

# **Stevens County Local Water Management Plan**

**10-Year Water Management Plan: June, 2005—June, 2015**  
**5-Year Implementation Program: June, 2005—June, 2010**



Pomme de Terre River

**Prepared by the Stevens County Environmental Services and WP Task Force  
P.O. Box 530, Morris, MN 56267—Telephone: 320-589-7420**

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## CHAPTER 1: EXECUTIVE SUMMARY

Stevens County is located in west central Minnesota, approximately 150 miles west of the Twin Cities Metropolitan Area. The County has a land area of approximately 570 square miles, or 364,000 acres, which includes 5 cities and 16 townships. The largest population settlement is the city of Morris, which is also the county seat. Map-1 illustrates an overall map of Stevens County.

There are portions of four major watersheds within the County. The Pomme de Terre, Chippewa, and Upper Minnesota Watersheds (approximately 75 percent of the County) are in the Minnesota River Watershed, and the Mustinka Watershed is in the Red River of the North Watershed. The County is unique with a continental divide of two major watersheds and drainage in different directions. About 95 percent of the land area is farmed or used for rotational pasture. The population trend is declining. In 1980 the population was 11,322, falling to 10,634 in 1990 and 10,053 in 2000.

The Stevens County Local Water Management Plan (LWMP) is administered by the Environmental Services Office. The Stevens Soil and Water Conservation District (SWCD) assist with planning and implementation by providing technical expertise for annual projects. Assistance for educational projects is sought from the regional or state Minnesota Extension Service. The LWMP Task Force has remained intact since the original plan, the 1996 plan revision, and was instrumental in developing the priority concerns, assessments, goals, objectives and actions of this plan update.

### PURPOSE OF THE LOCAL WATER MANAGEMENT PLAN

The purpose of this updated Local Water Management Plan is:

- To identify existing and potential problems or opportunities for protection, management, and development of water resources and related land resources in the County.
- To develop and implement a plan of action to promote sound hydrologic management of water and land resources in the County.
- To work toward effective environmental protection and management in the County.

### DESCRIPTION OF PRIORITY CONCERNS AND SUMMARY OF GOALS AND ACTIONS

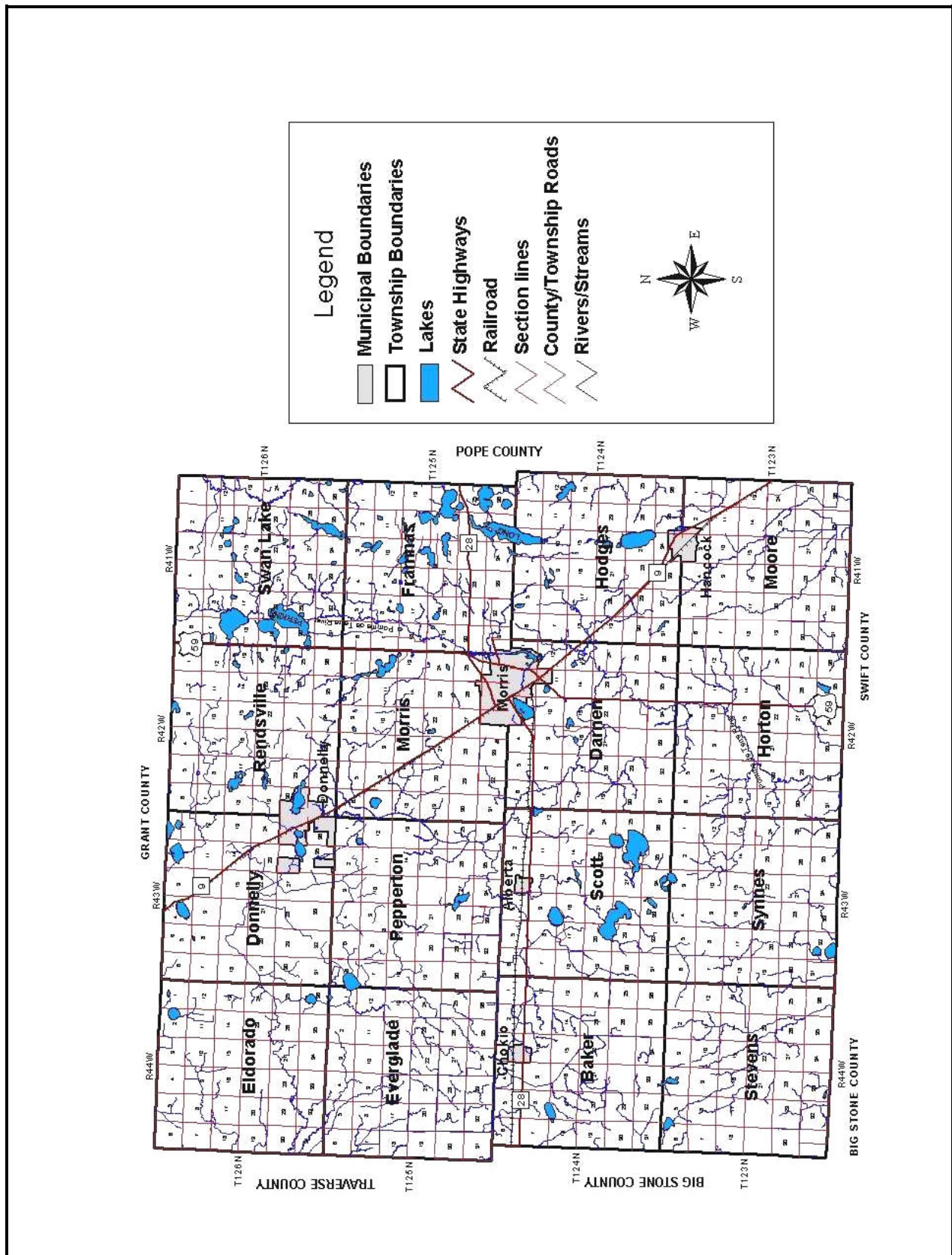
Through comments received from state and local agencies, a public input meeting, and a survey of perceived problems within the county, the following priority concerns were identified:

#### **PRIORITY CONCERN: County Administration/Enforcement of Individual Sewage Treatment Systems - adopt Minnesota Rules Chapter 7080.**

Stevens County has yet to formally adopt Minnesota Rules Chapter 7080. Local units of government are responsible for administering and enforcing a local septic system ordinance.

- **The goal of this priority concern is to protect surface and groundwater quality.**

## MAP-1: Overall Map of Stevens County



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- **Summary of actions include:**

- Draft an individual sewage treatment system (ISTS) ordinance for County Board consideration;
- Set a public hearing date, conduct the public hearing for draft ordinance and seek County Board adoption;
- Administer and enforce ISTS ordinance;
- Consider adding inspection triggers at property transfer;
- Develop strategies to identify ISTS imminent public health threats and develop information/education program for the general public for proper operation/maintenance of ISTS;
- Seek additional low interest loan funds; and
- Provide an annual report for the Natural Resource Block Grant requirements.

**Approximate cost:** \$6,000 – Program Adoption; and \$250,000 – ISTS Loan Program

**PRIORITY CONCERN: Groundwater/Rural Water/Wellhead Protection focusing on the City of Morris supplying rural water for the cities of Alberta and Chokio.**

The city of Alberta has high levels of natural occurring arsenic in their water supply and the city of Chokio is in need of upgrading their current water treatment system. Both of these communities lie west of Morris. The possibility of supplying water from the city of Morris is currently being discussed.

- **The goal of this priority concern is to provide a good quality water supply to County cities and rural residents.**

- **Summary of the actions include:**

- Complete rural water project with Morris and Alberta, develop an educational component on benefits of rural water for the entire county, conduct a survey on interest of rural water, and perform a feasibility study based on survey results;
- Participate on wellhead protection teams of local water suppliers;
- Create GIS maps identifying wellhead protection areas, target wellhead protection areas for best management practices, and provide educational components to city residents, farms and businesses regarding actions they can take to protect drinking water; and
- Conduct countywide well testing, continue cost-share to seal unused wells and encourage water conservation through use of low-pressure irrigation systems to conserve water in the County.

**Approximate Cost:** \$25,000

**PRIORITY CONCERN: Erosion and Sediment Control concentrating on identified areas of agricultural lands for gully erosion and concentrated flows.**

Since approximated 95 percent of the county land area is farmed or used for rotational grazing, soil erosion, sedimentation and surface water quality degradation are recognized issues.

- **The goal of this priority concern is to protect the County's soil resources and restore surface water quality.**

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- **Summary of the actions include:**

- Seek a 10% increase in crop residue based on tillage transect results and continue to conduct tillage transect survey annually;
- Continue to fund a Continuous Conservation Reserve Program (CCRP) position to promote and establish additional filter strips and wetland restorations along ditches and streams to capture sediment;
- Establish grass waterways, construct water and sediment control basins, establish field windbreaks and encourage use of rock inlet/french drains for field dewatering;
- Target acres for Conservation Reserve Enhancement Program (CREP) in the Mustinka River Watershed;
- Work with the Minnesota Pollution Control Agency (MPCA) on the Total Maximum Daily Loads (TMDL) impaired reach of the Pomme de Terre River and seek Clean Water Partnership (CWP) 319 grant funding to focus on reduction of non-point source loading;
- Promote nutrient management and target stream bank stabilization sites to reduce erosion;
- Assist feedlot operators with permitting, manure management, livestock exclusion, and in seeking financial and technical assistance through Environment Quality Incentive Program (EQIP); and
- Identify and encourage upgrades of failing septic systems and seek low interest loan funding annually.

**Approximate cost:** \$1,311,400

**PRIORITY CONCERN: Stormwater and Drainage Management focusing on wetland restorations and flood control.**

Stormwater and drainage management applies to agricultural and urbanized land uses that include quality and quantity considerations. Management includes activities within a watershed or region done to remedy existing problems and/or prevent occurrence of new problems.

- **The goal summary of this priority concern is to improve surface water management by decreasing runoff, flooding and erosion while maintaining the drainage systems.**

- **Summary of the actions include:**

- Assist the MPCA on identifying construction sites in need of a National Pollution Discharge Elimination System (NPDES) permit and promote the use of erosion and sediment control to reduce sediment and nutrients entering watercourses;
- Coordinate with the Bois de Sioux Watershed District to seek water retention/storage in the East Branch Twelve Mile Creek, work to resolve the Traverse/Stevens County line dispute and participate on project team in Stevens County portion of the Bois de Sioux;
- Work countywide in each watershed to implement best management practices to reduce flooding, erosion and sedimentation, and promote Wetland Reserve Program (WRP) and CCRP.
- Gather data for each drainage system and create a geographic information system (GIS) database for components of each system; and
- Provide education to landowners/operators on keeping buffer strips in place to protect the drainage ditch systems.

**Approximate cost:** \$3,010,000

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**PRIORITY CONCERN: Land Use/Development Issues - develop a Comprehensive Plan including updating the County Zoning Ordinance and Shoreland Standards.**

Stevens County needs a comprehensive plan to emphasize the importance of proper planning and ensure decisions are best for the citizens of the County as well as the environment. The County currently has a draft comprehensive plan dated in the early 1970's that was never adopted. The zoning ordinance was originally adopted in 1972 with a few minor amendments since that time. The zoning ordinance also contains outdated shoreland standards that need to be updated.

- **The goal of this priority concern is to prepare and adopt a county comprehensive plan.**
- **Summary of the actions include:**
  - Seek grant funding to assist in promotion and development of comprehensive plan;
  - Appoint a task force to undertake a strategy in developing the plan;
  - Develop a process to engage people to participate;
  - Establish an understanding of issues;
  - Identify needs and develop the vision, goals and policies;
  - Develop alternative strategies;
  - Account for strategy costs and benefits, and choose those that best fit;
  - Complete and adopt the plan;
  - Implement the plan; and
  - Incorporate revision of zoning ordinance and shoreland standards in the planning process.

**Approximate cost:** Unknown

**CONSISTENCY WITH OTHER PLANS**

Stevens County considered and examined several plans in the completion of this document. Plans reviewed include the Bois de Sioux Watershed District, Chippewa River Watershed, city ordinances for Chokio, neighboring county LWMP's and the wellhead protection plan for the city of Hancock. The LWMP update has utilized appropriate action items to support these plans, and is consistent with the data and goals presented therein.

**SUMMARY OF RECOMMENDED AMENDMENTS OF OTHER PLANS AND OFFICIAL CONTROLS**

The Stevens County LWMP does not have any recommended amendments to other plans or official controls.



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## CHAPTER 2: ASSESSMENT OF THE PRIORITY CONCERNS

This chapter will address the five priority concerns selected by the Stevens County Local Water Management Plan Task Force. Each assessment will examine why the particular concern is a priority and what risks the County faces if the concern is not addressed.

### **PRIORITY CONCERN ASSESSMENT: County Administration/Enforcement of Individual Sewage Treatment systems - adopt Minnesota Rules Chapter 7080.**

Individual sewage-treatment systems (ISTS), commonly known as “septic systems,” can provide a high degree of sewage treatment if they are properly designed, constructed and maintained. In a properly sited, installed and maintained ISTS, most of the pollutants will be treated within two to three feet below the drainfield. In Stevens County, it is estimated that approximately 50 percent of the rural residences have non-conforming septic systems. The potential health risks and water quality issues associated with these non-conforming systems are a major concern in the County.

