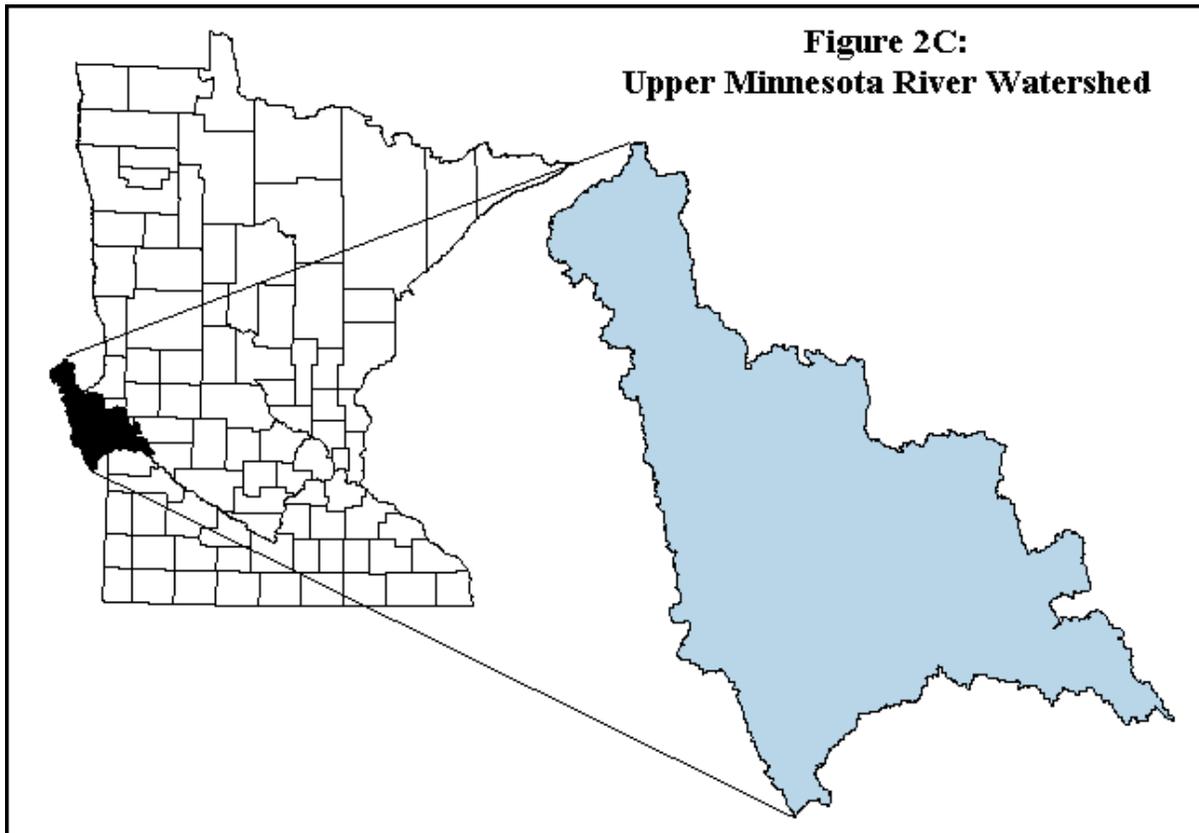


0 2 4 6 Miles



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 Big Stone, Chippewa, Lac qui Parle, Stevens, Swift, Traverse counties and northeastern South Dakota and southeastern North Dakota (see Figure 2C). 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 Big Stone/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.

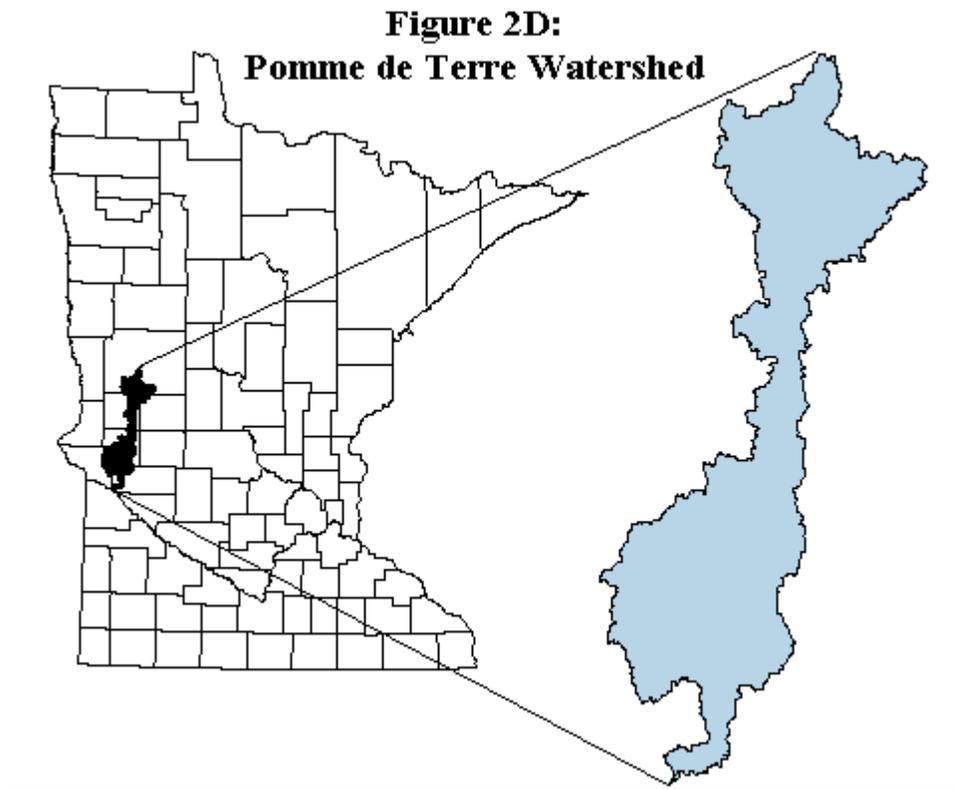
Below Ortonville, the Minnesota River passes through the Big Stone-Whetstone Reservoir (constructed during the 1970s). Further down, the Yellow Bank River, whose headwaters are also in South Dakota, enters into the Minnesota River. The Upper Minnesota then meets Marsh Lake and Lac qui Parle Lake (meaning “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.

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 improved drainage. The majority of the crop-lands (82%) are classified as moderately productive. As of 1994, approximately 8% of the agricultural acres within the Watershed were classified as grasslands enrolled in the Conservation Reserve Program (CRP), a voluntary federal program that offers annual rental payments to farmers in exchange for planting areas of grass and trees on lands subject to erosion. 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.

The Pomme de Terre Watershed

The Pomme de Terre River Watershed is also one of the twelve major watersheds in the Minnesota River Basin. It is located in west central Minnesota within Big Stone, Douglas, Grant, Otter Tail, Stevens and Swift counties (see Figure 2D). There are nine municipalities in the watershed, of which the City of Morris is the largest (5,068 residents according to the 2000 Census). The Pomme de Terre River Watershed is approximately 875 square miles or 559,966 acres. The Watershed is subdivided into 52 minor watersheds (or sub-watersheds). The minor watersheds range in size from 2,524 acres to 40,139 acres, with approximately 10,769 acres being the average size.

The Pomme de Terre River and its tributaries, public and private drainage systems, lakes and wetlands, all define the drainage network of the Watershed. The Pomme de Terre River flows from the north to its confluence with the Minnesota River near the City of Appleton in Swift County. The total distance of the stream network is 751 miles of which 616 miles are intermittent streams and 135 miles are perennial streams.



Originating in lakes and ponds of the rugged, undulating to steep sloped (6- 45%) Alexandria Glacial Moraine, the Pomme de Terre River starts its journey as a distinct stream tumbling cool and clear from Stalker and Long Lakes in southern Otter Tail County. Bordered by wooded hills and grassy meadows, the Pomme de Terre River, while having no major tributaries, flows south through several lakes in Otter Tail, Grant and Stevens counties. Most of these lakes have small water-control dams in the outlets, which maintain various lake levels. In many stretches between lakes, the River meanders quietly through cattail and reed canary grass marshes.

Below the headwaters, the Pomme de Terre River enters the Northern Glaciated Plains Ecoregion. Drainage on the eastern side of the River comes off the Big Stone Moraine, characterized by landscapes that are gently sloping to moderately steep (6-12%), with well drained, silty and loamy soils. Water erosion potential within the Big Stone Moraine is generally classified as moderate. Waters falling on the western side of the basin drain the Fergus Falls Till Plain, an outwash plain that is nearly level to moderately sloping (0-6%), composed of poorly drained clayey and loamy soils. Slight to high water and wind erosion potentials exist across this section of the basin and are reflected by the character of the Pomme de Terre River below the City of Morris. South of this point, flowing through southern Stevens and eastern Swift counties, the River is bordered by eroding and muddy banks, becoming increasingly turbid before discharging into the Minnesota River at Marsh Lake. The River's overall gradient averages 3.5 feet per mile.

Land use within the Pomme de Terre River Watershed is primarily agricultural, accounting for approximately 81% of the area. Located in the northwest quadrant of the Minnesota River Basin, cropping systems in the Pomme de Terre Watershed are more diverse than those of other major watersheds draining the southwest and southeast quadrants. There are roughly one million cattle and three million hogs in the Minnesota River Basin, with 24% of the cattle and 14% of the hogs located within the northwest quadrant.

Within the Pomme de Terre River Watershed, corn and soybeans only account for approximately 50% of the crops grown on agricultural lands. Small grains, hay, and grasslands enrolled in the Conservation Reserve Program (CRP) make up the majority of the balance. In early 1996, it was estimated that 7% of the agricultural acres within the Pomme de Terre Watershed were enrolled in the CRP program. Cropped lands are generally classified as moderately productive (73%), although nearly 24% are ranked as low production acres.

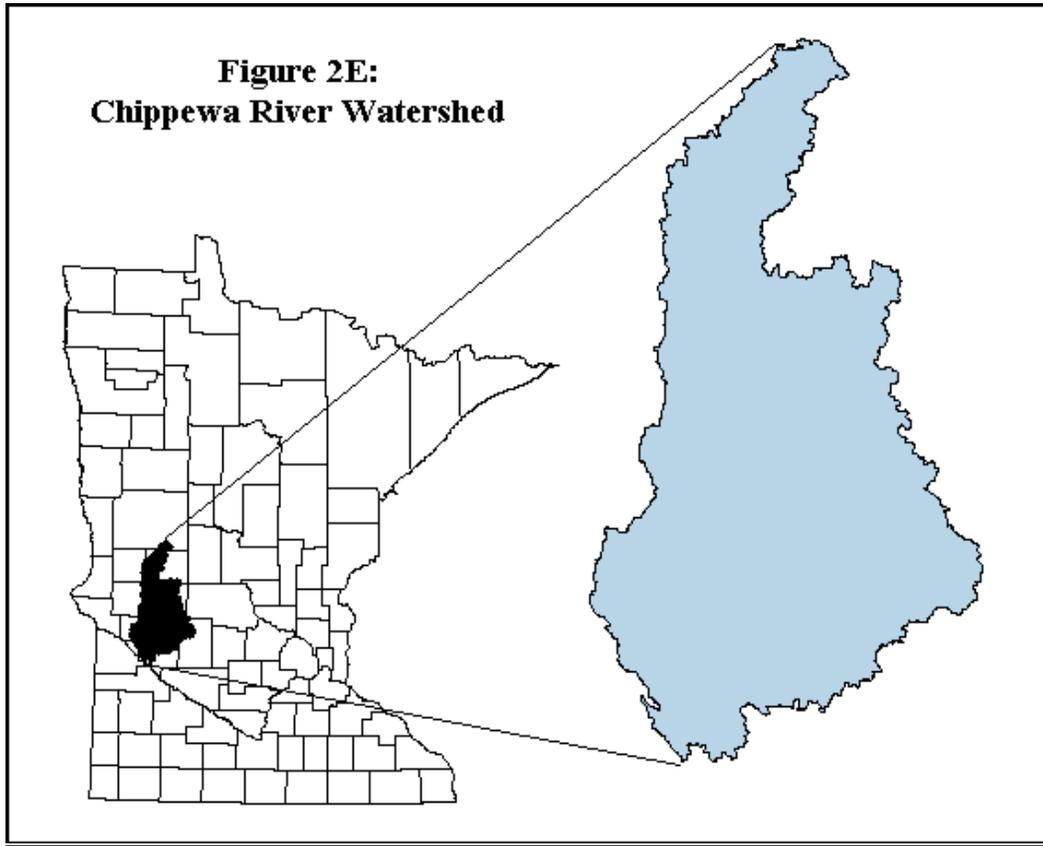
The Chippewa River Watershed

The Chippewa River Major Watershed is one of the twelve major watersheds of the Minnesota River Basin. It is located in west central Minnesota within Chippewa, Douglas, Grant, Kandiyohi, Otter Tail, Pope, Stearns, Stevens and Swift Counties (see Figure 2E). There are 26 municipalities in the watershed, of which the City of Montevideo is the largest (with a 2000 Census population of 5,346). The Chippewa River Watershed area is approximately 2,084 square miles or 1,333,541 acres. The watershed is subdivided into 127 minor or sub-watersheds. The sub-watersheds range in size from 1,644 acres to 40,351 acres, with the mean size approximately 10,500 acres.

The Chippewa River and its tributaries, public and private drainage systems, lakes and wetlands, define the drainage network of the major watershed. 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

**Figure 2E:
Chippewa River Watershed**



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. As such, 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 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.

Land use within the Chippewa River Watershed is primarily agricultural, accounting for approximately 68% of the available acres. Corn and soybeans are grown on approximately 66% of cropped lands; small grains, hay, and grasslands enrolled in the Conservation Reserve Program (CRP) make up the majority of the balance. Early 1996 estimates were that 10.5% of the

agricultural acres within the watershed were enrolled in the CRP program, a voluntary federal program that offers annual rental payments to farmers in exchange for planting areas of grass and trees on lands subject to erosion. Crop lands are generally classified as moderately productive (68%), although nearly 25% are ranked as low production acres.

1996 figures estimated there were roughly one million cattle and three million hogs in the Minnesota River Basin. Of the cattle, approximately 30% occur in the southwestern portion of the Minnesota River Basin and an additional 30% in the southeastern portion. Approximately half of the hogs are raised in the southeastern section of the basin with an additional 25% in the southwestern section.

Data Item 7. State Public Waters (*also see Chapter Three for Drainage Ditches*)

Public Waters are designated as such to indicate which lakes, wetlands and watercourses the Minnesota Department of Natural Resources (DNR), Division of Waters has regulatory jurisdiction over. The statutory definition of Public Waters can be found in Minnesota Statute 103G, Subdivision 15. The following water bodies and courses are given such a classification:

- All types 3, 4, and 5 wetlands (as defined in U.S. Fish and Wildlife Service Circular No. 39, 1971 ed.) that are 10 acres or more in size in unincorporated areas or 2½ acres or more in size in incorporated areas;
- Water basins assigned a shoreline management classification by the Commissioner of the DNR, under sections 103F.201 to 103F.221, except wetlands less than 80 acres in size that are classified as natural environment lakes;
- Waters of the State which have been determined to be public waters or navigable waters by a court of competent jurisdiction;
- Meandered lakes, excluding lakes that have been legally drained;
- Water basins previously designated by the Commissioner for management for a specific purpose, such as trout lakes and game lakes pursuant to applicable laws;
- Water basins designated as scientific and natural areas under Section 84.033;
- Water basins located within and totally surrounded by publicly owned lands;
- Water basins where the State of Minnesota or the Federal government holds title to any of the beds or shores, unless the owner declares that the water is not necessary for the purposes of the public ownership;
- Water basins where there is publicly owned and controlled access that is intended to provide for public access to the water basin;
- Natural and altered watercourses with a total drainage area greater than two square miles in area;
- Natural and altered watercourses designated by the Commissioner as trout streams; and
- Public Waters wetlands, unless the statute expressly states otherwise.

Detailed Public Waters maps are available for viewing at applicable county auditors offices, DNR Waters regional and area offices, DNR area fisheries offices, county Soil and Water Conservation District offices and planning and zoning offices. The maps may also be downloaded off the DNR website at:

www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

Data Item 8. Soils (also see data item 6)

Data Item 9. Erosion-Prone Soils (also see data item 6 and Chapter 3)

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 2B displays the Swift County soil associations that are classified as wind erosion prone. Map 3C in Chapter Three shows the location 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 (320-842-7201 ex. 3).

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 (also refer to Data Item 6 and Chapter Three)

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 3C Chapter Three (placed there for the discussion on the County's erosion problems) identifies the water erosion prone Swift County soil associations that have K factors equal to or greater than 0.28.

Wind Erosion (also refer to Data Item 6 and Chapter Three)

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. Map 3C Chapter Three (placed there for the discussion on the County's erosion problems) identifies the wind erosion prone Swift County soil associations.

Data Item 10. Original Vegetation

The Minnesota Department of Natural Resources (DNR) has inventoried the original vegetation of Swift County through its Presettlement Vegetation Database. Presettlement vegetation was determined by analyzing the detailed maps and records of early surveyors (approximately 1895). The purpose of the database is to “analyze presettlement vegetation patterns for the purpose of determining natural community potential, productivity indexes, and patterns of natural disturbance”. Map 2C presents the presettlement vegetation for Swift County.

Data Item 11. Topography

See Data Item 6 for a general discussion on the County's Topography. The County's Soil Survey also provides a good description of Topography.

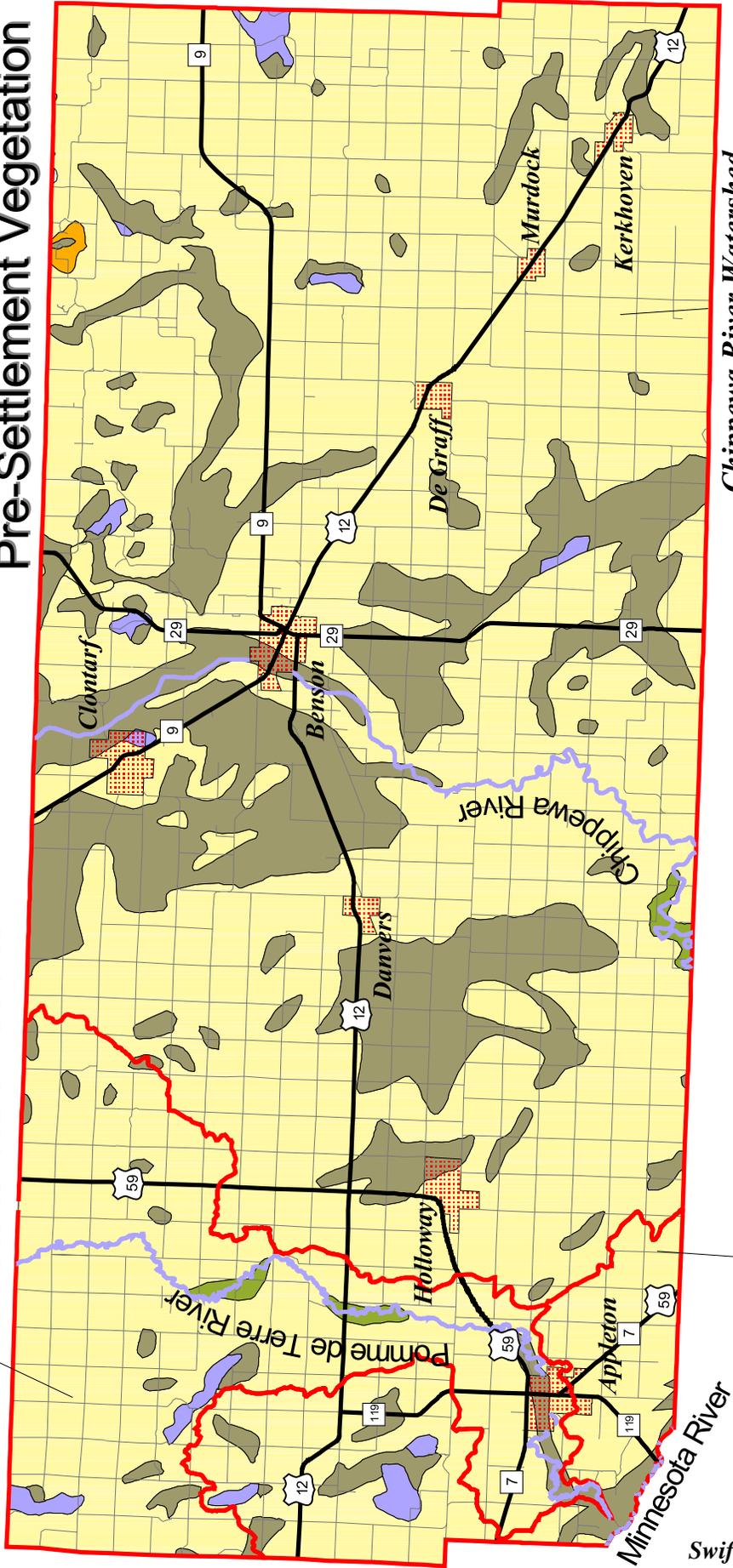
Data Item 12. Land Use

As an update to the 1969 Land Use Inventory, the Minnesota Land Management Information Center (LMIC) conducted the Minnesota Land Use-Agricultural and Transition Areas Inventory in 1989. Land uses were interpreted using National Wetland Inventory Maps from the United States Fish and Wildlife Service, USDA-Farm Service Agency (FSA) low altitude 35-mm aerial photography and Landsat satellite imagery. The results of the Inventory are reproduced in Map 2D (the Map corresponds with the text below).

The land cover classifications used in this project were derived from *A Classification Manual for Land Cover and Land Use in Minnesota*, produced in 1978 by the Minnesota State Planning Agency. The objective of the current classification scheme was to provide as much consistency as possible with the 1969 land use categories, while at the same time recognizing current user needs and better data sources. The following definitions describe the types of land use found in each classification scheme:

Map 2C: Swift County's Pre-Settlement Vegetation

Pomme de Terre River Watershed



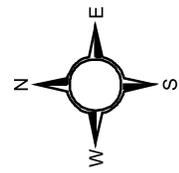
Chippewa River Watershed

Upper Minnesota River Watershed

Swift County Water Plan
Ch. 2 Pg. 15

Legend

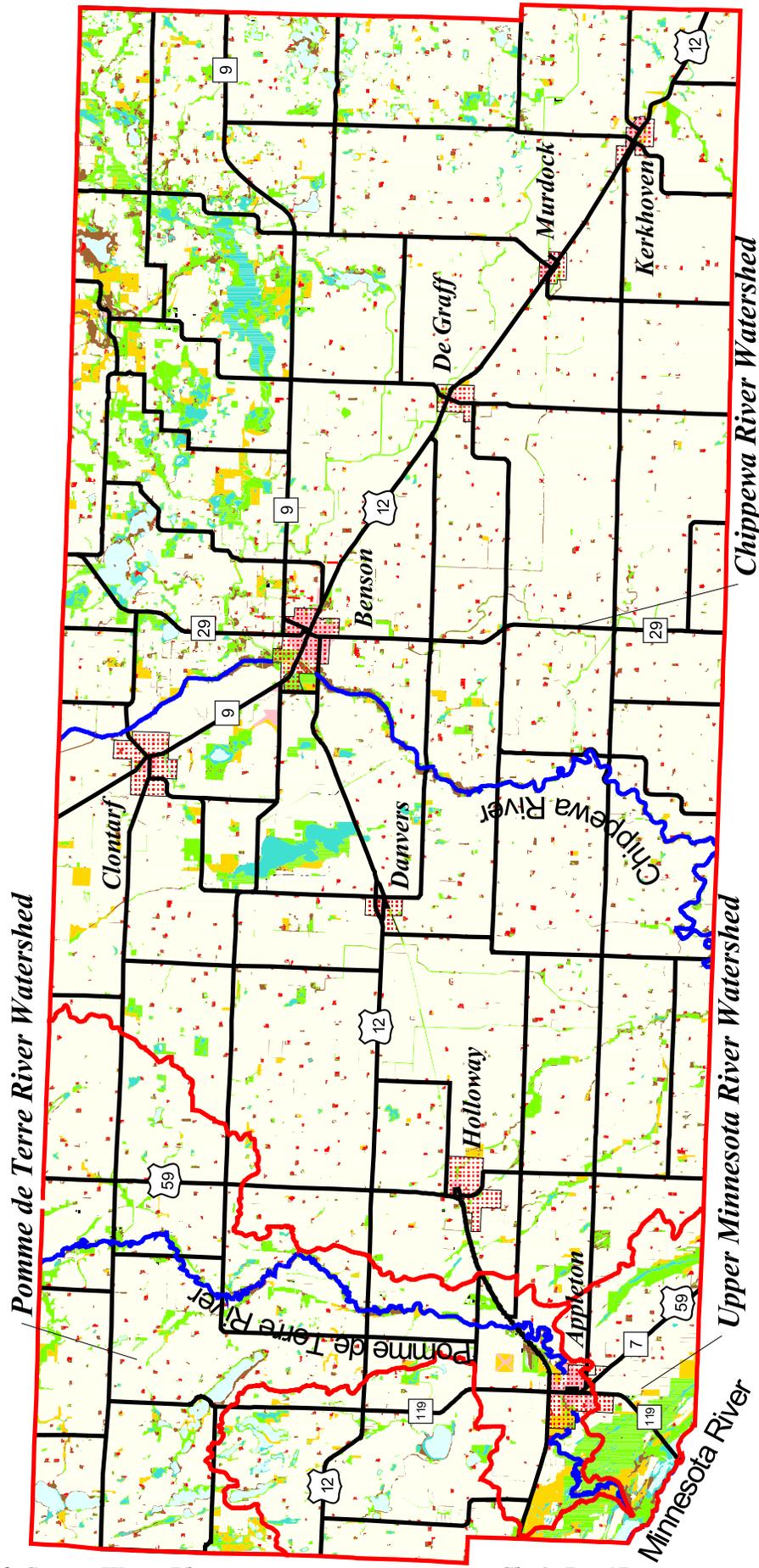
- | | | | | | |
|---|-------------|---|----------------------------|---|--------------------------|
|  | Rivers |  | Major Watershed Boundaries |  | Lakes (open water) |
|  | Major Roads |  | Minor Roads |  | Oak Openings and Barrens |
|  | Cities |  | |  | Prairie |
| | |  | |  | River Bottom Forest |
| | | | |  | Wet Prairie |



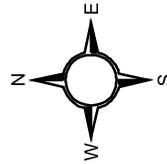
Source: MNDNR Waterbasins 1995, MNDOT Basemap '99,
MN DNR-Division of Forestry
Date: June 25, 2003
Produced By: UMRDC GIS Service Bureau

Land Use Map Categories (1990)

- **Urban and Industrial** - This category includes cities, towns and villages with place names. Small residential areas without USGS topographic map place names are classified as rural residential developments. The urban and industrial category also includes commercial, industrial or urban developments that are included within, or are directly associated with an urban area.
- **Farmsteads and Rural Residences** - Farmsteads include the farmhouse and adjoining farmyard areas. Farmsteads also include buildings such as machinery storage areas, grain storage facilities, corrals, livestock holding and feeding areas directly associated with the farmyard area.
- **Cultivated Land** - Cultivated land includes those areas under intensive cropping or rotation, including periods when a parcel may be fallow. It represents land planted to forage or cover crop. The units exhibit linear or other patterns associated with current or relatively recent tillage.
- **Pasture and Hayland** - This category includes areas that show evidence of past tillage but do not now appear to be continuously cropped or in a crop rotation. Parcels in this unit include fields that are idle or abandoned and may or may not have been planted to a cover crop.
- **Grassland** - This unit includes grasslands and herbaceous plants. It may contain up to one-third shrubs and/or tree cover. Areas may be small to extensive, and range from regular to very irregular in shape.
- **Deciduous Forest** - This classification includes areas with at least two-thirds of the total canopy cover composed of predominantly woody deciduous species.
- **Water** - This category includes permanent water bodies, including lakes (U.S. Fish and Wildlife Service Lacustrine System 'L'), rivers, reservoirs, stock ponds and permanent palustrine open water.
- **Wetlands** - This category includes wetlands visible through photography, with an area of at least two acres.
- **Gravel Pits and Open Mines** - This category includes areas stripped of topsoil with exposed substrate. Gravel pit areas that have been reclaimed either naturally or artificially are classified as the current cover type.
- **Bare Rock** - This category includes areas of rock outcrops that lack appreciable soil development or vegetative cover.



Map 2D: Swift County's Land Use



Legend

	Major Watershed Boundaries		Pasture and Hayland
	Rivers		Grassland
	Major Roads		Forest
	Cities		Water
	Urban and Industrial		Wetlands
	Farmsteads and Rural Residences		Gravel Pits and Open Mines
	Cultivated Land		Bare Rock, Exposed Soil, Sandbars, and Sand Dunes

Source: MNDNR Waterbasins 1995, MNDOT Basemap '99,
TIC Land Use 1989
Date: June 25, 2003
Produced By: UMRDC GIS Service Bureau

Data Item 13. Public Water, Storm Sewer and Sanitary Sewer Systems

Table 2B identifies which Swift communities have public water, storm sewer and sanitary sewer systems. Map 2E shows the locations of the communities along with the major watershed boundaries.

**Table 2B:
Communities Served by Public Water,
Storm Sewer and Sanitary Sewer Systems**

Community	Storm Sewer	Sanitary Sewer	Public Water
Appleton	X	X	X
Holloway	X	X	X
Danvers	X	X	
Benson	X	X	X
Clontarf			
De Graff			X
Murdock	X	X	X
Kerkhoven	X	X	X

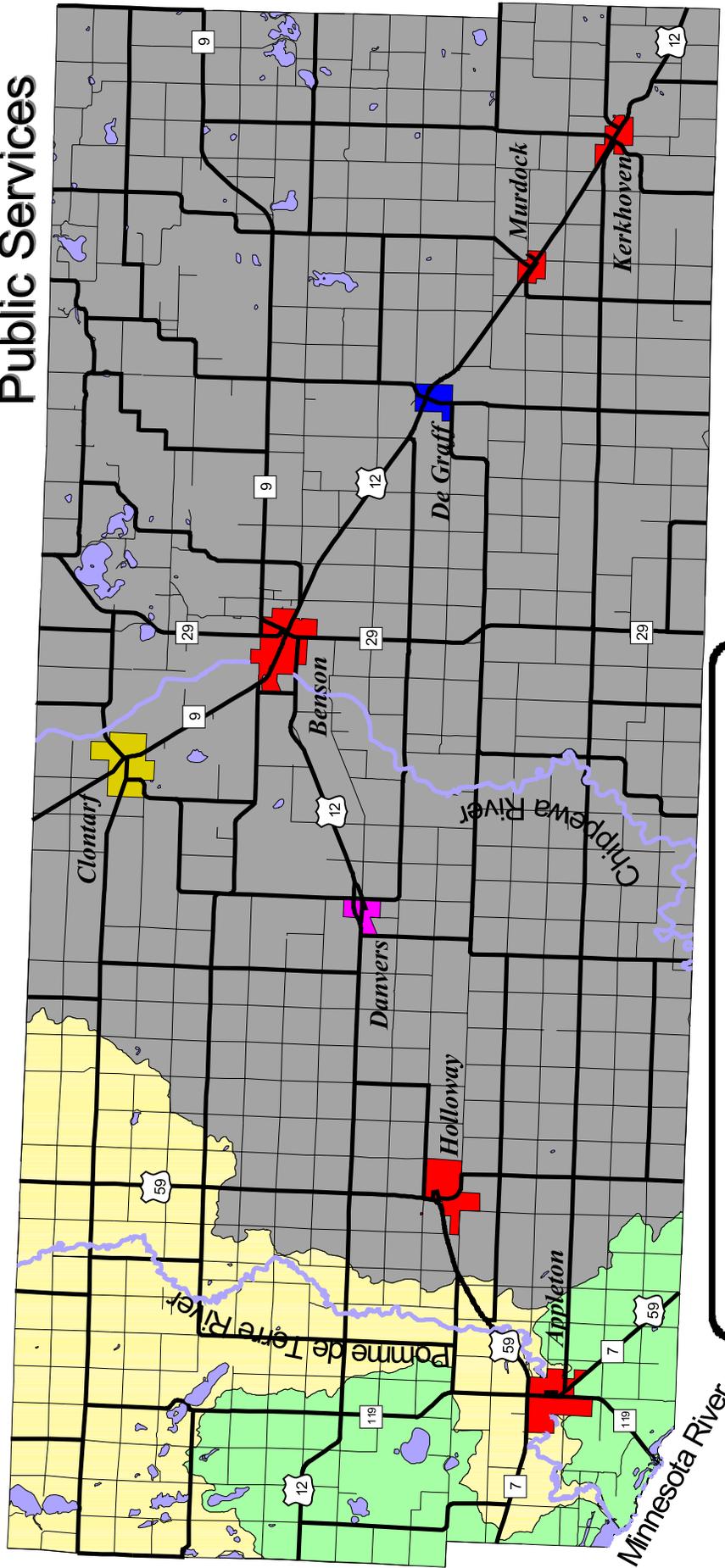
Data Item 14. Community Public Water Supplies

Please refer to Chapter 3 for a discussion on Public Water Suppliers.

Data Item 15. Land Ownership

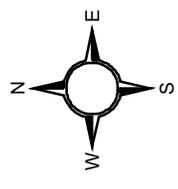
In 1995, the Minnesota Land Management Information Center (LMIC), in conjunction with the Minnesota Department of Natural Resources (DNR), developed a computerized database of publicly owned lands in the State, called the Gap Analysis Project (GAP) Stewardship. Much of the data used to create the GAP Stewardship database was from the mid 1970s to the late 1980s, thus the accuracy of the database is limited. Another factor that limits the accuracy of this database is that tracts are only broken down by 40 acre blocks, thus land interest is only expressed when an agency owns more than 50 percent of a 40 acre tract. Map 2F displays the location of the publicly owned lands within the County.