Failing septic systems pose a health risk through the spread of hepatitis, dysentery, and other diseases that may be spread by bacteria, viruses, and parasites in wastewater. These disease-causing organisms called pathogens may make water unsafe for recreation. Flies and mosquitoes that are attracted to and breed in wet areas where wastewater reaches the surface may also spread disease.

Many of the synthetic cleaning products or other chemicals used around the house can be toxic to humans, pets, and wildlife. These products may reach the ground surface or end up in surface waters.

High nitrate levels in groundwater can result from inadequately treated wastewater. Excessive nitrate levels in drinking water can result in serious health problems for infants.

Inadequate treatment can also allow excess nutrients to reach lakes or streams, promoting algae growth. Algae blooms make lakes unsuitable for swimming and boating activities and can affect water quality for fish and wildlife habitat.

In 1994, legislation governing ISTS was signed into law, taking aim at the serious water pollution and health problems associated with the thousands of failing septic systems in the state. The law included requirements for minimum sewage-treatment standards, new construction, replacement of ISTS, disclosure of sewage system information to property buyers, and a mandatory licensing program for all ISTS professionals, including designers, site evaluators installers, inspectors and pumpers. The law also required all counties that did not adopt ordinances by May 7, 1994, or that did not have ordinances, to adopt ordinances that comply with ISTS rules by January 1, 1999.

A hearing was held on a draft ISTS ordinance for Stevens County on December 17, 1998 at the county board meeting. A few county residents were at the hearing to persuade the County Board

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not to adopt another mandated program. They expressed concern that mounds do not work and felt the ordinance should not be adopted. The County Board asked the Environmental Services Coordinator to contact the Minnesota Pollution Control Agency (MPCA) as to what the State would do if the county did not adopt an ordinance to implement Minn. Rules Chapter 7080. A letter from the MPCA stated it was unclear what actions would be taken in the unlikely event that a county deliberately violates Minnesota Statute. The county board elected to wait and see what ramifications the State would impose on the County.

In general, the County administers the 7080 Rules. Since the County's Zoning Ordinance does contain a section on sanitary provisions, and requires a building permit for bedroom additions, a permit/inspection program was developed. The sanitary section indicates that sewage systems constructed or maintained shall conform with regulations of Stevens County or the State of Minnesota. The zoning ordinance is more than 30 years old and is outdated by many land use issues that have developed over the years. The section also states the following:

Location and installation of individual sewage disposal systems and each part thereof shall be such that, with reasonable maintenance, it will function in a sanitary manner and will not create a nuisance or endanger the safety of any domestic water supply. In determining a suitable location for the system, consideration shall be given to the size and shape of the lot, slope of natural and finished grade, soil permeability, depth of ground water, geology, proximity to existing or future water supplies, accessibility for maintenance, and possible expansion of the system.

- All individual sewage disposal systems installed by the property owner must be inspected and approved by a licensed plumber
- All individual sewage disposal systems not owner-installed must be installed by a licensed plumber.

The current ISTS permit/inspection program follows the minimum requirements of Chapter 7080.0035 to 7080.315. These sections describe general requirements for local ordinances and a permit program/inspection program for ISTS. The Environmental Services Coordinator is licensed as a MPCA qualified employee to inspect ISTS. Anyone proposing a new, expanded, or replacement ISTS is required to have a plan designed by a MPCA licensed designer, have the system installed by a licensed installer and inspected by the Environmental Services Office. A homeowner is allowed to install their own system but only if they have a licensed design and the construction of the system is inspected by the Environmental Services Office. A Certificate of Compliance is issued to homeowners once the inspection is completed.

The MPCA has informed the County that they will be unable to recommend approval of the LWMP without adoption of Minn. Rules Chapter 7080. Thus, the County will adopt an ISTS ordinance that references the 7080 Rules.

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**PRIORITY CONCERN ASSESSMENT: Groundwater/Rural Water/Wellhead Protection focusing on the City of Morris supplying rural water for the cities of Alberta and Chokio.**

The City of Alberta initiated a meeting in January of 2004, to discuss the possibility of developing a regional water system to provide water for rural and municipal customers in Stevens County. Alberta's water supply has arsenic levels that exceed the new U.S. Environmental Protection Agency (EPA) maximum acceptable level in public drinking water systems at 10 parts per billion (ppb). That's approximately one drop of arsenic in 16,000 gallons of water. Public water systems must comply with the new EPA standard by January 2006, unless a temporary extension is granted.

The City of Chokio was also interested in the rural water project since their current water treatment plant is need of repair. Although, Chokio's water quality currently meets all of the Primary Standards of the Safe Drinking Water Act.

At subsequent meetings attended by representatives of Alberta, Chokio and the City of Morris, it was decided to commission a study of the cost and feasibility of constructing facilities to provide water from Morris to both Alberta and Chokio. If interest were apparent on the part of rural customers along the pipeline route, rural needs would be considered. DeWild Grant Reckert and Associates (DGR) were hired by the three communities to prepare a study as the first phase in considering the cost and feasibility the facilities needed to serve just Alberta and Chokio.

As of the date of this plan update, the City of Chokio has decided to construct a new water treatment plant to serve their residents. Although it appears Chokio will not be part of the rural water project, the following water supply study information is included for the City. Following is information that was provided in the DGR Water Study.

**Existing Supply Facilities**

City of Alberta

The water supply study indicates Alberta's water supply is secured from two wells. One was constructed in 1951 and the other in 1965. Although the wells have been able to provide the needs of Alberta, both wells have been in service for many years and there is some concern about their continued use and reliability. The City does not provide any form of treatment. Water is pumped from the wells into a 7,500 gallon hydropneumatic tank and delivered into the distribution system from the tank.

Water quality information indicates total hardness of 740 m/L (43 grains per gallon), iron of 2.5 parts per million and manganese of 0.16. Water of this quality would be considered very hard and both iron and manganese levels are well above the Safe Drinking Water Act Secondary Standards for iron and manganese. Sulfates are 710 parts per million, and levels this high are often problematic for those not used to drinking the water. Sulfates tend to impart a bitter taste and if the mains or reservoirs are not properly flushed, odor problems can develop. The arsenic level in the water supply is 14 micrograms per liter, which is over the Primary Standard that was recently lowered to 10 micrograms per liter. As mentioned above, Alberta will need to comply with the new standard by January of 2006.

Arsenic occurs naturally in our environment. It is part of the earth's crust. As a natural

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component of underground rock and soil, arsenic works its way into groundwater. As a result, municipalities and other public water suppliers that get water from underground sources may draw water from their wells that contain small amounts of arsenic. Repeated exposures to low levels may result in increased risk of adverse health effects, such as skin cancer or disorders of the circulatory, nervous, and digestive systems.

In 1998, Stevens County was part of a nine county Minnesota Arsenic Study (MARS) in west-central Minnesota. Other counties included Big Stone, Clay, Douglas, Grant, Otter Tail, Swift, Traverse, and Wilkin. The counties in the study were already known to have higher than average arsenic levels. Map-2 illustrates arsenic concentrations in Minnesota.

The MARS showed that most, if not all, arsenic in Minnesota's drinking water comes from geologic sources. In the study area, the arsenic probably comes from shale brought into Minnesota by the many glaciers that crossed the state. Each glacier deposited layers of clay, sand and gravel. Some of these layers have large amounts of shale. The wells that are in or just below these high-shale layers often have high arsenic levels in their water. Of the wells sampled, about 65 percent had arsenic levels below 20 ppb. About 25 percent were between 20 and 50 ppb, and less than 10 percent were above 50 ppb, the EPA's former maximum level.

#### City of Chokio

Chokio receives its water supply through two wells. One was constructed in 1959 and the other in 1969. Treatment for the removal of iron and manganese is provided by a steel Tonka treatment unit that provides spray aeration, detention, and gravity filtration. A treatment plant was built in 1967 and refurbished in 1983. The treatment plant has provided adequate iron and manganese removal, however, its increasing age and condition of the filter media and under-drain system are deteriorating.

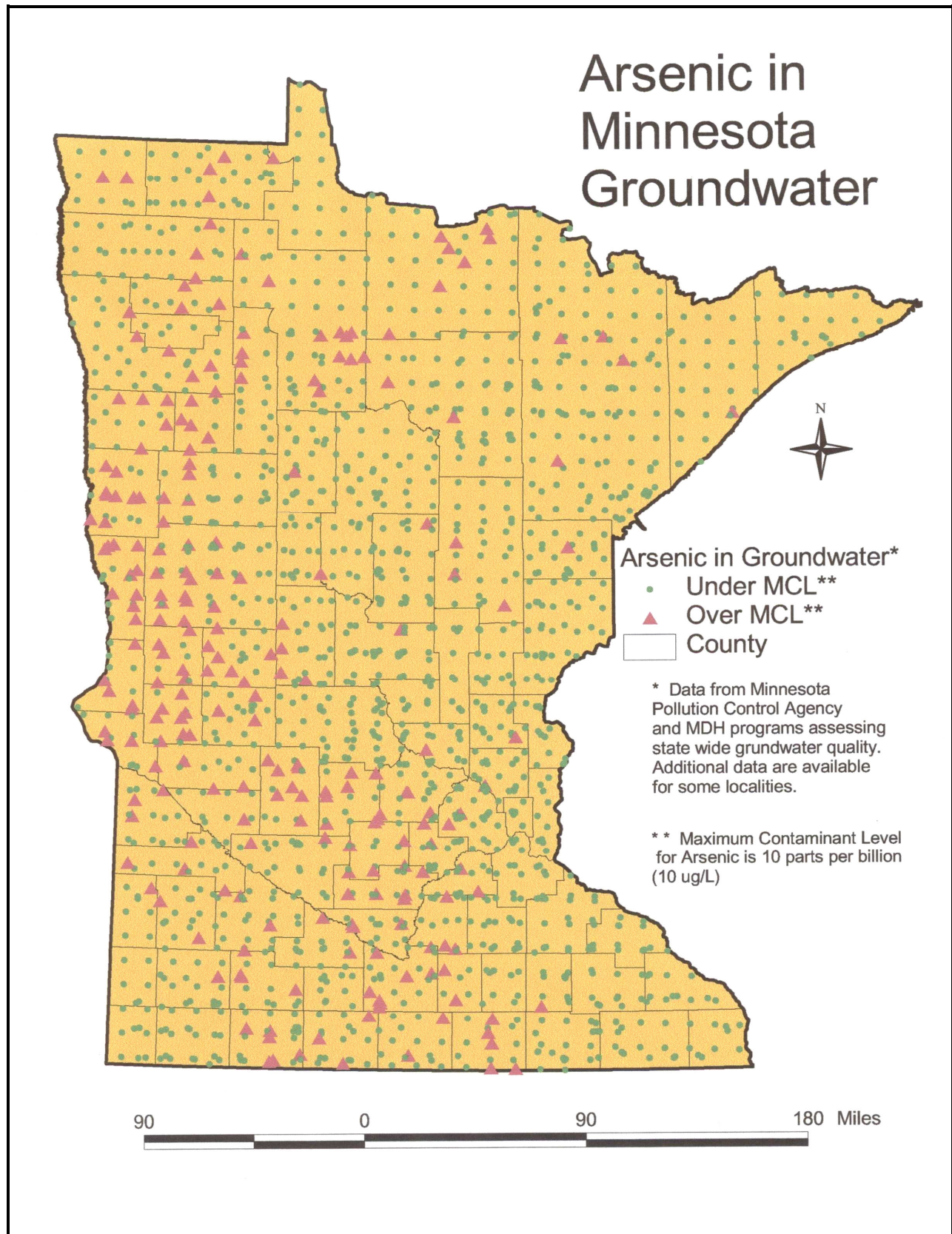
The hardness of Chokio's water is 753 parts per million (44 grains per gallon), sulfates are 827 parts per million, iron and manganese before treatment are 3.1 parts per million and 0.1 parts per million respectively. The water in Chokio is considered very hard and the sulfate levels troublesome to individuals not used to drinking the water. The City currently meets all of the Primary Standards of the Safe Drinking Water Act.

The primary concern relative to Chokio's water supply is the age and condition of the steel gravity filter unit. Since its refurbishment in 1983, no work has been done on the filter. Steel filters such as this need periodic recoating to maintain their integrity and the unit is well beyond the time for such work. The filter manufacturer observed the unit and concluded that it could not be cost effectively refurbished and strongly recommended replacement.

#### City of Morris

Morris obtains its water supply from four shallow wells finished in the alluvium of the Pomme de Terre River. The wells are designated No. 3, No. 4, No. 5, and No. 6. Exploratory test drilling has identified a location for a future well No. 7. Well No. 3 was constructed in 1954 and is 75 feet deep and is equipped with a pump capable of delivering 400 gallons per minute (gpm). Well No. 4 was also constructed in 1954, is 65 feet deep and can deliver 400 gpm. Well No. 5 was constructed in 1978 and is 78 feet deep with a 300 gpm pump. Well No. 6 was built in 1980, is 72 feet deep and has a 300 gpm pump. Total design capacity is therefore, 1,400 gpm and Firm

**Map-2: Arsenic Concentrations in Minnesota Groundwater**



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Capacity (capacity with the largest well out of services) is 1,000 gpm. Currently the wells are in operation with the discharge line throttled, and have a combined delivery rate of about 930 gpm.

Treatment is provided in a plant designed to remove iron and manganese. The plant was constructed in 1975 and in 1998 filter media was replaced and an air wash system was installed. The plant includes an aluminum forced draft aerator, concrete detention tank, and two concrete gravity filters. From the filters, water is delivered into a concrete clear well below the high service pumps and a circular, below grade, concrete ground storage reservoir adjacent to the plant. High service pumps deliver water from the plant into the City's storage and distribution system. The plant was designed to treat water at a maximum rate of 1,660 gpm. Thus, in a 20 hour day almost 2 million gallons can be treated.

Water from Morris meets all of the Primary Drinking Water Standards. Since the supply is secured from shallow wells, total dissolved solids, sulfates, and other constituents are considerable lower than those in the ground water available to either Alberta or Chokio.

### **Projected Water Needs**

#### Alberta

The 2000 census indicates a population of 142 and is expected to remain relatively stable. The population for Stevens County also shows a stable or downward trend. Both water use and population has remained stable with the greatest variation in water use likely due to climatic conditions resulting in more or less water being used for lawn sprinkling and watering of trees, shrubs, and gardens. Because water sales within Alberta are not metered, there is little motivation to conserve water. If new water supply facilities are built, however, residential meters will be required and it is reasonable to assume that overall water usage will decline as residents become aware of their own water use and the corresponding cost associated with higher use.

If Alberta's water supply is obtained from the City of Morris by means of a pipeline built from Morris to Alberta, the delivery facilities will be sized to provide the current water demands for the City. It is anticipated that the City's existing hydropneumatic tank will be abandoned and the new facilities will need to meet the instantaneous peak demand requirements as they occur with the community.

#### Chokio

The 2000 census indicated Chokio had a population of 443. The population and water use in Chokio has remained relatively stable and is not expected to change significantly in the future. Water used by residential customers is metered and would not expect a decline in usage if a Morris supply project is built.

#### Morris

Current capacity available from the four wells in operation for the City of Morris is less than the 2 million gallons per 20-hour day that can be treated at the plant. The current total design capacity of the wells is 1400 gpm, which would produce 1,680,000 gallons in a 20-hour period. Although this would be adequate to meet the need of Morris' historic peak day plus the water needs of Alberta and Chokio, good engineering design practice is that the projected peak day needs can be met with the largest well out of service (this is referred to Firm capacity). The

current firm design capacity of Morris' well field is 1,000 gpm, which would result in 1.2 million gallons in a 20-hour period and would be inadequate to meet the projected needs of the City. Thus, Morris should add another well that is similar in capacity to the existing wells (300-400 gpm), Firm Capacity would be increased to at least 1300 gpm which would allow a 20-hour production rate of 1,560,000 gallons. This would be adequate to meet the historic peak day needs of Morris plus a concurrent peak day demand by Alberta and Chokio.

The preliminary water study indicates that Morris has adequate water supply capacity available or can easily develop more to consider selling water to Alberta and Chokio. A consequence of a commitment to sell water by Morris is that the available water treatment plant and well field capacity will be reduced and the City will have less capacity for future growth. However, the needs of Chokio and Alberta together are not overwhelming and would increase the water Morris produces by approximately 16 percent. Another consideration in evaluating a potential sale to Alberta and Chokio is the feasibility of expanding the water treatment plant capacity and additional wells. The water treatment plant currently appears to have adequate property adjacent to it to facilitate and expansion, if it is needed in the future. The City's well field is located in the alluvium associated with the Pomme de Terre River. From previous general geologic mapping of the Pomme de Terre River Watershed by the U.S. Geological Survey, alluvial sands and gravels occur throughout the river valley in the vicinity of Morris. It therefore is reasonable to assume that additional wells can be developed to provide the future needs of the City.

Map-3 shows the proposed pipeline route from Morris to Alberta of a 6 inch gravity main line to deliver water needs to Alberta.

An estimated construction cost for the facilities is provided in Table-1. The construction cost is based on unit prices for similar projects bid in the region within the past year. Actual costs will be based on competitive bids and may vary significantly from those provided in the estimate.

**Table-1**

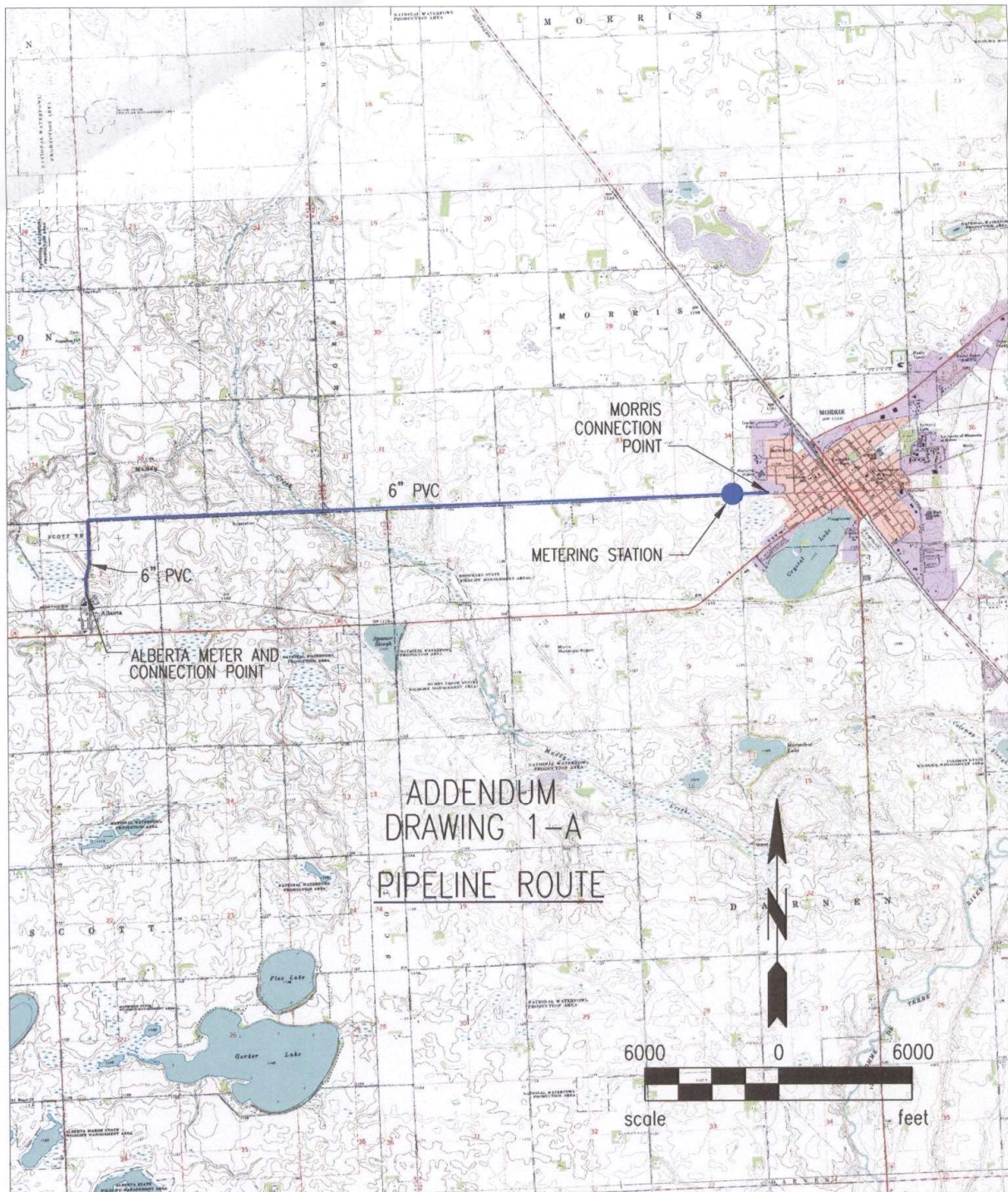
<b>Estimated Construction Costs For Rural Water to Alberta &amp; Chokio</b>					
<b>Item</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Total Cost</b>	<b>Alberta 27%</b>	<b>Chokio 73%</b>
6" PVC Pipe (feet)	68,400	4.75	\$324,900	\$ 88,322	\$236,578
Valves, Crossings, and Misc.		30%	\$ 97,470	\$ 26,479	\$ 70,973
City Meter Pits	2	\$ 20,000	\$ 40,000	\$ 20,000	\$ 20,000
Pumping Station	1	\$110,000	\$110,000	\$ 29,903	\$ 80,097
Electrical & Controls	Job	\$ 40,000	\$ 40,000	\$ 10,874	\$ 29,126
Contingencies		15%	\$ 91,856	\$ 24,970	\$ 66,885
<b>Total Estimated Construction Cost</b>			\$704,226	\$200,566	\$503,659
<b>Other Costs</b>		25%	\$176,057	\$ 50,142	\$125,915
<b>Total Estimated Project Cost</b>			\$880,283	\$250,708	\$629,574

### **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



### Map-3: Proposed Pipeline Route from Morris to Alberta





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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.

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. Table-2 below illustrates the status of the cities in Stevens County for developing a wellhead protection plan (WHP):

**Table-2**

<b>City WHP Status for Stevens County</b>	
<b>City</b>	<b>Status of WHP</b>
Hancock	Completed in 2002.
Morris	In the development stages. Expected completion date 2005.
Donnelly	Will be required as time permits
Chokio	Will be required as time permits.
Alberta	Connecting to City of Morris water supply system in 2005.

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 non-complying sources located on their property; and
- 3.) Report to the MDH other violations to the isolation distance, or ask a local governmental unit to regulate these sources.

To protect existing groundwater quality, the County needs to continue to implement existing land use controls, such as zoning and ISTS ordinances. The Water Plan has also identified in the Goals, Objectives and Actions section of this plan update 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 percent (\$300 maximum) of sealing unused wells, targeting sealing unused wells in wellhead protection areas and other sensitive areas (i.e., flood plains, sensitive groundwater recharge areas, etc.).

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**PRIORITY CONCERN ASSESSMENT: Erosion and Sediment Control concentrating on identified areas of agricultural lands for gully erosion and concentrated flows.**

Erosion and sedimentation is the process by which soil is deposited elsewhere on the land surface. It occurs when soil is displaced by wind or water erosion and can originate from cropland fields, construction sites, farmsteads, roads, and streambanks. Sedimentation in rivers and streams can have a negative impact on water quality and quantity. As sediment is deposited into watercourses, water levels raise and increase flood hazards. The effects on aquatic life are also significant. Fewer plants and animals thrive in muddy water because of reduced oxygen and increased concentrations of nutrients. In addition, many plants, animals, and animal nesting areas get buried in sediment. Sedimentation influences lake water quality and quantity. As sediment settles on the bottom of the lake, the lake becomes shallow. This process is a natural part of lake aging, governed by gravity and the forces of rain and wind.

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

**High Priority Erosion Problems** – Are 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 local water plan or the conservation district's comprehensive plan.

**High Priority Water Quality Problems** – Are areas where sediment, nutrients, chemicals, or other pollutants discharge to the Department of Natural Resources designated protected waters or to any high priority waters as identified in the 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.

Erosion and sedimentation on agricultural land, primarily gully erosion and concentrated flow, are present throughout Stevens County. Hot spots of critical sedimentation occur along shoreland adjacent to lakes and rivers in the County. Sediment from field runoff, drainage systems that empty directly into lakes and tributaries draining areas of critical erosion is the primary problem. Wind erosion that dumps soil into water bodies is difficult to account for, but is considered a significant problem in the flatter parts of the County. Working to solve critical erosion problems for both wind and water would go a long way toward solving critical sedimentation problems.

The Stevens SWCD/NRCS targets critical areas and highly erosive areas in the County for many of their programs. Taking land out of production through Reinvest In Minnesota (RIM), Conservation Reserve Program (CRP), Wetland Reserve Program (WRP) and Conservation Reserve Enhancement Program (CREP) has been quite successful in reducing erosion potential in those areas. These filter strips act as buffers reducing sediment, nutrients, and chemical residue from reaching surface waters and groundwater recharge areas. Grassed waterways, and sediment retention structures also improve the quality and quantity of runoff by allowing sediment to settle out, and nutrients to be filtered before reaching surface water.

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It is estimated that Stevens County has approximately 21,462 cultivated acres in the 100-year floodplain and/or 100 foot riparian zone. From current data reflecting Stevens County enrollment in CRP, CREP, RIM, and WRP, it is estimated that 4,800 of these acres are located in a riparian area. Thus, approximately 22 percent of the cultivated acres in the 100-year flood plain or 100 foot riparian zone are currently protected in the County. See Appendix B for a conservation lands summary and riparian land use in Minnesota.