Map 2E: Swift County's Public Services



Legend

	Rivers		Major Roads
	Lakes		Minor Roads
	City Services		Major Watersheds
	None		Chippewa River
	Public Water		Pomme de Terre River
	Storm & Sanitary Sewer		Upper Minnesota River
	Storm, Sanitary Sewer & Public Water		



Source: MNDNR Watersheds 1995, MNDOT Basemap '99,
Upper MN Valley RDC
Date: June 25, 2003
Produced By: UMRDC GIS Service Bureau

Data Item 16. Water Resource and Related Easements

Easements, whether short-term or perpetual, are commonly used to protect water quality, reduce soil erosion, and enhance fish and wildlife habitat. There are a variety of programs offered through local, State and Federal governmental agencies (see Appendix C for Swift County's Conservation Lands Summary). Among the most common programs offered are the Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Reinvest in Minnesota (RIM) Reserve Program, Wetland Reserve Program (WRP) and U.S. Fish and Wildlife Service easements. A brief discuss on each of these programs is provided below. For more information contact your local Board of Water and Soils Resources' Board Conservationist (currently David Sill in the Marshall office at 507-537-6060) or visit the following website:

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

Conservation Reserve Program (10-15 Year Contracts)

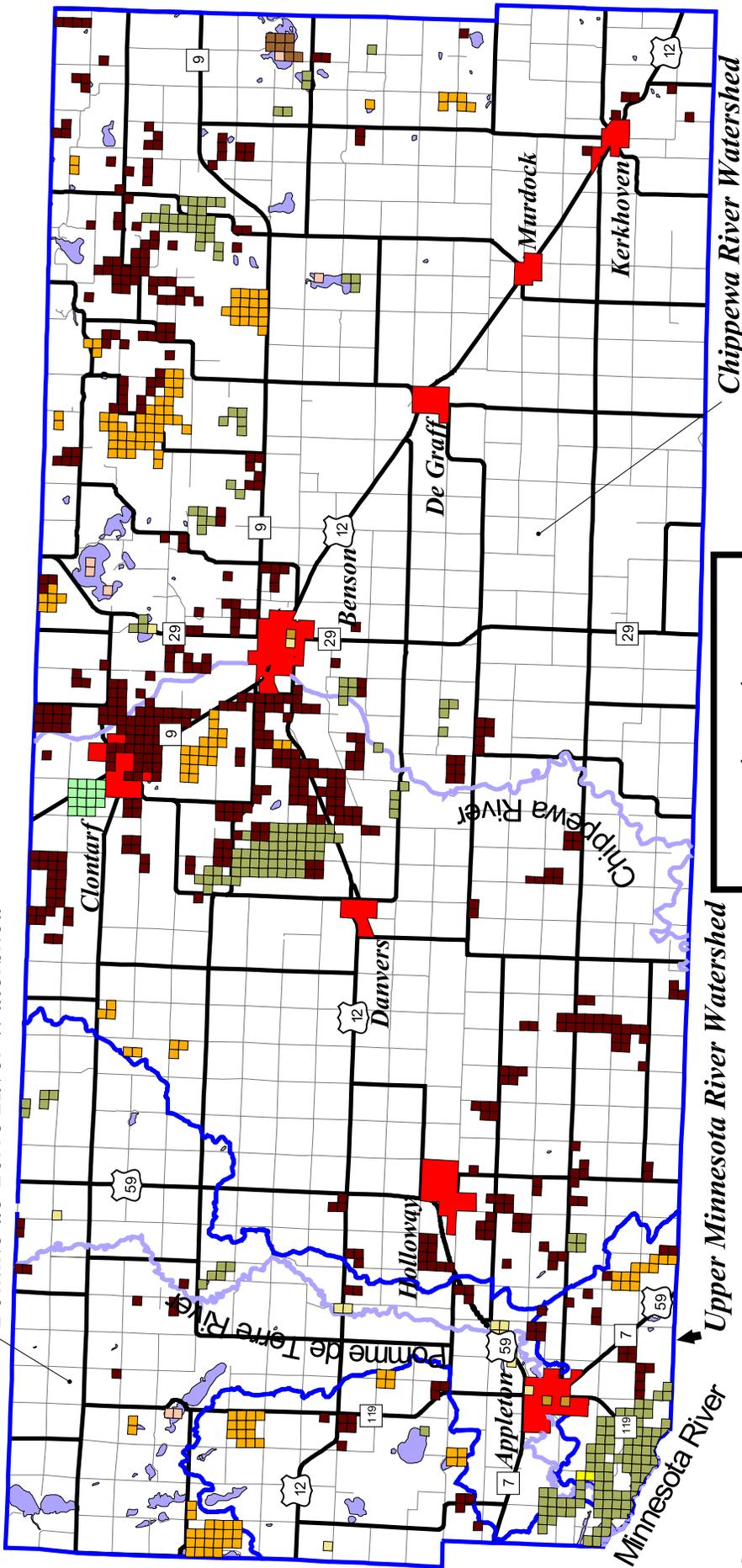
The Conservation Reserve Program (CRP) offers landowners, operators and tenants the opportunity to voluntarily convert land with high erosion rates and other environmentally sensitive land to permanent vegetative cover. Permanent cover options include grasses and legumes, tree plantings and wildlife habitat. The program goals are to: reduce soil erosion, enhance fish and wildlife habitat, improve water quality, protect the soils on the nation's cropland base, demonstrate good land stewardship and improve rural aesthetics.

Eligible owners or operators may place highly erodible or environmentally sensitive land into a 10 to 15 year contract. The participant, in return for annual payments, agrees to implement a conservation plan approved by the local conservation district for converting highly erodible cropland or environmentally sensitive land to a less intensive use (i.e., cropland must be planted with a vegetative cover, such as perennial grasses, legumes, forbs, shrubs, or trees). The cropland must be owned or operated for at least 12 months prior to the close of the annual sign-up period, unless the land was acquired by will or succession or the Farm Service Agency (FSA) determines that ownership was not acquired for the purpose of placing the land in the conservation reserve.

Conservation Reserve Enhancement Program (Perpetual/Limited)

The Conservation Reserve Enhancement Program (CREP) is a unique combination of the State's RIM Program and the Federal CRP Program. CREP aims to improve the water quality of the Minnesota River, which in large part is degraded by runoff from marginal agricultural lands, floodplains, riparian areas and drained wetlands. CREP provides a unique opportunity for landowners along the Minnesota River to voluntarily remove these lands from agricultural production. Through CREP, farmers are given an upfront State "bonus" payment, plus up to 15 years of guaranteed USDA annual payments, based on the value of the land. Funding for the program comes through a match of State and Federal dollars. The State of Minnesota is required to match Federal dollars (about \$0.44 for every Federal dollar) for the placement of perpetual CREP easements on up to 100,000 acres in the 37-county Minnesota River Watershed. Approximately 163 million in Federal funds were available through September 30, 2002.

Pomme de Terre River Watershed



Chippewa River Watershed

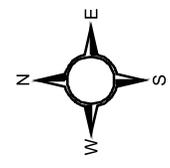
Upper Minnesota River Watershed

Minnesota River

Map 2F: Swift County's Land Ownership

Legend

	Rivers		ARMY CORPS OF ENGINEERS
	Cities		BUREAU OF LAND MGMT
	Major Watershed Boundaries		DEPT OF MILITARY AFFAIRS
	Major Roads		DEPT OF TRANSPORTATION
	Minor Roads		DNR DIV FISH & WILDLIFE
	Lakes		DNR DIV OF PARKS & REC.
			MIN DEPT OF AGRICULTURE
			UNITED STATES
			US FISH & WILDLIFE



Source: MNDNR Waterbasins 1995, MNDOT Basemap '99, GAP Stewardship
 Date: June 25, 2003
 Produced By: UIMVRDC GIS Service Bureau

Reinvest in Minnesota Reserve Program (Perpetual/Limited)

The Reinvest in Minnesota (RIM) Reserve Program, administered by local SWCDs and BWSR, was one of the first State programs of its kind in the nation. RIM allows landowners to sell perpetual easements for riparian lands, sensitive groundwater areas, wetland restoration areas (drained wetlands), marginal cropland and land for living snow fences. The payment rate for the program is based on 90% of the average market value of tillable land in the township. In addition, RIM Reserve provides cost share funds, often times 100%, for establishing appropriate conservation and wildlife habitat practices on easement lands.

Since its inception in 1986, funding for the program has been erratic, ranging from a high of \$51 million, to a low of \$3 million. Since it began, RIM Reserve has enrolled approximately 3,927 easements statewide, covering 126,567 acres, including 43,401 acres of wetland restoration and adjacent upland. The program has historically fostered partnerships with private organizations including Pheasants Forever, Ducks Unlimited and the Minnesota Waterfowl Association, as well as other government agencies, including the U.S. Fish and Wildlife Service (USFWS) and the Minnesota Department of Natural Resources (DNR).

Wetland Reserve Program (Perpetual/ Limited)

The Wetland Reserve Program (WRP) is a voluntary program through the USDA to restore and protect wetlands on private property. It provides an opportunity for landowners to receive financial incentives to restore or enhance wetlands on their property. Landowners can enroll in the WRP by one of the following three means:

- Permanent Easement. USDA will pay up to the appraised market value for the land and 100% of the cost of restoring wetlands and seeding of upland areas into native grasses and forbs.
- 30-Year Easement. USDA will pay 75% of the appraised market value for the land and 75% of the cost associated with wetland restorations and upland native grass seeding.
- Restoration Cost-Share Agreement. USDA will pay 75% of the cost of restoring a wetland in exchange for a minimum ten-year agreement to maintain the restoration. No land use payment is provided.

Any type of land that can be restored to a wetland at a reasonable cost is eligible for WRP, except for wetlands drained in violation of Swampbuster or land established to trees under the Conservation Reserve Program. Cost-share is available to restore:

- Wetlands cleared and/or drained for farming, pasture, or timber production;
- Upland areas around a restored wetland and;
- Drained wooded wetlands where hydrology will be restored.

Through the WRP the landowner continues to control access to the land and may lease the land for hunting, fishing, and other compatible recreational activities.

U.S. Fish and Wildlife Service Easements (Perpetual)

The U.S. Fish and Wildlife Service (USFWS) manages land enrolled in two types of conservation easement programs in Swift County: the Farmer's Home Administration Program (FmHA) and Wetland Easement Program. Under FmHA, when a landowner defaults on a loan, and that property contains wetlands, those wetlands receive protection. Protection may come in the form of a perpetual conservation easement or fee title transfer to a Federal or State fish and wildlife agency for management.

Data Item 17. High, Mean and Low Flows of Streams

The Minnesota Department of Natural Resources (DNR) evaluates average annual stream flow by using Exceedence Value Ranges (EVRs). An exceedence value is a statistical measurement of stream flow based on historical discharge records. The value is the probability of the stream flow exceeding a certain value. For instance, a 50% exceedence value (sometimes written as Q50) indicates that the level of stream flow currently being reported at a gauging station has been equaled or exceeded 50% of the time during the period of record being used (which could be monthly or yearly). A 75% exceedence value (Q75) would be the level of stream flow at a particular gauging station that was equaled or exceeded 75% of the time during the period of record. A description of each EVR is given below.

- **Critical Flow (Q90-Q100):** A watershed is classified as having critical flow when its stream flow falls below the annual 90% exceedence value (Q90). If a watershed is classified as having critical flow, the DNR may, if necessary, restrict the appropriation of water from that watershed to conserve water for instream flow or other higher priority uses.
- **Low Flow (Q75-Q90):** A watershed is classified as having low flow when its stream flow is below the monthly 75% exceedence value (Q75), but still above critical flow.
- **Normal Flow (Q25-Q75):** A watershed is classified as having normal flow when its stream flow is between the monthly 25% (Q25) and 75% (Q75) exceedence values.
- **High Flow (Q10-Q25):** A watershed is classified as having high flow when its stream flow is above the monthly 25% exceedence level (Q25).
- **Flood Flow (Q1-Q10):** A watershed is classified as having flood flow when its stream flow is at or above the flood stage set for that watershed by the National Weather Service (NWS).

Table 2C displays the mean annual EVRs for streams in Swift County by watershed (1996-2000). For more specific information relating to Swift County's climate or stream data, visit either of the following websites:

www.climate.umn.edu or <http://mn.water.usgs.gov/wrd/index.html>

**Table 2C:
Mean Stream Exceedence Value Ranges (EVR)
Between 1996 and 2000 by Major Watershed**

Watershed	1996 EVR	1997 EVR	1998 EVR	1999 EVR	2000 EVR
Chippewa River	Q1-Q10	Q1-Q10	Q10-Q25	Q10-Q25	Q25-Q75
Pomme de Terre	Q1-Q10	Q1-Q10	Q25-Q50	Q10-Q25	Q25-Q75
Upper Minnesota River	Q1-Q10	Q1-Q10	Q10-Q25	Q10-Q25	Q25-Q75

Data Item 18. Ordinary High Water Levels for Lakes

The boundary of protected waters and wetlands, for regulatory purposes, is defined by the Ordinary High Water Level (OHWL). The OHWL is the elevation delineating the highest water level which has been maintained for a sufficient period of time (enough to leave evidence on the landscape). Generally, it is the point where the natural vegetation changes from predominately aquatic to predominately terrestrial. Any work done below the OHWL is within the beds of public waters and is therefore subject to the permit authority of the Department of Natural Resources.

To find current OHWLs for a specific lake in Swift County, use the following steps:

1. Use the Department of Natural Resource’s land finder feature on their website at:

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

2. Type in the specific lake and/or county in the “FIND A LAKE” box.
3. Click “Get Lake Data”.
4. Once the new page is loaded, find your lake name in the correct county (there may be more than one listed due to overlapping lake names...this is avoided if you typed in the county’s name in step 2).
5. Click the checkmark under the “lake water levels” category.
6. The lake’s OHWL will be listed next to “OHW” on the upper left side. Click the highlighted OHW for more information on Ordinary High Water Levels.

Data Item 19. Permitted Surface Water Appropriations
Data Item 22. Permitted Groundwater Appropriations

A listing of Minnesota DNR issued Water Appropriation Permits for Swift County is provided in Appendix B (The first page of Appendix B describes how to use the information). Water Appropriation Permits are required by the Minnesota DNR for withdrawals greater than 10,000 gallons per day or one million gallons per year. There are several exemptions from the permit requirements, including domestic uses serving less than 25 persons for general residential purposes, test pumping, reuse of water already authorized by a permit and certain agricultural drainage systems. All active water appropriation permit holders are required to measure monthly water use with an approved measuring device to an accuracy of 10% and report water use yearly. For more information on water appropriation permits, visit the DNR at the following website:

http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/index.html

Data Item 20. State Protected Lake Levels and Stream Flows

The DNR is the regulatory agency in charge of establishing protected flows and lake levels within the State. The DNR has defined protected flow as “the amount of water required in the watercourse to accommodate instream needs such as water-based recreation, navigation, aesthetics, fish and wildlife habitat, water quality and needs by downstream higher priority users located in reasonable proximity to the site of appropriation.” Protection flow for “instream needs” has been identified as a significant social and environmental issue. Instream flow protection is addressed in Minnesota Statutes, and permits issued for appropriation of water from streams or lakes may be limited in order to maintain and protect instream uses.

Although Minnesota is widely perceived as a water-rich state, local and statewide shortfalls are common. For instance, in 1988, Minnesota and much of the Upper Midwest experienced a severe to extreme drought, rivaling the drought conditions of 1933-1934. Wells went dry, streams had low or no flow, and the lack of adequate water supplies affected all users, out-of-stream and instream. Surface-water appropriators who had never before experienced water availability shortages, had their surface water appropriation permits suspended as early in the season as June.

As recently as the summer of 2000, serious thought was given to suspending appropriations. This was due to abnormally dry growing season over significant areas of Minnesota. The DNR notified water appropriators to plan ahead in case of permit suspensions. Heavy rainfall in early November, however, helped to replenish dehydrated topsoil, as well as streams and lakes.

For a list of current protected lake levels and stream flows in Swift County, contact the local DNR Hydrologist (call 888-MINN-DNR for his/her name). The following individual is currently the statewide contact:

**Dana Dostert, Data Management Hydrologist, (651) 297-3901 or
danadostert@dnr.state.mn.us**

Data Items 21 & 23. Water Use Conflicts & Known Well Interference Problems

Increases in surface and groundwater use can lead to conflict. In such instances, domestic well owners and municipal water suppliers can file a water use complaint with the Department of Natural Resources (DNR). According to Minnesota Statutes 103G.261, domestic water use is the highest priority when the State's water supply is limited. If upon DNR investigation it is found that the water use conflict is the direct result of a nondomestic water user(s), water use restrictions may be imposed. For instance, the Water Appropriation Permit Program could consider imposing permit restrictions, based on the user's priority, water conservation measures and/or well improvements. In addition, the DNR Technical Analysis Program may assist the user(s) in evaluating alternative water supply sources.

When a high capacity well is pumping, a portion of the aquifer around it is dewatered in a pattern known as a cone of depression. Wells located within the cone of depression may experience lower water levels and have problems getting water. This condition is referred to as "well interference". Most well interference problems tend to be localized and short in duration, however, being without water is a major inconvenience and can cause damage to well pumps. Simply lowering the pump in the well or installing a new well pump can resolve many well interference problems. In some situations, however, it may become necessary to construct a new water supply well.

The DNR Well Interference Complaint Tracking Database lists seventeen well interference complaints that took place in Swift County between 1977 and 1988 (the second highest amount for all counties in Minnesota). Only four of these complaints, however, were found to be valid. For more information regarding the County's well interference database, contact the DNR local water planning coordinator (currently John Fax) at 651-297-2404.

Data Item 24. Observation Wells

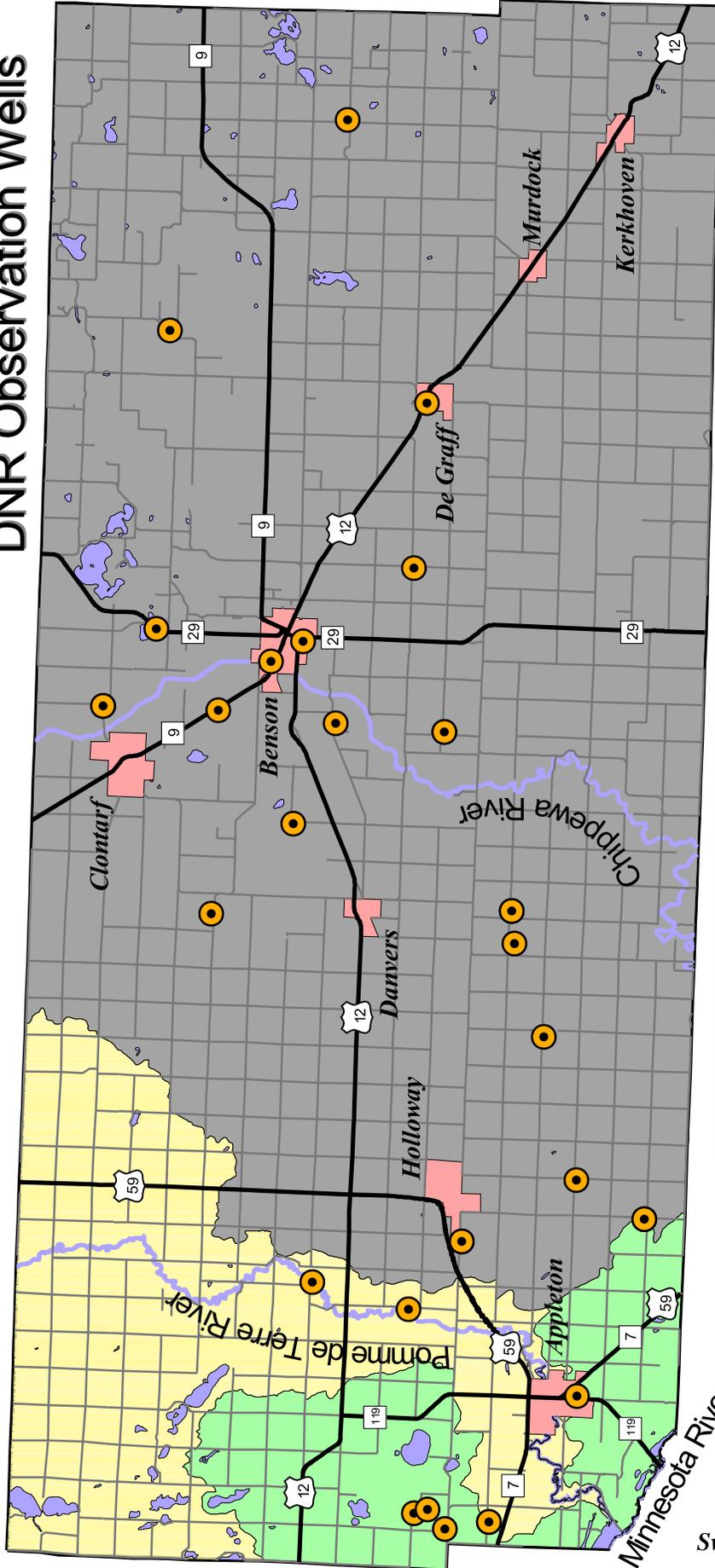
The Minnesota Department of Natural Resources monitors the use of the State's water and allocates resources to assure there is sufficient quality and quantity to supply the needs for future generations. Under the Observation Well Program, groundwater levels are routinely measured in 700 wells statewide. Map 2G identifies the locations of the DNR observation wells within Swift County. 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 for local groundwater complaints.
- Provide data to resolve allocation problems.
- Identify target areas that need further hydrogeologic investigation, water conservation measures, or remedial action.

For more information on observation wells, visit the DNR website at:

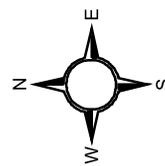
http://www.dnr.state.mn.us/waters/groundwater_section/obwell/index.html

Map 2G: Swift County's DNR Observation Wells



Legend

- | | | | |
|--|-------------------|--|-----------------------|
| | Major Roads | | Major Watersheds |
| | Minor Roads | | Chippewa River |
| | Observation Wells | | Pomme de Terre River |
| | Lakes | | Upper Minnesota River |
| | Rivers | | |
| | Cities | | |



2 0 2 4 Miles

Data Item 25. Water Quality Management Classifications

The Minnesota Pollution Control Agency (MPCA) establishes water quality standards for all waters of the State, both surface and underground. These standards are contained in Minnesota *Rules* Chapter 7050 (the MPCA's statutory authority to adopt water quality standards and to classify waters of the State is found in Minnesota *Statutes* Chapter 115). Water quality standards consist of beneficial uses and the numerical standards needed to protect those uses. The beneficial uses of water include drinking, protection of aquatic life, fishing and recreation, industrial, agriculture and wildlife use. Chapter 7050 is usually revised every three years. The current version became effective on February 14, 2000, and can be found at the State Revisor's following website:

<http://www.revisor.leg.state.mn.us/arule/7050/0470.html>

Data Item 26. Surface Water Quality Data

Data Item 27. Informal Water Quality Sources

There is a vast amount data that directly pertains to Swift County's water quality. The coverage of the data varies from the larger eco-regions of Minnesota, to detailed water quality data collected from local waters within the County. The purpose of this section is to introduce what kind and type of water quality information can be found (or could be found if someone wanted to collect it) regarding Swift County. For more information on the types of water quality data available, visit the following Minnesota Pollution Control Agency websites:

<http://www.pca.state.mn.us/water/lakeprograms.html> or [.../lakequality.html](http://www.pca.state.mn.us/water/lakequality.html)

Lake Water Quality Assessment Reports

The Lake Assessment Program (LAP) was developed in 1985 in response to requests from lake associations that were interested in cooperatively assessing the condition of their lake. Since 1985, the Minnesota Pollution Control Agency (MPCA) has conducted over 160 LAP studies. In addition to complete studies, the MPCA conducts a variety of other lake-monitoring (regional and trend studies) efforts that result in briefer reports. These include the following:

- Trend Reports are often follow-up studies to previously conducted LAP or other studies. Their primary focus is to assess trends in lake condition over time.
- Note Reports, as they are referred to, are brief LAP-like reports often prepared in response to lakeshore residents' concerns or as a part of oral presentations. These are brief reports that focus primarily on the current trophic status of the lake.
- Status reports are brief reports that serve to characterize the trophic status and trends of several lakes in a county.

Currently, there are no LAP studies available for lakes in Swift County. For more information, visit the following website:

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

Citizen Lake Monitoring Program

The Citizen Lake Monitoring Program (CLMP) is a cooperative program combining the technical resources of the Minnesota Pollution Control Agency (MPCA) and volunteer efforts of citizens statewide who collect water-quality data in lakes. CLMP volunteers collect water transparency data using an eight-inch, circular, all-white metal plate attached to a calibrated rope, called a Secchi disk. About once a week during the summer, volunteers boat to a designated spot on their lakes to collect transparency readings. The volunteer lowers the disk into the water until it is no longer visible and notes the depth from the markings on the rope. The disk is then lowered a little further and then raised back up until it is just visible. The second depth reading is averaged with the first, and a final number is recorded on a data sheet. At the end of summer, volunteers send their data sheets to the MPCA to be compiled with other water-quality data. Water transparency readings derived through the CLMP provides useful information concerning the lake's water quality. First, they indicate the amount of light penetration into a lake. Second, Secchi transparency provides an indirect measure of the amount of suspended materials in the water, which in many cases is an indication of the amount of algae in the water. Long-term transparency monitoring helps scientists detect signs of degradation to a lake. Generally, the earlier water-quality problems are detected, the easier and less expensive it is to restore the lake to its previous state.

No lakes in Swift County have been monitored through the Citizens Lake Monitoring Program. To view specific CLMP water quality data regarding lakes in other counties, visit the following MPCA website and do a lake search:

<http://data.pca.state.mn.us/pca/clmp.html>

Citizen Stream Monitoring Program

The Citizen Stream Monitoring Program (CSMP) combines the knowledge and commitment of interested citizens with the technical expertise and resources of the Minnesota Pollution Control Agency (MPCA) to develop a more comprehensive statewide network for monitoring Minnesota's 92,000 miles of streams. Any person or group willing to devote a small amount of time and energy to conduct simple stream checks on a regular basis can become a volunteer monitor with the MPCA. Approximately once a week during the summer months, monitors measure transparency, appearance, recreational suitability and stream stage on an established spot of a nearby stream. Monitors also measure precipitation on a daily basis.

For more information on the Citizen Stream Monitoring Program, including results for Swift County, visit the MPCA at the following website:

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

Total Maximum Daily Loads (also see Chapter Four)

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 surface and/or groundwater, while still allowing it to meet its designated uses (such as drinking water, fishing, swimming, irrigation or industrial purposes). Minnesota's statewide water quality standards and other provisions that protect water quality are found in Minnesota Rules Chapter 7050. Standards are broken down based upon water use classifications.

Many of Minnesota's water resources cannot currently meet their designated uses because of pollution problems from a combination of point and nonpoint sources. For each pollutant that causes a water body to fail to meet State water-quality standards, the Clean Water Act requires the states to conduct a Total Maximum Daily Load (TMDL) study. A TMDL study identifies all point and nonpoint sources of each pollutant in a water body, which fails to meet water-quality standards. Water-quality sampling and

computer modeling determine how much each pollutant source must reduce its contributions to assure the standard is met in that water body. Rivers and streams may have several TMDLs, each one determining the limit for a different pollutant.

Section 303 (d) of the Clean Water Act requires states to publish, every two years, an updated list of streams and lakes that are not meeting their designated uses because of excess pollutants. The list, known as the Section 303 (d) List of Impaired Waters, is based on violations of TMDL standards. The Swift County waters on the current list (July 2002) are presented in Chapter Three (the listing also appears in Chapter Four under the Reducing Priority Pollutants Goal).

STORET

STORET is a water quality data clearinghouse that is maintained by the Environmental Protection Agency (EPA), with help from the Minnesota Pollution Control Agency (MPCA). The EPA maintains two STORET data management systems: the Legacy Data Center and STORET. The Legacy Data Center (LDC) contains historic water quality data dating back to the early part of the 20th century and collected up to the end of 1998. STORET contains data collected beginning in 1999, along with older data that has been properly documented and migrated from the LDC. To view Swift County's extensive STORET information, visit the EPA's website at:

<http://www.epa.gov/STORET/>

Hypoxia Zone of the Gulf of Mexico

Over the past two decades, scientists have studied the hypoxia zone of the Gulf of Mexico. The hypoxia zone is an oxygen depleted area of the Gulf, caused by excessive nitrogen and phosphorus loading from the Mississippi River. High levels of these nutrients cause excessive plankton growth, which in turn die and aerobically decompose. The result is an overall reduction in the level of dissolved oxygen in the Gulf, which can lead to fish kills and overall ecological instability.

In studying the hypoxia zone of the Gulf of Mexico, scientists have concluded that this area has increased dramatically over the last several years. Studies conducted by the Environmental Protection Agency (EPA) have identified agricultural production in the Upper Mississippi River Basin (Illinois, Iowa, Minnesota and Wisconsin) as the primary source of nitrates in the hypoxia zone.

Data Item 28. Groundwater Quality (also see Chapter Three)

Minnesota Pollution Control Agency

In 1989, the Minnesota Pollution Control Agency (MPCA) received a grant from the Legislative Commission on Minnesota Resources 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 between 1990 to 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, however, the Minnesota Pollution Control Agency continues to provide information on the program. For best results, visit their website at:

<http://www.pca.state.mn.us/water/groundwater/gwmap/>

MDA Nitrate Water Testing Program (visit <http://www.mda.state.mn.us/>)

In 1993, the Minnesota Department of Agriculture developed a “walk-in” style of water testing clinic 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 may also provide some broad information on the occurrence of nitrate ‘hotspots’ across the State; this could eventually aid in justifying 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.

Data Item 29. Eroding Lands and Nonpoint Source Pollution

Data Item 30. Effects of Land Use and Cover on Runoff by Watershed Unit (also see Chapter Three for both Data Items)

Eroding lands are a major cause of nonpoint source pollution. In agricultural areas, the major nonpoint sources of pollutants are sediments, nutrients, pesticides, bacteria and oxygen-demanding substances. Each of these pollutants is discussed below. For a more complete discussion, view the Minnesota River Basin Plan (December 2001) at the following website:

<http://www.pca.state.mn.us/water/basins/mnriver/mnbasinplan.pdf>

Sediment

Sedimentation resulting from eroding land is a major source of water pollution in Swift County. Sedimentation affects most surface water types: lakes, wetlands and streams. Sediment clogs drainage ways, fills basins, increases lake water turbidity and adversely affects spawning areas for fish. In addition, nutrients and chemicals attached to sediment can have adverse effects on water quality. Phosphate, attached to fine textured sediments, accelerates algae and plant growth in many lakes.

Nutrients

Nutrients such as phosphorus, nitrogen and potassium are the essential part of plant growth in agriculture. They are normally added to the soil in the form of fertilizers, manure, or decaying vegetation. These nutrients, particularly phosphorus and nitrogen, can become pollutants when they are transported from eroding lands to surface and groundwater in runoff or are leached below the root zone.

Pesticides

Pesticide is a term that covers a wide range of chemicals such as herbicides, insecticides and fungicides. Pesticides can wash off crops and fields and into lakes and streams, where they may be toxic to fish and other aquatic organisms. Pesticides can also adversely affect water resources if they are improperly stored or disposed of.

Bacteria

Fecal coliform bacteria are prolific in the intestines of warm-blooded animals, including humans. Although these bacteria are not necessarily harmful, they are often associated with disease producing organisms or pathogens, which can cause diarrheal disease, infectious hepatitis, parasites and cholera. Common sources of bacteria are runoff or seepage from feedlots and failing septic systems.

Oxygen-Demanding Substances

When oxygen-demanding pollutants enter a lake or stream from runoff, they can upset the delicate balance between oxygen-consuming organisms and the oxygen replenishing process. If oxygen is consumed faster than it is replenished, the oxygen content can fall below the level needed to support aquatic life. Pollutants, such as inadequately treated sewage, manure, crop residues and decaying organic matter such as leaves, create an oxygen demand on a lake or stream.

Urban Pollutants

Agriculture is not the only culprit of nonpoint source pollution. In urban areas, natural cover is removed, many areas are paved and natural channels are modified to remove runoff faster. This scenario creates more runoff, while reducing the opportunity for natural treatment. Urban runoff may contain oil drippings, fallout from auto emissions, sediment from construction sites, road salt, pet wastes, fertilizer, and pesticides from lawns and many other pollutants.

Data Item 31. Irrigation Areas

Data Item 32. Implications of Irrigation Over 1,000 Acres n Any One Township (also see Chapter Three for both Data Items)

Data available from the Minnesota DNR Water Appropriation Permit Index lists information and the location of permitted irrigation withdrawals in Swift County. Minnesota DNR water appropriation permits are required for withdrawals greater than 10,000 gallons per day or 1,000,000 gallons per year. All active water appropriation permit holders are required to measure monthly water use with an approved measuring device to an accuracy of ten% and report water usage yearly. Information concerning Water Appropriation Permits issued for irrigation purposes in Swift County can be found in Appendix B.

Sources for irrigation withdrawal include both surface waters and groundwater. Withdrawals from surface water potentially include lakes, streams, rivers, wetlands, ditches and dug pits. Row crops, such as corn and soybeans, are the predominant crops irrigated within the County. A concentration of row crops and irrigation on coarse textured soils significantly increases the potential of non-point source contamination of surface and groundwater. Highly water soluble agricultural chemicals and fertilizers, such as nitrates, are easily leached through the soil column to the aquifers beneath.

Data Items 33 & 34. Public Drainage System

Please refer to Chapter Three

Data Item 35. Potential Pollutant Sources

Dumps and Sanitary Landfills

The purpose of the Minnesota Landfill Cleanup Program is to ensure the proper closure and postclosure care at 106 closed, permitted municipal sanitary landfills in the State. There is currently one landfill in the program in Swift County. This site is located a half-mile northeast of the Benson on the north side of Highway 9, east of Highway 29. The 80-acre site consisted of 11 filled acres containing approximately 360,000 cubic yards of waste.

The Minnesota Pollution Control Agency also maintains an Open Dumps Inventory Database that can be viewed at the following website:

http://www.pca.state.mn.us/programs/landfill_p.html

Federal Superfund Sites

Currently, there are no Federal Superfund sites in Swift County. For more information on the Federal Superfund program, visit the following website:

<http://www.epa.gov/superfund/index.htm>

Individual Sewage Treatment Systems (ISTSs)

Individual Sewage Treatment Systems (ISTSs) are used for the treatment and disposal of wastewater from individual homes, clusters of homes, isolated communities, industries or institutional facilities. When properly functioning, ISTSs are an effective means of treating wastewater. However, if improperly designed, installed or maintained, ISTSs have the potential to adversely impact water quality. Human waste contains high concentrations of microorganisms and many chemicals, including carbon, nitrogen, phosphorus and salts. These pollutants not only represent a public health concern, but also can significantly degrade the quality of the environment.