Following is an assessment by major watershed on the effects of land use practices on quantity and quality of sediment runoff. The Pomme de Terre, Chippewa and Upper Minnesota Watersheds are in the Minnesota River Watershed and the Mustinka is in the Red River of the North Watershed. Map-4 illustrates the major/minor watersheds in Stevens County.

### **Pomme de Terre River Watershed**

The Pomme de Terre River Watershed (approximately 60% of the County) contains nearly level to gently rolling hills with slopes generally of 2-6 percent, except for the valley walls of the Pomme de Terre River, where slopes exceeding 12 percent may be found. These soils were developed in the outwash sands and gravels and are highly susceptible to wind and water erosion if not protected by vegetation or crop residues. Since the land use is primarily agricultural, slight to high water and wind erosion potentials exist across the watershed. The watershed experiences occasional flooding during major storm events and spring snowmelt. Eroding and muddy banks exist with little or no buffer strip along streams and county ditches. Best management practices such as conservation tillage, filter strips, contour strips, diversions, waterways, field windbreaks, and water and sedimentation basins should be used when farming in this area to reduce soil and wind erosion into the river and lakes.

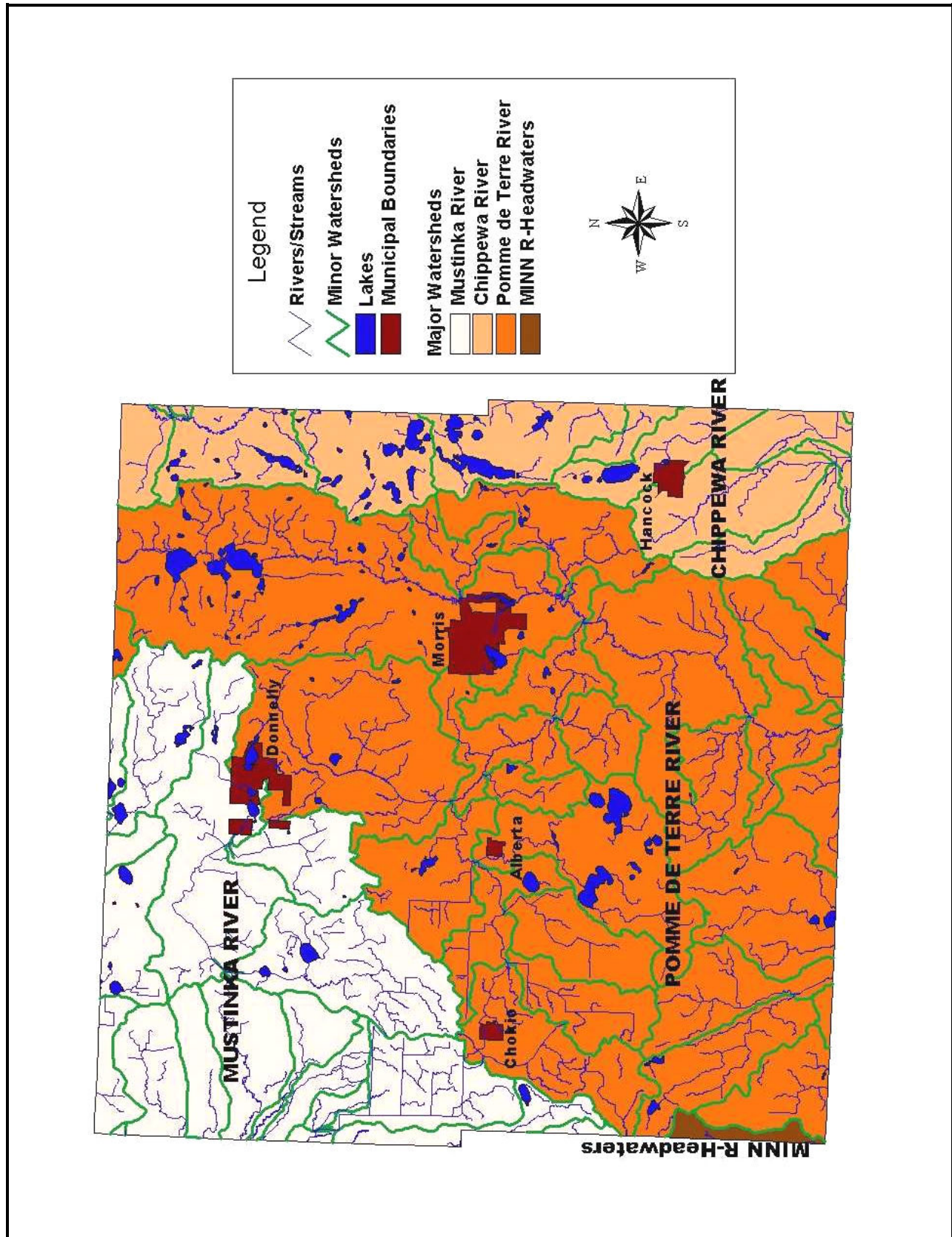
Muddy Creek is a tributary of the Pomme de Terre River. This sub-watershed begins in section 14 of Pepperton Township approximately 3 miles north of the city of Alberta. It drains southeasterly for approximately 10 miles until discharging into the Pomme de Terre River in section 23 of Darnen Township. This is approximately 3 miles south of the city of Morris. Approximately 144 square miles of mostly agricultural land is drained through this system and has been identified as an area contributing nutrient and sediment loading to the Pomme de Terre River. Map-5 depicts the Muddy Creek Watershed in the County.

Surface water quality monitoring conducted from 1994 to 1996 indicates that sedimentation and nutrients attached to the sediment particles from the Muddy Creek sub-watershed is a major contributor to water quality degradation to the lower portion of the Pomme de Terre River. The Pomme de Terre River is on the impaired waters list from Muddy Creek to Marsh Lake Dam in Swift County. Erosion and sedimentation concerns apply to all watersheds in Stevens County but the primary area of concern should be the Muddy Creek Watershed and efforts for water quality improvement needs to be targeted in this area. Projects such as filter strips, wetland restorations, feedlot upgrades, nutrient management and septic system upgrades need to be promoted. Map-6 shows impaired surface waters in Minnesota.

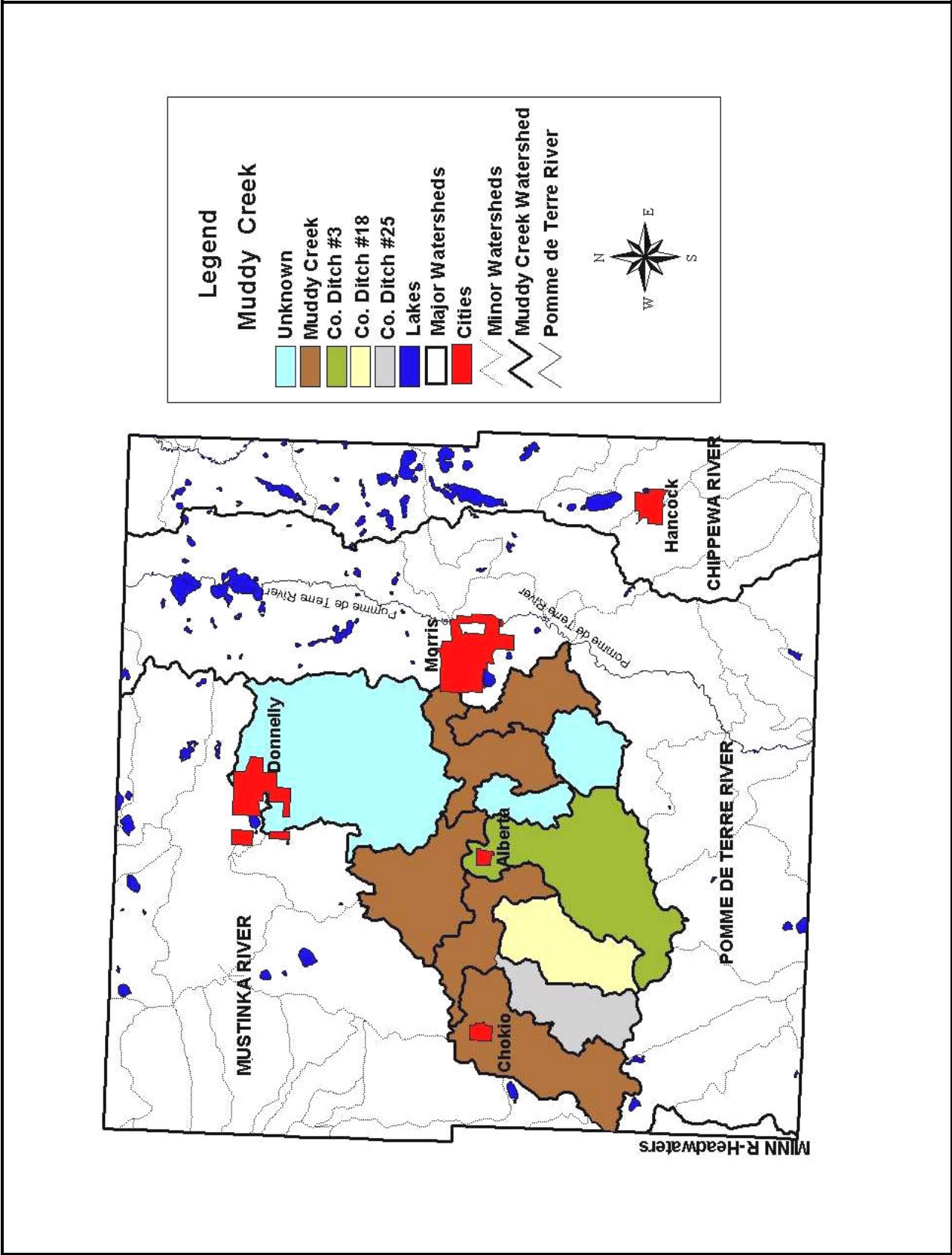
### **Chippewa River Watershed**

The Chippewa River Watershed (approximately 14% of the eastern portion of the County) is the hilliest part of the County, with slopes ranging from 2 to over 12 percent. Soils are generally coarser, and are well drained with medium infiltration rates. Water erosion is the most severe in this region of the County. Best management practices such as conservation tillage, contour

**Map-4: Major & Minor Watersheds In Stevens County**

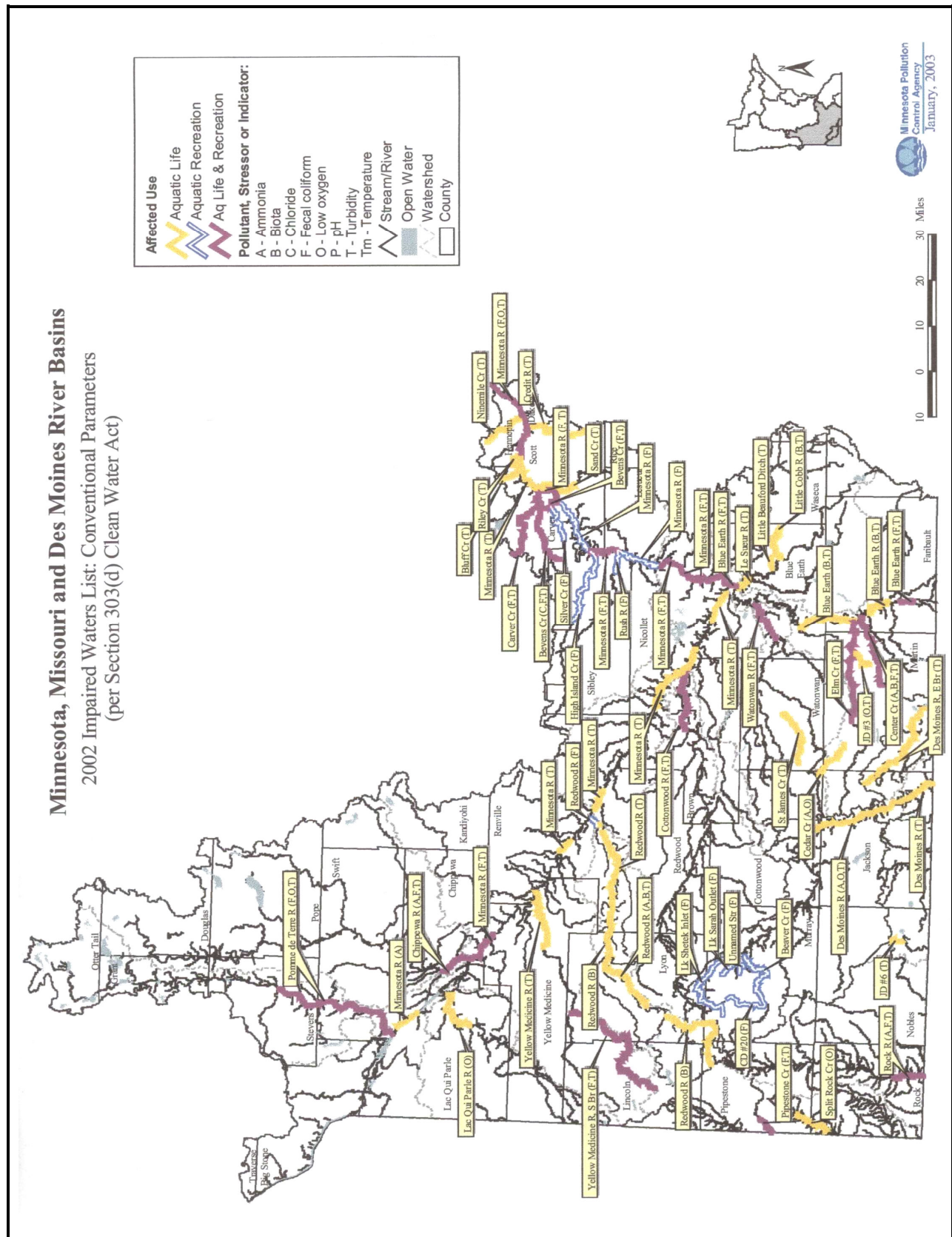


Map-5: Muddy Creek Watershed





## Map-6: Impaired Surface Waters in Minnesota



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farming, diversions, waterways, and water and sediment control basins should be use as part of farming practices.

#### Priority Management Areas

According to the Chippewa River Watershed Plan, the Chippewa River carries high sediment and phosphorus loads during the growing season. This is predominantly the result of rainfall-driven polluted runoff that occurs throughout most of the watershed. The lower reach, which is in the very southeast portion of the County, is affected by bacteria, exceeding the fecal coliform standard, and is subject to a total maximum daily load study in the next few years.

The Chippewa River Watershed Plan indicates there are several tributaries comprised in the Watershed, including Shakopee Creek, the East Branch Chippewa River, the Little Chippewa River, Dry Weather Creek, Spring Creek, Cottonwood Creek, and Lines Creek. In addition the main stem is separated into an Upper Chippewa (main stem) and the Lower Main Stem Chippewa. For purposes of loading concentrations the watershed was broken down into six sub-basins for priority management areas. These six priority management areas are depicted on Map-7. Because of the immense size of the watershed, the decision was made to apply for implementation funds for each priority management area separately over the 2001 to 2008 years. Table-3 below indicates the schedule for funding (Steven County sub-basins are highlighted):

**Table-3**

<b>Sub-Basins of the Chippewa River Watershed</b>	<b>Target Year</b>
Shakopee Creek and Shakopee Headwaters	2001-2004
East Branch Chippewa River	2002-2005
<b>Lower Main Stem Chippewa River</b>	<b>2003-2006</b>
<b>Little Chippewa River</b>	<b>2004-2007</b>
Dry Weather Creek, Spring Creek, Lines Creek, and Cotton wood Creek	2005-2008
<b>Upper Main Stem Chippewa River</b>	<b>2006-2009?</b>

#### **Minnesota River Watershed (headwaters)**

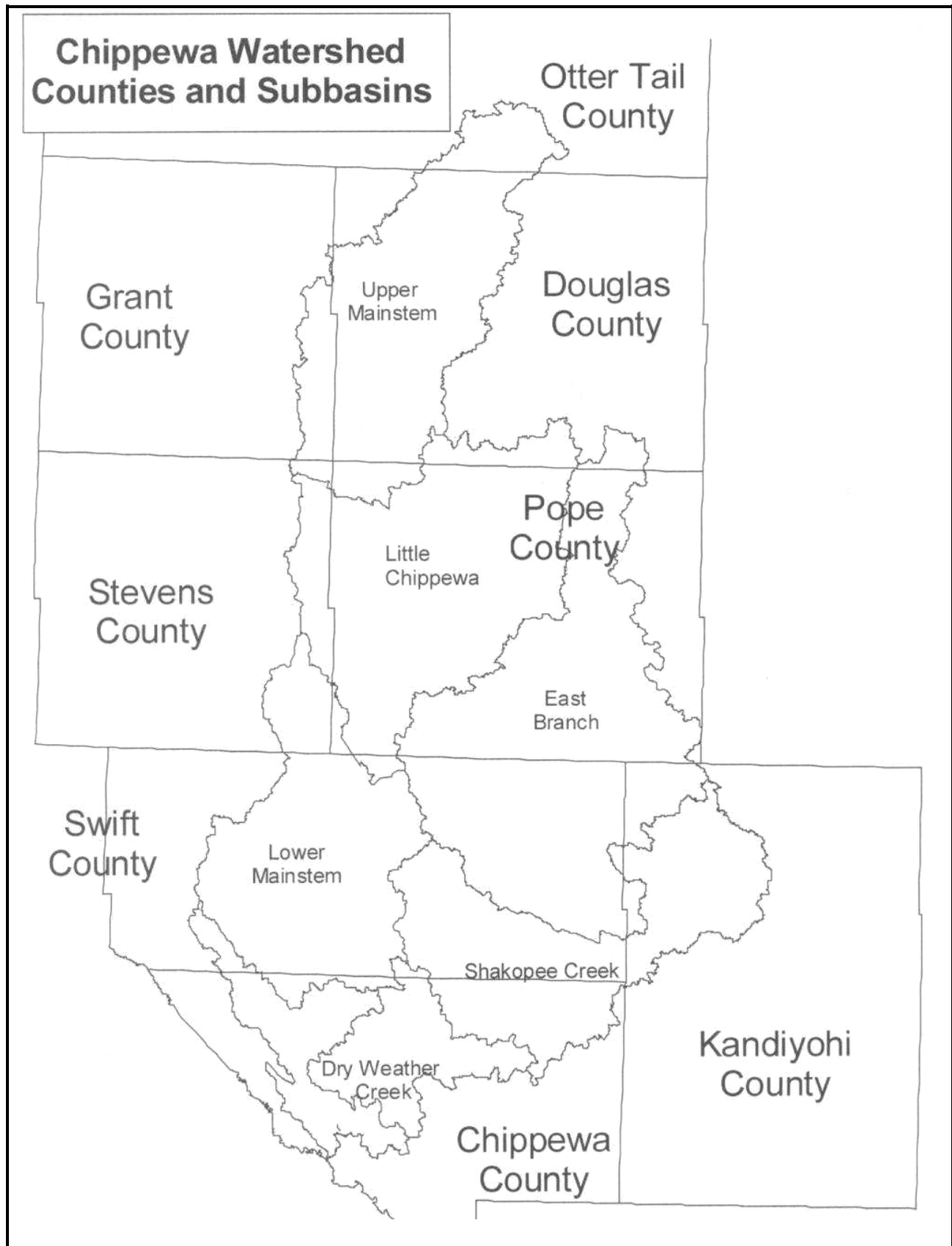
Only a small portion of this watershed (approximately .54% of the County or 1,740 acres) is within the southwest portion of Stevens County. This area is nearly level to hilly, with moderately well drained to very poorly drained soils that are clay throughout. Wind erosion is a problem when strong winds blow in the winter and early in the spring, particularly if plowing is done in the fall and all crop residues are turned under. Conservation tillage, and field windbreaks should be promoted in this watershed.

#### **Mustinka River Watershed**

The Mustinka River Watershed (approximately 25% of the County) in the northwest portion of the County, is mostly level, with slopes of 0-2 percent. Soils are poorly drained and have very slow to slow infiltration rates. These soils retain moisture well during periods of drought. Land use is primarily agriculture in this watershed. Wind erosion is most prevalent in this flat region of the County. Landowners must use best management practices to reduce soil erosion such as field windbreaks, and conservation tillage practices.

The Bois de Sioux Watershed District was established in March of 1988 to comprehensively manage water resources in the Mustinka Watershed. The Bois de Sioux Watershed Plan

**Map-7: Sub-Basins of the Chippewa River Watershed**





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indicates erosion due to storm runoff is another serious problem in the watershed. During periods of high runoff, channel erosion causes bank stabilization concerns. The severity depends on the land cover, duration, and volume of water. Erosion is often worse in the spring due to the lack of vegetative cover on the fields. Efforts to promote agricultural best management practices to improve crop residue, tillage and cover, and reduce soil erosion should be encouraged.

The landscape throughout the watershed has been extensively altered, primarily to improve agricultural production. While the agricultural land has been highly productive, much of the natural landscape values once present in the watershed have been lost. Most of the original landscape prairie landscape has been cultivated and many of the original wetlands have been drained. Many of the original streams have been channelized and riparian corridors have been diminished or lost. In addition to maintaining soil productivity and minimizing crop damage from blowing soil, control of wind erosion and the resulting sediment, has the added benefit of minimizing the clogging of drainage and road ditches. Installation of field windbreaks, farmstead shelterbelts and retired riparian croplands should be encouraged to minimize wind and soil erosion.

### **Tillage Transect Survey**

A roadside survey of crop residue remaining on field surfaces after planting has been conducted since 1998. The purpose of the survey is to determine the extent of farmers' adoption of crop residue management, and important agricultural best management practices that help reduce soil erosion and sedimentation of surface water (providing baseline information that can be used to track progress in sediment reduction within Stevens County). A total of 222 points are observed when the transect is driven, with data being recorded as observed in the fields on each side of the road (444 overall points). Plans are to continue periodically with this transect survey for observation purposes. Table-4 below illustrates the results of the transect surveys for the years of 1998 to 2002. The data from these five years document that the five-year average reflects 51 percent of the fields meeting residue targets.

**Table-4**

<b>Stevens County Tillage Transect Survey Results (1998-2002)</b>				
Residue Trend Analysis: Percent of Corn and Soybean Fields Meeting Residue Targets				
2002	2001	2000	1999	1998
63%	55%	46%	60%	32%

### **Impaired Waters - Total Maximum Daily Load (TMDL)**

Impaired waters are those streams, rivers and lakes that currently do not meet their designated use and associated water quality standards. During the 1970's, each river, stream and lake in Minnesota was assigned a designated use. For each water body, the standards define the maximum amounts of specific pollutants that may be present in a water body and not adversely affect a particular designated use. There are seven classes of designated uses, such as aquatic life, recreation, drinking water, agriculture, wildlife and other uses. Under Section 303 of the 1972 Clean Water Act, territories, and authorized tribes are required to assess their waters and develop lists of impaired waters. The law requires the development of the TMDL for these waters.

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The federal Clean Water Act requires the MPCA to list the water as impaired during a formal listing process and conduct a TMDL study for each pollutant that causes a water body to fail to meet its designated use and associated state water quality standards.

The TMDL study is a written plan that analyzes the problem and determines how water quality standards will be attained. A TMDL study identifies both point and non-point sources of each pollutant that fails to meet water quality standards. Rivers and streams may have several TMDL's, one for each pollutant. A TMDL is a calculation of the maximum amount of pollutant that a water body can receive while still meeting water quality standards and/or designated uses. It is the sum of the loads of a single pollutant from all contributing point and non-point sources. Additional information on Impaired Waters and TMDLs is located at the following website: [www.pca.state.mn.us/water/tmdl.html](http://www.pca.state.mn.us/water/tmdl.html)

### **Priority Concern Area**

A Pomme de Terre River Watershed Association (Association) was formed in 1981 to improve water quality and reduce flooding in the Watershed. The Association is made up of local elected officials who are part of a Joint Powers Board Agreement. County Commissioners and Soil and Water Conservation District Supervisors from Otter Tail, Grant, Douglas, Swift, Big Stone and Stevens counties are representative members of the Joint Powers Board. There is also a Technical Committee comprised of local technical experts from the six county SWCD/water plans, a representative from BWSR, DNR Fisheries, MPCA and Wesmin RC&D.

Since the MPCA's list of impaired (or contaminated) waters includes a reach of the Pomme de Terre River from Muddy Creek to the Marsh Lake Dam in Swift County, the Association is interested in working with the MPCA to get the reach of waters off of the impaired waters listing. Table-5 below identifies the year the TMDL was listed, assessment ID number, affected use, pollutant or stressor and the estimated target start and completion date for the necessary TMDL study.

**Table-5**

<b>MPCA TMDL List For Stevens County</b>					
<b>Name</b>	<b>Year Listed</b>	<b>Assessment ID</b>	<b>Affected Use</b>	<b>Pollutant or Stressor</b>	<b>Target Start/Completion Date</b>
PdT River; Muddy Cr to Mn. R. (Marsh Lk Dam)	1994	07020002-501	Aquatic Recreation	Fecal Coliform	2002/2008
PdT River; Muddy Cr to Mn. R. (Marsh Lk Dam)	1994	07020002-501	Aquatic Life	Low Oxygen <sup>2,5</sup>	2002/2008
PdT River; Muddy Cr to Mn. R. (Marsh Lk Dam)	2002	07020002-501	Aquatic Life	Turbidity	2002/2008

In October of 2004, the Association submitted a Clean Water Partnership 319 grant application to the MPCA to focus on the reduction of non-point source loading of the impaired reach of the river. Grant funding would provide additional financial incentive to existing Federal, State and local cost-share funding programs to promote and install wetland restorations, buffer strips, livestock exclusions from water and low interest loans for septic system upgrades within the Muddy Creek Watershed. Other components of the grant application include water monitoring

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of different reaches of the Creek (as well as upstream/downstream of the Pomme de Terre River), educational components and demonstrations of water quality improvement projects.