The first State law addressing failing ISTSs went into effect in 1994. This legislation is known as the ISTS Act (Minnesota Rules, Chapter 7080). Chapter 7080 requires that all new construction and replacement of ISTSs meet minimum statewide standards. It also puts into place a method to systematically address the adequacy of existing systems through requiring upgrading of failing existing systems before construction of an additional bedroom. The following are the State's objectives in regulating sewage systems through Chapter 7080:

- Keep inadequately treated sewage away from human contact to prevent disease;
- Reduce levels of pathogenic bacteria and viruses discharged to the environment;
- Reasonably and cost-effectively prevent ground-water contamination;
- Develop clear direction for design, construction and maintenance of sewage-treatment facilities;
- Strive for cost-effective methods of sewage treatment to maintain or improve property values;
- Encourage personal responsibility for treating sewage; and
- Require all counties to adopt an ISTS ordinance.

For more information on ISTS rules and regulations, contact the Swift County Environmental Services Office at (320-843-2356).

Data Item 36. Feedlots, Unsealed Abandoned Wells, Underground Storage Tanks and Permitted Wastewater Dischargers

Feedlots

Please refer to Chapter Three

Abandoned Wells

The Minnesota Groundwater Protection Act requires that the status and location of wells on a property be disclosed upon property sale to both the buyer and the Minnesota Department of Health (MDH). The Act applies to all types of wells, including wells used for drinking water, irrigation, commercial or industrial processing, heating or cooling, or monitoring. These wells include drive-point (sand point) wells, drilled wells and dug wells.

Well disclosure is a particularly useful tool in identifying unused or “abandoned” wells. Unused wells that have not been properly sealed can be a source of groundwater contamination, allowing surface water, contaminated water and improperly disposed of waste to reach sensitive aquifers below ground. In addition to being a potential pollution hazard, unused wells also pose a potential safety hazard for children and animals and a potential liability for the property owner.

Before signing an agreement to sell or transfer real property the seller must provide the buyer with a Well Disclosure Statement. The Statement must include the following information:

1. The legal description of the property and County;
2. A map showing the location of each well; and
3. Whether each well is in use, not in use, or sealed.

A well is “in use” if the well is functioning for some purpose. A well is "not in use" if the well is not functioning or is not capable of functioning, such as when the well pump on the well is disconnected, or when the well is no longer connected to a power supply. A well is "sealed" if the well has been filled with an approved sealing material by a licensed well contractor or a licensed well sealing contractor and the MDH has received a Well and Boring Sealing Record.

At the time of closing of the sale, the information on the Well Disclosure Statement, the name and mailing address of the buyer, and the quarter, section, township, and range of the property must be provided on a Well Disclosure Certificate. This form is available from many realtors, county recorders or district offices of the MDH. The seller or person authorized to act on behalf of the seller signs the certificate. In the absence of the seller's signature, the certificate is prepared and signed by the buyer or person authorized to act on behalf of the buyer. In the case of a contract-for-deed sale, the certificate is prepared and signed by the seller (grantor) or person authorized to act on behalf of the seller (grantor), if the contract is recorded at the beginning of the contract. When the contract is recorded at the fulfillment of the contract, the certificate is prepared and signed by the buyer (grantee) or person authorized to act on behalf of the buyer (grantee). Once completed, the Well Disclosure Certificate is filed along with the property deed at the County Recorders office.

If a well is not in use, the property owner has three options:

1. The well can be put back into use;
2. The well can be sealed by a licensed well contractor, or a licensed well sealing contractor; or
3. The property owner can apply for a maintenance permit.

For more information on abandoned wells, including a list of sealed wells in Swift County, contact the Swift County Environmental Services Office at (320-843-2356).

Underground Storage Tanks

The Minnesota Pollution Control Agency's (MPCA) Leaking Underground Storage Tank (LUST) Program was created to help prevent contamination caused by leaking tanks. This program focuses on technical assistance, inspections and outreach to achieve this objective. As a part of the program, leaking underground storage tanks throughout the State have been inventoried and entered into a database. A complete listing of underground storage tanks in Swift County (there are numerous) can be found at the following MPCA website:

http://www.pca.state.mn.us/programs/lust_p.html

Permitted Wastewater Dischargers

The National Pollution Discharge Elimination System (NPDES) is a Federal program established under the Clean Water Act, aimed at protecting the nation's waterways from point and nonpoint sources of pollution. In Minnesota, the NPDES program is administered by the Minnesota Pollution Control Agency (MPCA), under delegation from the U.S. Environmental Protection Agency (EPA). Under the program, any industrial, municipal or private-entity point source that proposes to discharge treated wastewater to surface waters of the state must apply for a permit. As part of the permitting process, NPDES permit applicants are required to submit information to the MPCA on design flows of the facility, the route that treated wastewater will travel to a surface-water body and a description of the existing treatment system of the system to be built.

In addition to issuing NPDES permits, the MPCA is also responsible for setting effluent limitations to protect water quality standards and the designated uses of waters of the State. All municipal and other point-source dischargers of sewage are required, at minimum, to provide secondary treatment. For a current listing of NPDES permits in Swift County, call the MPCA toll free at 800-657-3864 or visit the following MPCA website for more information on NPDES permits:

http://www.pca.state.mn.us/programs/inpdes_p.html

Data Item 37. Hazardous Waste Generators

In Minnesota, commercial entities that produce any amount of hazardous waste are regulated as hazardous-waste "generators" with requirements that depend upon the amount of waste they produce. These requirements are part of the federal Resource Conservation and Recovery Act (RCRA) and Minnesota Hazardous Waste Rules, designed to protect people and the environment from the effects of improper management of hazardous wastes from commercial sources.

The primary users of this program are waste-producing industries, such as:

- ✓ Manufacturers
- ✓ Auto repair, printing or painting shops
- ✓ Metal finishing or electroplating shops

- ✓ Photo or X-ray processors
- ✓ Medical or dental clinics
- ✓ County, State and Federal agencies
- ✓ Waste consultants
- ✓ Dry cleaners

The MPCA and metropolitan county hazardous waste programs help achieve proper hazardous waste management through:

- ✓ Licensing, education and outreach activities;
- ✓ Working with various levels of government, industry associations and waste consultants;
- ✓ Providing technical assistance and training; and
- ✓ Implementing rules.

The MPCA regulates and provides assistance to generators in greater Minnesota. For more information, call the MPCA toll free at 800-657-3864 or visit the following MPCA website:

http://www.pca.state.mn.us/programs/bau_p.html

Superfund Sites

The Superfund sites in Minnesota are listed on the Minnesota Permanent List of Priorities (PLP). This list was approved by the MPCA in June 2001. The PLP lists 108 sites where investigation and cleanup are needed, cleanup is underway, or cleanup has been completed and long-term monitoring or maintenance continues. Currently there are no Superfund sites identified in Swift County. To view the statewide list, visit the following MPCA website:

<http://www.pca.state.mn.us/programs/superfund-summaries>

Data Item 38. Special Geologic Conditions

See Data Items 4 and 5 and Chapter Three

Data Items 39 & 40. Wetlands and Plans for Controlled Outlets

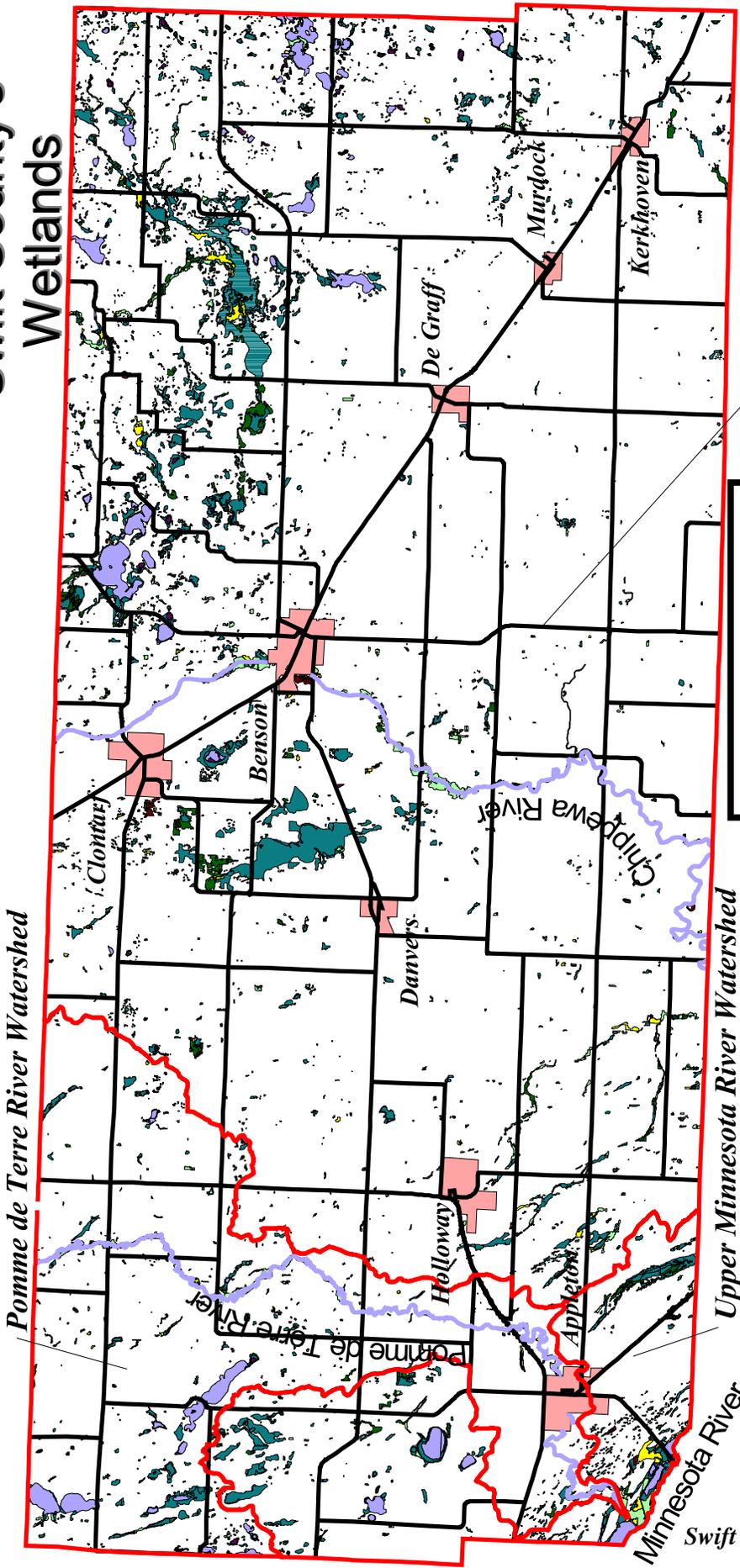
Wetlands are some of the most productive ecosystems in the world. Apart from filtering water before it enters aquifers, wetlands are the breeding sites of thousands of species of fish, shellfish, microorganisms, amphibians, reptiles, insects, invertebrates and birds. The term “wetlands” refers to low depressions in the landscape covered with shallow and sometimes intermittent water. Wetlands are also commonly referred to as marshes, swamps, potholes, sloughs, shallow lakes, and ponds. Some have surface water only in the springtime during thaws or after rainstorms, while others may form shallow lakes which rarely dry up.

There are three major sources of wetland inventory maps for Swift County, including the U.S. Fish and Wildlife Service (USFWS), Natural Resource Conservation Service (NRCS) and Minnesota Department of Natural Resources (DNR). The USFWS has identified wetlands through its National Wetlands Inventory. Wetlands located within cropland have been inventoried by the NRCS. Finally, the Minnesota DNR has identified wetlands as part of the Protected Waters Inventory.

Most of the County's wetlands were identified in the National Wetlands Inventory. This Inventory classifies the wetlands into eight "wetland types". Wetlands are differentiated by depth of water, vegetation and seasonal life-span. The definition of U.S. Fish and Wildlife Service wetland categories is provided below:

- Type 1: Seasonally Flooded Basins or Flats:** Soil is covered with water or is waterlogged during variable seasonal periods, but usually is well drained during much of the growing season. Vegetation varies greatly according to season and duration of flooding.
- Type 2: Inland Fresh Meadows:** Soil is usually without standing water during most of the growing season, but is waterlogged within at least a few inches of the surface. Vegetation includes grasses, sedges, rushes and various broad-leaf plants. Meadow may fill shallow basins, sloughs, or farmland sags, or these meadows may border shallow marshes on the landward side.
- Type 3: Inland Shallow Fresh Marshes:** Soil is usually waterlogged early during growing season; often covered with as much as six inches or more of water. Vegetation includes grasses, bullrushes, spike rushes and various other plants such as cattails, arrowheads, and smartweed. These marshes may nearly fill shallow lake basins or sloughs, or may border deep marshes on the landward side.
- Type 4: Inland Deep Fresh Marshes:** Soil is usually covered with six inches to three feet or more of water during the growing season. Vegetation includes cattails, reeds, bullrushes, etc. Deep marshes may completely fill shallow lake basins, potholes, limestone sinks and sloughs, or may border open water in such depressions.
- Type 5: Inland Open Fresh Water:** Shallow ponds and reservoirs are included in this type. Water is usually less than ten feet deep and fringed by a border of emergent vegetation similar to open areas of Type 4 Wetlands.
- Type 6: Shrub Swamps:** Soil is usually waterlogged during the growing season and is often covered with as much as six inches of water. Vegetation usually includes alders, willows, dogwood, etc. Swamps occur mostly along sluggish streams and occasionally on floodplains.
- Type 7: Wooded Swamps:** Soil is waterlogged within a few inches of the surface during the growing season and is often covered with as much as one foot of water.
- Type 8: Bogs:** Soil is usually waterlogged and supports a spongy covering of moss. Vegetation is woody, herbaceous or both.

Map 2H: Swift County's Wetlands



Chippewa River Watershed

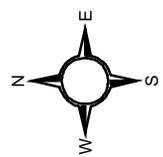
Pomme de Terre River Watershed

Upper Minnesota River Watershed

Swift County Water Plan
Ch. 2 Pg. 39

Legend

 Wetlands	 Major Watershed Boundaries
 Seasonally flooded basin or flat	 Rivers
 Wet Meadow	 Major Roads
 Shallow marsh	 Cities
 Deep marsh	
 Shallow open water	
 Shrub swamp	
 Wooded swamps	
 Riverine systems	



Source: MNDNR Waterbasins 1995, MNDOT Basemap '99, NW1 1997
Date: June 25, 2003
Produced By: UMWVDC GIS Service Bureau

Wetlands are regulated by Federal, State and local agencies. At the Federal level, the U.S. Army Corps of Engineers (USACE) and the U.S. Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) have regulatory responsibilities. While USACE authority has been limited by the United States Supreme Court, work in wetlands determined to be waters of the United States under the Federal Clean Water Act requires a USACE permit. The Federal Farm Bill's "Swamp Buster" provision provides that a landowner who alters a wetland for agricultural purposes can lose eligibility for many USDA benefits, such as price support programs.

In 1991, the State Legislature passed the Wetlands Conservation Act (WCA) in order to establish a no-net-loss of wetlands policy for the State. The WCA requires anyone proposing to drain or fill a wetland must first try to avoid disturbing the wetland; second, to try to minimize any impact on the wetland; and finally, to replace any lost wetland acres, functions and values (this process is called sequencing in the law). 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. Swift County is the responsible agency for the administration of WCA. The program is administered statewide by the Minnesota Board of Water and Soil Resources. WCA protects any wetland, regardless of its status on the National Wetland Inventory.

Minnesota law also provides two regulatory schemes for wetlands. Larger and deeper wetlands (type 3, 4 and 5 wetlands greater than 10 acres in rural areas and greater than 2.5 acres within municipalities) have been identified and cataloged as protected waters and wetlands. These basins were designated in the late 1970s and are regulated through the Department of Natural Resources, Division of Waters Protected Waters Program. The Protected Waters Program affords a high degree of protection to these basins, however, only wetland basins that are listed on the protected waters inventory are regulated under this program. This is regardless of whether they now meet the size and type requirements. Protected waters maps are available through the Swift County Planning and Zoning Office.

Wetlands provide many benefits to humans including the reduction of flooding by means of storage during high flows, filtration of pollutants and sediment, groundwater and aquifer recharge, wildlife habitat and aesthetic appeal. Much of the drainage of wetlands within the County occurred prior to the 1980s, when policies were enacted to prevent future wetland loss. The Minnesota Wetland Conservation Act (WCA), DNR Protected Waters, U.S. Army Corps of Engineers regulations and Swampbuster provisions of the USDA Farm Program, are examples of such policies. Wetland policies are discussed in greater detail in Data Items 7 and 41.

For more information on wetlands, visit the following websites:

The U.S. Fish and Wildlife Service at: <http://www.fws.gov/>

The Natural Resources Conservation Service at: <http://www.nrcs.usda.gov/>

Minnesota Association of Soil and Water Conservation Districts at: <http://www.maswcd.org/>

Board on Water and Soil Resources at: <http://www.bwsr.state.mn.us/wetlands/index.html>

Data Item 41. U.S. Army Corps of Engineers, Section 404 (for the Wetland Conservation Act and Swampbuster, see Data Item 40).

The U.S. Army Corps of Engineers has been regulating activities in the nation's waters since 1890. Laws and court decisions to consider the full public interest in both protection and utilization of water resources have broadened this regulatory program. These regulatory activities and responsibilities are based on Section 10 of the Rivers and Harbors Act of 1899 [33 U.S.C. 403], which prohibits obstruction or alteration of navigable waters of the United States without a permit from the Corp of Engineers.

Section 404 of the Clean Water Act [33 U.S.C. 1344] prohibits discharge of dredged or fill material into waters of the United States without a permit from the Corps of Engineers. Waters of the United States include adjacent wetlands and tributaries to navigable waters of the United States and other waters where the degradation or destruction of which could affect interstate or foreign commerce. If a project involves discharge of dredged or filled material, the Corps will evaluate the proposed activity under the Section 404 guidelines prepared by the Environmental Protection Agency (EPA). These guidelines restrict discharge into aquatic areas where less environmentally damaging practical alternatives exist.

The Corps of Engineers and the EPA define wetlands as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas, under these rules.

Activities in wetlands that normally require permits include, but are not limited to:

- Placement of fill material
- Ditching activities when excavated materials is sidecast
- Levee and dike construction
- Land clearing involving relocation of soil material
- Land leveling
- Most road construction
- Dam construction

The Corp of Engineers must consider other Federal laws during permit review. These other laws include:

- National Environmental Policy Act
- Fish and Wildlife Coordination Act
- Endangered Species Act
- National Historic Preservation Act
- Federal Power Act
- Wild and Scenic Rivers Act
- National Fishing Enhancement Act of 1984

For more information on the U.S. Army Corps of Engineers' wetland regulatory responsibilities, visit the following website:

<http://www.mvp.usace.army.mil/regulatory/>

Data Items 42, 43 & 44. Floodplains, Flood Prone Areas & Flood Damages

In 1969, the Minnesota Legislature enacted the State Floodplain Management Act (Minnesota Statutes, Chapter 103F). This Act and sound floodplain management principles stress the need for a comprehensive approach to solving flood problems by emphasizing nonstructural measures, such as floodplain zoning regulations, flood insurance, flood proofing, flood warning and response planning. By law, Minnesota's flood prone communities are required to: adopt floodplain management regulations when adequate technical information is available to identify floodplain areas; and enroll and maintain eligibility in the National Flood Insurance Program (NFIP) so that the people of Minnesota may insure themselves from future losses through the purchase of flood insurance. In 1987, the Flood Plain Management Act was amended to establish a state cost-sharing grant program to help local government units plan for and implement flood hazard mitigation measures.

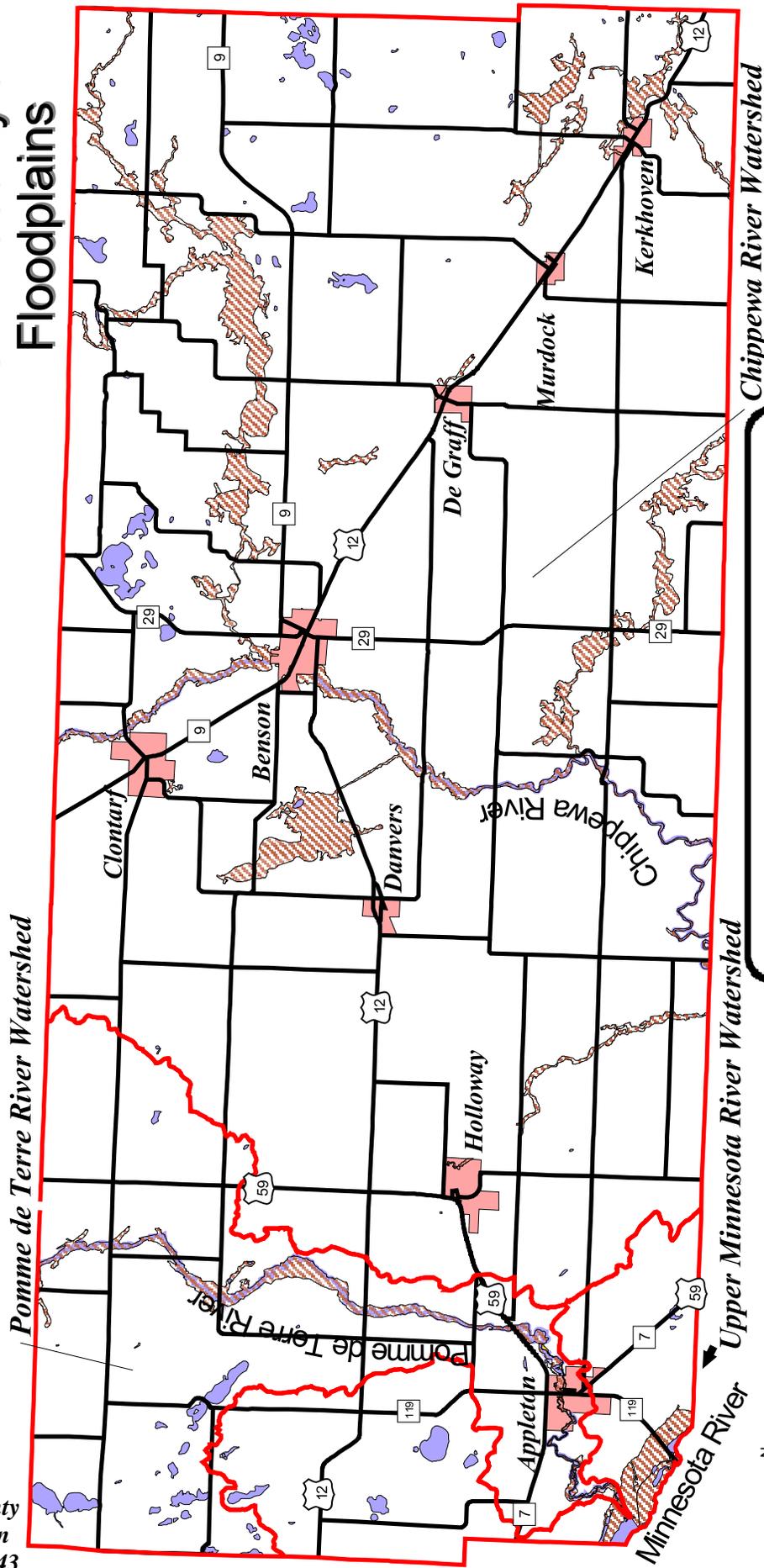
The Department of Natural Resources (DNR) is the state agency with overall responsibility for implementation of the State Flood Plain Management Act. They also serve as the coordinating agency for the National Flood Insurance Program and oversee the local enforcement of county or municipal floodplain ordinance. Local enforcement is generally through the county or municipal zoning official and the regional DNR hydrologist. Land use and building permits are strictly regulated within the floodplain. Local governments have the authority to issue conditional use permits only after a special administrative review. Swift County has also entered into the National Flood Insurance Program, offered through FEMA.

At the state level, the DNR has promulgated minimum standards for floodplain management entitled "Statewide Standards and Criteria for Management of Flood Plain Areas of Minnesota" (Minn. Rules 6120.5000 - 6120.6200). These standards have two direct applications: 1) all local floodplain regulations adopted after June 30, 1970, must be compliant with these standards; and 2) all state agencies and local units of government must comply with Minnesota Regulations in the construction of structures, roads, bridges or other facilities located within floodplain areas delineated by local ordinance. Local floodplain regulatory programs, administered by county government, predominately for the unincorporated areas of a county, and by municipal government for the incorporated areas of a county, must be compliant with federal and state floodplain management standards. Both federal and state standards identify the 100-year floodplain as the minimum area necessary for regulation at the local level. These regulations are intended to protect new development and modifications to existing development from flood damages when locating in a flood prone area cannot be avoided.

Structural flood control projects of the past, such as dikes, levees, reservoirs, or diversion channels, which kept flood waters away from developed property, are generally expensive and do not insure protection against flood damage to life and property. Current Federal and State regulations address comprehensive floodplain management to encourage wise land use as well as needed structural projects. Regulatory, nonstructural methods of flood control include floodplain zoning, flood insurance, building permits, flood proofing, flood warning systems and disaster planning.

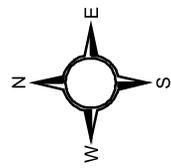
Map 2I identifies the floodplains for Swift County. To view FEMA's maps for Swift County, contact the Swift County Environmental Services Office at (320-843-2356).

Map 2I: Swift County's Floodplains



Legend

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



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

Flood Programs

The Flood Damage Reduction Grant Assistance Program (FDR) was created by the Minnesota Legislature in 1987 to provide technical and financial assistance to local government units for reducing the damaging effects of floods. Under this program the state can make cost-share grants to local units of government for up to 50% of the total cost of a project. The goal of existing regulations and programs for flood damage reduction is to minimize the threat to life and property from flooding. In addition to property loss, people can be killed or injured fighting flood waters. The efforts of local governments to enforce their zoning ordinances and to sponsor projects and acquire or relocate flooded buildings have helped to reduce risk to lives and flood damages.

Currently, two different classes of grants are available through the FDR program. Small grants are for projects with a total cost of less than or equal to \$300,000 (state share less than \$150,000). Small grants are made directly by the DNR from funds appropriated by the Legislature. Large grants are for projects with a total cost greater than \$300,000 (state share greater than \$150,000). Large grant applications are received and prioritized by the DNR and then presented to the governor and the Legislature for consideration in a capital bonding bill. A project will be funded based on its rank after prioritization and the amount of program funding made available by the Legislature.

If a presidential disaster declaration has been issued in Minnesota, the Federal Emergency Management Agency pays for 75% of the cost of structural acquisition with the remaining 25% to be provided by the local governments. The FDR program will pay half the local share leaving the local government unit with only a 12.5% share. The FDR program will also pay for half of the 35% nonfederal share of federal flood hazard mitigation projects.

The repetitive flooding damage in certain areas of Minnesota has necessitated a program to mitigate the possibility of future damages. Since the FDR Program was instituted in 1987, a significant number of projects have been completed to minimize the threat of loss of life and property damage from flooding. Funds have been provided for floodplain analysis, structural acquisition, flood proofing, emergency levee analysis, storm sewer construction, and watershed analysis. Because of the way projects are prioritized, it is very important that the grant application thoroughly define the project and any alternatives that were also considered. Working with the DNR area hydrologist will improve your community's chances of presenting a successful project for grant assistance. If you have comments or questions about the priorities or procedures, please bring them to the attention of your DNR area hydrologist or the FDR coordinator at (612) 296-4800.

Data Items 45 & 46 Shoreland Ordinances and Protected Waters (also see Data Item 7)

The Minnesota Shoreland Management Act was initially implemented in 1969 to reduce the effect of uncontrolled and unplanned development on public waters, to maintain the economic value of shoreland property and to preserve the intrinsic qualities of natural shoreland and waters. As a result of this Act, Minnesota counties and specified municipalities were required to regulate land use and compatible development on public water shoreland through State approved shoreland zoning ordinances. In addition to the Shoreland Management Act, the State of Minnesota also regulates shoreland use through the 1969 Floodplain Management Act and the 1973 Minnesota Wild and Scenic Rivers Act.

In 1989, the Minnesota Department of Natural Resources (DNR) adopted revised statewide shoreland regulations. The revision required all units of government that were implementing shoreland controls to amend their shoreland ordinances within two years to conform with the State's revised regulations.

Swift County is the only local unit of government in the County that currently has an adopted shoreland ordinance (i.e., no cities have done so).

Data Item 47. Water-Based Recreational Lands

Data Item 48. Public Water Accesses

Data Item 49. State and Federal Wild and Scenic Rivers/Canoe Routes

A variety of interactive maps, including recreational, public accesses and state parks/trails maps, can be viewed and downloaded from the following Minnesota Department of Natural Resources website:

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

Wild and Scenic Rivers

The Minnesota State Wild & Scenic Rivers Program was established in 1973 to protect rivers which have outstanding natural, scenic, geographic, historic, cultural and/or recreational values. Six rivers in Minnesota have segments which are designated as wild, scenic, or recreational under the state program. The Minnesota River was added to Minnesota's Wild & Scenic Rivers Program in 1977. The designated stretch extends from Lac qui Parle Dam to the City of Franklin (in Renville County). Each of the designated river segments in Minnesota has a management plan which outlines the rules and goals for that waterway. These rules work together with local zoning ordinances to protect the rivers from pollution, erosion, over-development, and degradation; factors which undermine the wild, scenic, and recreational qualities for which they were designated. The original management plan for this stretch of the Minnesota River was adopted in 1977. A community-based planning process to update this plan is expected to begin within the next few years. For more information on Wild and Scenic Rivers, visit the following websites:

The DNR at: **<http://www.dnr.state.mn.us/waters/wsrivers/index.html>**

or the National Wild and Scenic Rivers System at: **<http://www.nps.gov/rivers/>**

Canoe and Boating Routes

Minnesota statute 85.32 authorized the Commissioner of the DNR to mark Canoe and Boating routes and provide recreational facilities on 24 of the state's rivers. Factors of recreational demand and potential, resource characteristics, and public input are all taken into account in evaluating rivers or river segments proposed for Canoe and Boating Route status. Designation occurs by means of legislation, which may include funding for acquisition, development, and maintenance. Currently there are 2,950.8 miles of designated Canoe and Boating Route riverway on twenty-four rivers in this state. All six of the State Wild, Scenic, and Recreational rivers (i.e., the Minnesota River) are also designated as Canoe and Boating Rivers.

Criteria to be met for designation include:

- Canoeable at least three months of the year
- Potentially free of numerous snags and manmade obstacles (no more than an average of one portage per mile)
- River shore lands are suitable for campsite and rest area development.
- Existing or potential accesses are compatible with the river resource, current recreational use, and the river's classification.
- Capable of sustaining controlled amounts of recreational use without substantial adverse impact on the resource, adjacent lands, or land uses
- Present uses are compatible with canoeing and boating.
- Water quality is high enough to allow for body contact.
- Scenic qualities contribute to the recreational experience.
- Has reasonable proximity to potential users.

Minnesota River Canoe Route: Ortonville to Granite Falls

Traveling from Ortonville to Granite Falls, the canoeist will see a diversity of terrain, from steep granite bluffs to marshy lowlands. The Minnesota River, rich in natural beauty, flows through a wide valley carved out by the ancient River Warren. There are some Class I rapids and dams which need to be portaged or locked through.



Water characteristics - From the Lac qui Parle Dam to Granite Falls the river flows in a 100- to 150-foot-wide channel through a wide floodplain. Below Montevideo granite outcrops become prevalent. Most of this segment does not have any rapids until the Granite Falls area where you will encounter Class I rapids above and below the city.

Landscape - A wide variety of vegetation fringes the river. Canoeists may be surprised to see prickly pear cactus along the route. From Ortonville to Marsh Lake, trees and vines overhang the river and give it a jungle-like appearance; dark woods of soft maple, cottonwood and elm fringe the banks. Snags and broken-down bridges create obstacles. Near Marsh Lake, the river widens and large areas of swamp and marsh extend from the river; willows predominate. Marsh Lake and Lac qui Parle, two miles downstream, are shallow and weedy. At the southeast end of Lac qui Parle, called "talking water" by the Dakota Indians, is Lac qui Parle State Park.

Fish and wildlife - Many birds use the stretch of the river corridor between Marsh Lake and Lac qui Parle for nesting, breeding and resting during migrations. There are several species of waterfowl, including mallards, blue-winged teal and wood ducks. The most impressive waterfowl along the river is the Canada goose, many of which are found at Lac qui Parle. Wetland birds, including various species of herons, bitterns and shorebirds, make their summer home along the river. Pheasants and Hungarian partridge find thick cover in the river valley for nesting and for protection from harsh winter storms. Part of the Lac qui Parle Wildlife Management Area, including Lac qui Parle from the State Highway 40 bridge to the dam (river mile 284), is closed to the public from September 20 to December 1. No canoeing is allowed on that stretch of the river between these dates. Within Lac qui Parle State Park, there are miles of back channels which support an abundant wildlife population. In addition to various species of water birds, owls, hawks, deer, beavers and muskrats inhabit this area.

The Minnesota also supports a large fish population. Although carp and other rough fish predominate, anglers can take walleye, northern pike and smallmouth bass in deep pools below rapids, riffles and dams. According to the most recent Minnesota Department of Health Advisory (1997), carp and catfish may be safely eaten once a week. Other species were not included in the study.

Data Item 50. Wildlife Areas

Wildlife Management Areas

The State Wildlife Management Area (WMA) Program was established as an attempt to preserve wildlife habitat areas, primarily wetlands that were being destroyed by development and agricultural land uses. WMAs were incorporated as components of the Minnesota outdoor recreation system, which was established by the Minnesota Outdoor Recreation Act of 1975. The Act establishes an outdoor recreation system that will: 1) preserve an accurate representation of Minnesota's natural and historical heritage for public understanding and enjoyment; and 2) provide an adequate supply of scenic, accessible and useable lands and waters to accommodate the outdoor recreation needs of Minnesota's citizens. WMAs are managed for wildlife production and are open to public hunting and wildlife watching. According to Appendix C, Swift County has approximately 9,363 acres of MWAs (as of August 13, 2002).

Waterfowl Production Areas

Waterfowl Production Areas (WPAs) are acquired and managed under the direction of the U.S. Fish and Wildlife Service (USFWS). WPAs aim to preserve wetlands and grasslands that are critical to waterfowl and other wildlife. These public lands were included in the National Wildlife Refuge System in 1966, through the National Wildlife Refuge Administration Act. Part of the money collected through purchasing a Duck Stamp in Minnesota goes toward the acquisition and maintenance of these areas.

WPAs provide numerous recreational opportunities to the public, including hunting, fishing, trapping, wildlife observation and photography. The use of motorized vehicles, including snowmobiles and all-terrain vehicles, is generally prohibited in WPAs. For additional rules and regulations regarding WPAs, contact the USFWS at (320) 589-1001.

Data Item 51. State Designated Trout Waters

The Minnesota Department of Natural Resources (DNR) has designated trout lakes and streams in Minnesota. Restrictions have been placed on designated trout streams in order to protect and foster the propagation of the species. In such streams, fishing is limited, except during the open season, and the taking of minnows is prohibited at all times, unless permitted by the DNR.

Cottonwood Creek is the only designated trout waters located in Swift County.

Data Item 52. State Ecological and Management Classifications

The Minnesota Department of Natural Resources (DNR), Division of Fisheries, has developed several lake classification systems. Lake classification systems have been used to categorize lakes according to their general fish community composition, natural ecological condition and the most suitable species for which a lake can be managed. Fisheries managers use these lake classifications to prescribe lake management goals and objectives. Ecological and Management Classification systems, were the earliest classification systems developed by Fisheries managers and are still used to some extent today. More recently, *An Ecological Classification of Minnesota Lakes with Associated Fish Communities* was developed by DNR Fisheries. The older Ecological Classification system categorizes suitable fish populations that are adapted to the physical, chemical and biological features of a lake. The older Management Classification system categorizes the most important species, or combination of species, on which management efforts should be directed. The *Ecological Classification of Minnesota Lakes with Associated Fish Communities* categorizes lakes according to limnological variables including variables associated with lake size, lake depth and chemical fertility and length of the growing season.

For more information on, contact the DNR toll free at (888) MINN-DNR or the DNR's local fisheries staff at (320) 839-2656.

Data Item 53. Biological Surveys

The Minnesota County Biological Survey (MCBS) began in 1987 as a systematic survey of rare biological features. The goal of the Survey is to identify significant natural areas and to collect and interpret data on the distribution and ecology of rare plants, rare animals and native plant communities. Native habitats surveyed by MCBS contribute to a sustainable economy and society because they:

- Provide reservoirs of genetic materials potentially useful in agriculture and medicine;
- Provide ecological services that contribute to the quality of air, soil and water;
- Provide opportunities for research and monitoring on landscapes, native plant communities, plants, animals and their relationships within the range of natural variation;
- Serve as benchmarks for comparison of the effects of resource management activities; and
- Are part of natural ecosystems that represent Minnesota's natural heritage and are sources of recreation, beauty and inspiration.

To date, the MCBS has added 13,414 new records of rare plants and animals to the Rare Features Database, Natural Heritage Information System (NHIS). Work for the Survey has been completed in 56 of Minnesota's 87 counties, including Swift County (although the final map has not been created). For more information on the MCBS, visit the following website:

http://www.dnr.state.mn.us/ecological_services/mcbs/index.html

Data Item 54. Management Plans for Fish and Wildlife Areas

Minnesota Department of Natural Resources (DNR) Fisheries personnel routinely survey lakes and streams. Data collected in the survey process includes the initial survey, resurveys, population assessments, reproduction checks and creel surveys. Information collected is often used to develop and revise Lake and Stream Management Plans (LSMP). LSMPs include long-range goals, operational plans, mid-range objectives, potential plans, primary and secondary species management and a narrative section. Plans are periodically revised as new data is collected and information from other sources becomes available.

During the process of conducting lake and stream surveys, the Minnesota DNR Fisheries has identified opportunities to not only improve fish and wildlife habitat, but also improve water quality.

Opportunities identified by the DNR Fisheries include:

1. Storm water retention ponds, siltation basins, and restoration and development of wetlands in strategic locations that can provide waterfowl production and northern pike spawning.
2. Protection, preservation, and establishment of native emergent vegetation (i.e., cattails, bulrushes, etc.) yield water quality benefits, while providing fish and wildlife habitat.
3. Stabilization of shoreline utilizing buffer strips, riprap and other erosion and siltation prevention measures, could enhance natural spawning shoals and minimize turbidity.
4. Carp, and other undesirable fishes uproot vegetation and stir up bottom sediments and destabilize shoreline areas. Electric fish barriers and velocity culverts in strategic locations could minimize or prevent migration of undesirable fish species.
5. Winter aeration of marginal fish producing waters and stocking of desirable species can provide additional recreational opportunities, spread out/reduce angling pressure on existing resources and through biological control, reduce the abundance of undesirable fish.
6. Aquatic plant management, including the detection and control of exotic plant species (i.e., Eurasian Water Milfoil, Purple Loosestrife and Curled Pondweed).
7. Diversion of storm sewers, drainage tiles, county ditches and sewage treatment facilities away from lakes and streams into wetlands or through sedimentation basins.

Management of the County's fish resources is critical to the long-term sustainability of not only the resource itself, but the portion of the local economy that is dependant upon the sports fishing industry. One popular tool that has been used in the County to manage fish resources is winter aeration systems.

Data Item 55. Unique and Rare Features/Species

The Federal Endangered Species Act of 1973 requires the U.S. Department of the Interior to identify species as endangered or threatened, according to a separate set of definitions, and imposes a separate set of restrictions pertaining to those species. Definitions for endangered, threatened and species of special concern are provided as follows:

- **Endangered Species** - A species is considered endangered if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota.
- **Threatened Species** - A species is considered threatened if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.
- **Species of Special Concern** - A species is considered a species of special concern if, although the species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) requires the Minnesota Department of Natural Resources (DNR) to adopt rules designating species meeting the statutory definitions of endangered, threatened, or species of special concern. The resulting list of endangered, threatened and species of special concern is codified as Minnesota Rules, Chapter 6134. The Endangered Species Statute also authorizes the DNR to adopt rules that regulate treatment of species designated as endangered and threatened.

Minnesota's Endangered Species Statute and the associated Rules impose a variety of regulations pertaining to species designated as endangered or threatened. Under State regulations, a person may not take, import, transport, or sell any portion of an endangered or threatened species. However, these acts may be allowed through the issuance of a DNR permit. In addition, certain exemptions exist for agricultural lands and for the accidental, unknowing destruction of designated plants. Minnesota's Endangered Species Statute or associated Rules do not protect species of special concern

The Natural Heritage Information System (NHIS) provides information on Minnesota's rare plants, animals, native plant communities, and other rare features. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, natural communities, and other natural features. Its purpose is to foster better understanding and conservation of these features.

The most commonly used component of the system is the Rare Features Database. The Database began as a compilation of historical records from museum collections and published information. This has been supplemented with data from years of field work on Minnesota's rare features. Since 1986, our knowledge of Minnesota's rare features has increased substantially with the progress of the Minnesota County Biological Survey. Information from the Rare Features Database can be provided for review of land-use plans, impacts of specific development projects, research projects, and for other legitimate uses. The publication of exact locational information, however, may threaten the continued existence of some rare species.

For more information on Minnesota Threatened and Endangered Species, contact the Department of Natural Resources at the following website:

http://www.dnr.state.mn.us/ecological_services/rare.html

CHAPTER THREE: WATER PLANNING ISSUES, IMPLICATIONS AND ASSESSMENTS

This Chapter identifies Swift County’s water planning issues and describes which ones are considered “high priority” between 2003 and 2008. An implication and assessment section is also included for each high priority issue. This Chapter contains the following sections:

- ✓ **Issue Identification Process**
- ✓ **Public Informational Meeting Issues**
- ✓ **State Agency Water Planning Issues**
- ✓ **Reducing Priority Pollutants Issues, Implications and Assessments**
- ✓ **Surface Water/Drainage Management Issues, Implications and Assessments**
- ✓ **Groundwater Protection Issues, Implications and Assessments**
- ✓ **Public Education Issues, Implications and Assessments**

Issue Identification Process

The Swift water planning process included issues gathered at public informational meetings (see page 2), issues submitted by the various state and local governmental agencies (see page 3), and issues discussed by the County’s Water Planning Task Force (see below). After reviewing all of the identified issues, the Water Planning Task Force prioritized all of the issues into the following four high priority categories:

Reducing Priority Pollutants – One of the Water Plan’s primary emphasis is to identify action steps to actually minimize or alleviate a number of priority pollutants. Although most of the action steps will be implemented on a countywide basis, priority sub-watershed management areas will also be identified.

Surface Water/Drainage Management – The County would like to examine drainage management systematically to develop a strategy to address issues and pursue opportunities.

Groundwater Protection – This issue focuses on recent efforts to protect and enhance the County’s groundwater supplies, including a section on wellhead protection.

Public Education & Outreach – Most of the issues identified throughout the water planning process would be greatly improved by simply raising public awareness on the subject.

Public Informational Meeting Issues

The following issues were collected during a public informational meeting held on April 8, 2002. The purpose of the meeting was to give local residents, local governmental units and various governmental agencies the opportunity to identify and discuss local water planning issues.

- ✓ Short on water planning funds. BWSR should add funds rather than cut back. If we want to see all of the needed water planning items addressed, the County will need more money.
- ✓ Septic systems need more financial assistance. Kandiyohi County recently voted to extend its loan payback period from five years to ten years. Swift County should do so as well, especially in critical areas.
- ✓ The reason it is a five-year payback is due to it's the Department of Agriculture's money and rules.
- ✓ Sometimes septic systems get a bad rap: municipalities are just as bad!
- ✓ Mandatory inspections on change of ownership is good but not enough. Should encourage voluntary inspections.
- ✓ Abandoned wells need to be inventoried and addressed.
- ✓ Need to get serious about clean water by allocating more money to the problem.
- ✓ The water plan should address a lot more than abandoned wells. Should be a user fee for closing wells.
- ✓ Need more education on the application of fertilizers in both rural and urban settings.
- ✓ More information regarding the lifespan of septic tanks.
- ✓ Changing septic standards are sometimes confusing. It used to be the deeper the system the better: now it's the higher the better.
- ✓ Now have a better understanding of the groundwater interconnections in the Danvers area.
- ✓ Soil and Water Conservation District monitors 32 wells and sends information to the State once a month.
- ✓ Concern on groundwater in the NW portion of the County. Well interference near the Pomme de Terre River. A well went dry do to irrigation in 1989. There is also a documented Appleton well interference problem.
- ✓ How is Fibrominn going to affect water quality?
- ✓ Are rural water systems put in place do to need or desire?
- ✓ Have had three 500-year floods on Shakopee Creek.
- ✓ How can the County live in harmony with Feedlots?
- ✓ Should require manure management plans for the larger feedlots.
- ✓ Concerned with inorganic chemicals.
- ✓ Need to update Best Management Practices for farmers.
- ✓ Need to monitor storm water.
- ✓ Promote corn-based solutions versus salt for icy roads.
- ✓ How will the newly designated canoe route affect water quality?
- ✓ Promote buffer strips along ditches.

State Agency Water Planning Issues

The following issues were collected during a five county state agency meeting held in Appleton, Minnesota, on April 8, 2002. The purpose of the meeting was to discuss issues relating to updating Big Stone, Chippewa, Lac qui Parle, Swift and Swift Counties individual water plans. Participants included the Board of Water and Soil Resources, Minnesota Department of Natural Resources, Minnesota Department of Agriculture, Minnesota Department of Health, U.S. Fish and Wildlife Service, Soil and Water Conservation Districts and respective County Water Planners. The Minnesota Pollution Control Agency could not attend but submitted comments in writing.

- ✓ Storm Water Management (i.e., encourage proper ordinances)
- ✓ Erosion Control Ordinance
- ✓ Shoreland Naturalization
- ✓ Wetland Plan (i.e., identification, drainage, restoration)
- ✓ Wellhead Protection Planning (MN Department of Health)
- ✓ Conservation Tillage (MN Department of Agriculture)
- ✓ Land-locked water bodies (i.e., drainage, wildlife/recreation)
- ✓ Better understanding of hydrogeology and aquifers (locate recharge areas)
- ✓ Water storage and buffers
- ✓ Drainage – map and manage them in the proper locations (clean & buffer)
- ✓ Identifying ditch and tile outlets
- ✓ Drained Wetland Inventory (Fish & Wildlife Service)
- ✓ Public Land (more education on the public benefits vs. loss of tax revenue)
- ✓ Use of County Biological Surveys
- ✓ Prescribed burning
- ✓ Feedlots (determining which ones are in critical areas)
- ✓ Total Maximum Daily Loads 303d list (MN Pollution Control Agency)
- ✓ Individual Septic Treatment Systems
- ✓ Swim and fishable waters
- ✓ Eliminate potentially harmful bacteria in surface water
- ✓ Address groundwater vulnerability areas
- ✓ Better utilize Soil and Water Conservation District resources
- ✓ Create a comprehensive Floodwater Management Plan (mitigation/reduction)
- ✓ Emphasize quality (not necessarily quantity) wildlife habitat
- ✓ Promote willing wetland restorations
- ✓ Appreciate State and Federal lands as recreational and environmental assets
- ✓ Use buffers to reduce erosion and sedimentation (use incentives)
- ✓ Conduct a test program with rotational grazing of buffered areas
- ✓ Develop County Recreational Plans
- ✓ Convert open tiles to French inlets to reduce sedimentation
- ✓ Use GIS to map and plan
- ✓ Work to improve agency relationships/cooperation with local governments
- ✓ Work to minimize surface water conflicts
- ✓ Identify, protect and restore (where appropriate) native prairie grass
- ✓ Update zoning ordinances to provide good land use incentives

Reducing Priority Pollutants: Issues, Implications and Assessments

The Water Plan Task Force decided to concentrate a large majority of Water Plan's action steps listed in Chapter Four on efforts specifically designed to minimize or alleviate a number of priority pollutants. The following three sections provide a description of how and why Swift County will address reducing priority pollutants:¹

- 1. Total Maximum Daily Loads (TMDLs)**
- 2. Minnesota River Basin Plan and Local Watershed Projects**
 - a. Dissolved Oxygen and Phosphorus
 - b. Nitrogen
 - c. Sediment and Erosion
- 3. Feedlots**

Reducing Priority Pollutants Issue 1: Total Maximum Daily Loads (TMDLs)

The Clean Water Act requires states to publish, every two years, an updated list of streams and lakes that are not meeting their designated uses because of excess pollutants. The list, known as the 303(d) list, is based on violations of water quality standards and is organized by river basin. To facilitate this process, Total Maximum Daily Loads (TMDLs) were designed for a number of priority pollutants. These standards define how much of a pollutant can be in a surface and/or ground water while still allowing it to meet its designated uses, such as for drinking water, fishing, swimming, irrigation or industrial purposes.

The current 303(d) TMDL listing was published in July 2002. Since all of Swift County is located in the Minnesota River Basin, the following 303(d) basin summary pertains to Swift County's water planning activities (MPCA 2002 303d List Cover Letter):

In the **Minnesota River Basin**, there are 29 rivers and creeks that are impaired for one or more of the following pollutants: Low Dissolved Oxygen, impaired biota, mercury, fecal Coliform, turbidity, excess ammonia, Chloride, PCBs, and eutrophication. The Minnesota River has the most reaches listed for impairment in the Basin [totaling 46]. There are also 81 lakes listed with one or more of the following impairments: excess nutrients and mercury or PCBs in the water column and/or fish tissue. Altogether, there are 320 river reaches and lakes listed as impaired in this Basin.

For each pollutant that causes a water body to fail to meet state water quality standards, the federal Clean Water Act requires the MPCA to conduct a TMDL study (refer to the text box on page 6). A TMDL study identifies both point and nonpoint sources of each pollutant that fails to meet water

¹ *It should be noted that much of the information presented in this section of the Water Plan and its corresponding Goals, Objectives and Action Steps found in Chapter Four ties in with information and efforts identified in the Minnesota Pollution Control Agency's Minnesota River Basin Plan (December 2001). See page 6 of this Chapter for more information on the Basin Plan.*

quality standards. Water quality sampling and computer modeling determine how much each pollutant source must reduce its contribution to assure the water quality standard is met. Rivers and streams may have several TMDLs, each one potentially determining the limit for a different pollutant.

The Water Plan Task Force identified working with the Minnesota Pollution Control Agency to get the County’s waters off the 303(d) listing (see Table 3A). It was also clearly communicated by the Committee that they would like to learn more about the TMDL listing process and what role the Water Plan plays in getting waters off the listing.

Table 3A: MPCA’s 303d List of Impaired Waters for Swift County (July, 2002)

Name	Year Listed	Assessment ID	Affected Use	Pollutant or Stressor	Target Start - Completion Date
Chippewa River	2002	07020005-506	Aquatic life	Mercury/ FCA ¹	2002/2015
Minnesota River (Lac qui Parle Lake)	1992	07020001-501	Aquatic life	Ammonia	2012/2015
Pomme de Terre River: Muddy Creek to Marsh Lake Dam	1994	07020002-501	Swimming	Fecal Coliform/ Low Oxygen	2002/2007
Oliver Lake	2002	76- 0146	Aquatic life	Mercury	2002/2015

**Reducing Priority Pollutants Issue 2:
Minnesota River Basin Plan and Local Watershed Projects**

Minnesota River Basin Plan, published by the Minnesota Pollution Control Agency in December 2001, identifies action steps to address pollution concerns throughout the 37 county Minnesota River Basin. Specifically, the purpose of the Basin Plan is to “*guide and coordinate the activities of the MPCA, in conjunction with other agencies and organizations, in restoring or protecting the water resources of the Minnesota River Basin*” (Basin Plan, page 12). The development of the Basin Plan consisted of a ten year process based on the efforts of numerous organization and individuals, including the following:

- ✓ Recommendations from the Minnesota River Citizen’s Advisory Committee
- ✓ Recommendations from the Minnesota River Agricultural Team
- ✓ Input from stakeholders and citizens at public meetings
- ✓ Input from basin planning meetings
- ✓ Results form the Minnesota River Assessment Project
- ✓ Studies from other agencies and organizations

The Minnesota River Basin Plan identifies goals, objectives and targets that were all created to have measurable environmental outcomes. The reducing priority pollutant goals, objectives and action steps identified in Chapter Four of this Water Plan were designed in part to tie into the ones outlined in the Minnesota River Basin Plan. More importantly, the Minnesota River Basin Plan provides the technical information on the status of water quality by providing an analysis of the monitoring data and reports that have been collected throughout the Minnesota River Basin.

TMDL PROCESS STEPS (PCA lead staff in parentheses)

- 1. Stakeholder Involvement:** (Basin Coordinator, PCA Watershed Project Manager)
 - ✓ Outline water quality problem; answer questions, in regional meetings/presentations
 - ✓ Establish local team (or use existing one) to stay with the project
 - ✓ Invite local ideas on approaches to solving the problem
 - ✓ Involve local people in data collection, plan development and review
- 2. Data Collection** (PCA Watershed Project Manager, Consultant*, in consultation with TMDL Modeling Coordinator)
 - ✓ Use TMDL “grid” or other appropriate format
 - ✓ Develop Source inventories
 - ✓ Conduct water quality monitoring to identify contributing areas
 - ✓ Other data – geologic, land use, etc.
- 3. Analyze and Interpret Data** (TMDL Modeling Coordinator, PCA Watershed Project Manager, and/or Consultant*)
 - ✓ Identify sub-watersheds contributing disproportionately to problem
 - ✓ Estimate “loads” or relative contributions by sector
- 4. Show Initial Results to Local Team** (PCA Watershed Project Manager and others as needed)
- 5. Show high-loading watersheds/sectors**
- 6. Run Scenarios** on different approaches to achieving designated uses (PCA Watershed Project Manager, Consultant* TMDL Modeling Coordinator)
- 7. Show Scenario Results to Team** (PCA Watershed Project Manager and others as needed)
 - ✓ Show Scenario Results/Discuss Alternatives
- 8. Develop Implementation Strategy** (All, with Team)
 - ✓ State Load-Reduction Goals by Sector
 - ✓ Describe Strategies for Reaching Goals
- 9. Send TMDL and Implementation Strategy to EPA** (TMDL Coordinator)
 - ✓ EPA Review
 - ✓ Revisions if any
 - ✓ EPA Approval
- 10. Implement Strategy**
 - ✓ Focus MPCA programs on target areas/sites
 - ✓ Seek funding
- 11. Monitor Progress**
 - ✓ Track progress on the land (BMP Implementation, permits, etc.)
 - ✓ Monitor water quality to determine when goals are achieved
 - ✓ If not achieved on schedule, return to #2 and repeat process
- 12. If data support, de-list the impaired reach**

*Use of consultants for data collection, data analysis and interpretation, or public meeting facilitation is at the discretion of the PCA Watershed Project Manager and local watershed team members.

The following information summarizes (and reproduces) the Minnesota River Basin Plan's implications and assessments that tie in with Swift County's priority pollutant goals, objectives and action steps. More importantly, the Chippewa River Watershed Project and the Pomme de Terre River Association monitoring data and implementation plan will add to these assessments and more clearly focus actions.

Dissolved Oxygen and Phosphorus – The dissolved oxygen and phosphorous goals and objectives are included together because of the strong linkage between phosphorous levels in the Minnesota River and the dissolved oxygen concentrations in the lower reaches of the Minnesota River. Almost all the efforts identified [in the Basin Plan] toward reducing the biochemical oxygen demand and, therefore, maintaining dissolved oxygen concentrations in the River involve the reduction of phosphorous levels. To accomplish this, one of the Minnesota Pollution Control Agency's commitments is to provide assistance to local units of government in developing and using adequate watershed assessment information for identifying land use changes needed to reduce phosphorus loading. Phosphorus originates from several sources: Point-sources mainly come from municipal and industrial dischargers into surface waters; Non-point sources mainly come from agricultural fields, urban runoff, construction sites, feedlots and on-site septic systems.

Nitrogen – Nitrite, nitrate, ammonia, organic nitrogen and nitrogen gas are all common forms of nitrogen. Nitrogen is most persistent in rivers and streams when in the form of nitrate-nitrogen. Nitrogen in the forms of nitrate and ammonia are of the greatest concern to water quality. The Minnesota Department of Agriculture has developed a Nitrogen Fertilizer Management Plan that contains both a voluntary BMP component and regulatory measures.

Sediment and Erosion – The Minnesota River Assessment Project identified sediment as a pollutant concern in the Minnesota River. Sediment causes turbidity or cloudiness in the water that can limit light penetration and inhibit healthy plant growth on the river bottom. Sediment on the river bottom can destroy the habitat of fish and other aquatic life. Sediment is a significant carrier of other critical pollutants, including phosphorous and heavy metals. It can play a role in decreasing dissolved oxygen levels in the river due to warmer water temperatures resulting from the increased absorption of solar energy by the sediment in the water. Excessive turbidity is also an aesthetic impairment.

The gross estimate of riparian land use/cover made by the Board of Water and Soil Resources using information from the 100–100 Study by Mankato State University indicate that about half of the stream length in the Basin is in vegetative cover, while the other half is unprotected (i.e., cropped). Although specific estimates of total sediment contribution from agricultural land have not been made, based on the fact that agricultural comprises eighty percent of the Basin's land use, it is likely the largest contributor of sediment. Streambank erosion, however, can also contribute a large amount of sedimentation.

Due to the significance of the sedimentation issue in Swift County (see Map 3A), the Water Plan Committee identified numerous action steps in Chapter Four devoted to properly addressing sedimentation concerns. Many of the items will be the primary responsibility of both the Chippewa County SWCD and the NRCS.

Due to the significance of the sedimentation issue in the County, the Water Plan Committee identified numerous action steps in Chapter Four to properly address sedimentation concerns. Many of the items will be the shared responsibility of both the Swift County SWCD and the NRCS.

Reducing Priority Pollutants Issue 3: Feedlots

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 amended in 1974, 1978 and 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 by January 1, 2002. Registration was accomplished one of three ways: 1) the owner(s) can fill out information on an MPCA registration form and return it to the MPCA or, in a delegated county, the delegated county feedlot officer, 2) the owner(s) can fill out a permit application (if required to obtain a permit), or 3) the owner can be listed on a current (as of October 1, 1997) Level Two or Level Three inventory that also contains the required information and the inventory has been submitted to the MPCA, this serves as fulfilling the initial registration requirement. It is the owner's responsibility to ensure that his or her registration information has been forwarded to the MPCA. Registration information must be updated at least once in every four-year period after January 1, 2002. The MPCA or delegated county will notify owners that they must re-register at least 90 days before their current registration expires. Also, the MPCA or delegated county will send the owner a receipt within 30 days of receiving the registration information from the owner.

Definition of an animal unit

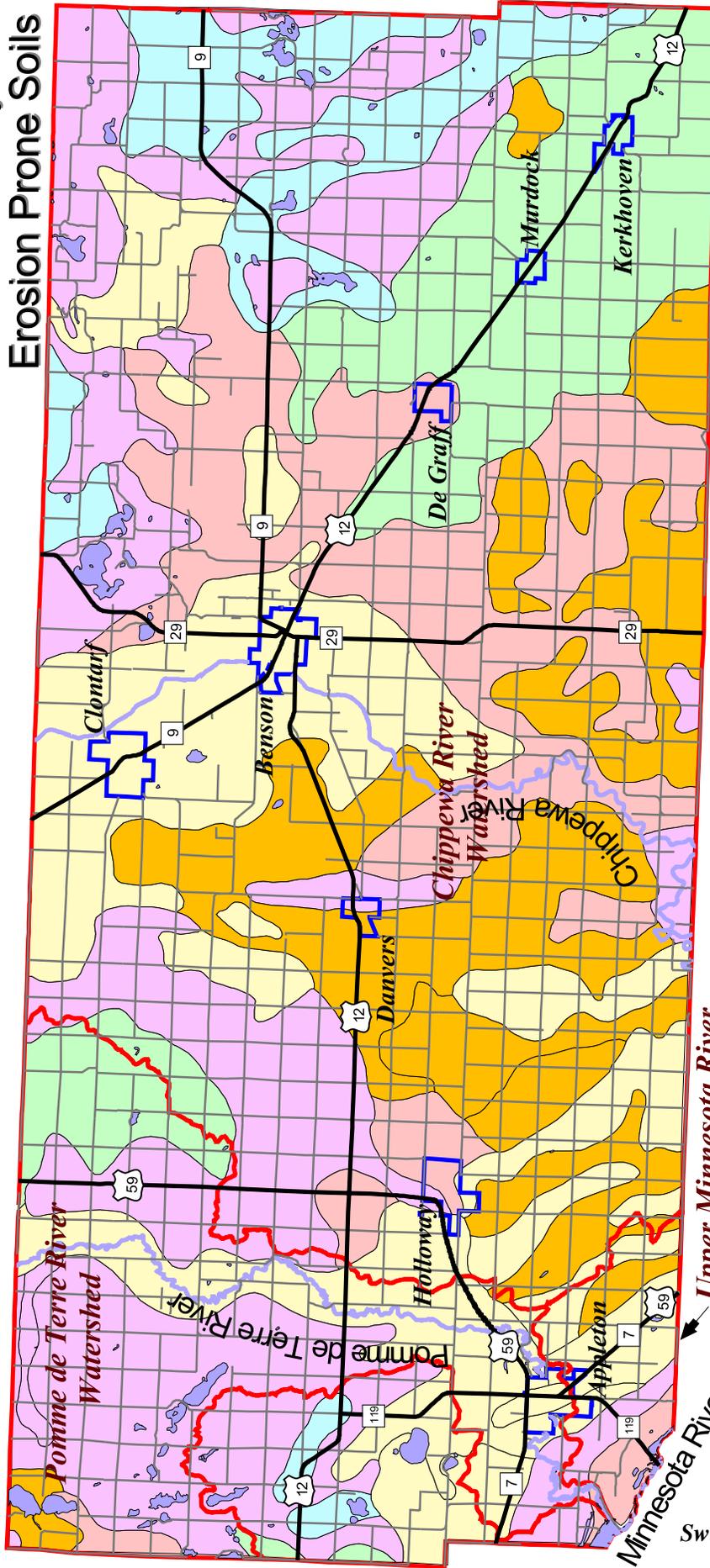
A standardized measure to compare differences in the production of animal manure for an animal feedlot or manure storage area. A mature cow of about 1000 pounds (455 kg.) is the standard unit, thus being 1 animal unit. In comparison, it takes approximately 2.5 adult hogs to equal a 1000 pound cow. As a result, each adult hog is equal to a 0.4 animal unit. In other words, it takes 2.5 hogs to equal 1 animal unit

Exemptions to registration:

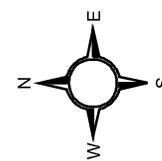
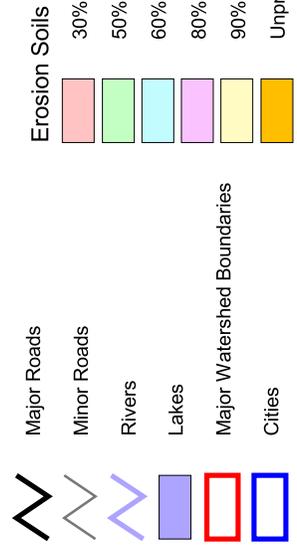
- Owners of livestock facilities located on county fairgrounds were not required to register.
- Owners of pasture or grazing operations that have buildings or lots with a capacity of less than 50 animal units, or less than 10 animal units in shoreland areas, were not required to register.
- Owners of pasture or grazing operations that do not have buildings or open lots were not required to register.

Once registered, owners will be directed to obtain any needed permits. The requirement for a feedlot permit is dependant upon the size of the operation and whether or not a pollution hazard has been identified. Owners with less than 300 animal units are not required to have a permit for the construction of a new facility or expansion of an existing facility if construction is in accordance with the technical standards contained in Minnesota State Rules. For owners with 300 animal units

Map 3A: Swift County's Erosion Prone Soils



Legend



or more, but less than 1,000 animal units, a streamlined short-form permit is required for construction activities. An Interim Permit is required for owners with 300 animal units or more, but less than 1,000 animal units, if a pollution hazard has been identified. Finally, a National Pollutant Discharge Elimination System (NPDES) permit or State Disposal System (SDS) permit is required for all feedlots with 1,000 animal units or more. NPDES and SDS permits must be issued by the MPCA.

Owners of feedlots with less than 300 animal units, with passive manure-contaminated runoff from open lots, are encouraged to sign up for the 2005/2010 Open-lot Agreement. If an owner qualifies for the agreement, they will be allowed to phase in any needed corrections to pollution problems. Owners are required to install clean-water diversions, vegetated buffer areas or filter strips for manure-contaminated runoff to flow through, or other corrective measures by October 1, 2005.

Swift County is currently delegated to administer the MPCA feedlot program. The County has both a Level I and Level Two Feedlot Inventory. The Level I Inventory simply identifies the location of each feedlot. In 2002, the County had 213 feedlots. The Level II Inventory contains specific information on each feedlot, such as its size, number of animals and type of manure storage. The Water Plan Task Force identified a few key action steps to address feedlot concerns between 2003 and 2008. The most important action step involves creating a Geographic Information System (GIS) of Level Two feedlots registered under MPCA's current registration guidelines. The Water Plan Task Force also expressed interest in the following:

- ▶ Develop an informational packet to mail to registered feedlot operators to assist them with contacts for technical questions (compliance, design, manure management) and financial incentives;
- ▶ Identify all noncompliant feedlot operators by 2008;
- ▶ Assisting three noncompliant feedlots with financial and technical assistance each year through EQIP, State Cost-Share;
- ▶ Assisting feedlot operators with completing proper MPCA permits and Manure Management Plans on 100 percent of feedlots with 1000+ animal units; and
- ▶ Assisting two sites with establishing livestock exclusion practices (i.e., fencing, alternative water source, rock crossing, etc.) in the East Branch Chippewa River Sub-Watershed.

Open Lot Agreement

The Open Lot Agreement (OLA) is found in the Minnesota feedlot rules (Minn. R. 7020.2003, subp. 4). The rule allows eligible owners of feedlots with less than 300 AU to enter into an agreement with the MPCA to make substantial pollution reductions by 2005, and correct all passive manure runoff problems from eligible open lots by 2010, without the risk of civil penalty from the MPCA regarding past violations of Minn. R. 7050.0215 associated with passive runoff problems. Feedlot operators who enter into an OLA must immediately begin the process to phase into compliance. The OLA requires producers to: 1) immediately manage and operate the feedlot to minimize discharges at all times, 2) install partial fixes by 2005, and 3) complete final fixes to meet effluent limits in Minn. R. 7050.0215 by 2010. OLAs only apply to eligible open lots and not discharges from manure storage areas or other parts of the feedlot such as milk-house waste or silage leachate. Other parts of the facility should be brought into compliance using the appropriate tools, such as interim permits or enforcement.

Water/Drainage Management: Issues, Implications and Assessments

Drainage systems are widely used primarily to increase agricultural production where the topography of the landscape is nearly level and the soils are poorly drained. A drainage system is needed to control ponding and to lower the water table below the root zone. Open ditches drain much of the surface water and can be used as outlets for subsurface tile lines. Proper design and maintenance of drainage systems can improve and increase the productivity of the soil, therefore playing a vital role to both the agricultural community and the County's overall economy. Map 3B shows approximate location of Swift County's public drainage system. In addition, the Map also shows the location of the County's dams and control structures.

Typically, drainage systems are degraded by sediment, nutrients and bacteria. This, in turn, degrades the quality of County's other water features. To minimize this problem, landowners need to implement Best Management Practices (BMPs), such as filter strips, along the County's drainage ditches. Implementation of such practices not only improves the quality of the County's surface water, but it also reduces the need for expensive ditch cleanout and repair. Besides problems related to water quality, Swift County's drainage systems pose water quantity threats as well. Because ditches were designed to remove a large quantity of water in a short duration, flooding problems can and do occur, especially following major storm events and during the spring snowmelt. To minimize flooding impacts, increased upland storage is necessary to reduce the overall volume of water transported by the ditch system.

John Helland, a Legislative Analyst, wrote a legislative information brief titled, "The Drainage Issue", for the Minnesota House of Representatives in 1999. The following text contains key portions of the information brief:

Drainage activity over the years has ebbed and flowed based on agricultural prosperity and the drought cycle. The activity peaked in the 1950s, and by the 1960s public policy had shifted toward an emphasis on wetland conservation. People began to question whether drainage was always in the public interest.

Federal and State law thereafter evolved toward acquisition and protection of wetlands. Water bank programs were created to pay landowners not to drain wetlands and to place them under easement. The federal Clean Water Act gave the U.S. Army Corps of Engineers permit control over the discharge of substances into wetlands. The 1985, 1990, and 1996 federal farm bills all contained significant wetland protection measures for landowners planting crops [consequently, the 2002 Farm Bill does as well]. Minnesota's law has changed during the last three decades by increasing the consideration of environmental measures before a drainage proceeding commences and imposing stricter protection of wetlands. This culminated in the State Wetland Conservation Act of 1991, which established a "no-net-loss" policy for Minnesota's remaining wetlands.