The impaired stretch of the Pomme de Terre River has been identified for the pollutants of turbidity, low oxygen and fecal coliform. A brief discussion of each of these pollutants are listed below:

**Turbidity** – Turbidity in water is caused by suspended soil particles, algae, etc., that scatter light in the water column making the water appear cloudy. Excess turbidity can significantly degrade the aesthetic qualities of water bodies. People are less likely to recreate in waters degraded by excess turbidity. Turbidity values that exceed the standard can harm aquatic life. Aquatic organisms may have trouble finding food, gill function may be affected, and spawning beds may be covered.

**Low Dissolved Oxygen** – Dissolved oxygen (DO) is required for essentially all aquatic organisms to live. DO is not a toxicant, and in general, the more DO in the water, up to about 110 percent of saturation, the better, as far as aquatic organisms are concerned. If DO drops below acceptable levels, desirable aquatic organisms such as fish can be lost or harmed.

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

Stevens County intends to place a high priority on addressing impaired waters. As discussed previously in this assessment, the Muddy Creek sub-watershed has been identified as a targeted area for implementation activities through this water plan update. Recent efforts to seek accelerated funding for BMP application, increased monitoring opportunities and educational efforts (319 application) reflect this priority.

The County will work with the MPCA to implement a TMDL plan on this stretch of the Pomme de Terre River and any other reaches that may occur in the future. Lead responsibility for these implementation steps are outlined in Chapter 3. Basic steps include:

- facilitation and scoping
- intense monitoring/problem investigation
- TMDL development and project management
- implementation plan development
- post monitoring & reporting

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## Septic Systems and Feedlots – General Information

### Septic Systems

As indicated above, failing septic systems and manure runoff of feedlots can potentially be sources of fecal coliform bacteria. For a more in-depth assessment of septic systems in Stevens County, refer back to the previous Chapter 2, Priority Concern Assessment: County Administration/Enforcement of Individual Sewage Treatment systems - adopt Minnesota Rules Chapter 7080.

### Feedlots

The Minnesota Pollution Control Agency (MPCA) regulates the collection, transportation, storage, processing and disposal of animal manure. The Feedlot Program implements rules governing these activities, and provides assistance to counties and the livestock industry. The feedlot rules apply to all aspects of livestock waste management including the location, design, construction, operation and management of feedlots and manure handling facilities.

In October 2000, a major revision of the feedlot rule (Minnesota Rules, Chapter 7020) went into effect. In the more than the twenty years since the last revision, much has changed in the livestock industry. Production techniques and practices have changed dramatically. There have been new discoveries and understandings regarding agriculture and the environment. The MPCA and its partner counties have also gained much experience administering the feedlot program. The MPCA's goals for the new rules are to:

- focus on animal feedlots and manure storage areas that have the greatest potential for environmental impact;
- expand the role of delegated counties in the feedlot program;
- increase agency and delegated-county staff field presence; and
- achieve the desired environmental outcomes with existing agency and county resources.

Through a cooperative arrangement between the MPCA and county governments, 55 counties have chosen to be a delegated county to administrate the feedlot program. County feedlot programs have responsibility for implementing state feedlot regulations for facilities with fewer than 1,000 animal units (AU). These responsibilities include:

- registration
- permitting
- inspections
- education and assistance
- complaint follow-up

The revised feedlot rule required all feedlots with more than 50 animal units (10 in shoreland areas) to register by January 2002. About 29,000 feedlots have been registered in Minnesota. Permits authorize larger feedlots to operate under specific conditions in order to comply with the federal Clean Water Act. State and federal regulations require all feedlot owners with 1,000 or more animal units to have a National Pollutant Discharge Elimination System (NPDES) permit and/or a State Disposal System permit. The MPCA developed a General NPDES permit. This permit provides one public comment period to address many facilities rather than each facility being placed on public notice separately. Use of the general permit reduced the amount of time needed to issue NPDES permits to producers. Delegated counties issue permits for operations

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under 1,000 animal units. The MPCA issues permits in non-delegated counties and all permits over 1,000 animal units. For more information on feedlot regulations in Minnesota, visit the MPCA website at: <http://www.pca.state.mn.us/hot/feedlot-publicaiton.html#rules>.

#### Feedlots in Stevens County

Feedlots are a very important industry in Stevens County. In 1991, a resolution was passed by the County Board of Commissioners for the establishment of a County Feedlot Program. The Environmental Services Coordinator has been designated as the County Feedlot Officer (.25 FTE).

The County has completed registration of 184 animal feedlots. The registration information includes the location, size of feedlot, types of animals, types of manure storage, etc. Table-6 below illustrates the size and number of registered feedlots in Stevens County.

**Table-6**

<b>Stevens County Feedlot Registration Results</b>	
Feedlots with 10 – 49 Animal Units	26
Feedlots with 50 –99 Animal Units	24
Feedlots with 100 –299 Animal Units	55
Feedlots with 300 – 999 Animal Units	68
Feedlots with 1000 or more Animal Units	11
<b>Total Number of Feedlots</b>	<b>184</b>
<b><u>Definition of an Animal Unit:</u> <i>A standardized measure to compare differences in the production of animal manure for an animal feedlot or manure storage area. A mature cow of 1,000 pounds (455 kg.) is the standard unit.</i></b>	

#### Nutrient Management

Nutrient management (manure and fertilizers) overall is one of rural Minnesota's resource concerns. It is important to apply the correct amount of agriculture waste or commercial fertilizer as the excess will escape over time. The MPCA Feedlot Rules have minimum requirements for application of manure. The rules require manure to be applied at agronomic rates, manure nutrient testing, preparation of a manure management plan, record keeping, and minimum setback requirements in sensitive areas. For more information on manure application requirements for different size feedlots visit the MPCA website at: <http://www.pca.mn.us/hot/feedlots.html>. The Minnesota Department of Agriculture is the lead state agency for all aspects of pesticide and fertilizer regulatory functions. For more information, visit the following website: <http://www.mda.state.mn.us/APPD/ace/nutmgmt.htm>

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## **PRIORITY CONCERN ASSESSMENT: Stormwater and Drainage Management focusing on wetland restorations and flood control.**

### **Stormwater**

Stormwater runoff can be a significant pollutant source to Stevens County's surface and groundwater resources. Stormwater and snowmelt runoff from cropland and urban areas can carry sediment, nutrients, and organic contaminants into lakes, streams and wetlands. The increase in impervious surfaces, and loss of water-absorbing wetlands increases both the volume of surface runoff and peak rate of flow. The result is an increase in the velocity and total volume of flow in natural stream channels and roadside ditches. This leads to erosion and a general decline in habitat. Inadequately sized culverts and storm drains contribute to large-scale erosion events as roads and shoulders wash out. Ditches that have been stripped of vegetation and not adequately protected become sources of sediment and further speed the flow of water into larger waterways.

Sediment is the single most significant water pollutant, resulting from eroding cropland. While nitrogen can have adverse effects on both surface and groundwater, phosphorus problems are predominately associated with surface water. Erosion and runoff from cropland are pathways of nitrogen and phosphorus movement into surface waters. Drainage ditches and tile lines are also a potential source of sediment bound nitrogen and phosphorus to streams and lakes. Agricultural pesticides can enter lakes and streams from stormwater runoff as a solution in the water, absorbed to sediment particles carried by runoff, or in a solution with tile drainage water. This is a potential countywide problem.

Stormwater runoff from urban areas also carries pollutants to lakes or streams through storm sewers or over land. The types of pollutants present in urban runoff may include heavy metals, microorganisms, sediment, nutrients and other inorganic and organic materials. The type of metals found in urban runoff is derived from paints, wood preservatives, catalytic converters, tires etc. These compounds can accumulate in lake bottom materials and in fish tissue where they may produce chronic effects. The same substances may infiltrate and contaminate groundwater.

### **NPDES Permitting**

The Stormwater Program for construction activity is designed to reduce the amount of sediment and pollution entering surface and groundwater both during and after construction projects. Stormwater discharges associated with construction activities are regulated through the use of National Pollution Discharge Elimination System (NPDES) permits. NPDES permits are issued by the MPCA. Through this permit, the owner is required to develop a stormwater pollution prevention plan that incorporates specific best management practices applicable to their site.

Construction activities that disturb one acre or more of land require a permit. These activities may include road building, landscape clearing, grading, excavation, and construction of homes, office buildings, industrial parks and airports. Both owners and operators are responsible for submitting the permit application. The permit is required of developers, builders, landscapers, architects, design engineers, surveyors, city/county highway departments, the Minnesota Department of Transportation and more.

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Since the passage and implementation of the Federal Clean Water Act and various Minnesota laws and rules, the quality of our State's waters has improved. However, degraded and impaired waters still exist. A leading source of this impairment is polluted and sediment filled stormwater runoff. Runoff can change both water quality and quantity affecting our water resources physically, chemically and biologically. Runoff from land modified by human activities changes natural hydrologic patterns, accelerates stream flows, modifies stream channels and destroys aquatic habitat. Polluted runoff containing oil, grease, chemicals, nutrients, metals, litter, and pathogens, can severely reduce water quality. If left unmanaged, runoff stresses our streams, ages our lakes, and degrades and eliminates our wetlands.

More information is available on the MPCA website at:  
<http://www.pca.state.mn.us/water/stormwater/index.html>

### **Drainage**

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. Public drainage ditches were installed throughout the County in the early 1900's. There are 29-major County and joint county ditches in the County. Map-8 depicts the location of Stevens County's public drainage system.

Typically, drainage systems are degraded by sediment, nutrients and bacteria. This, in turn, degrades the quality of the County's other water features. To minimize this problem, landowners need to implement Best Management Practices, 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 clean-out and repair. Besides problems related to water quality, Stevens 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.

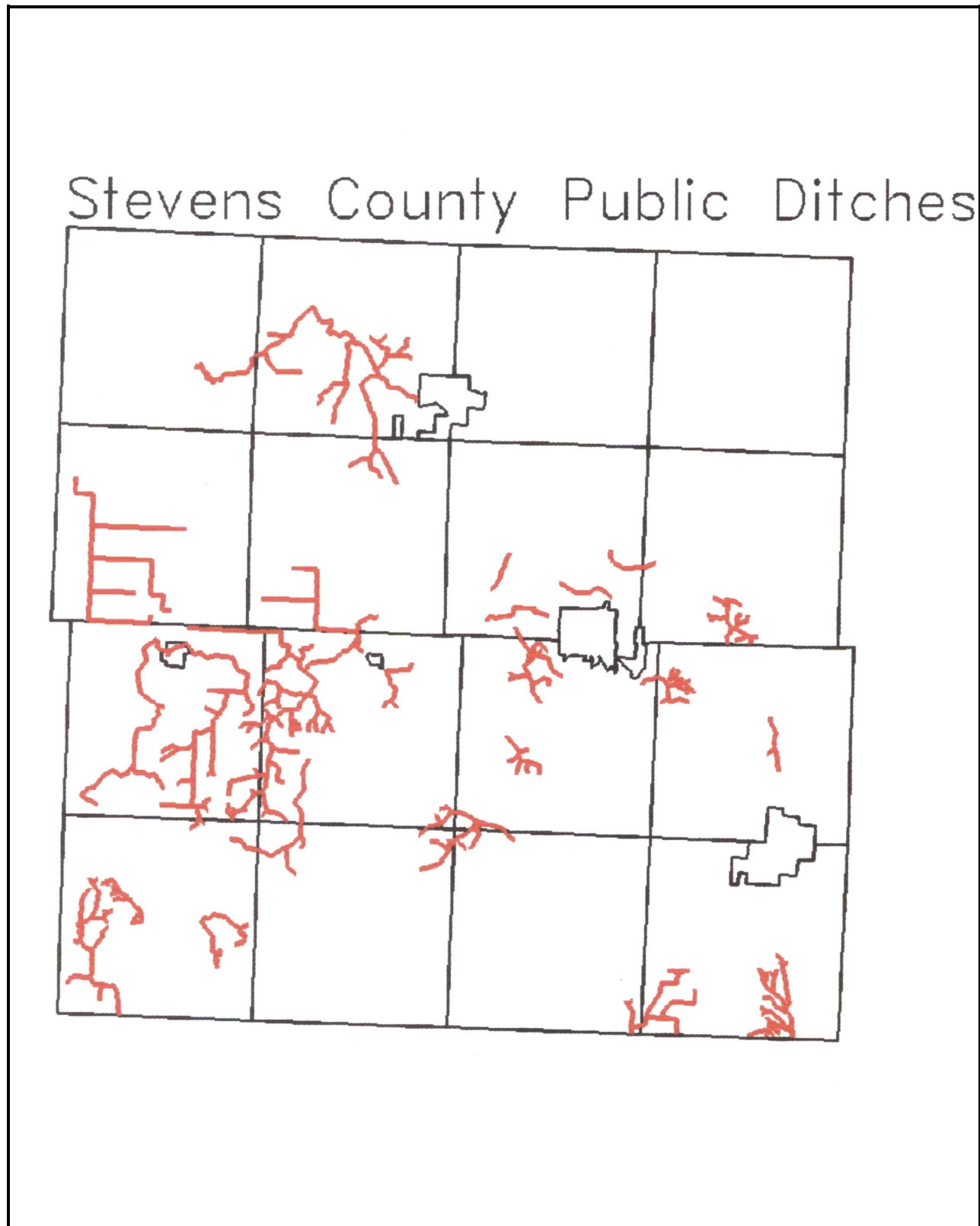
John Helland, a Legislative Analyst, wrote a legislative information brief titled, "The Drainage Issue", for the Minnesota House of Representatives in 1999. The following text contains key portions of the information brief:

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

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**Map-8: Stevens County Public Drainage System**





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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 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 clearing house 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

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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 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 are 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 county-wide 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.