Activity and Authority

An estimate in 1985 calculated that Minnesota had about five million acres of drained land. About 20 percent of the acreage was drained by tile pipes, conveying excess water from farm fields to collection ditches. The remaining 80 percent was drained by 27,000 miles of

“The Drainage Issue” *continued...*

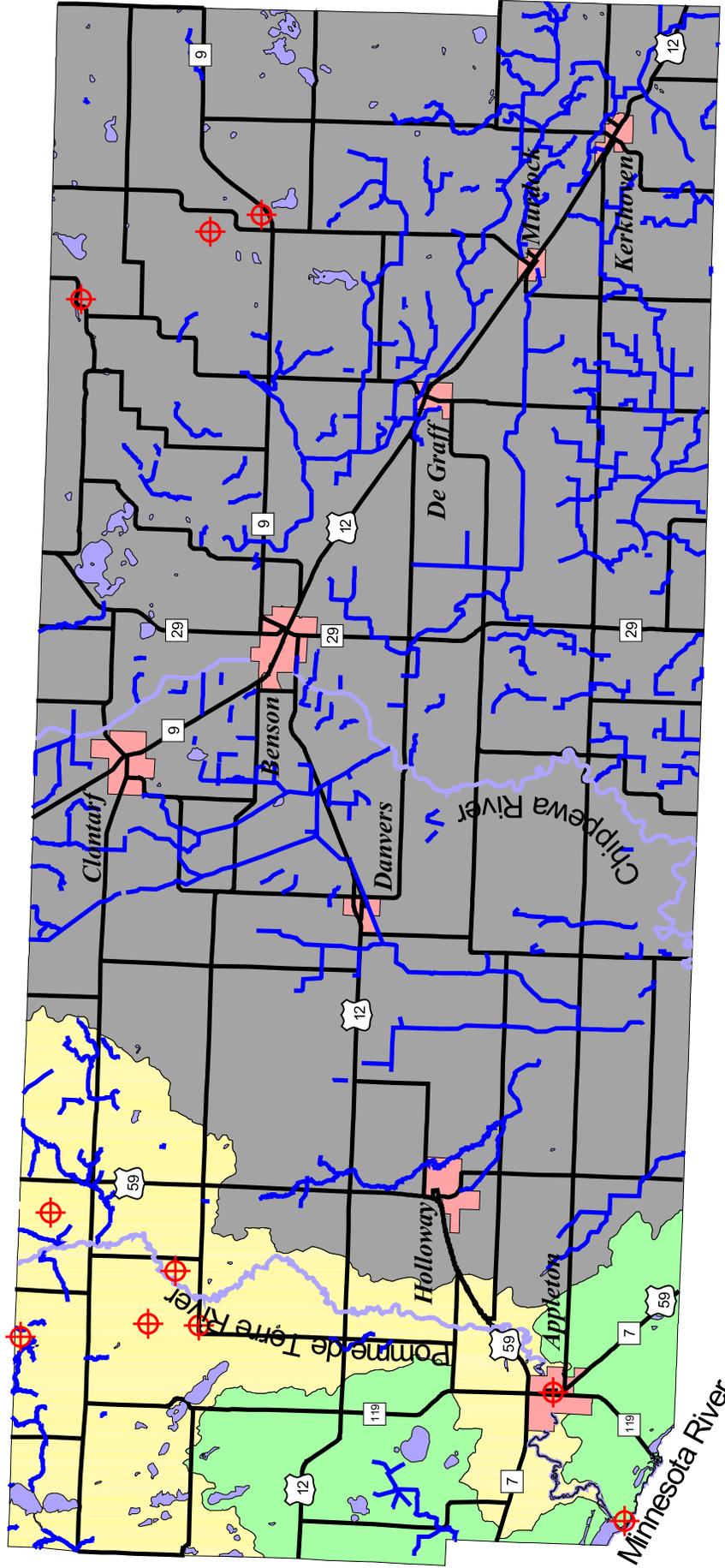
constructed drainage ditches. Drainage activity, however, has tapered off in the last two decades. There are fewer individual farmers, and subsequently less interest in opening up new land to drain. The growing realization of public benefits of wetland protection, and accompanying laws, has slowed wetland drainage. Some drainage activity is taking place in the state’s growing urbanization areas, including preparing for streets, roads, airports, and residential and industrial development.

General authority for public drainage is vested in the counties under Minnesota Statutes, chapter 103E, although some drainage systems are located in and under the supervision of a watershed district (Minn. Stat., Ch. 103D). Counties and watershed districts are more or less on their own in the interpretation of the drainage law, on a case-by-case basis. This has caused a growing lack of uniformity and standardization of drainage procedures among the counties and watershed districts.

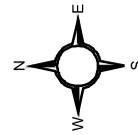
Issues

Issues and concerns about public drainage have emerged among various interest groups during the 1990s. Some of the groups have expressed an interest in specific changes to the drainage law, or wholesale change to “modernize” it. Recently, the state Board of Water and Soil Resources sponsored a public drainage forum to identify and discuss the issues and concerns. The major concerns seem to be:

- ▶ There is a great need for more education on the drainage law, which is very process oriented, for all interested parties, but especially public officials who change and may be unfamiliar with the law. An information clearinghouse and specialized training program should be provided, and perhaps the University of Minnesota could construct a “drainage model” for demonstration purposes.
- ▶ The buffer strips required to be placed along new drainage systems to prevent erosion need to be maintained and inspected. Minnesota Statutes, section E, requires the planting of a 16.5 foot wide permanent grass strip on each bank of a new or improved drainage ditch. However, the law doesn’t reach 90 percent of previously existing public drainage ditches or private systems. According to a 1990 study, enforcement of the permanent grass strip is non-existent for the most part.
- ▶ The abandonment of a public drainage ditch is very hard to accomplish. The initiative must come from assessed landowners with a petition signed by at least 51 percent of the property owners assessed for the system. The petition must designate the drainage system proposed to be abandoned, and show that it is not of public benefit and utility. This has proved to be difficult as existing law is designed to increase drainage, not to reduce it. As a result, separate legislation often is introduced in legislative sessions to abandon a particular system.
- ▶ Repair of an existing drainage ditch sometimes is thought of as an improvement. Repairs are not intended to significantly increase the hydraulic efficiency or capacity of a ditch, or to extend and improve drainage benefits to the new land. If a ditch and repaired channel is



Map 3B: Swift County's Drainage Systems & Dams



Legend

<ul style="list-style-type: none"> Dams Lakes Drainage Rivers Major Roads Cities 	<ul style="list-style-type: none"> Major Watershed Boundaries <ul style="list-style-type: none"> Chippewa River Pomme de Terre River Upper Minnesota River
--	--

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

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

“The Drainage Issue” *continued*...

maintained on a regular basis, major repair should not be required. However, many ditches are not maintained regularly and petitions for repair, with lesser standards, can sometimes cross the line and become an improvement.

- ▶ Some drain tile systems are overwhelming the capacity of existing ditch systems to handle the water flow. Although some counties have conducted ditch inventories, there is a need for a statewide inventory and record keeping system. This would help public officials to have exact information on local drainage and be able to enforce the law better.
- ▶ The viewers’ report in a drainage proceeding may be the single most important document; it lists three viewers’ facts and findings. Viewers gather information that is used by the county board or watershed district to decide if a drainage project is feasible. It also identifies who will pay for construction and maintenance of the drainage system. The original establishment of benefits on a new system will affect all later repairs related to that system. Environmental criteria is required by Minnesota Statutes, section 103E.015, to be considered in a proposed drainage project. However, the law does not specify when it is to be done, so it often isn’t accomplished at the beginning of the project but during the hearing stage. This can make a project more troublesome and costly.

Several ideas flowed from the drainage forum to improve the current situation:

- ▶ There should be a cost/benefit analysis of drainage on a countywide basis, not project-by-project.
- ▶ Best management practices on ditch systems, similar to existing agricultural efforts, would be a good boost to improve overall water quality.
- ▶ New technology in drain tile systems also may assist improved water quality and could be mandated.
- ▶ Perhaps compensation or other incentives should be provided to landowners in order to more easily abandon ditch systems no longer providing a public benefit.
- ▶ Engineers working on a proposed drainage system should immediately review the required environmental criteria to assess the impact after the project is initiated by petition and before it gets to the hearing stage.

Future Drainage Efforts

The Swift County Water Plan Task Force discussed a number of issues similar to the ones identified in John Hellend’s “The Drainage Issue” legislative brief, including the need to develop a summary of drainage system data for the use in water planning. More importantly, however, the Task Force would like to seek available funds to create a Water/Drainage Management Plan, focusing on identifying financial incentives and other win-win opportunities for landowners to improve drainage management throughout the County.

Groundwater Protection: Issues, Implications and Assessments

Observation Wells

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 observation well network program, groundwater levels are routinely measured in 700 wells statewide (refer to Chapter Two for Swift County's Observation Wells Map). 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 for local groundwater complaints.
- Provide data to resolve allocation problems.
- Identify target areas that need further hydrogeologic investigation, water conservation measures, or remedial action.

Minnesota Department of Health

The Minnesota Department of Health (MDH) monitors public water supplies under the Federal Safe Drinking Water Act. Public water supplies generally fall into three categories: 1) Community Public Water Supplies, 2) Nontransient Noncommunity Public Water Supplies and 3) Transient Noncommunity Public Water Supplies. The first two categories of public water supplies are tested regularly for 25 chemical and biological parameters. The third category is usually routinely tested for nitrate levels and bacteria only.

Under the 1989 Minnesota Groundwater Protection Act, MDH developed Health Risk Limits (HRL) for substances found to degrade groundwater through groundwater quality monitoring. A health risk limit is the concentration of a groundwater contaminant, or a mixture of contaminants, that can be safely consumed daily for a lifetime. HRL are expressed as a concentration in micrograms per liter, or calculated as a "hazard index." At the time of this printing, the Minnesota Department of Health is currently in the process of revising the Health Risk Limits for groundwater.

HRL reflect health effects data alone. They do not incorporate economic or technological factors such as treatment cost and treatment feasibility, as do Federal drinking water standards, the Maximum Contaminant Levels (MCL). Economic and technological factors, the protection of the environment and the health of non-human species are considered in other groundwater protection regulations. The health risk limit rules are unique in that they do not specify how health risk limits are to be applied.

The following are some of public health protection purposes the Minnesota Department of Health uses Health Risk Limits for:

1. **Advice for Private Wells.** Because private wells are not regulated for contamination, HRL are used to evaluate contaminated wells and provide advice to consumers and well owners about the suitability of their water supply for consumption and other uses.
2. **Unregulated Contaminants in Public Water Supplies.** In instances where no Federal drinking water standard exists for a contaminant in public water supplies, HRL are used as criteria to evaluate options for reducing the community's exposure to the contaminant.
3. **Environmental Review.** The MDH uses health risk limits as criteria in environmental review projects. For example, monitoring data may be compared to HRL to evaluate potential impacts of a project on public health.
4. **Site Assessment Criteria.** The MDH's Site Assessment and Consultation Program uses HRL as criteria to evaluate potential site impacts on public health, to make recommendations on monitoring and mitigation.

Well Interference

When a high capacity well is pumping, a portion of the aquifer around it is dewatered in a pattern known as a cone of depression. Wells located within the cone of depression may experience lower water levels and have problems getting water if water levels are lower than the well pump. This condition, displayed in Figure 3A, is referred to as “well interference”. Most well interference problems tend to be localized and short in duration, however being without water is a major inconvenience and can cause damage to well pumps. Lowering the pump in the well or installing a new well pump can resolve many well interference problems and, in severe situations, it may become necessary to construct a new well. Minnesota Statutes 103G.261 establish domestic water use as the highest priority of the State’s water when supplies are limited. Procedures for resolving well interferences are defined by Minnesota Rules 6115.0730. Domestic well owners and municipal water suppliers that have problems obtaining water and believe the situation is due the operation of a high capacity well that pumps in excess 10,000 gallons per day or 1,000,000 gallons per year can submit a well interference complaint to the DNR for investigation. Before the DNR will investigate a well interference complaint, however, the well owner must have the well inspected by a licensed well driller to determine if the water supply problems are related to the condition of the domestic well.

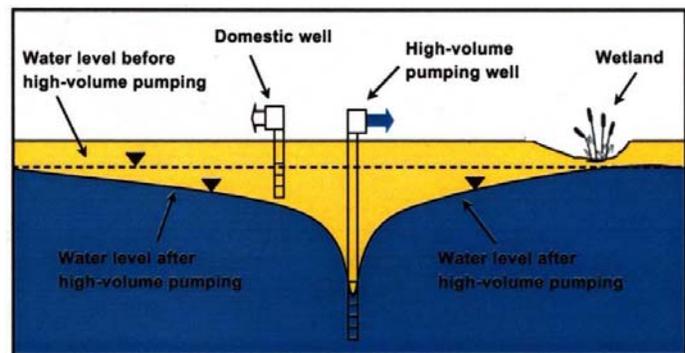


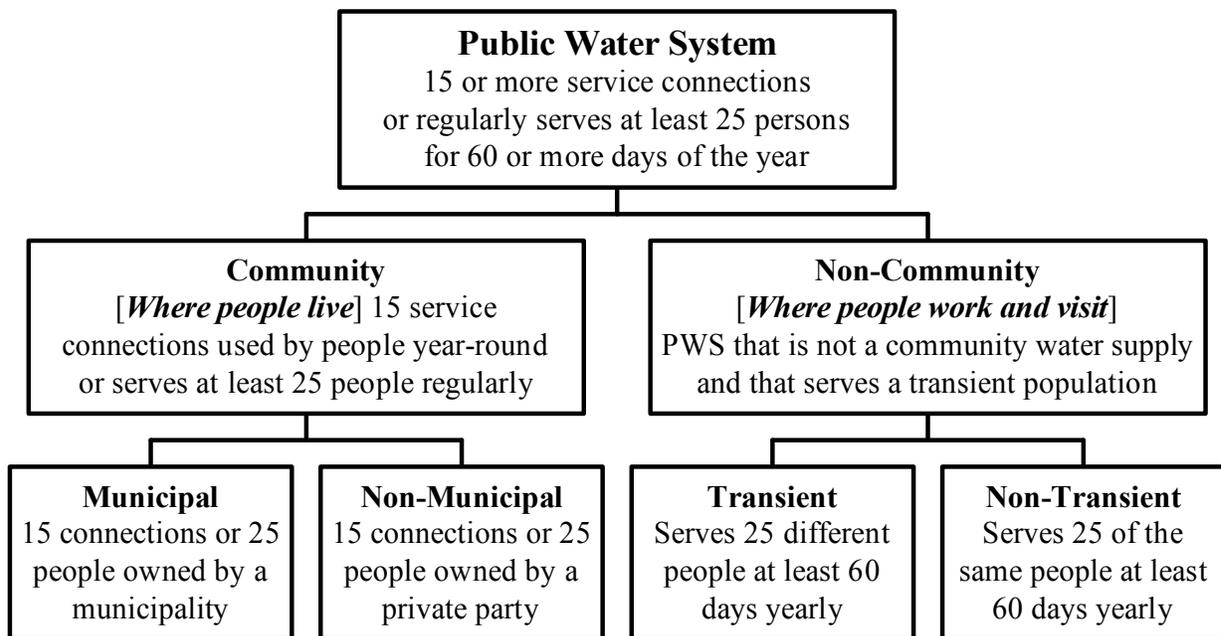
Figure 3A: Well Interference

The DNR Well Interference Complaint Tracking Database lists seventeen well interference complaints that took place in Swift County between 1977 and 1988 (the second highest amount for all counties in Minnesota). Only four of these complaints, however, were found to be valid. For more information regarding the County’s well interference database, contact the DNR local water planning coordinator (currently John Fax) at 651-297-2404.

Community Public Water Supplies

The Minnesota Department of Health (MDH) defines a public water supply as a system that provides piped drinking water for human use to 15 or more service connections or regularly serves at least 25 people for 60 or more days a year. Public water supplies are separated into two main classes: community and non-community. Figure 3B provides a flowchart that shows how public water systems are categorized and defined. Table 3B lists Swift County's public water suppliers according to the Minnesota Department of Health (July, 2002). A complete listing of all water appropriations permitted through the Minnesota Department of Natural Resources can be found in Appendix B. A permit is needed for all withdrawals greater than 10,000 gallons per day or 1,000,000 gallons per year.

**Figure 3B:
Public Water System Categories and Definitions**



Wellhead Protection

Wellhead protection, administered by the Minnesota Department of Health (MDH), is a means of safeguarding public water supply wells by preventing contaminants from entering the area that contributes water to the well or wellfield over a period of time. The wellhead protection area is determined by using geologic criteria, such as the physical characteristics of the aquifer and the effects which pumping has on the rate and direction of groundwater movement. A management plan is developed for the wellhead protection area that includes inventorying potential sources of groundwater contamination, monitoring for the presence of specific contaminants, and managing existing and proposed land and water uses that pose a threat to groundwater quality.

**Table 3B:
Public Water Suppliers**

ID	Name	City	Contact	Phone
Community Water Suppliers				
1760001	Appleton	Appleton	Keith Novotny	320.2891363
1760004	DeGraff	DeGraff	Harlyn Saulsbury	320.8754841
1760005	Holloway	Holloway	Ivan Iseminger	320.2891907
1760006	Kerkhoven	Kerkhoven	Woodrow Nelson	320.2642581
1760007	Murdock	Murdock	Harlyn Saulsbury	320.8754841
1760008	Benson	Benson	Matt Goebel	320.8434775
Non-Community Transient				
5760002	Club 104	Sunburg		
5760006	Trinity Lutheran	Holloway	Roger Krebs	320.394.2308
5760016	Church of Visitation	Danvers	Sister Clara Stang	320.567.2278
5760021	Clontarf Cafe	Clontarf	City of Clontarf	
5760022	Prairie Pub	Clontarf	City of Clontarf	320.843.2590
5760029	Cloverleaf Supper Club	Benson	Gerald Sandstrom	320.843.9989
5760052	Appleton Airport	Appleton	Greg Ruether	612.289.1871
5760057	Good Shephard	Appleton	Pastor Rochelle	320.324.2619
5760058	Benson Airport	Benson	Bob Flaws	320.843.4775
5760059	Ascheman Oil Co.	Danvers	Ronald Ascheman	320.567.2338
5760062	Bonanza Aviation	Benson	Warren Jackson	320.843.4300
5760063	Monson Lake State Park	Sunburg	Park Manager	320.366.3797
5760066	Swift Falls Park	Swift Falls	Jim Pfeiffer	320.842.5251
5760067	Shepherd of the Hills	Benson	Pari Bailey	320.843.3501
5760068	Danvers Municipal Liquor	Danvers	Pat McGeary	320.567.2390
5760069	St. John's Lutheran	Holloway	Scott Nagel	320.289.2216
5760076	Web Cafe	Benson	Joel/Melissa Bailey	320.843.2718
5760079	Bethesda Lutheran	Murdock	Richard A. Jensen	320.843.4687
Non-Community Non-Transient				
5760035	Lorenz Manufacturing	Benson	Donn Lorenz	320.843.3210
5760060	Redball, Inc.	Benson	Jody Bjerke	320.843.4932
5760061	Agralite Electric Coop	Benson	Ray Millett	320.843.4150
5760078	Chippewa Valley Ethanol	Benson	Kelly Davis	320.843.4813

The long-term goal of the MDH is to implement wellhead protection measures for all public water supply wells. However, due to the large number of public water supply wells (13,000 statewide), the diversity of geologic conditions in Minnesota, and current resource constraints, wellhead protection will be implemented in phases. To accomplish this, all public water suppliers without a wellhead protection plan were assigned a ranking number by the MDH. Table 3C contains a listing of each public water supplier's wellhead protection status (and ranking number). The lower ranking number represents higher priority.

Table 3C:
Wellhead Protection Status
(Information received from Minnesota Department of Health – June 2002)

1. Public water suppliers currently in the wellhead protection program: Benson, Appleton and Holloway.
2. Public water suppliers to be brought into wellhead protection program within the next five years and current phasing number: Kirkhoven (396), Redball, Inc. (516), Agralite Electric Cooperative (624).
3. Other public water suppliers and current phasing number: Lorenz Manufacturing Co. (737), Murdock (874), DeGraff (1055) and the Chippewa Valley Ethanol Company (1206).

All public water suppliers will be required to:

1. Maintain the isolation distances from potential contamination sources defined in the State Well Code;
2. Monitor the noncomplying sources located on their property; and
3. Report to the Minnesota Department of Health other violations to the isolation distance, or ask a local governmental unit to regulate these sources.

In addition to maintaining the isolation distances, owners of community and nontransient noncommunity, when either notified by the Minnesota Department of Health or when a new well is added to a municipal water supply system, must develop a wellhead projection plan which includes:

1. A map of the wellhead protection area;
2. A vulnerability assessment of the well and the wellhead protection area;
3. An inventory of potential sources of contamination within the wellhead projection area;
4. A plan to manage and monitor existing or proposed potential source(s) of contaminants; and a water supply contingency strategy.

To protect existing groundwater quality, the County needs to continue to implement existing land use controls, such as the zoning and ISTS ordinances. The Water Plan has also identified in Chapter Four that the County will assist the MDH and public water suppliers as they develop and implement Wellhead Protection Plans. Additional key groundwater action steps include: creating a County Zoning Map and showing wellhead protection areas (excluding the exact wellhead location); cost-sharing up to 50% (\$250 maximum) of sealing abandoned wells; targeting sealing abandoned wells in wellhead protection areas and other sensitive areas (i.e., flood plains, sensitive groundwater recharge areas, etc.); and explore creating a County Drought Contingency Plan.

Public Education: Issues, Implications and Assessments

The Water Plan Task Force recognized that water-based education is the most important component of all water planning activities. Most of the issues identified throughout the water planning process would be greatly improved by raising public awareness on the subject. In addition, it was recognized that Committee members, local decision-makers and the general public also need to know how to interpret and use existing data, reports and sources of information. As a result the high priority education issue for Swift County can be broken down into the following two categories:

1. *Learning how to better understand and use existing informational sources*
2. *Raising public awareness on key water planning issues*

Education Issue 1: Learning How to Better Understand and Use Existing Informational Sources

Swift County's Regional Hydrologic Assessment

Regional Hydrogeologic Assessment (RHA) is a formal study of an area's geology and groundwater resources, emphasizing the investigation of shallow geologic, groundwater, and pollution sensitivity conditions. RHA's should not be confused with County Geologic Atlases, which investigate the properties and distribution of rocks and unconsolidated earth materials beneath the land surface (an Hydrogeologic Assessment normally covers an area in size of between four to nine counties, while a Geologic Atlas is specific to one county). Swift County was recently included in a Regional Hydrogeologic Assessment, along with Lac qui Parle and Chippewa Counties, and the southern half of Big Stone County.

Each Regional Hydrogeologic Assessment or County Geologic Atlas produces a series of information and products. These include the following:

- ✓ County Well Index Database
- ✓ Geology Maps
- ✓ Water Chemistry and Groundwater Maps
- ✓ Pollution Sensitivity Maps
- ✓ Geographic Information System Files (see the next section)
- ✓ Interpretive Reports

The Regional Hydrogeologic Assessment is an excellent source of information, however, local decision-makers and County staff need to have a better understanding of how to use it. The long-term goal is to actually use the RHA in the decision-making process. For example, it could be used to help locate a water-intensive industry in an area of the County with suitable groundwater concentrations. As a result of this issue, the County has created an action step to proactively learn how to best interpret and use water-based information in the decision-making process. For more information on Swift County's Regional Hydrogeologic Assessment, contact the Minnesota Geological Survey or the Department of Natural Resources at the following location:

Geology and Atlas Use
Minnesota Geological Survey
2642 University Avenue
St. Paul, MN 55114-1057
(612) 627-4780
<http://www.geo.umn.edu/mgs>

Groundwater and Pollution Sensitivity
DNR Waters
500 Lafayette Road
St. Paul, MN 55155-4032
MN Toll Free 1-888-646-6367
<http://www.dnr.state.mn.us>

Minnesota River Basin Plan, Chippewa River Watershed Project and The Pomme de Terre River Association (also see page 5 of this Chapter)

The Minnesota River Basin spans over 37 counties, beginning from Big Stone Lake, emptying into the Mississippi River while traveling as far south as northern Iowa (a basin is the area of land drained by a river or lake and its tributaries; in this case the Minnesota River). In December 2001, the Minnesota Pollution Control Agency (MPCA) published the Minnesota River Basin Plan to identify pollution concerns and to help coordinate the various cleanup efforts. Specifically, the purpose of the Basin Plan is to...

“...guide and coordinate the activities of the MPCA, in conjunction with other agencies and organizations, in restoring or protecting the water resources of the Minnesota River Basin” (Basin Plan, page 12).

One of the identified action statements of the Minnesota River Basin Plan is to generate and publish an annual “State of the Minnesota River” report. The purpose of the report would be to document annual monitoring results and analyze long-term trends. The later is needed to establish a baseline for evaluations as time goes by. The problem is that few locals have been made aware of the purpose of the Minnesota River Basin Plan and how the County can assist with doing its part. Furthermore, the County is skeptical it will know how to interpret the technical data presented in the annual State of the Minnesota River reports. Nevertheless, the County has committed an action step to review the State of the Minnesota River report on an annual basis. In the era of numerous State agency cutbacks, agencies need to keep in proper perspective that many of their efforts fall short of being fully maximized due to a failure in properly communicating the results. In addition, the technical experts need to do a better job of assisting the County with learning how to use all the information on a day-to-day basis, especially during the land use decision-making process. More importantly, an annual review of the monitoring data, accomplishments and implementation initiatives of the Chippewa River Watershed Project and the Pomme de Terre River Association activities is needed.

**Education Issue 2:
Raising Public Awareness on Key Water Planning Issues**

The vast number of complicated water planning issues translates into a vast amount of overlapping educational efforts. This is understandable, simply by looking at the mere number of local, State and Federal agencies involved with various water planning issues and activities. Regardless, the vast amount of information leads to confusion, which is often compounded by the fact that water planning issues often evolve through a series of suitable “solutions.” This problem will never fully disappear, although information sharing and modern technologies are closing a few of the gaps in our learning curve. The “simple” solution to coordinating the public educational efforts is to target one governmental agency assimilate all of the educational materials, assess the overlap, and target promotional efforts in an orderly fashion.

The idea was discussed during the water planning process of trying to coordinate the water-based educational efforts on a five-county level through the Minnesota River Headwaters Joint Powers Board (Big Stone, Swift, Lac qui Parle, Pope and Swift Counties). Almost unanimously, each of the member counties decided they wanted more local control over what resources and information is given to locals. The primary fear was that one County’s primary water planning issue might not be experienced by the other counties. As a result, Swift County created an action step to create an outline in November/December each year on how the Water Planning Task Force and the County will focus extra-ordinary educational efforts on two to three important water planning issues over the upcoming year. The following table identifies some of the organizations currently playing a major role in providing water-based education in Swift County:

**Table 3D: Swift County Key
Organizations Providing Water-Based Education**

Organization	Contact
Swift County Environmental Service	(320) 843-5341; 1000 15 th St. S, Benson
Soil & Water Conservation District	(320) 843-2458; 1430 Utah Ave.; Benson
Chippewa River Watershed Project	(320) 269-2139; 629 North 11 th St., Montevideo
Pomme de Terre River Association	(320) 763-3191; 900 Robert St., Alexandria
University of Minnesota Extension (County Office)	(320) 843-3796; 301 14th St N, PO Box 305, Benson
Natural Resources Conservation Service	(320) 843-2458; 1430 Utah Ave., Benson
Minnesota Board of Water & Soil Resources	(507) 537-6374; www.bwsr.state.mn.us
Minnesota Department of Natural Resources	(320) 839-2656 Fisheries; (320) 289-2493 Wildlife; www.dnr.state.mn.us (320) 796-6272 Waters;
Minnesota Pollution Control Agency	(507) 537-7146; www.pca.state.mn.us
Minnesota Department of Health	(651) 215-5800; www.health.state.mn.us
Minnesota Geological Survey	(612) 627-4780; www.geo.umn.edu/mgs
Minnesota Department of Agriculture	(800) 967-2474; www.mda.state.mn.us
US Fish & Wildlife Services	(320) 589-1001; www.fws.gov
Minnesota River Basin Data Center	(507) 389-5492; http://mrbdc.mankato.msus.edu/

Chapter Four: Goals, Objectives and Action Steps (2003-2008)

This Chapter establishes Goals, Objectives and Action Steps for each of the County's high priority issues identified in Chapter Three. In review, the County's four priority issues are:

- ✓ *Reducing Priority Pollutants*
- ✓ *Surface Water Management (Drainage)*
- ✓ *Groundwater Protection*
- ✓ *Public Education*

Chapter Definitions

Each of the action steps contained in this Chapter identifies who is responsible for its implementation, when the action step should occur, and an estimate on how much it will cost. For the purposes of this Chapter, the following abbreviations are used (**An *Asterisk, Underlined, and Bolded means lead action step responsibility**):

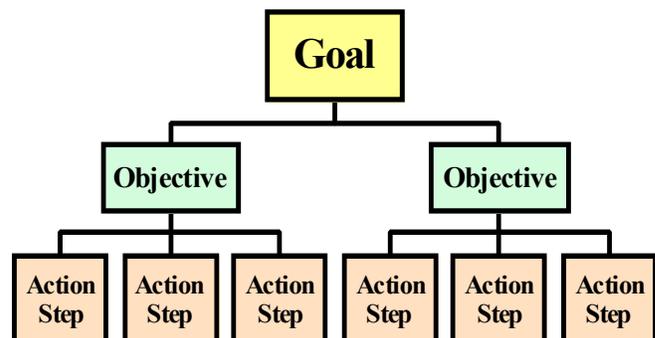
CB = County Board	BWSR = Board on Water and Soil Resources
CS = County Staff	DNR = Department of Natural Resources
DA = County Ditch Authority	FWS = U.S. Fish & Wildlife Service
ES = Environmental Services	MDA = Minnesota Department of Agriculture
PZC = Planning & Zoning Commission	MDH = Minnesota Department of Health
WP = County Water Plan/Planner	MGS = Minnesota Geological Survey
WPTF = Water Planning Task Force	MPCA = Minnesota Pollution Control Agency
CRW = Chippewa River Watershed Project	NRCS = Natural Resource Conservation Service
PdT = Pomme de Terre Watershed	SWCD = Soil and Water Conservation District
UMR = Upper MN River Watershed District	UMES = University of MN Extension
RDC = Upper MN Valley Regional Development Commission	MDOT = MN Department of Transportation
	CPH = Countryside Public Health

Throughout the Comprehensive Water Plan, goals, objectives and action steps are defined in the following way:

Goal: A general, idealistic statement intended to be achieved at some undetermined future date.

Objective: Begin with an action verb and can be measurable if a date, dollar amount, etc. is included.

Action Step: Specific implementation steps that will be followed in order to achieve the County's Goals and Objectives.



**PRIORITY ISSUE:
REDUCING PRIORITY POLLUTANTS**

PRIORITY POLLUTANT GOAL: TO RESTORE, PROTECT AND MAINTAIN THE WATER QUALITY, BIODIVERSITY AND NATURAL BEAUTY OF SWIFT COUNTY’S WATER RESOURCES.

Note: This section ties in with the MPCA’s Minnesota River Basin Plan (December, 2001) and Swift County’s local Watershed Projects

Objective A: Work with the MPCA to get the following waters off the Clean Water Act’s TMDL 303d list of impaired waters (published July 2002):

Name	Year Listed	Assessment ID	Affected Use	Pollutant or Stressor	Target Start/Completion Date
Chippewa River	2002	07020005-506	Aquatic life	Mercury/ FCA ¹	2002/2015
Minnesota River (Lac qui Parle Lake)	1992	07020001-501	Aquatic life	Ammonia	2012/2015
Pomme de Terre River: Muddy Creek to Marsh Lake Dam	1994	07020002-501	Swimming	Fecal Coliform/ Low Oxygen	2002/2007
Oliver Lake	2002	76- 0146	Aquatic life	Mercury	2002/2015

¹ FISH CONSUMPTION ADVISORY.

Actions:

1. Work with the Minnesota Pollution Control Agency to development an action plan for each water feature identified in the 303d listing. Assist with various implementation steps as needed.

Who: *MPCA, CRW, PdT, UMR, WP **When:** 2003 - 2008 **Cost:** \$Unknown

Objective B: Ensure **phosphorous and nitrogen** concentrations are low enough to fully support aquatic life and aesthetic/recreational use.

Actions:

1. Establish a strategy to promote the use of phosphorous free fertilizer on lawns. Encourage municipalities to adopt an ordinance that limits or prevents the use of phosphorus-based fertilizers.

Who: *WP, WPTF, Cities **When:** By 2006 **Cost:** \$1,500

2. Provide nutrient management planning financial incentives to ten 40-acre parcels (different owners) in the Lower Shakopee Creek Sub-Watershed. Continue elsewhere if successful.

Who: *SWCD, CRW, WPTF, NRCS **When:** 2003 - 2008 **Cost:** \$15,000

3. Establish five sites per year to experiment or demonstrate alternatives to open tile intakes (i.e., pattern tile design). Focus sites in the Lower Shakopee Creek Sub-Watershed.

Who: *SWCD, CRW, ES, NRCS **When:** 2003 - 2008 **Cost:** \$2,500

Objective C: Properly treat both human and animal waste.

Actions:

1. Implement the following strategy to address feedlot compliance:
 - a. Develop a GIS layer of Level II feedlots registered under current MPCA registration guidelines (\$5,000).
 - b. Develop an informational packet to mail to registered feedlot operators to assist them with contacts for technical questions (compliance, design, manure management) and financial incentives (\$1,500).
 - c. Identify all noncompliant feedlot operators by 2008 (\$2,500).
 - d. Assist three noncompliant feedlots with financial and technical assistance each year (\$15,000 each year) through EQIP, FWQ State Cost-Share or SRF Loan Funding.
 - e. Inspect ten percent of registered feedlots each year (\$4,000 each year).

Who: *ES, MPCA, RDC, SWCD, NRCS **When:** By 2008 **Cost:** \$139,000

2. Assist feedlot operators with completing proper MPCA permits and Manure Management Plans on 100 percent of feedlots with 1000+ animal units.

Who: *ES, MPCA **When:** By 2005 **Cost:** \$8,000

3. Address two sites with livestock exclusions practices (fencing, alternative water source, rock crossing and rotational grazing) in the East Branch Chippewa River Sub-Watershed.

Who: *ES, CRW, SWCD, DA, NRCS **When:** By 2008 **Cost:** \$100,000

4. Work with other resource partners to complete a rotational pasture grazing tour in the East Branch Chippewa River Sub-Watershed.

Who: *ES, CRW, SWCD, DA, NRCS **When:** By 2005 **Cost:** \$1,000

5. Seek grants and other funding sources to develop feasibility studies for upgrading unsewered communities. Cost share feasibility studies for DeGraff and Clontarf.

Who: *ES, MPCA, RDC, CRW **When:** By 2008 **Cost:** \$6,000

6. Provide funding to the Chippewa River Watershed Project to develop a marketing plan for ISTS in the East Branch and Lower Shakopee Creek Sub-Watershed.

Who: *ES, CRW, WP **When:** 2003 - 2008 **Cost:** \$3,000

3. Gather data for each drainage system and create a GIS database (include the following: name, size, outlets, date established, system type, repair history, flow data, demonstration capacity, monitoring data available, etc.). Regularly update the database as needed. Assess the database to assist with water planning activities (identify highly erodible areas, flooding problem areas, storage potential, etc).
Who: *CB, RDC, WPTF, ES, DA **When:** 2005 - 2008 **Cost:** \$6,000

4. Continue to develop a GIS layer for public drainage systems showing watershed boundaries, open ditches and tile lines (one County Ditch has been digitized).
Who: *CB, RDC, WP, ES, DA **When:** By 2005 **Cost:** \$25,000

5. Work with various resource partners to seek water retention/storage opportunities with willing landowners on a watershed, sub-watershed or ditch-shed basis. Drainage systems such as Judicial Ditch's 5, 8 and 19 may be areas to initially inventory.
Who: *CB, SWCD, NRCS, DNR, FWS, CRW, PdT, UMR, DA **When:** 2003 - 2008 **Cost:** \$20,000

6. Seek a grant to create a water management plan (for drainage systems) identifying financial incentives for landowners to improve drainage management throughout the County. The plan would, among other items, assess water storage opportunities, erosion and sedimentation problems, drainage system enhancements, and win-win opportunities for improving the County's overall drainage system with an emphasis on reducing the County flooding potential.
Who: *CB, SWCD, NRCS, DNR, FWS, CRW, PdT, UMR, DA **When:** By 2005 **Cost:** \$12,000

7. Conduct an inventory of drained wetland basins to be used in conjunction with flood control and watershed restoration efforts (determine if the U.S. Fish and Wildlife Service's inventory will be completed and when approximately).
Who: *CB, ES, DNR, FWS, DA, SWCD **When:** By 2004 **Cost:** \$15,000

8. Target the Lake Oliver Sub-Watershed for wetland restoration activities.
Who: *CB, ES, WP, DNR, DA **When:** By 2003 - 2008 **Cost:** \$15,000

9. Be an active participant as the DNR develops a Management Plan for Marsh Lake.
Who: *CB, ES, WPTF, DNR, DA **When:** By 2005 **Cost:** \$1,000

10. Complete an inventory of land locked water basins that could provide additional recreation and wildlife opportunities. Seek funds to pursue projects, with an emphasis on finding money or incentives for willing landowners to cooperate.
Who: *CB, DNR, FWS, DA, SWCD **When:** 2004-2006 **Cost:** \$5,000

11. The County may accept and process eligible applications for wetland preservation on a countywide basis. A wetland so enrolled is exempt from property tax, however, the State of Minnesota has a mandated fund to reimburse the tax loss to the County.

Who: *LRM

When: Annually

Cost: \$500

**PRIORITY ISSUE:
GROUND WATER PROTECTION**

GROUND WATER GOAL: *PROTECT AND IMPROVE THE QUALITY OF GROUNDWATER IN THE COUNTY.*

Objective A: Assist with wellhead protection and planning.

Actions:

1. Participate on wellhead/source water protection teams when invited by the local public water suppliers. Participate in both the development and implementation of Wellhead Protection Plans.

Who: *WP, MDH

When: 2003 – 2008

Cost: \$2,000

SWIFT COUNTY PUBLIC WATER SUPPLIERS	
Wellhead Protection Status	
<i>(Information received from Minnesota Department of Health – June 2002)</i>	
I.	Public water suppliers currently in the wellhead protection program: BENSON, APPLETON, HOLLOWAY.
II.	Public water suppliers to be brought into wellhead protection program within the next five years and current phasing number: KERKHOVEN (396), REDBALL INC. (516), AGRALITE ELECTRIC COOPERATIVE (624).
III.	Other public water suppliers and current phasing number: Lorenz Manufacturing Co. (737), Murdock (874), DeGraff (1055), Chippewa Valley Ethanol Company (1206).

2. Create a County Zoning Map showing Wellhead Protection Areas (excluding the exact wellhead location). Periodically update the map as needed.

Who: *WP, MDH, RDC

When: 2005

Cost: \$7,000

3. Establish the identified Wellhead Protection Areas as priority areas for cost-share and other land use incentive programs (i.e., sealing abandoned wells, upgrading septic systems, installing buffers, etc.)

Who: *WP, ES

When: 2003 – 2008

Cost: \$2,500

4. Continue the cost-share program to properly seal abandoned wells (pay up to 50% with a \$250 maximum).

Who: *ES, WP

When: 2003 – 2008

Cost: \$2,500

Objective B: Support good land use decisions regarding groundwater protection.

Actions:

1. Examine ways to incorporate groundwater information into the land use decision-making process. Invite state agencies to assist the County with learning how to interpret data and identify sensitive areas needing additional management and protection. Use the Upper Minnesota River Basin Regional Hydrogeologic Assessment and other groundwater information as informational sources.

Who: *ES, CB, MGS, DNR,
MDH

When: 2003 - 2008

Cost: \$1,500

2. Work with the Minnesota Geological Survey and the Minnesota Department of Health on developing criteria to identify sensitive groundwater recharge areas. In addition, work with these agencies on developing land use incentives and possibly a protection strategy that can be incorporated in the County Zoning and Subdivision Ordinance.

Who: *ES, WPTF, CB, MGS,
MDH

When: 2006

Cost: \$2,000

3. Review County Drought Contingency Plans and decide if one should be developed for Swift County.

Who: *CB, ES, WPTF, DNR,

When: 2006

Cost: \$500

4. Do countywide well testing to establish baseline groundwater quality. Combine results with previous water testing data.

Who: *WP, CPH, CRW, PdT,
UMR

When: 2003 - 2008

Cost: \$500

5. Develop a strategy to promote water conservation by using existing materials and resources (i.e., Minnesota Rural Water Association's handouts). Develop a strategy for both the urban (i.e., households) and rural (i.e., irrigation) levels. The rural strategy may examine rotational irrigation in key areas or during drought conditions.

Who: *ES, DNR, Cities

When: By 2008

Cost: \$4,500

**PRIORITY ISSUE:
EDUCATION & OUTREACH**

EDUCATION & OUTREACH GOAL: Raise public awareness on a number of key water-planning issues.

Objective A: Raise public awareness on a number of key water-planning issues.

Actions:

1. Focus education and outreach efforts on two to three water planning issues each year. Integrate those efforts with watershed's educational goals. Identify the priority issues in November/December each year. Annual topics chosen will be promoted through the use of the following sources: newspaper articles, radio ads, posters, displays, field days, speakers, classes, etc.

Who: *WPTF, SWCD, CRW, PdT, UMR, UMES **When:** 2003 - 2008 **Cost:** \$12,000

2. Create a brochure to promote how to handle chemical, manure and fuel spills, listing contacts and phone numbers (the State Duty Officer at 1-800-422-0798).

Who: *WP, MPCA **When:** By 2008 **Cost:** \$500

3. Raise public awareness on storm water pollution and ways to prevent and/or minimize it. In cooperation with cities, address common storm water issues and assess the need to be more proactive in promoting storm water management through both public education and improved land use ordinances.

Who: *ES, WPTF, Cities **When:** 2003 - 2008 **Cost:** \$4,000

4. Examine writing a Recreation and Wildlife Plan to systematically address current and future needs (i.e., tourism, hunting areas, trails, parks, equipment, etc.).

Who: *CB, PZC, ES, DNR, FWS **When:** By 2008 **Cost:** \$8,000

Objective B: Continue to support the watershed monitoring and information gathering efforts in order to better understand, assess, and identify gaps related to the condition of the County's water resources.

Actions:

1. Continue to support watershed planning and implementation activities by providing financial and technical assistance. Annually review monitoring data and implementation accomplishments to coordinate future implementation steps.

Who: *WP, CB, ES **When:** 2003 - 2008 **Cost:** \$20,000

2. Annually review MPCA's "State of the Minnesota River" report documenting annual monitoring results and long-term trends. Create a response to the report if necessary.

Who: *WPTE, ES, MPCA

When: 2003 - 2008

Cost: \$1,000

3. Use the County's Geographic Information System (GIS) to track water plan accomplishments and maintain current and past inventories.

Who: *LRM

When: 2003 - 2008

Cost: \$4,500

CHAPTER FIVE: PLAN ADMINISTRATION

Chapter Five contains information on plan administration, including plan implementation, schedule, implementation timeline, intergovernmental conflicts, major plan amendment procedure, minor plan amendment procedure, incorporating amendments into the Plan and general Water Plan information.

Plan Implementation

Managing Swift County's water resources is a complicated task, involving many local, State and Federal agencies, as well as private 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.

Swift County will ensure coordination and implementation of its Comprehensive Local Water Plan through its established Water Planning Committee. The Committee will meet regularly to review progress, identify emerging problems, opportunities and issues and continue to direct the implementation of the Plan. The Committee will be supported by the County Board appointed Water Plan Coordinator. The Coordinator shall administer the implementation of this Plan, coordinate the Water Plan Committee's activities, write grant proposals, prepare annual work plans and reports, and conduct other activities as specified by the Swift County Board of Commissioners.

Implementation Timeline

Coordination of the Comprehensive Local Water Plan activities will commence with the County Board adoption of the Plan. These activities will be conducted throughout the planning period identified as April 1, 2003 through April 1, 2013. The Water Plan's Goals, Objectives and Action Steps, however, will need to be updated by April 1, 2008. This is due to the realization by Swift County and the Board of Water and Soil Resources that creating a ten-year implementation schedule is nearly impossible to accomplish. As a result, this Water Plan is a ten-year Plan with five-year action steps.

Intergovernmental Conflicts

At this time, there are no known conflicts between the Swift County Comprehensive Local Water Plan, and the plans of other local units of government. In the event of an intergovernmental conflict, the Swift County Board of Commissioners shall request the Swift County Water Planning Committee to intervene and informally negotiate resolution of the conflict. If the Water Planning Committee does not resolve the conflict, the County shall petition the Board of Water and Soil Resources (BWSR) for a contested case hearing.

Major Plan Amendment Procedure

The Swift County Comprehensive Local Water Plan is intended to extend through April 1, 2013. The County may prepare proposed amendments to the Plan prior to this date, however, the Plan will be updated, including any proposed plan amendments, before April 1, 2013.

The following procedures will be used by Swift County to deal with proposed major amendments to the County Comprehensive Local Water Plan:

- A. When issues are brought to the attention of the County with regard to the need for amendments to its adopted County Comprehensive Local Water Plan, the County will refer that person, group, local unit of government, or agency to the County's Water Planning Committee.
- B. The Swift County Water Planning Committee will review the issue and may, if necessary, undertake studies or investigations to gather information relating to the issue. After reviewing the issue, the County Water Planning Committee will determine whether the County Comprehensive Local Water Plan should be amended.
- C. If the County Water Planning Committee determines that the County Comprehensive Local Water Plan should be amended, it will make recommendations to the County Board. The County Board shall approve or disapprove the proposed amendment.

After development, but before final adoption by the County Board, a proposed amendment to the County Comprehensive Local Water Plan must be submitted for local review and comment in the following manner. The County must submit the proposed plan amendment to all local units of government wholly or partly within the County, the applicable regional development commission (if any), each contiguous county and watershed management organization, and other counties or watershed management organizations within the same watershed unit and groundwater system that may be affected by the proposed plan amendment.

A local unit of government must review the proposed amendment and its existing water and land-related land resources plan or official controls and in its comments describe in a general way, possible amendments to its existing plans or official control, and an estimate of the fiscal or policy effects that would be associated with those amendments, to bring them into conformance with the proposed plan amendment. A county or watershed management organization within the same watershed unit or groundwater system must review the proposed plan amendment and describe in its comments possible conflicts with its existing or proposed comprehensive water plan and suggest measures to resolve the conflicts. The Regional Development Commission must review the proposed amendment under Section 462.391, Subdivision 1.

Comments from local review must be submitted to the County Board within 60 days after receiving a proposed plan amendment for comment, unless the County Board determines that good cause exists for an extension of this period and grants an extension. The County Board must conduct a public hearing on the proposed plan amendment pursuant to Section 375.51 after the 60-day period for local review and comment is completed, but before it is submitted to the State.

After conducting the public hearing but before final adoption, the County Board must submit the proposed plan amendment, all written comments, a record of the public hearing, and a summary of changes incorporated in the proposed plan amendment as a result of the review process to the BWSR for review. The BWSR must complete the review within 90 days after receiving the proposed County Comprehensive Local Water Plan amendment and support document. The BWSR must consult with the Departments of Agriculture, Health, Natural Resources, Pollution Control, Planning Agency, Environmental Quality and other appropriate State agencies during the review.

The BWSR may disapprove a proposed County Comprehensive Local Water Plan amendment if it determined the amendment is not consistent with State law or the principles of sound hydrologic management, effective environmental protection and efficient management. If the amendment is disapproved, the BWSR must provide a written statement for its reasons for disapproval. The disapproved County Comprehensive Local Water Plan amendment must be revised by the County Board and resubmitted for approval by the BWSR within 120 days after receiving notice of disapproval, unless the BWSR extends the period for good cause. The decision of the BWSR to disapprove the amendment may be appealed by the county to District Court.

A County Board must adopt and begin implementation of its amended County Comprehensive Local Water Plan within 120 days after receiving notice of approval of the amendment from the BWSR.

Minor Plan Amendment Procedure

If a revision/amendment to the Swift County Comprehensive Local Water Plan is considered to be minor in nature, the following revision process will be followed:

- A. The Swift County Board of Commissioners will receive a recommendation from the Swift County Water Planning Committee for an amendment to the Water Plan.
- B. At the Board of Commissioners' meeting where the amendment is introduced, the County will hold a public hearing to explain the amendments and publish a legal notice of the hearing at least ten (10) days before the date of the hearing.
- C. The County will send copies of the amendments to the BWSR Board Conservationist assigned to Swift County for review and comment.

Incorporating Amendments into the Plan

All amendments adopted by the County will be printed in the form of replacement pages for the Comprehensive Local Water Plan. Each page will show deleted text as stricken and new text as underlines on draft amendments, as needed, and include the effective date of the amendment. The County will maintain a distribution list of agencies and individuals who have received a copy of the Comprehensive Local Water Plan and the County shall distribute copies of the amendment(s) within thirty days of adoption.

General Water Plan Information

For more information on Water Plan in general, contact the following:

The Minnesota Board of Water and Soil Resources
One West Water Street, Suite 200
Saint Paul, MN 55107
(651) 296-3767; Fax (651) 297-5615; TTY (800) 627-3529
<http://www.bwsr.state.mn.us/>

For more information on this Water Plan, contact the following:

Swift County Environmental Services
1000 Industrial Road
P.O. Box 288
Benson, MN 56215
(320) 843-2356

Appendix A:

Census
Profiles

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Table DP-1. Profile of General Demographic Characteristics: 2000

Geographic Area: Swift County, Minnesota

[For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent	Subject	Number	Percent
Total population	11,956	100.0	HISPANIC OR LATINO AND RACE		
SEX AND AGE			Total population	11,956	100.0
Male.....	6,537	54.7	Hispanic or Latino (of any race).....	320	2.7
Female.....	5,419	45.3	Mexican.....	170	1.4
Under 5 years.....	642	5.4	Puerto Rican.....	35	0.3
5 to 9 years.....	757	6.3	Cuban.....	2	-
10 to 14 years.....	784	6.6	Other Hispanic or Latino.....	113	0.9
15 to 19 years.....	816	6.8	Not Hispanic or Latino.....	11,636	97.3
20 to 24 years.....	626	5.2	White alone.....	10,728	89.7
25 to 34 years.....	1,516	12.7	RELATIONSHIP		
35 to 44 years.....	2,018	16.9	Total population	11,956	100.0
45 to 54 years.....	1,546	12.9	In households.....	10,418	87.1
55 to 59 years.....	526	4.4	Householder.....	4,353	36.4
60 to 64 years.....	510	4.3	Spouse.....	2,479	20.7
65 to 74 years.....	931	7.8	Child.....	3,125	26.1
75 to 84 years.....	899	7.5	Own child under 18 years.....	2,622	21.9
85 years and over.....	385	3.2	Other relatives.....	162	1.4
Median age (years).....	39.3	(X)	Under 18 years.....	53	0.4
18 years and over.....	9,202	77.0	Nonrelatives.....	299	2.5
Male.....	5,105	42.7	Unmarried partner.....	156	1.3
Female.....	4,097	34.3	In group quarters.....	1,538	12.9
21 years and over.....	8,842	74.0	Institutionalized population.....	1,491	12.5
62 years and over.....	2,519	21.1	Noninstitutionalized population.....	47	0.4
65 years and over.....	2,215	18.5	HOUSEHOLD BY TYPE		
Male.....	881	7.4	Total households	4,353	100.0
Female.....	1,334	11.2	Family households (families).....	2,882	66.2
RACE			With own children under 18 years.....	1,306	30.0
One race.....	11,742	98.2	Married-couple family.....	2,479	56.9
White.....	10,840	90.7	With own children under 18 years.....	1,058	24.3
Black or African American.....	322	2.7	Female householder, no husband present.....	266	6.1
American Indian and Alaska Native.....	60	0.5	With own children under 18 years.....	173	4.0
Asian.....	171	1.4	Nonfamily households.....	1,471	33.8
Asian Indian.....	6	0.1	Householder living alone.....	1,343	30.9
Chinese.....	5	-	Householder 65 years and over.....	767	17.6
Filipino.....	101	0.8	Households with individuals under 18 years.....	1,357	31.2
Japanese.....	28	0.2	Households with individuals 65 years and over ..	1,513	34.8
Korean.....	13	0.1	Average household size.....	2.39	(X)
Vietnamese.....	3	-	Average family size.....	3.00	(X)
Other Asian ¹	15	0.1	HOUSING OCCUPANCY		
Native Hawaiian and Other Pacific Islander.....	182	1.5	Total housing units	4,821	100.0
Native Hawaiian.....	135	1.1	Occupied housing units.....	4,353	90.3
Guamanian or Chamorro.....	-	-	Vacant housing units.....	468	9.7
Samoan.....	26	0.2	For seasonal, recreational, or		
Other Pacific Islander ²	21	0.2	occasional use.....	59	1.2
Some other race.....	167	1.4	Homeowner vacancy rate (percent).....	2.6	(X)
Two or more races.....	214	1.8	Rental vacancy rate (percent).....	13.1	(X)
Race alone or in combination with one			HOUSING TENURE		
or more other races: ³			Occupied housing units	4,353	100.0
White.....	10,989	91.9	Owner-occupied housing units.....	3,353	77.0
Black or African American.....	339	2.8	Renter-occupied housing units.....	1,000	23.0
American Indian and Alaska Native.....	98	0.8	Average household size of owner-occupied units.....	2.54	(X)
Asian.....	287	2.4	Average household size of renter-occupied units.....	1.90	(X)
Native Hawaiian and Other Pacific Islander.....	314	2.6			
Some other race.....	186	1.6			

- Represents zero or rounds to zero. (X) Not applicable.

¹ Other Asian alone, or two or more Asian categories.

² Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

³ In combination with one or more of the other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.

Source: U.S. Census Bureau, Census 2000.

Table DP-2. Profile of Selected Social Characteristics: 2000

Geographic area: Swift County, Minnesota

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent	Subject	Number	Percent
SCHOOL ENROLLMENT			NATIVITY AND PLACE OF BIRTH		
Population 3 years and over enrolled in school	2,722	100.0	Total population	11,956	100.0
Nursery school, preschool	163	6.0	Native	11,810	98.8
Kindergarten	123	4.5	Born in United States	11,735	98.2
Elementary school (grades 1-8)	1,282	47.1	State of residence	9,166	76.7
High school (grades 9-12)	807	29.6	Different state	2,569	21.5
College or graduate school	347	12.7	Born outside United States	75	0.6
EDUCATIONAL ATTAINMENT			Foreign born	146	1.2
Population 25 years and over	8,336	100.0	Entered 1990 to March 2000	44	0.4
Less than 9th grade	750	9.0	Naturalized citizen	53	0.4
9th to 12th grade, no diploma	885	10.6	Not a citizen	93	0.8
High school graduate (includes equivalency)	2,929	35.1	REGION OF BIRTH OF FOREIGN BORN		
Some college, no degree	1,935	23.2	Total (excluding born at sea)	146	100.0
Associate degree	668	8.0	Europe	29	19.9
Bachelor's degree	959	11.5	Asia	45	30.8
Graduate or professional degree	210	2.5	Africa	-	-
Percent high school graduate or higher	80.4	(X)	Oceania	7	4.8
Percent bachelor's degree or higher	14.0	(X)	Latin America	54	37.0
MARITAL STATUS			Northern America	11	7.5
Population 15 years and over	9,770	100.0	LANGUAGE SPOKEN AT HOME		
Never married	2,498	25.6	Population 5 years and over	11,311	100.0
Now married, except separated	5,447	55.8	English only	10,567	93.4
Separated	100	1.0	Language other than English	744	6.6
Widowed	944	9.7	Speak English less than "very well"	259	2.3
Female	789	8.1	Spanish	261	2.3
Divorced	781	8.0	Speak English less than "very well"	88	0.8
Female	272	2.8	Other Indo-European languages	290	2.6
GRANDPARENTS AS CAREGIVERS			Speak English less than "very well"	65	0.6
Grandparent living in household with one or more own grandchildren under 18 years	26	100.0	Asian and Pacific Island languages	182	1.6
Grandparent responsible for grandchildren	9	34.6	Speak English less than "very well"	106	0.9
VETERAN STATUS			ANCESTRY (single or multiple)		
Civilian population 18 years and over ..	9,202	100.0	Total population	11,956	100.0
Civilian veterans	1,252	13.6	Total ancestries reported	15,435	129.1
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION			Arab	-	-
Population 5 to 20 years	2,410	100.0	Czech ¹	84	0.7
With a disability	178	7.4	Danish	239	2.0
Population 21 to 64 years	5,341	100.0	Dutch	291	2.4
With a disability	762	14.3	English	552	4.6
Percent employed	69.6	(X)	French (except Basque) ¹	504	4.2
No disability	4,579	85.7	French Canadian ¹	65	0.5
Percent employed	86.2	(X)	German	5,011	41.9
Population 65 years and over	2,067	100.0	Greek	-	-
With a disability	846	40.9	Hungarian	18	0.2
RESIDENCE IN 1995			Irish ¹	1,137	9.5
Population 5 years and over	11,311	100.0	Italian	109	0.9
Same house in 1995	6,940	61.4	Lithuanian	3	-
Different house in the U.S. in 1995	4,220	37.3	Norwegian	3,992	33.4
Same county	1,785	15.8	Polish	409	3.4
Different county	2,435	21.5	Portuguese	33	0.3
Same state	1,043	9.2	Russian	19	0.2
Different state	1,392	12.3	Scotch-Irish	107	0.9
Elsewhere in 1995	151	1.3	Scottish	90	0.8
			Slovak	2	-
			Subsaharan African	32	0.3
			Swedish	1,062	8.9
			Swiss	68	0.6
			Ukrainian	3	-
			United States or American	256	2.1
			Welsh	2	-
			West Indian (excluding Hispanic groups)	5	-
			Other ancestries	1,342	11.2

-Represents zero or rounds to zero. (X) Not applicable.

¹The data represent a combination of two ancestries shown separately in Summary File 3. Czech includes Czechoslovakian. French includes Alsatian. French Canadian includes Acadian/Cajun. Irish includes Celtic.

Source: U.S. Bureau of the Census, Census 2000.

Table DP-3. Profile of Selected Economic Characteristics: 2000

Geographic area: Swift County, Minnesota

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent	Subject	Number	Percent
EMPLOYMENT STATUS			INCOME IN 1999		
Population 16 years and over			Households		
In labor force	9,586	100.0	Less than \$10,000	4,368	100.0
Civilian labor force	5,438	56.7	\$10,000 to \$14,999	478	10.9
Employed	5,435	56.7	\$15,000 to \$24,999	321	7.3
Unemployed	236	2.5	\$25,000 to \$34,999	671	15.4
Percent of civilian labor force	4.3	(X)	\$35,000 to \$49,999	726	16.6
Armed Forces	3	-	\$50,000 to \$74,999	867	19.8
Not in labor force	4,148	43.3	\$75,000 to \$99,999	905	20.7
Females 16 years and over			\$100,000 to \$149,999	234	5.4
In labor force	4,237	100.0	\$150,000 to \$199,999	112	2.6
Civilian labor force	2,531	59.7	\$200,000 or more	19	0.4
Employed	2,531	59.7	Median household income (dollars)	35	0.8
Own children under 6 years	737	100.0	With earnings	34,820	(X)
All parents in family in labor force	544	73.8	Mean earnings (dollars) ¹	3,290	75.3
COMMUTING TO WORK			With Social Security income	41,367	(X)
Workers 16 years and over			Mean Social Security income (dollars) ¹	1,650	37.8
Car, truck, or van -- drove alone	5,160	100.0	With Supplemental Security Income	9,941	(X)
Car, truck, or van -- carpooled	3,900	75.6	Mean Supplemental Security Income (dollars) ¹	125	2.9
Public transportation (including taxicab)	463	9.0	With public assistance income	6,110	(X)
Walked	28	0.5	Mean public assistance income (dollars) ¹	130	3.0
Other means	278	5.4	With retirement income	1,565	(X)
Worked at home	64	1.2	Mean retirement income (dollars) ¹	535	12.2
Mean travel time to work (minutes) ¹	427	8.3	Families	13,878	(X)
Employed civilian population 16 years and over			Less than \$10,000	2,912	100.0
OCCUPATION			\$10,000 to \$14,999	112	3.8
Management, professional, and related occupations	5,199	100.0	\$15,000 to \$24,999	94	3.2
Service occupations	1,730	33.3	\$25,000 to \$34,999	333	11.4
Sales and office occupations	698	13.4	\$35,000 to \$49,999	503	17.3
Farming, fishing, and forestry occupations	1,257	24.2	\$50,000 to \$74,999	685	23.5
Construction, extraction, and maintenance occupations	106	2.0	\$75,000 to \$99,999	819	28.1
Production, transportation, and material moving occupations	478	9.2	\$100,000 to \$149,999	223	7.7
INDUSTRY			\$150,000 to \$199,999	101	3.5
Agriculture, forestry, fishing and hunting, and mining	930	17.9	\$200,000 or more	13	0.4
Construction	618	11.9	Median family income (dollars)	29	1.0
Manufacturing	301	5.8	Per capita income (dollars) ¹	44,208	(X)
Wholesale trade	879	16.9	Median earnings (dollars):	16,360	(X)
Retail trade	175	3.4	Male full-time, year-round workers	29,362	(X)
Transportation and warehousing, and utilities	711	13.7	Female full-time, year-round workers	21,667	(X)
Information	273	5.3	Subject		
Finance, insurance, real estate, and rental and leasing	98	1.9	Number below poverty level		
Professional, scientific, management, administrative, and waste management services	320	6.2	Percent below poverty level		
Educational, health and social services	222	4.3	POVERTY STATUS IN 1999		
Arts, entertainment, recreation, accommodation and food services	196	3.8	Families		
Other services (except public administration)	971	18.7	With related children under 18 years		
Public administration	219	4.2	With related children under 5 years		
Private wage and salary workers	216	4.2	Families with female householder, no husband present		
Government workers	320	6.2	With related children under 18 years		
Self-employed workers in own not incorporated business	40	0.8	With related children under 5 years		
Unpaid family workers	3,577	68.8	Individuals		
	840	16.2	18 years and over		
	742	14.3	65 years and over		
	40	0.8	Related children under 18 years		
			Related children 5 to 17 years		
			Unrelated individuals 15 years and over		

-Represents zero or rounds to zero. (X) Not applicable.

¹If the denominator of a mean value or per capita value is less than 30, then that value is calculated using a rounded aggregate in the numerator.

See text.

Source: U.S. Bureau of the Census, Census 2000.

Table DP-4. Profile of Selected Housing Characteristics: 2000

Geographic area: Swift County, Minnesota

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent	Subject	Number	Percent
Total housing units	4,821	100.0	OCCUPANTS PER ROOM		
UNITS IN STRUCTURE			Occupied housing units	4,353	100.0
1-unit, detached	3,891	80.7	1.00 or less	4,312	99.1
1-unit, attached	72	1.5	1.01 to 1.50	25	0.6
2 units	86	1.8	1.51 or more	16	0.4
3 or 4 units	73	1.5			
5 to 9 units	88	1.8	Specified owner-occupied units	2,396	100.0
10 to 19 units	153	3.2	VALUE		
20 or more units	224	4.6	Less than \$50,000	930	38.8
Mobile home	232	4.8	\$50,000 to \$99,999	1,133	47.3
Boat, RV, van, etc	2	-	\$100,000 to \$149,999	227	9.5
			\$150,000 to \$199,999	60	2.5
YEAR STRUCTURE BUILT			\$200,000 to \$299,999	36	1.5
1999 to March 2000	53	1.1	\$300,000 to \$499,999	2	0.1
1995 to 1998	192	4.0	\$500,000 to \$999,999	3	0.1
1990 to 1994	169	3.5	\$1,000,000 or more	5	0.2
1980 to 1989	279	5.8	Median (dollars)	58,200	(X)
1970 to 1979	792	16.4			
1960 to 1969	394	8.2	MORTGAGE STATUS AND SELECTED		
1940 to 1959	1,142	23.7	MONTHLY OWNER COSTS		
1939 or earlier	1,800	37.3	With a mortgage	1,287	53.7
			Less than \$300	16	0.7
ROOMS			\$300 to \$499	318	13.3
1 room	20	0.4	\$500 to \$699	426	17.8
2 rooms	145	3.0	\$700 to \$999	362	15.1
3 rooms	265	5.5	\$1,000 to \$1,499	122	5.1
4 rooms	606	12.6	\$1,500 to \$1,999	34	1.4
5 rooms	899	18.6	\$2,000 or more	9	0.4
6 rooms	941	19.5	Median (dollars)	632	(X)
7 rooms	780	16.2	Not mortgaged	1,109	46.3
8 rooms	633	13.1	Median (dollars)	221	(X)
9 or more rooms	532	11.0			
Median (rooms)	6.0	(X)	SELECTED MONTHLY OWNER COSTS		
			AS A PERCENTAGE OF HOUSEHOLD		
Occupied housing units	4,353	100.0	INCOME IN 1999		
YEAR HOUSEHOLDER MOVED INTO UNIT			Less than 15.0 percent	1,279	53.4
1999 to March 2000	552	12.7	15.0 to 19.9 percent	403	16.8
1995 to 1998	952	21.9	20.0 to 24.9 percent	279	11.6
1990 to 1994	729	16.7	25.0 to 29.9 percent	124	5.2
1980 to 1989	683	15.7	30.0 to 34.9 percent	99	4.1
1970 to 1979	707	16.2	35.0 percent or more	198	8.3
1969 or earlier	730	16.8	Not computed	14	0.6
VEHICLES AVAILABLE			Specified renter-occupied units	910	100.0
None	332	7.6	GROSS RENT		
1	1,343	30.9	Less than \$200	156	17.1
2	1,680	38.6	\$200 to \$299	126	13.8
3 or more	998	22.9	\$300 to \$499	357	39.2
			\$500 to \$749	123	13.5
HOUSE HEATING FUEL			\$750 to \$999	45	4.9
Utility gas	1,852	42.5	\$1,000 to \$1,499	7	0.8
Bottled, tank, or LP gas	1,228	28.2	\$1,500 or more	-	-
Electricity	493	11.3	No cash rent	96	10.5
Fuel oil, kerosene, etc	704	16.2	Median (dollars)	362	(X)
Coal or coke	-	-			
Wood	36	0.8	GROSS RENT AS A PERCENTAGE OF		
Solar energy	-	-	HOUSEHOLD INCOME IN 1999		
Other fuel	27	0.6	Less than 15.0 percent	204	22.4
No fuel used	13	0.3	15.0 to 19.9 percent	172	18.9
			20.0 to 24.9 percent	94	10.3
SELECTED CHARACTERISTICS			25.0 to 29.9 percent	54	5.9
Lacking complete plumbing facilities	18	0.4	30.0 to 34.9 percent	63	6.9
Lacking complete kitchen facilities	13	0.3	35.0 percent or more	219	24.1
No telephone service	87	2.0	Not computed	104	11.4

-Represents zero or rounds to zero. (X) Not applicable.

Source: U.S. Bureau of the Census, Census 2000.

Appendix B:

DNR Water
Appropriation
Permits

WATER APPROPRIATION PERMIT INDEX KEY

Minnesota DNR Water Appropriation permits are required for withdrawals greater than 10,000 gallons per day or one million gallons per year.