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### Bois de Sioux Watershed District

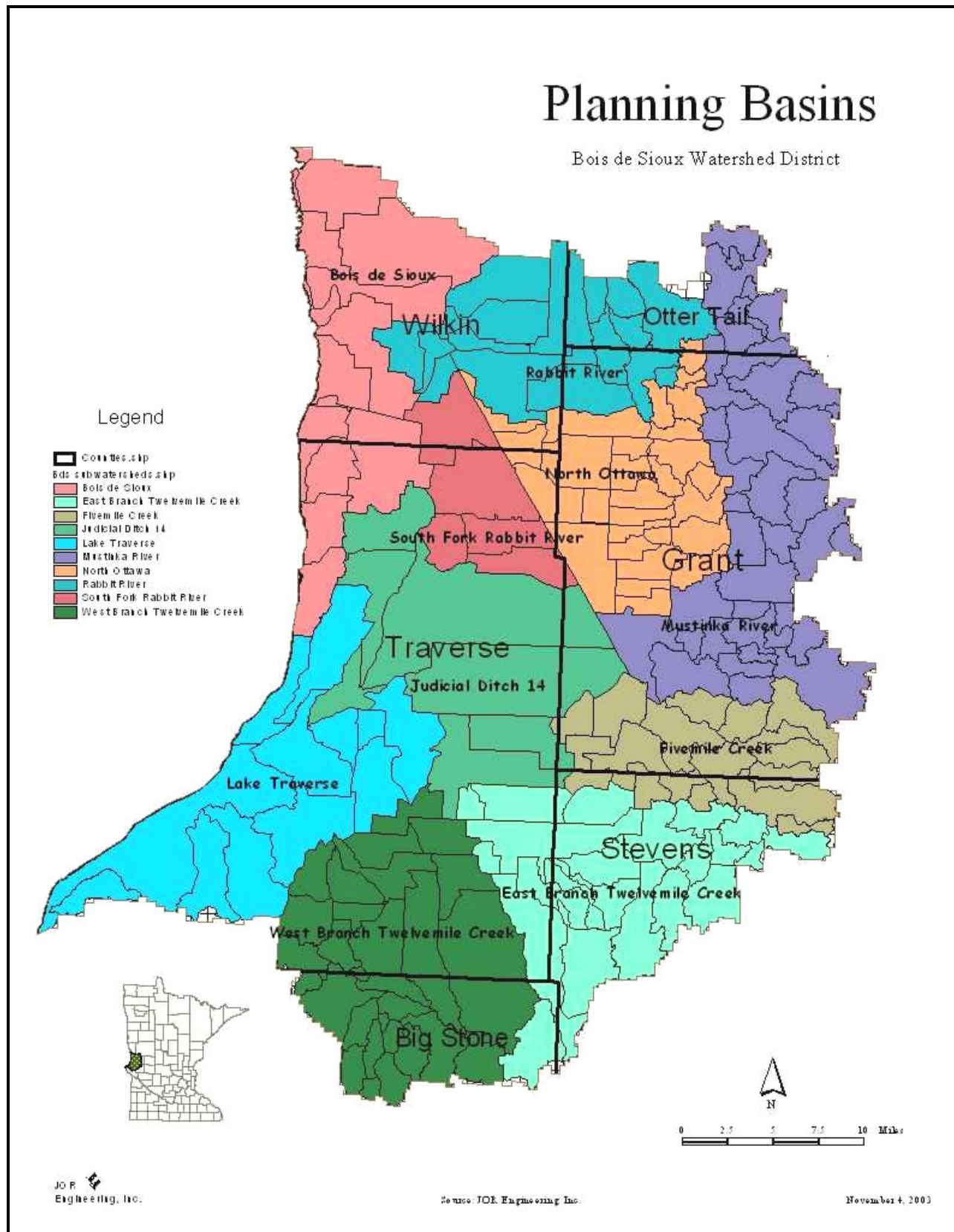
The Bois de Sioux Watershed District in the northwest portion of the County was established in March of 1988 to comprehensively manage water resources in the Mustinka Watershed. The Stevens County Board of Commissioners are the ditch authority in this portion of the County, but draining, filling, and ditch improvements need to have a permit from the Watershed District. The Watershed District updated their Overall Plan in 2003 and submitted a copy of the Ordinal Rankings for flood damage reduction and natural resource enhancement in the East Branch of Twelve Mile Creek as priority concerns for consideration. Map-9 illustrates the planning basins in the Bois de Sioux Watershed District.

According to the Overall Plan, the Twelve-Mile Creek sub-watershed experiences frequent flooding with spring flooding being almost an annual occurrence. Damages associated with this type of flood are to public infrastructure, personal property, cropland and public resources (fisheries, wildlife, soils and water quality). The upper reaches of the sub-watershed are in the glacial moraine area having rolling topography and depressional wetland areas. Many of the wetlands have been drained by private and public drainage projects.

The East Branch Twelve-Mile sub-watershed is a headwaters area. Therefore, its flooding problems originate within the sub-watershed. This sub-watershed is also a major contributor to downstream flooding. It is considered a high opportunity area for flood storage type projects because they would tend to solve both the local and downstream flooding problems. Similarly, water-conserving measures that reduce runoff may be very beneficial in this area. Because of the topography, including both drained and undrained wetlands, the area would seem to have great potential for multi-purpose flood control and natural resource enhancement projects. Pursuing such projects should be a high priority within the watershed.

The Overall Plan identifies a serious local conflict at the Traverse and Stevens County boundary. Two Traverse County ditches extend upstream to just short of the Stevens County line. Land in Stevens County not included in the benefited area and the downstream ditches are not considered adequate to handle improved drainage from land in Stevens County. Outlets into Traverse County are restricted and water from upstream drainage areas causes severe flooding along the county line. In both cases, upstream storage should be considered as a solution having widespread benefits.

**Map-9: Bois de Sioux Watershed District Planning Basins**



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**PRIORITY CONCERN ASSESSMENT: Land Use/Development Issues - develop a Comprehensive Plan including updating the County Zoning Ordinance and Shoreland Standards.**

It should be acknowledged that portions of the following assessment were derived from the Minnesota Planning Agencies guide for developing a comprehensive plan. The guide is entitled, “Under Construction: Tools and Techniques for Local Planning”.

**What is Comprehensive Planning?**

Comprehensive planning can be defined as deciding where you want to go and how you will get there. This sounds easy enough. Yet planning for economic development, housing, roads, sewers, schools, environmental quality and parks is obviously more complex than planning a family trip, and it requires broad participation from the community.

Minnesota Statutes, Section 394.22(9) defines a comprehensive plan as the “policies, statements, goals and interrelated plans for public and private land and water use, transportation and community facilities, including recommendations for plan execution documented in texts, ordinances and maps which constitute the guide for future development of the county.”

A comprehensive plan is a kind of business plan for the community. Similar to a good business plan, an effective comprehensive plan includes careful analysis of demographic data and other information on current conditions and trends affecting things important to the identity and livability of the community. The plan identifies a clear and compelling vision of the community’s future, comprehensive goals, and specific policies, strategies and action steps for implementing the strategies and meeting the vision and goals.

Developing a comprehensive plan that expresses community values and sets clear policies for development is a good community investment. The comprehensive plan allows a local government to set well-founded priorities for investing scarce resources, establish long-range policies that guide day-to-day actions and develop publicly supported guidelines for making tough decisions.

For example, local decision-makers can use the plan to guide their evaluation of a particular development proposal. The plan can and should guide the preparation of development controls, such as zoning or subdivision regulation, and various incentive programs or educational efforts. It also can inform how a local government allocates funds for public improvements and where it might best invest in sewer extensions or new transportation options for the elderly.

The plan also serves an educational function by making citizens more aware of their community, how it is structured, how it is changing, what its major problems are and what needs to be done to remedy those problems. It is a statement of community intentions, setting forth major policies concerning desirable future development on behalf of the common good.

**Chief Components of a Comprehensive Plan**

Although Minnesota law provides different requirements for various units of government, some important components of a comprehensive plan include:

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A vision statement. This describes what residents want their community to be like in the future.

Statements of goals and policies. These lay out the framework for how a community will achieve its vision. The goals describe the ultimate ends of a community in pursuit of its vision. The goals may not always be achievable, but they set a challenging “high bar” toward which a community can work. Policies are the principles or courses of action that guide a community’s actions in pursuit of its goals. Together, the vision, goals and policies provide the foundation, or policy framework, for everything else in a comprehensive plan.

Strategies of goals and vision. Strategies are the steps a community will take, consistent with its policies, to achieve its goals and vision. They should have measurable objectives and definite time frames. A community should pick those strategies that offer the greatest long-term benefits at the lowest long-term cost.

Information to inform decisions. Surveys, studies and other information about existing conditions tell a community about its overall health and how it may be changing. Background data should cover the community and its area of influence and include major aspects of a community’s physical (including environmental), economic and social conditions and trends. This is the information that helps a community define its assets and challenges, and develop its vision, goals, policies and strategies. This element can serve as a stand-alone plan document, as well as reference for a comprehensive water plan, transportation plan, recreation plan, zoning ordinance or other implementation effort of a community.

A land use element. This element guides future development of public and private property to implement a comprehensive plan’s goals and policies. It should designate allowable land uses, as well as lay out specialized plans for specific areas or specific types of land uses. A land use element may also identify development densities acceptable to a community.

An implementation element. This element describes the recommendations, timing, cost, resources and steps needed to implement the various aspects of a plan. This should include performance measures that allow citizens and others to track how well a community is doing in implementing its comprehensive plan.

### **Stevens County Zoning Ordinance**

One of the primary purposes of a comprehensive plan is to guide future development and redevelopment of land within a county. Through statutory authorization of various implementation measures by the state legislature (i.e. subdivision regulations, zoning ordinance, capital improvements, etc.), counties have great opportunities to shape, guide, and manage their futures.

Zoning ordinances are one of the primary elements in a comprehensive plan. All other elements such as natural resources, transportation, housing, etc., should be developed in a coordinated manner with the zoning ordinance. A good zoning ordinance should provide a logical framework to help local leaders and property owners answer tough questions such as: Which natural features and open space areas should be protected in the County? Where should rural residential housing be built? Where should feedlots, gravel pits, and other more intensive rural

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land uses be located? Which directions should cities grow in order to allow for new development with public sewer and water services? What areas should be annexed into cities and in what timeframe? The political, environmental, and economic aspects of these questions have to be addressed through open dialogue and ongoing communication between the units of government involved and the citizens impacted by the decisions.

Stevens County needs a comprehensive plan to emphasize the importance of proper planning and ensure decisions are best for the citizens of the County as well as the environment. The County currently has a draft comprehensive plan dated in the early 1970's that was never adopted. The County Zoning Ordinance was originally adopted in 1972 with a few minor amendments since that time. It is more than 30 years old and outdates many land use practices such as development and feedlot issues of today. There are sections of the ordinance that can be left to interpretation that may eventually lead to legal actions.

### **Outdated Shoreland Standards**

The Zoning Ordinance also contains outdated shoreland standards that need to be revised. The County needs to adopt and enforce a shoreland management ordinance that meets or exceeds the model provided by Minnesota DNR's Shoreland Management Program.

More people seem to want to live by the water. With the high price and/or lack of lakeshore property on good water quality lakes in counties to the north, the trend seems to be to purchase shoreland property on less desirable types of lakes. More development on these less desirable waterbodies increases potential for removal of trees, native plants, and aquatic vegetation. Maintaining a natural shoreline is critical for water quality, aquatic plants and essential habitat for fish and wildlife. The lakes in Stevens County are already considered to be hypereutrophic. They have high nutrient concentrations and are often characterized as "green" with strong odors. Potential for more poor land use practices will only degrade the lakes to an even worst condition.

This water plan update encourages the County to coordinate updating the County zoning ordinance and shoreland standards as part of a comprehensive planning process. This process would allow people with different perspectives to articulate the sort of County they would like to live in and leave behind.

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## CHAPTER 3: IMPLEMENTATION (GOALS, OBJECTIVES, & ACTIONS)

This Chapter establishes the Implementation of Goals, Objectives and Action Steps for each of the County's high priority concerns identified in Chapter 2. The development of the Goals and Objectives define broad directions to restore, protect and preserve County land and water resources. Action items describe specific measures that the County intends to implement, with assistance from appropriate state and federal agencies, to achieve the Goals and Objectives. Goals may have one or more objectives.