Use Codes

WATERWORKS

- 211. Municipal
- 212. Private waterworks
(trailer courts, small housing units)
- 213. Commercial and Institutional
(business, industry, hospital)
- 214. Cooperative waterworks
- 215. Fire protection
- 216. Campgrounds, waysides, highway rest areas
- 217. Rural Water Districts
- 219. Waterworks

POWER GENERATION

- 221. Hydro power
- 222. Steam power cooling-once through
- 223. Steam power cooling-wet tower
- 224. Steam power cooling-ponds
- 225. Steam power-other than cooling
- 226. Nuclear power plant
- 229. Power generation

AIR CONDITIONING

- 231. Commercial building A/C
- 232. Institutions (school, hospital)
- 233. Heat pumps
- 234. Coolant pumps
- 235. District heating/cooling
- 239. Once-through heating or A/C
- 238. Air conditioning

INDUSTRIAL

- 241. Agricultural processing (food & livestock)
- 242. Pulp and paper processing
- 243. Mine processing (not sand & gravel washing)
- 244. Sand and gravel washing
- 245. Sewage treatment
- 246. Petroleum-chemical processing, ethanol
- 247. Metal processing
- 248. Non-metallic processing (rubber, plastic, glass)
- 249. Industrial processing

TEMPORARY (12 months or less)

- 251. Construction (non-dewatering)
- 252. Construction (dewatering)
- 253. Pipeline & tank testing
- 254. Landscape watering
- 255. Pollution containment
- 256. Water level maintenance
- 257. Livestock waste treatment
- 258. Temporary ag irrigation
- 259. Temporary

WATER LEVEL MAINTENANCE

- 261. Basin (lake) level
- 262. Mine dewatering
- 263. Quarry dewatering
- 264. Sand/gravel pit dewatering
- 265. Tile drainage and pumped sumps
- 266. Dewatering
- 269. Water level maintenance

SPECIAL CATEGORIES

- 271. Pollution containment
- 272. Aquaculture (hatcheries, fisheries)
- 273. Snow making
- 274. Peat fire control
- 275. Livestock watering
- 276. Pipeline and tank testing
- 279. Special Categories

NON-CROP IRRIGATION

- 281. Golf course
- 282. Cemetery
- 283. Landscaping/athletic fields
- 284. Sod farm
- 285. Nursery
- 286. Orchard
- 289. Non-crop irrigation

MAJOR CROP IRRIGATION

- 290. Major crop irrigation
- 296. Wild rice irrigation

* indicates Multi-Use Permits

Resource Codes	Status Codes
1 - Ground Water	1 - Active
2 - Lake	2 - Standby
3 - Stream/River	3 - Abandoned
4 - Ditch	4 - Terminated
5 - Dug Pit/Holding Pond	
6 - Quarry/Mine/Gravel Pit	Fee Codes
7 - Wetland	E - Exempt from Fees
	N - Non-Profit

County Codes

1 Aitkin	30 Isanti	59 Pipestone
2 Anoka	31 Itasca	60 Polk
3 Becker	32 Jackson	61 Pope
4 Beltrami	33 Kanabec	62 Ramsey
5 Benton	34 Kandiyohi	63 Red Lake
6 Big Stone	35 Kittson	64 Redwood
7 Blue Earth	36 Koochiching	65 Renville
8 Brown	37 Lac Qui Parle	66 Rice
9 Carlton	38 Lake	67 Rock
10 Carver	39 Lake of the Woods	68 Roseau
11 Cass	40 Le Sueur	69 St. Louis
12 Chippewa	41 Lincoln	70 Scott
13 Chisago	42 Lyon	71 Sherburne
14 Clay	43 McLeod	72 Sibley
15 Clearwater	44 Mahnomon	73 Stearns
16 Cook	45 Marshall	74 Steele
17 Cottonwood	46 Martin	75 Stevens
18 Crow Wing	47 Meeker	76 Swift
19 Dakota	48 Mille Lacs	77 Todd
20 Dodge	49 Morrison	78 Traverse
21 Douglas	50 Mower	79 Wabasha
22 Faribault	51 Murray	80 Wadena
23 Fillmore	52 Nicollet	81 Waseca
24 Freeborn	53 Nobles	82 Washington
25 Goodhue	54 Norman	83 Watonwan
26 Grant	55 Olmsted	84 Wilkin
27 Hennepin	56 Otter Tail	85 Winona
28 Houston	57 Pennington	86 Wright
29 Hubbard	58 Pine	87 Yellow Medicine

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Use	CO	Twp	Rng	Sec	QQQQ	shed	Well	Resource	Code/Name	Acres	GPM	--- Reported Pumping ---				2001	Stat	
															1997	1998	1999	2000			
804188	- 2	KERKHOVEN, CITY OF	211	76	120	37	21	ACB	26	241467	1	QBAA	450	36.0	6.4	4.7	4.6	5.7	0.9	1	
804188	- 3	KERKHOVEN, CITY OF	211	76	120	37	21	ACB	26	180304	1	QBAA	450	36.0	11.0	16.9	17.7	12.3	36.7	1	
804188	- 4	KERKHOVEN, CITY OF	211	76	120	37	21	ACB	26	508042	1	QBAA	450	36.0	18.9	12.4	11.5	15.8	36.9	1	
904129	- 1	WILLMAR POULTRY FARMS	241	76	120	37	25	DD	26	428769	1		35	1.9	1.4	1.8	1.8	1.8	1.6	1	
804189	- 3	MURDOCK, CITY OF	211	76	120	38	2	DDD	26	183577	1	QBAA	330	20.0						1	
804189	- 1	MURDOCK, CITY OF	211	76	120	38	11	AAAB	26	232202	1	QBAA	330	20.0	7.1	11.9	11.7	13.2		1	
804189	- 2	MURDOCK, CITY OF	211	76	120	38	11	AAAB	26	232203	1	QBAA	330	20.0	5.6	0.7				13.4	1
014019	- 1	DUBLIN DAIRY	275	76	120	38	30	CCB	26	640232	1	QBAA	90	25.0					2.5	1	
014019	- 2	DUBLIN DAIRY	275	76	120	38	30	CCB	26	646803	1	QBAA	90	25.0					2.5	1	
014019	- 3	DUBLIN DAIRY	275	76	120	38	30	CCB	26	646804	1	QBAA	90	25.0					2.5	1	
014003	- 1	CARRUTH FARMS INC	290	76	120	41	1	BCB	26	629736	1	QBAA	500	51.4					20.2	1	
754328	- 2	CARRUTH, JOHN	290	76	120	41	2	CCDD	26	411836	1	QBAA	400	160.0					16.8	1	
754328	- 3	CARRUTH, JOHN	290	76	120	41	2	DBAD	26	108205	1	QBAA	400	160.0	27.4	24.4	15.6	16.9	22.3	1	
764052	- 1	GALLAGHER, WALTER	290	76	120	41	3	ACC	26		4	JUDICIAL DITCH 8	160	13.3	12.9	12.7	13.0	12.0	12.0	1	
854134	- 1	JOHNSON, HAROLD P	290	76	120	41	3	CCAA	26	411802	1	QBAA	233	900	13.5	44.9	39.6	29.1	43.5	1	
774167	- 1	CARRUTH FARMS INC	290	76	120	41	3	DBD	26	108206	1	QWTA	115	900	21.0	26.7	14.0	17.6	15.7	1	
611120	- 1	JOHNSON, BRENT C	290	76	120	41	4	BBC	26	401466	1	QWTA	480	825	7.4	7.4	8.4	11.4	19.9	1	
611120	- 2	JOHNSON, BRENT C	290	76	120	41	4	BBC	26	401467	1	QWTA	480	825						1	
904287	- 1	JOHNSON, BRENT C	290	76	120	41	4	BBC	26	401471	1		150	800	5.9	12.3	1.8	9.9	11.9	1	
700852	- 1	JOHNSON, BRENT C	290	76	120	41	4	CCB	26		5		150	700	6.4					1	
014126	- 1	JOHNSON, BRENT	290	76	120	41	5	A	26	603537	1		175	500					9.2	1	
014126	- 2	JOHNSON, BRENT	290	76	120	41	5	AAA	26	603522	1	QWTA	175	500						1	
794125	- 1	SCHMIESING BROTHERS	290	76	120	41	7	CACC	26	139240	1	QWTA	100	800	7.2	15.8	15.8	7.2	26.8	1	
754117	- 1	SCHMIESING BROTHERS	290	76	120	41	7	CBD	26	223942	1	QWTA	150	900						1	
754117	- 2	SCHMIESING BROTHERS	290	76	120	41	7	CBD	26	226748	1	QWTA	150	900						1	
754117	- 3	SCHMIESING BROTHERS	290	76	120	41	7	CBD	26		1		150	900						1	
610838	- 1	FUNKHOUSER, GLORIA	290	76	120	41	8	D	26		3		40	500						1	
774502	- 1	OLSON, SHERMAN L	290	76	120	41	10	ADAC	26	134253	1	QBAA	140	800	9.9	8.7	13.3	13.0	9.9	1	
994013	- 1	OLSON, SHERMAN	290	76	120	41	10	BCA	26	612977	1	QWTA	120	550	1.2	1.2	6.4	6.2	9.1	1	
994013	- 2	OLSON, SHERMAN	290	76	120	41	10	BCA	26	612978	1	QWTA	120	550	1.0	1.0	5.3	5.2	7.6	1	
754328	- 1	CARRUTH, JOHN	290	76	120	41	11	BCAD	26	443708	1	QBAA	400	160.0	13.1	25.6	12.6	13.7	23.9	1	
894216	- 1	CARRUTH FARMS INC	290	76	120	41	11	CAA	26	443683	1	QBAA	134	800	5.4	16.9	12.6	12.4	22.7	1	
774220	- 1	OLEARY FARMS	290	76	120	41	12	AAC	26	455536	1	QBAA	320	950	25.6	35.5	26.4	39.4	44.9	1	
984189	- 1	CARRUTH FARMS INC	290	76	120	41	16	CCC	26		4	JUDICIAL DITCH #8	130	800	19.2	19.2	28.5	16.0	25.0	1	
764065	- N	CARRUTH FARMS INC	290	76	120	41	17	AAC	26	458826	1	QWTA	130	800						1	
764065	- W	CARRUTH FARMS INC	290	76	120	41	17	ACA	26	458827	1	QWTA	130	800						1	
764065	- S	CARRUTH FARMS INC	290	76	120	41	17	ADB	26	595694	1	QWTA	130	800						1	
774112	- 1	ZINDA, BERNARD SR	290	76	120	41	18	ABDD	26	226749	1	QWTA	130	900	2.9	2.1	0.0	0.0	5.7	1	
994153	- 1	JOHNSON, BURTON J	290	76	120	41	20	BCB	26	434258	1		310	950					8.7	1	
784463	- 1	OLSON, DAVID C	290	76	120	41	20	DBAA	26	139229	1	QBAA	110	600	1.5	5.1	8.6	11.4	9.5	1	
774267	- 1	OWENS, MICHAEL	290	76	120	42	3	BAA	26		1		130	900						1	
774577	- 1	SCHMIDT, ROLAND O	290	76	120	42	4	BBD	26		1		285	750	11.4	24.5	19.3	20.3	27.7	1	
784151	- 1	SMITH, DANIEL A	290	76	120	42	6	DDB	23	249900	1	QBAA	147	800	11.0	11.0	7.8	13.7	2.9	1	
681582	- 1	BENSON, THOMAS H	290	76	120	42	8	DCA	26	214160	1	QWTA	320	800	0.0	0.4	3.4	0.6	1.0	1	
681582	- 2	BENSON, THOMAS H	290	76	120	42	8	DCA	26	214233	1	QWTA	320	800	0.0	0.4	0.3	0.6	1.0	1	
681582	- 3	BENSON, THOMAS H	290	76	120	42	8	DCA	26	214234	1	QWTA	320	800	0.0	0.4	0.3	0.6	1.0	1	
914097	- 1	BENSON, TOM	290	76	120	42	9	CCB	26	179837	1	QBAA	320	700	4.1	6.8	4.9	6.5	18.0	1	
894017	- 1	BERGLUND, LYLE	290	76	120	42	15	DBD	26	445536	1	QBAA	130	700	1.4	1.4				1	
804111	- 1	EVANS, RICHARD	290	76	120	42	18	CCBC	22	132287	1	QWTA	135	700	13.4	22.8	16.8	20.5	33.6	1	
854198	- 1	OLSON, LOUISE M	290	76	120	42	19	ACC	22	190703	1	QWTA	120	700						1	

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Swift County	Use	CO	Twp	Rng	Sec	QQQQ	shed	Well	Resource	----- Permitted -----				-- Reported Pumping --					
													Acres	GPM	MG/Y	1997	1998	1999	2000	2001	Stat	
784293	- 1	J BAR D RANCH		290	76	120	42	30	A	22	227017	1	QBAA	132	900	44.0	2.1	17.2	19.4	17.2	25.9	1
804150	- 1	WEIS, DALE P		290	76	120	42	32	AACC	22	150441	1	QBAA	36	400	15.3	1.8	36.0	6.7	36.0	7.5	1
732142	- 2	CLARK, DENNIS		290	76	120	43	1	BBB	23	452195	1	QBAA	330	1,600	136.0	2.3	12.6	5.3	12.6	14.7	1
732142	- 1	CLARK, DENNIS		290	76	120	43	1	BBB	23		1	QBAA	330	1,600	136.0	16.1	19.3	24.9	11.9	39.8	1
732142	- 3	CLARK, DENNIS		290	76	120	43	1	BBB	23		1	QBAA	330	1,600	136.0	2.3	12.6	5.3	9.7	14.7	1
774658	- 1	MINNESOTA FARMS CO		290	76	120	43	2	AA	23		1	QWTA	160	1,000	52.1	22.5	28.6	28.7	21.3	38.7	1
774659	- 1	MINNESOTA FARMS CO		290	76	120	43	2	BB	23		1	QWTA	160	1,000	52.1	10.5	30.3	23.9	21.7	37.4	1
670236	- 1	MINNESOTA FARMS CO		290	76	120	43	2	BBAA	23	214125	1	QBAA	135	1,000	45.0	17.2	19.5	21.2	17.0	27.6	1
764029	- 1	ALLPRESS, WILLIAM J		290	76	120	43	3	ABBB	22	107368	1	QBAA	162	1,000	66.0	10.9	17.0	17.1	15.4	36.1	1
824109	- 1	ALLPRESS, WILLIAM J		290	76	120	43	3	ADA	23	150519	1	QBAA	151	1,000	66.0	10.7	22.3	27.8	27.4	27.6	1
691359	- 1	MINNESOTA FARMS CO		290	76	120	43	3	BDA	23	445541	1	QBAA	135	1,000	55.0	9.8	27.7	21.1	20.9	33.5	1
924095	- 1	NELSON, HENRY		290	76	120	43	3	CBBC	22	179839	1	QBAA	136	800	58.0	22.0	8.5	13.5	1.5	24.6	1
774492	- 1	MINNESOTA FARMS CO		290	76	120	43	4	DCAB	23	132241	1	QWTA	122	1,000	40.6	16.1	18.1	18.1	16.1	27.4	1
764193	- NEW1	SANDEEN, ROBERT P		290	76	120	43	5	AACB	22	149550	1	QBAA	152	1,000	50.0	20.1	29.2	21.8	26.0	31.5	1
784125	- 1	TOSEL, KENNETH E		290	76	120	43	5	CBDD	23	132255	1	QBAA	106	800	44.0	20.0	20.2	27.5	15.7	26.9	1
774347	- 1	GIESE, DALE D		290	76	120	43	5	DACC	23	133088	1	QBAA	120	900	40.0	26.7	26.3	38.4	16.1	32.8	1
964255	- 1	MEYER, BRUCE		290	76	120	43	6	ABD	22	541889	1	QBAA	90	800	35.8	18.9	28.5	29.6	18.8	23.0	1
774341	- 1	SCHIRM, STANLEY G		290	76	120	43	6	ACC	22	445548	1	QBAA	140	900	57.4	28.0	12.4	18.7	17.3	14.4	1
774023	- 1	ROLFSMEIER, DERALD		290	76	120	43	7	DCAA	22	105534	1	QBAA	130	900	43.3	23.2	16.2	39.6	25.0	30.8	1
794201	- 1	MINNESOTA FARMS CO		290	76	120	43	7	AACC	23	139238	1	QBAA	160	1,000	50.0	11.7	28.9	26.1	19.1	37.3	1
764135	- 1	WILLIAMSON, DAVID		290	76	120	43	8	AACB	23	107365	1	QBAA	133	900	54.5	8.6	11.8	13.7	11.3	25.6	1
774576	- 1	WILLIAMSON, DAVID		290	76	120	43	8	CCAB	23	130264	1	QBAA	211	900	80.0	12.1	21.2	23.3	19.4	23.5	1
754225	- 2	TWETEN, KATHERINE J		290	76	120	43	9	AADD	23	598054	1	QBAA	79	800	25.7	42.8	48.3	53.0	66.4	15.4	1
774144	- 1	REINKE, GLADYS & PAUL		290	76	120	43	9	ABCC	23	224013	1	QBAA	245	900	81.6	8.5	14.2	16.5	17.7	71.2	1
754040	- 1	WILLIAMSON, DAVID		290	76	120	43	9	BCDB	23	223943	1	QBAA	147	800	35.0	17.4	18.7	19.9	15.6	33.2	1
774349	- 1	GIESE, DALE D		290	76	120	43	9	CADC	23	150429	1	QBAA	140	900	46.6	19.6	18.0	30.2	15.6	33.2	1
774504	- 1	TWETEN, KATHERINE J		290	76	120	43	9	DADD	23	223945	1	QBAA	130	800	42.0	18.5	23.4	27.1	21.7	37.4	1
774447	- 1	MINNESOTA FARMS CO		290	76	120	43	10	ABBC	23	137121	1	QBAA	120	1,000	40.0	14.8	18.0	26.6	18.6	30.7	1
732167	- 1	ALLPRESS, WILLIAM J		290	76	120	43	10	BCAA	23	214229	1	QBAA	160	1,000	50.0	17.6	27.4	20.1	22.8	29.2	1
660225	- 1	CLARK, DENNIS		290	76	120	43	10	DDBB	23	214158	1	QBAA	220	1,200	35.8	17.6	27.4	20.1	22.8	29.2	1
711370	- 1	TOSEL, KENNETH E		290	76	120	43	11	BCAB	23	223966	1	QBAA	160	1,000	97.2	26.2	26.2	24.9	26.6	30.6	1
984113	- 1	EVANS, RICHARD		290	76	120	43	13	ACB	22	604677	1	QBAA	236	900	54.5	13.1	24.8	16.4	25.5	38.8	1
004130	- 1	TWETEN, RUSSELL V		290	76	120	43	13	BAD	23	255296	1	QWTA	135	800	54.0	2.6	21.4	11.4	18.0	18.0	1
004130	- 2	TWETEN, RUSSELL V		290	76	120	43	13	BDA	22	133947	1	QWTA	135	800	54.0	8.1	14.0	9.0	14.1	22.5	1
774237	- 1	WHITE, BRUCE		290	76	120	43	13	CCA	22		1	QBAA	160	900	54.0	8.1	14.0	9.0	14.1	22.5	1
934107	- 1	TWETEN FARMS		290	76	120	43	13	DAC	22	496687	1	QWTA	150	900	62.0	4.1	4.4	4.6	15.3	20.7	1
934107	- 2	TWETEN FARMS		290	76	120	43	13	DBD	22	467841	1	QWTA	150	900	62.0	118.0	139.3	137.4	171.8	149.3	1
894047	- 1	APPLETON GOLF CLUB		281	76	120	43	14	ACA	23	450071	1	QBAA	40	400	15.0	3.0	4.6	3.7	5.9	7.8	1
754207	- 3	APPLETON, CITY OF		211	76	120	43	14	BDB	23	239952	1	QBUA	1,500	120.0	120.0	118.0	139.3	137.4	171.8	149.3	1
754207	- 4	APPLETON, CITY OF		211	76	120	43	14	CDC	23	401713	1	QBUA	1,500	120.0	120.0	118.0	139.3	137.4	171.8	149.3	1
804326	- 1	HUCKLE, R A		290	76	120	43	14	DDA	22	150067	1	QBAA	70	700	24.0	3.0	9.3	3.7	5.2	2.8	1
804109	- 1	NYGARD, BROCK		290	76	120	43	15	CCC	23	150441	1	QBAA	37	450	12.3	3.0	4.6	3.7	5.9	7.8	1
774457	- 1	NYGARD, GARY & PHIL		290	76	120	43	16	A	23	3	POMME DE TERRE	100	450	16.3	9.0	14.2	8.7	13.9	22.6	1	
774458	- 1	NYGARD, GARY & PHIL		290	76	120	43	16	DAD	23	131651	1	QBAA	110	750	46.6	11.5	16.4	14.8	18.3	27.3	1
804019	- 1	TOSEL, DAVID & FLETCHER SYLTIE		290	76	120	43	22	BDDD	22	139249	1	QBAA	144	1,000	48.0	9.8	18.1	21.7	16.9	31.5	1
774404	- 1	LAGRANGE, DERALL		290	76	120	43	23	BCCC	22	131718	1	QBAA	80	600	21.7	5.4	12.0	10.5	12.7	14.6	1
754212	- 1	ERICKSON, DALE		290	76	120	43	23	CDCA	22	121814	1	QWTA	136	950	44.3	8.3	23.8	20.1	19.1	36.7	1
934021	- 1	MINNESOTA FARMS CO		290	76	120	43	26	ABD	22	485046	1	QBAA	145	800	47.0	29.1	29.1	29.1	29.1	29.1	1
754226	- 2	TWETEN, KATHERINE J		290	76	120	43	26	BDA	22	495601	1	QBAA	145	800	47.0	29.1	29.1	29.1	29.1	29.1	1

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Swift County	Use	CO	Twp	Rng	Sec	QQQQ	shed	Water	Well	Resource	Code/Name	----- Permitted -----				-- Reported Pumping --				2001	Stat
															Acres	GPM	MG/Y	1997	1998	1999	2000	2001		
784441	- 1	WINJE, LYLE & JON		290	76	120	43	26	DBBB	22	151437	1	QBAA	132	900	44.0	9.3	25.3	10.6	10.1	34.4	1	1	
774580	- 1	CROSBY, MICHAEL		290	76	120	43	29	D	22	151437	5		150	550	48.9	6.0	4.9	4.6	6.8	5.5	1	1	
754204	- 1	DEGRAFF, CITY OF		211	76	121	38	29	ACDB	26	144132	1	QBAA	115	7.1	7.1	31.2	28.3	40.2	38.3	35.0	1	1	
754194	- 12	BENSON, CITY OF		211	76	121	39	5	BCB	26	221208	1	QBAA	2,350	166.0	166.0	45.6	50.2	37.6	39.7	46.4	1	1	
754194	- 31	BENSON, CITY OF		211	76	121	39	6	ACB	26	197490	1	QBAA	2,350	166.0	166.0	45.6	50.2	37.6	39.7	46.4	1	1	
794091	- 40	BENSON, CITY OF		281	76	121	39	6	ACB	26	221209	1	QBAA	75	750	52.0	15.8	19.5	18.2	20.4	19.2	1	1	
754194	- 30	BENSON, CITY OF		211	76	121	39	6	ADDD	26	214139	1	QBAA	2,350	166.0	166.0	45.6	50.2	37.6	39.7	46.4	1	1	
754194	- 11	BENSON, CITY OF		211	76	121	39	6	BACC	26	132381	1	QBAA	2,350	166.0	166.0	31.2	28.3	40.2	38.3	35.0	1	1	
994156	- 1	SHILOH FARMS INC		290	76	121	40	2	BACC	26	132381	1	QBAA	260	1,980	84.7	2.4	33.6	24.1	26.2	20.4	1	1	
994156	- 2	SHILOH FARMS INC		290	76	121	40	2	BBC	26	132122	1	QBAA	260	1,980	84.7	10.2	23.3	10.9	21.0	20.4	1	1	
774335	- 1	CARRUTH, JOHN T		290	76	121	40	3	BBDD	26	224010	1	QBAA	140	800	45.6	10.2	23.3	10.9	21.0	31.5	1	1	
764199	- 1	HOBERG, WILLIAM E		290	76	121	40	3	CACC	26	121841	1	QBAA	132	1,000	43.0	10.2	23.3	10.9	21.0	31.5	1	1	
894228	- 1	HOBERG, WILLIAM E		290	76	121	40	10	ADC	26	402612	1	QBAA	5	120	2.7	1.0	0.9	0.9	0.8	0.7	1	1	
814087	- 2	CARRUTH FARMS INC		290	76	121	40	11	ACAA	26	511508	1	QBAA	344	1,800	138.0	13.7	16.7	9.4	18.7	21.1	1	1	
924022	- 1	BENSON BUILDERS INC		290	76	121	40	11	CDA	26	510837	1	QBAA	137	1,000	56.0	13.7	16.7	9.4	18.7	21.1	1	1	
814087	- 1	CARRUTH FARMS INC		290	76	121	40	11	DDBB	26	150100	1	QBAA	344	1,800	138.0	11.9	27.6	22.2	17.8	16.1	1	1	
794016	- 1	CARRUTH, JOHN T		290	76	121	40	12	CCA	26	133011	1	QBAA	133	800	55.0	13.0	32.2	18.9	15.1	25.5	1	1	
994152	- 1	VAIL, THOMAS W		290	76	121	40	16	BBC	26	580000	1	QBAA	10	140	1.6	13.0	32.2	18.9	15.1	25.5	1	1	
994157	- 1	VAIL, THOMAS W		290	76	121	40	16	BBD	26	579977	1	QBAA	90	650	22.0	13.7	16.7	9.4	18.7	21.1	1	1	
994178	- 1	ANDERSON, JENNY		290	76	121	40	24	CBC	26	163051	1	QBAA	180	800	58.7	13.7	16.7	9.4	18.7	21.1	1	1	
774383	- 1	LUND, LAVON		290	76	121	41	3	AADB	26	131683	1	QWTA	150	1,000	48.9	13.7	16.7	9.4	18.7	21.1	1	1	
774441	- 1	AUST, TERESA		290	76	121	41	3	DBD	26	445535	1	QWTA	145	800	60.0	1.3	14.6	4.9	12.0	26.4	1	1	
774441	- 2	AUST, TERESA		290	76	121	41	3	DDB	26	450034	1	QWTA	145	800	60.0	1.3	14.6	4.9	12.0	26.4	1	1	
014119	- 1	JOHNSON, BRENT		290	76	121	41	4	BAB	26	646158	1	QWTA	150	300	60.0	8.2	12.3	6.1	7.7	15.2	1	1	
014119	- 2	JOHNSON, BRENT		290	76	121	41	4	BBA	26	646170	1	QWTA	150	300	60.0	1.4	14.7	7.3	14.4	18.0	1	1	
794267	- 1	MCGEARY, JOSEPH AND LOIS		290	76	121	41	10	BACD	26	132115	1	QBAA	105	500	43.0	8.2	12.3	6.1	7.7	15.2	1	1	
774227	- 1	MCGEARY, AUSTIN D		290	76	121	41	10	CDB	26	1			190	190	61.9	1.4	14.7	7.3	14.4	18.0	1	1	
774227	- 2	MCGEARY, AUSTIN D		290	76	121	41	10	CDB	26	1			190	190	61.9	1.4	14.7	7.3	14.4	18.0	1	1	
774486	- 1	SCHMITZLER, ANTHONY		290	76	121	41	21	CACC	26	132235	1	QBAA	133	700	44.3	9.0	20.1	15.2	15.2	28.0	1	1	
814306	- 1	STELZIG JR, EDWARD		290	76	121	41	26	BCA	26	163236	1	QWTA	100	750	34.0	3.8	3.6	5.0	5.0	7.0	1	1	
814306	- 2	STELZIG JR, EDWARD		290	76	121	41	26	BCA	26	163237	1	QWTA	100	750	34.0	3.8	3.6	5.0	5.0	7.0	1	1	
754118	- 1	WENZEL, JOY A		290	76	121	41	33	A	26	214230	1	QWTA	140	1,000	26.0	4.2	6.2	4.6	7.1	6.5	1	1	
754118	- 2	WENZEL, JOY A		290	76	121	41	33	A	26	223955	1	QWTA	140	1,000	26.0	4.2	6.2	4.6	7.1	6.5	1	1	
754118	- 3	WENZEL, JOY A		290	76	121	41	33	A	26	214231	1	QWTA	140	1,000	26.0	4.2	6.2	4.6	7.1	6.5	1	1	
774438	- 2	SCHUERMAN, DAVID		290	76	121	41	33	BBA	26	1			145	145	46.1	9.0	20.1	15.2	15.2	28.0	1	1	
774437	- 1	SCHUERMAN, DAVID		290	76	121	41	33	BBAC	26	134260	1	QBAA	145	800	46.1	9.0	20.1	15.2	15.2	28.0	1	1	
774438	- 1	SCHUERMAN, DAVID		290	76	121	41	33	BBAC	26	1			145	145	46.1	9.0	20.1	15.2	15.2	28.0	1	1	
764053	- 1	STELZIG JR, EDWARD		290	76	121	41	34	A	26	1			144	750	52.0	8.8	17.5	10.8	16.4	19.2	1	1	
784365	- 1	STELZIG JR, EDWARD		290	76	121	41	34	BBDD	26	134288	1	QBAA	130	850	44.0	4.1	5.0	3.9	6.5	9.2	1	1	
784365	- 2	STELZIG JR, EDWARD		290	76	121	41	34	BCAA	26	506164	1	QBAA	130	850	44.0	4.1	5.0	3.9	6.5	9.2	1	1	
864121	- 1	JOHNSON, HAROLD P		290	76	121	41	34	DBA	26	411816	1	QBAA	134	800	44.7	6.0	28.1	14.3	15.8	17.6	1	1	
834153	- 1	RUDNICK, RONALD		290	76	121	42	5	CDA	23	167897	1	QWTA	100	800	41.0	6.0	28.1	14.3	15.8	17.6	1	1	
774293	- 1	TRAGER BROS OF APPLETON		290	76	121	42	8	A	23	135403	1	QWTA	130	800	43.3	3.1	8.4	5.9	6.2	1.8	1	1	
774651	- 1	HENNEN, BARRY		290	76	121	42	8	CBDD	23	133957	1	QWTA	130	900	52.0	19.6	23.6	15.3	13.3	33.5	1	1	
784390	- 1	SONDAG, F LYLE		290	76	121	42	17	BDBB	23	132257	1	QWTA	72	800	26.0	6.5	10.4	11.8	18.9	24.1	1	1	
914044	- 1	CLEMENS, GEORGE		290	76	121	42	17	CDB	23	179831	1	QWTA	120	800	48.0	4.6	14.9	13.3	19.5	18.6	1	1	
774156	- 1	EMDE, ERVIN		290	76	121	42	19	BCAA	23	130313	1	QBAA	130	900	28.8	1.7	2.6	4.5	4.8	9.5	1	1	
754203	- 1	SCHMIDT, LLOYD		290	76	121	42	20	ABDB	23	121810	1	QWTA	160	800	43.3	14.6	25.1	17.7	25.5	27.3	1	1	
904276	- 1	TRAGER, ROGER		290	76	121	42	20	CCA	23	179830	1	QWTA	144	800	59.0	5.7	10.0	7.6	9.3	15.3	1	1	
701292	- 2	CRUM, CHARLES W		290	76	121	42	20	DCAB	26	214224	1	QWTA	160	160	53.0	5.7	10.0	7.6	9.3	15.3	1	1	

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Use	CO	Twp	Rng	Sec	QQQQ	shed	Well	Resource	Acres	GPM	MG/Y	1997	1998	1999	2000	2001	Stat
701292	- 1	CRUM, CHARLES W	290	76	121	42	20	DDBB	26	214223	1	160		53.0	7.2	15.8	15.8	32.0	26.8	1
754026	- 1	MATTHIES, MARVIN	290	76	121	42	21	CAC	26	131040	1	160	1,000	35.0	6.2	17.7	11.1	32.0	14.1	1
774374	- 1	SMITH, DANIEL A	290	76	121	42	21	CAD	26	179823	1	215	800	70.0	6.4	8.8	6.0	12.7	7.1	1
774374	- 2	SMITH, DANIEL A	290	76	121	42	21	CAD	26	179823	1	215	800	70.0	6.4	8.8	6.0	12.7	7.1	1
774249	- 1	SMITH, ALLEN L	290	76	121	42	22	CBAB	26	131039	1	280	800	88.6	5.7	8.6	2.1	2.0	2.0	1
744009	- 1	OWENS, MICHAEL	290	76	121	42	27	CDD	26		1	290	1,200	84.0	25.9	10.2	8.3	48.5	49.3	1
784177	- 1	SMITH, ALLEN L	290	76	121	42	28	ACCC	26	224006	1	132		44.0	18.3	10.8	8.0	7.4	18.7	1
784177	- 2	SMITH, ALLEN L	290	76	121	42	28	ACCC	26	224007	1	132		44.0						1
764243	- 1	FEHR, GARY	290	76	121	42	28	B	26		1	160	800	65.0	2.9	4.8	2.0	3.9	4.4	1
764243	- 2	FEHR, GARY	290	76	121	42	28	B	26		1	160	800	65.0	1.9	3.2	1.3	2.6	2.9	1
764243	- 3	FEHR, GARY	290	76	121	42	28	B	26	483061	1	160	800	65.0	4.8	8.1	3.4	6.5	7.4	1
764243	- 4	FEHR, GARY	290	76	121	42	28	B	26	458817	1	160	800	65.0	2.9	4.8	2.0	3.9	4.4	1
894167	- 1	SCHMESING, KAREN	290	76	121	42	28	CCC	26	454035	1	150	1,000	48.9	5.2	15.8	15.8	15.8	26.8	1
720046	- 1	CRUM, CHARLES W	290	76	121	42	28	DAC	26		1	150		62.0	7.2	15.8	15.8	26.8	26.8	1
720046	- 2	CRUM, CHARLES W	290	76	121	42	28	DDBA	26	139239	1	150		62.0						1
691214	- 3	ERICKSON, DALE M	290	76	121	42	29	AAC	26	434733	1	160	1,000	53.3	4.7	11.0	9.6	6.2	12.7	1
691214	- 1	ERICKSON, DALE M	290	76	121	42	29	AACC	26	236586	1	160	1,000	53.3						1
691214	- 2	ERICKSON, DALE M	290	76	121	42	29	ABDD	26	223959	1	160	1,000	53.3	4.7	11.0	9.6	6.2	12.7	1
774584	- 1	SCHLIEP, LEROY	290	76	121	42	29	CCA	23	132129	1	133	800	52.0	2.4	15.3	11.1	17.3	15.3	1
784366	- 1	SCHLIEP, LEROY	290	76	121	42	29	CCA	23	132127	1	132	800	43.0	8.4	21.6	14.2	13.1	24.9	1
691215	- 1	FEHR, GARY	290	76	121	42	29	DACC	26	214163	1	160	300	53.3	3.2	8.9	6.9	7.5	10.5	1
691215	- 2	FEHR, GARY	290	76	121	42	29	DACC	26	214226	1	160	300	53.3	3.2	8.9	6.9	7.5	10.5	1
691215	- 3	FEHR, GARY	290	76	121	42	29	DADD	26	214227	1	160	300	53.3	3.2	8.9	6.9	7.5	10.5	1
774628	- 3	LILJA, DAVID S	290	76	121	42	31	BAC	23	132288	1	135	800	54.0	4.4	16.2	28.2	35.3	17.6	1
904091	- 1	LILJA, DAVID S	290	76	121	42	31	BBB	23	506182	1	135	800	54.0						1
774628	- 1	LILJA, DAVID S	290	76	121	42	31	BDB	23	210420	1	135	800	54.0						1
774628	- 2	LILJA, DAVID S	290	76	121	42	31	BDB	23	211581	1	135	800	54.0						1
774628	- 4	LILJA, DAVID S	290	76	121	42	31	BDB	23	150430	1	135	800	54.0						1
844232	- 2	LILJA, DAVID S	290	76	121	42	31	CDA	23	401453	1	135	700	55.0						1
844232	- 1	LILJA, DAVID S	290	76	121	42	31	CDD	23	411806	1	135	700	55.0	10.1	11.8	24.7	24.7	24.7	1
794139	- 1	KASHMARK, RICHARD	290	76	121	42	31	DAA	23	139237	1	240	800	99.0	11.3	25.8	20.5	18.9	25.8	1
784315	- 1	LANG, HOWARD J	290	76	121	42	32	ABD	26	133906	1	154	1,050	51.3	3.7	6.1	6.5	9.1	15.2	1
784315	- 2	LANG, HOWARD J	290	76	121	42	32	ABD	26	199775	1	154	1,050	51.3	1.7	2.7	2.7	3.8	6.3	1
784286	- 1	LANG, HOWARD J	290	76	121	42	32	DDB	26	133907	1	154	1,050	51.3	10.4	13.5	26.1	22.1	30.8	1
874081	- 1	PIOTTER, BERNARD	290	76	121	42	33	AAD	26	190720	1	108	800	30.0						1
764379	- 1	PIOTTER, BERNARD	290	76	121	42	33	BDBC	26	133903	1	120	800	35.0						1
764198	- 1	MINNESOTA FARMS CO	290	76	121	42	34	BDA	26	224008	1	160	1,200	53.0						1
690552	- 1	MUMM, ALLEN & HAZEL	290	76	121	42	34	CCDA	26	255843	1	70	550	28.0						1
690552	- 2	MUMM, ALLEN & HAZEL	290	76	121	42	34	CDCA	26	255844	1	70	550	28.0						1
690552	- 3	MUMM, ALLEN & HAZEL	290	76	121	42	34	CDCA	26	255845	1	70	550	28.0						1
690552	- 4	MUMM, ALLEN & HAZEL	290	76	121	42	34	CDCC	26	255842	1	70	550	28.0						1
804180	- 2	HOLLOWAY, CITY OF	211	76	121	42	35	BBC	26	223980	1	400		8.0	6.6	6.8	4.8	4.8	6.0	1
804180	- 3	HOLLOWAY, CITY OF	211	76	121	42	35	BBC	26		1	400		8.0			5.7	1.6	6.0	1
784150	- 1	EMDE, LESTER	290	76	121	43	22	BBCD	22	150450	1	120	800	40.0	8.7	15.4	9.2	25.2	16.3	1
774169	- 1	EMDE, LESTER	290	76	121	43	22	BDDD	22	150433	1	120	900	40.0	8.6	7.7	3.6	11.3	21.9	1
924184	- 2	MINNESOTA FARMS CO	290	76	121	43	24	A	23	132449	1	132	900	44.0						1
924184	- 1	MINNESOTA FARMS CO	290	76	121	43	24	AD	23	147579	1	132	900	44.0						1
904294	- 1	WESTHAUSEN, ELDON	290	76	121	43	25	BAB	23	179832	1	135	700	54.1	1.1	7.7	0.8	4.8	11.3	1
904294	- 2	WESTHAUSEN, ELDON	290	76	121	43	25	BAB	23		1	135	700	54.1						1
834116	- 1	BEHRENS, HELMER	290	76	121	43	26	BCA	22	150525	1	120	800	49.0	4.2	7.0	3.7	10.6	13.6	1

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Swift County	Use	CO	Twp	Rng	Sec	QQQQ	shed	Well	Resource	Acres	GPM	MGY	1997	1998	1999	2000	2001	Stat
774170	- 1	EMIDE, LESTER		290	76	121	43	27	BDA	22	130281	1	120	900	40.0	4.7	3.6	17.6	12.1	15.0	1
884184	- 1	EHRNBERG, CARL		290	76	121	43	27	DCD	22	434730	1	130	800	43.3	6.0	8.6	12.7	12.9	11.6	1
774654	- 1	HEINECKE, JEFF		290	76	121	43	28	CCC	22	150443	1	280	1,250	93.0	11.2	22.9	18.4	21.2	24.3	1
804200	- 1	GIESE, DALE D		290	76	121	43	31	BADD	22	150445	1	128	900	52.0	1.4	11.4	10.9	11.7	13.3	1
764073	- 2	SEMILER FARMS INC		290	76	121	43	31	CBB	22	150544	1	240	1,000	85.0		17.3	10.3	20.2	20.2	1
744173	- 1	MEYER, DONALD L		290	76	121	43	31	DCA	22	223962	1	175	800	70.0	21.1	20.5	15.9	15.2	29.2	1
774119	- 1	C & H FARMS CO		290	76	121	43	32	ACDC	22	224009	1	120	900	40.0	19.3	24.8	21.4	13.4	22.5	1
774118	- 1	C & H FARMS CO		290	76	121	43	33	BCCC	22	226747	1	145	900	47.2	9.0	19.6	11.5	16.4	22.5	1
774086	- 1	WILKENING, CRAIG W		290	76	121	43	33	CAA	22	437748	1	135	900	55.0	14.2	13.6	16.9	12.8	15.5	1
804110	- 1	EHRNBERG, PAUL		290	76	121	43	34	AAAA	22	150440	1	78	550	32.0	10.6	1.9	3.0	6.4	13.3	1
774519	- 1	EHRNBERG JR, PAUL		290	76	121	43	34	CBD	22	193004	1	103	750	44.0	23.8	13.9	19.2	16.5	29.5	1
701414	- 1	DRU, DAVID & DAN TOSEL		290	76	121	43	34	DDBC	22	214198	1	210	800	68.0	9.6	14.1	14.7	27.6	21.1	1
670820	- 1	WESNER, DREW		290	76	121	43	35	AAAC	22	121593	1	240	1,200	80.0	24.8	25.1	27.2	31.8	44.5	1
964244	- 1	TOSEL, DELORES		290	76	121	43	35	BCB	22	528061	1	78	450	25.4	5.2	8.6	6.6	4.5	4.5	1
754061	- 1	EHRNBERG, CARL		290	76	121	43	35	CAC	22	223960	1	220	1,000	60.0	9.7	10.2	12.0	12.1	11.9	1
754081	- 1	MUNSTERMAN, DENNIS		290	76	121	43	36	ACCC	23	223963	1	240	1,000	80.0	19.0	29.2	29.1	44.7	44.7	1
904148	- 1	TOSEL, DAVID A		290	76	121	43	36	CAA	22	462461	1	140	900	54.0	9.6	15.2	28.6	13.8	27.6	1
774475	- 1	MINNESOTA FARMS CO		290	76	121	43	36	DCB	23	132242	1	160	900	53.0	7.8	11.6	23.1	14.8	27.4	1
994191	- 1	SCHMIDT, EVELYN		290	76	121	44	36	CDB	22	613000	1	120	700	47.5	12.0	12.2	10.0	6.3	17.6	1
784523	- 1	GJERDE, MARTIN		290	76	122	38	14	CCBB	26	134297	1	160	800	55.3	24.1					1
784522	- 1	GJERDE, MARTIN		290	76	122	38	23	AAAC	26	134296	1	160	800	50.0						1
924128	- 1	FLANDERS, DUANE		290	76	122	39	4	ABDD	26	463164	1	160	500	64.0		2.4	3.0	7.0	3.6	1
774641	- 1	VANDERWEYST, DONALD		290	76	122	39	6	CCAA	26	223999	1	135	750	52.0	5.3	6.2	19.9	16.5	23.3	1
794091	- 41	BENSON, CITY OF		281	76	122	39	31	CDDC	26	132111	1	75	750	52.0	6.2	7.7	7.2	21.8	17.2	1
774642	- 1	VANDERWEYST, GEORGE		290	76	122	40	1	DCB	26	232282	1	200	800	82.0	3.4	9.2				1
764391	- 1	LACHMILLER, RAY		290	76	122	40	2	CBD	26	3	CHIPPEWA	220	2,400	76.4						1
764391	- 2	LACHMILLER, RAY		290	76	122	40	2	CBD	26	3	CHIPPEWA	220	2,400	76.4						1
764019	- 1	TOSTENSON, ROGER		290	76	122	40	3	A	26	1		140	1,000	24.0	9.7	15.5	11.7	16.7	20.3	1
854124	- 1	CAMERON, EMMET J		290	76	122	40	3	C	26	407519	1	135	900	55.0	11.6	19.2	19.9	16.5	23.3	1
774553	- 1	CAMERON, TERRY		290	76	122	40	5	DAC	26	118487	1	313	900	128.0	23.2	33.6	34.4	39.2	49.9	1
014023	- 1	KENT BROTHERS		290	76	122	40	6	ACD	26	607334	1	135	700	54.0		3.7	8.7	8.7	16.5	1
014023	- 2	KENT BROTHERS		290	76	122	40	6	ACD	26	607329	1	135	700	54.0		3.7	8.7	8.7	16.5	1
764344	- 1	SCHAEFER BROTHERS INC		290	76	122	40	6	BAC	26	560836	1	130	1,125	53.0	4.7	5.7	6.8	14.7	13.8	1
764344	- 2	SCHAEFER BROTHERS INC		290	76	122	40	6	BDB	26	118480	1	130	1,125	53.0	4.7	5.7	5.9	15.8	12.1	1
914122	- 1	GOFF, JEROME		290	76	122	40	7	ADD	26	445537	1	130	1,125	53.0	4.7	37.1	36.2	49.0	44.5	1
944169	- 1	GOFF, PHILIP & MICHAEL		290	76	122	40	7	CDC	26	511512	1	320	900	131.0	19.4	11.6	11.5	12.3	11.2	1
004171	- 1	MEIRDING, ELMER JR		290	76	122	40	9	DCB	26	644064	1	100	500	40.0	6.7	11.6	9.1	9.1	12.5	1
774706	- 1	LACHMILLER, RAY		290	76	122	40	10	BDDD	26	137138	1	428	1,600	143.3	22.6	22.9	29.0	2.2	71.4	1
764391	- 3	LACHMILLER, RAY		290	76	122	40	11	BCB	26	3	CHIPPEWA	220	2,400	76.4						1
774337	- 1	SHAFFER, WILLIAM		290	76	122	40	12	DDBB	26	118495	1	135	400	44.0	5.4	2.6	0.2	1.1	24.9	1
774707	- 1	LACHMILLER, RAY		290	76	122	40	14	BDDD	26	134267	1	99	900	33.0						1
024137	- 1	LANGAN, MICHAEL		290	76	122	40	17	CAC	26	601727	1	130	550	52.0						1
844111	- 1	COMMERFORD, ROBERT L		290	76	122	40	18	ABD	26	197492	1	132	800	59.0	12.6	17.7	13.1	8.1	17.6	1
824160	- 1	COMMERFORD, ROBERT L		290	76	122	40	18	BBD	26	151114	1	177	800	79.0	12.2	14.4	11.4	11.2	20.4	1
964190	- 1	HANSON, RICHARD		290	76	122	40	22	DBC	26	150099	1	204	800	66.0	16.8	29.7	23.1	40.6	39.2	1
964189	- 1	HANSON, RICHARD		290	76	122	40	28	DCB	26	541887	1	260	800	85.0	13.2	28.2	19.4	27.0	37.1	1
784267	- 1	LANG, HOWARD		290	76	122	40	34	ABDA	26	136899	1	142	850	47.0	3.6	11.4	5.2	25.8	15.7	1
784032	- 1	LANG, HOWARD		290	76	122	40	35	CBA	26	133007	1	280	1,600	92.7	21.5	62.5	36.9	82.5	79.4	1
984041	- 1	CHIPPEWA VALLEY ETHANOL CO		241	76	122	40	36	CCC	26	563341	1	200	200	75.0		55.5	34.4	31.7	34.1	1

DNR Water Appropriation Permits

All Active Permits - By County & Location

9/12/2002

Permit #	Inst	Permittee	Use	CO	Twp	Rng	Sec	QQQQ	shed	Water	Well	Resource	Code/Name	Acres	GPM	MG/Y	1997	1998	1999	2000	2001	Stat
984041	- 2	CHIPPEWA VALLEY ETHANOL CO	241	76	122	40	36	CCC	26	563342	1	QBAA	200	75.0		34.4		31.7		34.1	1	
974025	- 1	KOEHLE, JOSEPH	290	76	122	41	1	AAC	26	455629	1	QWTA	140	650		10.3	7.8	10.3	6.5	19.7	1	
774461	- 1	ABUNDANT MERCY TRUST	290	76	122	41	1	BBB	26	118486	1	QWTA	135	550		6.9	6.9	4.0	0.0	11.0	1	
774461	- 2	ABUNDANT MERCY TRUST	290	76	122	41	1	BBB	26	611157	1	QWTA	135	550		54.0		4.0	0.0	11.0	1	
774460	- 1	WILSON, ERIC	290	76	122	41	1	DBD	26	118488	1	QWTA	130	500		53.0		4.0	0.0	11.0	1	
984181	- 1	NORMAN BEYER FARMS INC	290	76	122	41	3	DBB	26	605467	1	QBAA	125	750		50.0	13.9	16.5	21.1	21.0	1	
774329	- 1	LANGAN, JOHN R	290	76	122	41	24	D	26	131623	1	QBAA	132	850		54.0	15.0	17.4	17.4	18.4	1	
784551	- 1	STROEBEL BROTHERS	290	76	122	41	27	BADA	26	134281	1	QBAA	290	750		96.7					1	
774172	- 1	LUND, LAVON	290	76	122	41	35	CACC	26	129242	1	QBAA	262	1,200		87.3	26.2	18.6	21.6	26.2	1	
784438	- 1	HUGHES, DANIEL	290	76	122	41	36	DCBA	26	134289	1	QBAA	150	900		62.0		15.0	15.0	62.0	1	
774384	- 1	WULF & SONS INC, LEONARD	290	76	122	42	4	ADC	23	455577	1	QWTA	113	700		43.0	10.2	18.3	12.5	25.8	1	
784294	- 1	MAHONEY, DUANE	290	76	122	42	4	BACC	23	132110	1	QWTA	132	950		44.0	16.3	15.0	15.4	28.2	1	
774162	- 1	MOHR, LLOYD	290	76	122	42	4	DBCC	23	108235	1	QWTA	110	1,000		36.6	16.2	25.2	17.8	28.9	1	
764166	- 1	MESENBRINK, JOHN H	290	76	122	42	9	A	23	150444	1	QWTA	200	1,000		67.0	29.3	32.3	32.0	60.0	1	
774527	- 1	MESENBRINK, JOHN H	290	76	122	42	10	BBDC	23	118462	1	QWTA	130	900		42.0	14.1	21.9	20.5	32.7	1	
774650	- 1	LUND, PAUL	290	76	122	42	10	DAC	23	131713	1	QWTA	130	900		43.3	19.4	16.2	29.1	14.2	1	
014105	- 1	NUEST, JACK	290	76	122	42	15	BBA	23	657093	1	QWTA	115	1,400		46.0				17.0	1	
733072	- 1	SCHMIDGALL, NEIL	290	76	122	42	16	DBAA	23	167878	1	QWTA	180	800		72.0	22.6	17.1	20.5	23.1	1	
754325	- 1	BEYER, DEAN	290	76	122	42	17	DCDA	23	226755	1	QWTA	130	700		43.3	13.8	10.5	15.2	15.6	1	
764263	- 2	MARQUART, BYRON	290	76	122	42	19	DBB	23	190733	1	QWTA	203	1,000		81.0	0.1	2.8	11.3		1	
764263	- 1	MARQUART, BYRON	290	76	122	42	19	DBDC	23	118481	1	QWTA	203	1,000		81.0	5.7	8.7	8.7	24.6	1	
774563	- 1	SCHMIDT, ANNE A	290	76	122	42	20	AACD	23	133961	1	QWTA	90	800		30.0	7.4	12.3	16.3	19.3	1	
700117	- 1	DUCKWITZ, GEORGE ETAL	290	76	122	42	20	DCA	23	3	POMME DE TERRE	80	1,000		13.3						1	
754163	- 1	HEINECKE, ROLF & BRENT	290	76	122	42	21	BAC	23	216974	1	KRET	140	600		56.1	34.8	25.3	17.8	11.2	1	
994134	- 1	ANDERSON, ARLENE I	290	76	122	42	29	BD	23	253009	1		100	1,000		40.1	10.7	9.6	9.1	8.2	1	
794106	- 1	WENDT, KEITH	290	76	122	42	32	ACAC	23	132103	1	QWTA	92	800		30.0	18.4	13.8	16.7	22.2	1	
754079	- 1	KOOSMANN, BERTHOLD	290	76	122	42	32	CAC	23	1		80	660		26.0	4.4	8.7	5.5	6.9	8.1	1	
774649	- 1	LUND, PAUL	290	76	122	43	9	DBDD	23	118463	1	QWTA	130	900		43.3	9.7	25.9	25.9	20.6	1	
744064	- 1	ERICKSON, DALE	290	76	122	43	22	DDB	23	229608	1	QBAA	80	550		21.5	7.9	7.1	6.0	11.1	1	

Appendix C:
Conservation
Lands
Summary

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CONSERVATION LANDS SUMMARY

BWSR Prepared: 8/13/02
 *Note: Shaded areas indicate CREP counties.

COUNTY	TOTAL										OTHER DATA			
	CRP ACRES	CONTINUOUS CRP ACRES	CREP ACRES	RIM WRP	RIM WRP	WRP	RESOURCE ACRES	CROPLAND ACRES	PERCENT ENROLLED	USF&W ACQUISITIONS	DNR WMA	DNR PARKS	COUNTY SIZE TOTAL ACRES	
AITKIN	131.9	360.8	0.0	61.8	0.0	0.0	554.5	77,034.8	0.7%	69.86	52,458.00	15,516.00	1,275,757	
ANOKA	160.2	204.3	0.0	0.0	0.0	364.5	44,632.9	0.8%	0.00	17,458.00	0.00	285,069		
BECKER	30,149.4	2,425.4	0.0	135.4	0.0	80.0	32,790.3	307,783.7	10.7%	13,051.33	6,650.00	4,026.43	925,043	
BELTRAMI	17,863.1	1,580.0	0.0	206.5	0.0	0.0	18,227.6	143,724.5	12.7%	0.00	192,509.00	1,783.49	1,954,893	
BENTON	804.7	1,135.9	0.0	423.2	0.0	0.0	2,363.8	133,396.9	1.8%	0.00	1,945.00	0.00	264,211	
BIG STONE	6,536.8	1,567.2	712.9	567.9	20.6	536.5	9,941.9	251,987.0	3.9%	18,427.81	10,454.00	1,111.18	338,272	
BLUE EARTH	6,242.9	2,445.3	5,546.2	486.3	291.3	675.6	15,687.6	392,239.0	4.0%	1,025.63	4,540.00	2,759.80	489,715	
BROWN	7,489.0	2,888.1	4,730.8	885.9	0.0	606.0	16,599.8	335,790.0	4.9%	0.00	2,769.00	833.88	395,590	
CARLTON	274.1	210.3	0.0	0.0	0.0	0.0	484.4	52,479.7	0.9%	0.00	3,659.00	10,304.96	559,738	
CARVER	2,003.6	318.0	261.5	535.7	23.6	162.2	3,304.6	137,077.9	2.4%	219.00	772.00	472.50	240,442	
CASS	668.2	590.0	0.0	53.3	0.0	0.0	780.5	80,935.2	1.0%	43.00	18,338.00	654.27	1,544,115	
CHIPPEWA	7,637.4	3,978.1	7,704.0	1,561.1	149.7	133.0	20,758.3	326,760.0	6.4%	283.70	11,361.00	0.32	376,390	
CHISAGO	615.9	211.2	0.0	59.6	0.0	0.0	886.7	97,257.4	0.9%	0.00	8,951.00	7,664.74	283,021	
CLAY	40,744.1	2,566.3	0.0	1,526.3	0.0	0.0	44,836.7	524,605.4	8.5%	13,679.31	6,102.00	1,308.42	674,342	
CLEARWATER	9,667.5	593.1	0.0	251.5	150.9	0.0	10,665.0	125,931.3	8.5%	843.00	4,652.00	24,177.09	658,995	
COTTONWOOD	8,299.4	2,573.9	3,079.2	1,267.6	65.0	48.0	15,333.1	360,943.0	4.2%	3,137.45	6,287.00	0.00	415,027	
CROW WING	612.7	40.7	0.0	0.0	0.0	0.0	653.4	60,183.3	1.1%	0.00	4,755.00	6,211.78	739,776	
DAKOTA	1,763.1	2,116.1	0.0	93.1	0.0	0.0	3,972.3	207,049.0	1.9%	73.95	3,350.00	2,530.97	374,970	
DODGE	2,175.9	1,318.8	0.0	45.4	0.0	0.0	3,540.1	226,715.9	1.6%	0.00	754.00	310.64	281,152	
DOUGLAS	30,390.7	1,588.0	2,449.8	1,184.6	23.6	22.3	35,659.0	236,375.0	15.1%	15,634.81	4,449.00	1,291.41	460,928	
FARIBAULT	2,620.6	1,048.0	3,859.8	868.6	0.0	41.0	8,438.0	415,041.0	2.0%	938.77	2,889.00	0.00	461,613	
FILLMORE	15,424.1	2,362.4	0.0	296.3	0.0	0.0	18,082.8	346,876.0	5.2%	0.00	1,641.00	3,072.32	551,443	
FREEBORN	6,432.0	4,232.1	638.9	491.7	1,539.6	1,221.7	14,556.0	390,339.0	3.7%	1,775.25	1,485.00	1,617.37	461,946	
GOODHUE	8,052.9	1,151.1	0.0	805.4	0.0	0.0	10,009.4	305,255.3	3.3%	13,498.93	3,539.00	2,854.78	499,078	
GRANT	14,148.3	11,821.5	417.2	633.2	0.0	114.7	27,134.9	293,726.0	9.2%	0.00	67.00	915.73	388,090	
HENNEPIN	724.8	356.0	0.0	158.9	0.0	4.0	1,243.7	58,618.2	2.1%	0.00	346.00	1,224.08	363,930	
HOUSTON	15,087.2	1,252.9	0.0	1,459.6	0.0	161.0	17,960.7	149,239.1	12.0%	0.00	3,927.00	5,031.24	639,514	
HUBBARD	1,980.1	228.9	0.0	0.0	0.0	0.0	2,209.0	80,716.7	2.7%	0.00	4,915.00	0.00	288,723	
ISANTI	812.0	207.8	0.0	63.5	0.0	0.0	1,083.3	106,567.7	1.0%	0.00	8,996.00	4,684.65	1,872,320	
ITASCA	711.9	308.8	0.0	0.0	0.0	0.0	1,020.7	30,959.4	3.3%	3,978.47	5,051.00	551.68	460,250	
JACKSON	5,448.3	2,364.1	490.1	1,446.9	52.6	249.2	10,051.2	397,517.0	2.5%	0.00	9,421.00	0.00	341,274	
KANABEC	180.2	148.5	0.0	181.2	0.0	0.0	509.9	71,727.1	0.7%	17,425.42	3,409.00	3,233.40	551,859	
KANDIYOHI	31,451.7	2,749.8	3,379.2	2,991.5	88.7	50.8	40,711.7	377,217.0	10.8%	0.00	56,024.00	3,751.30	706,925	
KITSON	96,286.5	5,764.5	0.0	379.2	0.0	0.0	102,430.2	468,948.4	21.8%	0.00	1,014.00	87.14	2,017,005	
KOOCHICING	57.9	55.9	0.0	0.0	893.1	0.0	1,006.9	41,861.3	2.4%	5,563.69	20,941.00	752.40	498,310	
LAC QUI PARLE	25,098.9	4,955.1	8,259.4	966.3	64.9	0.0	39,344.6	410,614.0	9.6%	0.00	158,429.00	3,604.10	1,138,938	
LAKE OF THE WOODS	3,664.3	262.0	0.0	0.0	0.0	202.8	4,129.1	90,825.5	4.5%	452.24	3,141.00	382.51	303,008	
LE SUEUR	11,565.2	3,417.4	1,099.5	1,207.0	170.8	60.0	17,519.9	210,106.0	8.3%	1,147.18	8,476.00	0.00	351,283	
LINCOLN	32,580.4	4,158.1	3,132.7	496.5	55.2	0.0	40,422.9	278,292.0	14.5%	1,834.36	9,524.00	2,235.53	462,067	
LYON	13,475.5	2,500.0	4,823.6	1,075.1	164.2	0.0	22,038.4	387,950.0	5.7%	1,690.93	2,709.00	0.00	323,347	
MCLEOD	1,767.4	1,779.1	860.8	647.2	130.3	0.0	5,184.8	255,423.0	2.0%	10,346.33	10,142.00	0.00	373,523	
MAHONMEN	22,172.7	1,585.3	0.0	0.0	0.0	0.0	23,758.0	160,028.8	14.8%	0.00	114,496.00	404.40	1,161,043	
MARSHALL	202,854.3	2,352.1	0.0	422.9	118.4	829.0	206,576.7	806,892.8	25.6%	263.65	2,547.00	0.00	466,598	
MARTIN	2,405.5	781.7	3,893.8	655.8	117.9	0.0	7,854.7	411,001.0	1.9%	6,906.82	2,657.00	0.00	412,467	
MEEKER	13,618.5	2,086.7	0.0	1,538.1	242.3	0.0	17,485.6	277,071.1	6.3%	0.00	36,590.00	11,798.85	435,718	
MILLE LACS	330.6	405.3	0.0	295.4	0.0	0.0	1,031.3	86,682.7	1.2%	0.00	5,615.00	776.89	737,760	
MORRISON	4,881.2	1,474.6	0.0	871.6	0.0	0.0	7,227.4	237,828.8	3.0%	0.00	1,603.00	1,188.62	454,995	
MOWER	405.2	3,303.8	0.0	808.1	427.4	131.5	5,076.0	381,563.5	1.3%	1,302.18	8,661.00	998.65	460,659	
MURRAY	13,141.4	5,104.6	2,539.6	572.6	0.0	0.0	21,358.2	388,780.0	5.5%	0.00	4,392.00	470.58	298,528	
NICOLLET	1,841.4	2,040.1	1,107.0	1,798.9	100.7	1,080.9	7,969.0	234,169.0	3.4%	547.65	3,712.00	0.00	462,630	
NOBLES	1,986.2	4,346.6	0.0	224.0	0.0	0.0	6,556.8	399,175.8	1.6%	1,120.00	6,189.00	0.00	561,574	
NORMAN	45,936.0	3,039.8	0.0	1,115.7	0.0	0.0	50,091.5	481,471.4	10.4%	0.00	3,231.00	0.00	418,726	
OLMSTED	13,490.8	627.0	0.0	201.3	47.9	0.0	14,367.0	253,019.3	5.7%	33,679.73	11,681.00	13,095.72	1,423,923	
OTTER TAIL	67,672.9	12,028.5	708.5	850.4	95.4	418.8	81,774.5	630,658.7	13.0%					

OTHER DATA

COUNTY	CRP		CONTINUOUS		CREP		RIM		TOTAL RESOURCE		CROPLAND		PERCENT	
	ACRES	ACRES	CRP ACRES	ACRES	ACRES	ACRES	WRP	WRP	ACRES	ACRES	ACRES	ACRES	ENROLLED	ENROLLED
PENNINGTON	76,020.8		1,257.5	0.0	38.0	0.0	0.0	0.0	77,316.3	302,391.9		25.6%		
PINE	133.7		158.5	0.0	0.0	0.0	0.0	292.2		129,121.2		0.2%		
PIPESTONE	8,270.4		4,101.2	217.3	401.1	0.0	0.0	12,990.0		242,801.0		5.4%		
POLK	149,427.5		3,137.4	0.0	304.4	0.0	7,357.1	160,226.4		1,000,145.9		16.0%		
POPE	31,695.9		3,180.4	4,833.8	2,456.7	389.1	2.3	42,558.2		285,591.0		14.9%		
RED LAKE	47,290.3		283.2	0.0	232.9	0.0	0.0	47,806.4		205,985.9		23.2%		
REDWOOD	9,711.7		2,340.1	7,615.4	3,838.0	242.0	28.0	23,775.2		510,646.0		4.7%		
RENVILLE	6,948.2		1,850.1	8,838.4	4,325.0	327.4	684.3	22,973.4		575,177.0		4.0%		
RICE	14,110.1		1,342.9	0.0	1,060.9	202.3	339.0	17,055.2		224,642.0		7.6%		
ROCK	530.3		1,081.9	0.0	464.5	0.0	0.0	2,076.7		257,380.9		0.8%		
ROSEAU	132,846.4		856.1	0.0	34.0	0.0	91.0	133,827.5		549,220.0		24.4%		
ST. LOUIS	265.9		72.8	0.0	0.0	0.0	0.0	338.7		61,532.8		0.6%		
SCOTT	1,945.7		849.8	118.2	780.3	0.0	23.0	3,717.0		105,357.4		3.5%		
SHERBURNE	709.0		540.1	0.0	0.0	0.0	51.0	1,300.1		93,107.0		1.4%		
SIBLEY	1,868.2		1,263.8	953.4	1,260.8	13.3	218.7	5,578.2		323,296.0		1.7%		
STEARNS	27,715.8		3,934.6	0.0	735.7	0.0	211.4	32,597.5		511,176.8		6.4%		
STEELE	5,996.8		3,540.4	211.7	1,126.0	863.4	389.3	12,127.6		231,158.0		5.2%		
STEVENS	8,430.7		5,594.2	984.4	1,160.9	0.0	20.0	16,190.2		315,465.0		5.1%		
SWIFT	25,376.4		6,471.5	6,095.2	1,503.0	0.0	519.8	39,965.9		400,611.0		10.0%		
TODD	14,958.9		1,142.0	0.0	55.8	38.5	0.0	16,195.2		272,395.9		5.9%		
TRAVERSE	2,728.6		9,022.7	721.4	321.5	372.6	0.0	13,166.8		335,488.0		3.9%		
WABASHA	9,070.7		425.5	0.0	777.2	0.0	0.0	10,273.4		183,650.9		5.6%		
WADENA	2,739.1		1,673.4	0.0	218.8	0.0	0.0	4,631.3		113,085.2		4.1%		
WASECA	4,828.3		3,004.4	1,895.6	723.0	95.0	0.0	10,546.3		235,099.0		4.5%		
WASHINGTON	709.4		39.3	0.0	20.6	0.0	0.0	769.3		68,738.4		1.1%		
WATONWAN	2,810.0		1,746.2	2,750.2	577.8	56.1	0.0	7,940.3		251,650.0		3.2%		
WILKIN	12,695.5		2,288.3	0.0	443.6	0.0	337.9	15,765.3		407,405.9		3.9%		
WINONA	8,228.1		820.1	0.0	354.5	10.1	0.0	9,412.8		186,347.5		5.1%		
WRIGHT	5,796.8		1,035.8	0.0	674.4	0.0	79.0	7,586.0		220,989.5		3.4%		
YELLOW MEDICINE	14,629.2		7,170.5	5,622.9	1,554.0	0.0	62.0	29,038.6		424,077.0		6.8%		
STATE TOTAL	1,481,025.9		187,283.4	100,552.4	57,906.5	7,643.9	17,242.8	1,851,654.9		23,062,798.6		8.0%		

COUNTY	USF&W		EASEMENTS/ACQUISITIONS		DNR WMA		DNR PARKS		COUNTY SIZE TOTAL ACRES	
	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
PENNINGTON	0.00	0.00	3,229.00	0.00	2,888.00	41,436.19	230.12	0.00	395,629	917,133
PIPESTONE	0.00	0.00	2,101.00	0.00	2,101.00	230.12	0.00	298,515	1,279,437	
POLK	13,281.15	21,198.00	3,136.00	2,459.03	2,569.00	3,255.42	0.00	458,938	277,184	
POPE	21,677.19	0.00	2,264.00	0.00	4,966.00	0.00	0.00	564,173	631,718	
RED LAKE	0.00	0.00	1,234.00	117.33	2,569.00	3,255.42	0.00	329,901	309,146	
REDWOOD	982.80	11.00	487.00	1,830.98	487.00	2,957.44	0.00	1,074,125	277,184	
RENVILLE	634.24	0.00	94,051.00	9,762.65	94,051.00	9,762.65	0.00	4,312,019	204,21	
RICE	0.00	0.00	1,768.00	4,459.08	1,086.00	0.00	0.00	288,256	0.00	
ROCK	965.40	0.00	1,662.00	822.54	5,027.00	0.00	0.00	384,128	965.40	
ROSEAU	10,518.01	5,027.00	5,027.00	0.00	10,518.01	5,027.00	0.00	889,248	10,518.01	
SCOTT	460.11	1,650.00	1,650.00	1,436.30	2,675.00	0.00	0.00	276,467	460.11	
SHERBURNE	10,783.01	2,675.00	2,675.00	0.00	9,445.99	9,363.00	214.85	368,346	10,783.01	
SIBLEY	9,445.99	9,363.00	9,363.00	214.85	818.85	9,502.00	0.00	481,440	9,445.99	
STEARNS	818.85	9,502.00	9,502.00	0.00	5,250.00	1,209.00	0.00	626,752	818.85	
STEELE	5,250.00	1,209.00	1,209.00	0.00	0.00	6,085.00	211.11	375,277	5,250.00	
STEVENS	0.00	6,085.00	6,085.00	211.11	0.00	5,087.00	0.00	351,360	0.00	
SWIFT	0.00	5,087.00	5,087.00	0.00	0.00	2,088.00	0.00	347,597	0.00	
TODD	0.00	2,088.00	2,088.00	0.00	0.00	1,873.00	3,867.36	276,934	0.00	
TRAVERSE	225.07	1,284.00	1,284.00	0.00	225.07	1,284.00	0.00	270,637	225.07	
WABASHA	2,505.43	5,510.00	5,510.00	0.00	2,505.43	5,510.00	0.00	281,242	2,505.43	
WADENA	0.00	22,706.00	22,706.00	7,060.60	0.00	22,706.00	7,060.60	481,178	0.00	
WASECA	2,938.42	4,245.00	4,245.00	1,760.50	2,938.42	4,245.00	1,760.50	410,310	2,938.42	
WASHINGTON	1,194.67	5,087.00	5,087.00	1,358.43	1,194.67	5,087.00	1,358.43	457,171	1,194.67	
WATONWAN	250,856.00	1,115,380.00	1,115,380.00	226,929.75	250,856.00	1,115,380.00	226,929.75	488,646	250,856.00	
WILKIN										
WINONA										
WRIGHT										
YELLOW MEDICINE										

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