In review, the County's five priority concerns are:

- ***County Administration/Enforcement of Individual Sewage Treatment Systems – adopt Minnesota Rules Chapter 7080.***
- ***Ground Water/Rural Water/Wellhead Protection focusing on the City of Morris supplying rural water for the cities of Alberta and Chokio.***
- ***Erosion and Sediment Control concentrating on identified areas of agricultural lands for gully erosion and concentrated flows.***
- ***Stormwater and Drainage Management focusing on wetland restorations and flood control.***
- ***Land Use/Development Issues – develop a Comprehensive Plan including updating the County Zoning Ordinance and Shoreland Standards.***

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 of how much it will cost. For the purposes of this Chapter, the following abbreviations are used. The abbreviations in **BOLD** illustrate the lead agency under the specific actions.

### Abbreviations

- |   |  |
|---|--|
| ● BA – Board of Adjustment                  | ● MPCA – Minnesota Pollution Control Agency    |
| ● BdS - Bois de Sioux Watershed             | ● NRCS – Natural Resource Conservation Service |
| ● BWSR – Board of Water & Soil Resources    | ● SWCD – Soil & Water Conservation District    |
| ● CRW – Chippewa River Watershed            | ● TF – Water Plan Task Force                   |
| ● Comprehensive Plan Task Force             | ● PF – Pheasants Forever                       |
| ● CB - County Board                         | ● PC – Planning Commission                     |
| ● CHD – County Highway Department           | ● P/Z – Planning/Zoning                        |
| ● DA – Ditch Authority                      | ● PdT – Pomme de Terre Watershed               |
| ● DNR – Department of Natural Resources     | ● UMES – University of MN Extension            |
| ● ES – Environmental Services               |  |
| ● HRA – Housing & Redevelopment Authority   |  |
| ● MDA – Minnesota Department of Agriculture |  |
| ● MDH – Minnesota Department of Health      |  |





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<b>PRIORITY CONCERN: Groundwater/Rural Water/Wellhead Protection focusing on the City of Morris supplying rural water for the cities of Alberta and Chokio.</b>
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**GOAL:** *To provide good quality water supply to County cities and rural residents.*

**OBJECTIVE A:** Complete rural water project with Alberta and Morris and investigate expansion to entire County.

**ACTIONS:**

- 1.) Assist and provide guidance to the city's of Morris and Alberta to complete rural water project.  
**Who:** HRA, ES, CB                      **When:** 2005-2006                      **Cost:** \$1,000
- 2.) Develop an education component to inform rural residents of the benefits of a rural water system.  
**Who:** HRA                      **When:** 2006-2010                      **Cost:** \$5,000
- 3.) Pursue interest in expanding rural water system by conducting a countywide survey.  
**Who:** HRA, ES, CB                      **When:** 2005                      **Cost:** \$1,500
- 4.) Perform a feasibility study based on survey results for expansion of a county rural water system.  
**Who:** HRA, ES, CB                      **When:** 2006                      **Cost:** \$3,000

**OBJECTIVE B:** Assist with Wellhead Protection Planning

**ACTIONS:**

- 1.) Participate on wellhead/source water protection teams when invited by the local water suppliers. Provide available assistance with advice and technical land use and resource information when wellhead protection plans are developed.  
**Who:** TF, MDH                      **When:** 2005-2010                      **Cost:** \$2,000
- 2.) Create GIS shape files identifying wellhead protection areas when completed.  
**Who:** MDH                      **When:** 2005 and ongoing                      **Cost:** \$5,000
- 3.) Identify wellhead protection areas as priority areas for BMP incentive programs.  
**Who:** Cities, ES, MDH                      **When:** 2005 and ongoing                      **Cost:** Unknown
- 4.) Provide a variety of education on both public wellhead protection areas and the protection and management of private wells and well areas to city residents, farms and businesses regarding specific actions they can take to protect drinking water.  
**Who:** Cities, ES, MDH                      **When:** 2005 and ongoing                      **Cost:** \$2,000

- 
- |  |                               |                        |
|--|-------------------------------|------------------------|
| 5.) Conduct countywide well testing and/or educate landowners on how to test their own well.                           |                               |                        |
| <b>Who:</b> ES, MDH  | <b>When:</b> 2005 and ongoing | <b>Cost:</b> \$1,000   |
| 6.) Continue to provide cost-share to properly seal 10 wells per year (pay up to 50% with a \$300 minimum).            |                               |                        |
| <b>Who:</b> ES, TF   | <b>When:</b> 2005-2010        | <b>Cost:</b> \$15,000  |
| 7.) Encourage water conservation through use of low-pressure irrigation systems to conserve groundwater in the County. |                               |                        |
| <b>Who:</b> NRCS   | <b>When:</b> 2005-2010        | <b>Cost:</b> EQIP Fund |

<b>PRIORITY CONCERN: Erosion and Sediment Control concentrating on identified areas of agricultural lands for gully erosion and concentrated flows.</b>
---

**GOAL:** *Protect the County's Soil Resources and Restore Surface Water Quality*

**OBJECTIVE A:** Address erosion and sediment concerns by ensuring that turbidity and total suspended solids are low enough to meet the surface water quality standards for this ecoregion.

**ACTIONS:**

- |   |                        |                        |
|---|------------------------|------------------------|
| 1.) Seek a 10% increase in fields meeting crop residue targets countywide based on tillage transect results (Current five year average 1997 - 2001 was 51%).  |                        |                        |
| <b>Who:</b> SWCD, NRCS  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$5,000   |
| 2.) Complete a tillage transect survey bi-annually to show county residue data and inform the public of the results.  |                        |                        |
| <b>Who:</b> SWCD  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$2,500   |
| 3.) Continue to fund a CCRP position at SWCD to promote and target sensitive areas for filter strips and wetland restorations. Muddy Creek sub-watershed should be a priority.  |                        |                        |
| <b>Who:</b> SWCD, TF, PF  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$140,000 |
| 4.) Establish 500 new acres of CCRP filter/buffer strips along ditches and streams to capture sediment as it leaves agricultural fields. Enforce the minimum one-rod grassed area as it applies in drainage policy. Muddy Creek sub-watershed should be a priority. |                        |                        |
| <b>Who:</b> DA, CB, PF<br>SWCD, NRCS  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$103,500 |
| 5.) Establish 20 acres of grass waterways.  |                        |                        |
| <b>Who:</b> SWCD, NRCS  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$24,000  |
| 6.) Construct 50 water and sediment control basins.   |                        |                        |
| <b>Who:</b> SWCD  | <b>When:</b> 2005-2010 | <b>Cost:</b> \$75,000  |

- 
- |     |  |                        |                        |
|-----|--|------------------------|------------------------|
| 7.) | Establish 25,000 feet of field windbreaks.   |                        |                        |
|     | <b>Who: SWCD, NRCS</b>   | <b>When: 2005-2010</b> | <b>Cost: \$28,400</b>  |
| 8.) | Encourage five participants to install rock inlet/french drains for field draitile.        |                        |                        |
|     | <b>Who: SWCD</b>   | <b>When: 2005-2010</b> | <b>Cost: \$2,000</b>   |
| 9.) | Target 200 acres in the Mustinka Watershed for CREP if and when funding becomes available. |                        |                        |
|     | <b>Who: SWCD, BdS</b>  | <b>When: 2005-2010</b> | <b>Cost: \$400,000</b> |

**OBJECTIVE B:** Reduce priority pollutants, focusing on erosion, sediment, bacteria, nitrogen and phosphorous. First priority is targeted for the Muddy Creek sub-watershed.

**ACTIONS:**

- |     |   |                         |                        |
|-----|---|-------------------------|------------------------|
| 1.) | Work with the Minnesota Pollution Control Agency to develop an action plan for removing the impaired reach of the Pomme de Terre River from Muddy Creek to the Marsh Lake Dam off of the TMDL 303d listing: |                         |                        |
|     | • Facilitation and scoping:   | <b>MPCA, ES, SWCD</b>   |                        |
|     | • Intense monitoring/problem investigation-verification:  | <b>MPCA, ES, SWCD</b>   |                        |
|     | • TMDL development (model development, allocation exercise & public notice/EPA approval:  | <b>MPCA, ES, SWCD</b>   |                        |
|     | • Implementation plan development:  | <b>SWCD, ES, MPCA</b>   |                        |
|     | • Post monitoring and accomplishment reporting:   | <b>SWCD, ES, MPCA</b>   |                        |
|     | <b>Who: Listed Above</b>  | <b>When: 2005-2010</b>  | <b>Cost: Unknown</b>   |
| 2.) | Seek CWP 319 grant funding to focus on reduction of non-point source loading of the impaired stretch of the PdT River in Stevens County.  |                         |                        |
|     | <b>Who: PdT, SWCD</b>   | <b>When: 2005-2008</b>  | <b>Cost: \$200,000</b> |
|     | <b>NRCS, ES, MPCA</b>   |                         |                        |
| 3.) | Promote nutrient management throughout the County and target 500 acres per year.  |                         |                        |
|     | <b>Who: SWCD, NRCS</b>  | <b>When: 2005-2010</b>  | <b>Cost: \$7,500</b>   |
| 4.) | Target 5000 feet of bank stabilization and promote practices that reduce stream-bank and ditch-channel erosion such as willow planting or stream barbs in critical areas.                                   |                         |                        |
|     | <b>Who: SWCD, NRCS,</b>   | <b>When: 2005-2010</b>  | <b>Cost: \$83,500</b>  |
|     | <b>PdT, BdS</b>   |                         |                        |
| 5.) | Assist 15 feedlot operators with completing proper MPCA permits and manure management plans on feedlots with 300+ animal units.   |                         |                        |
|     | <b>Who: ES, MPCA</b>  | <b>When: 2005-2010</b>  | <b>Cost: \$11,250</b>  |
| 6.) | Address two sites with livestock exclusion practices (fencing, alternative water source, rock crossing and rotational grazing) in the Muddy Creek Sub-Watershed.  |                         |                        |
|     | <b>Who: ES, NRCS,</b>   | <b>When: 2005 –2010</b> | <b>Cost: \$50,000</b>  |
|     | <b>PdT, DA</b>  |                         |                        |

- 
- |      |  |                            |                        |                        |
|------|--|----------------------------|------------------------|------------------------|
| 7.)  | Attempt to inspect seven percent of the County feedlots annually, which is approximately 13 per year.  | <b>Who:</b> ES, NRCS, MPCA | <b>When:</b> 2005-2010 | <b>Cost:</b> \$16,250  |
| 8.)  | Assist two non-compliant feedlots with financial and technical assistance each year through EQUIP.   | <b>Who:</b> ES, NRCS, MPCA | <b>When:</b> 2005-2010 | <b>Cost:</b> \$150,000 |
| 9.)  | Identify and encourage upgrades of failing septic systems throughout the County but with priority focus on Muddy Creek.  | <b>Who:</b> ES, TF         | <b>When:</b> 2007-2010 | <b>Cost:</b> \$5,000   |
| 10.) | Continue to support upgrading of septic systems with the use of state revolving fund low interest loans. Consider reimbursing up to \$300 in the Muddy Creek Watershed for system design after the system has been installed and inspected. Target 5 systems annually (\$1,500). | <b>Who:</b> ES, MDA        | <b>When:</b> 2005-2010 | <b>Cost:</b> \$7,500   |

<b>PRIORITY CONCERN: Stormwater and Drainage Management focusing on wetland restorations and flood control.</b>
---

**GOAL:** *Improve surface water management by decreasing runoff, flooding and erosion while maintaining the drainage systems already in place to sustain agricultural productivity.*

**OBJECTIVE A:** Improve stormwater runoff quality by increased utilization of stormwater management practices throughout the County.

**ACTIONS:**

- |     |   |                           |                        |                         |
|-----|---|---------------------------|------------------------|-------------------------|
| 1.) | Assist the MPCA on identifying construction sites in need of a NPDES permit and provide educational materials to builders on the Stormwater Program.  | <b>Who:</b> MPCA, P/Z, ES | <b>When:</b> 2005-2010 | <b>Cost:</b> Staff Time |
| 2.) | Promote the use of erosion and sediment control and other best management practices to reduce the amount of sediment and nutrients entering watercourses from commercial and residential areas. | <b>Who:</b> SWCD, P/Z, ES | <b>When:</b> Ongoing   | <b>Cost:</b> Staff Time |

**OBJECTIVE B:** Apply watershed-based principles in properly managing the drainage system.

**ACTIONS:**

- |     |   |                                 |                      |                         |
|-----|---|---------------------------------|----------------------|-------------------------|
| 1.) | Coordinate with the Bois de Sioux Watershed District to seek water retention/storage in the East Branch Twelve Mile Creek. Goal is to create an additional 30,000 acre-feet of storage. | <b>Who:</b> BdS, SWCD, NRCS, CB | <b>When:</b> Ongoing | <b>Cost:</b> Staff Time |
|-----|---|---------------------------------|----------------------|-------------------------|

- 
- 2.) Cooperate and assist the Bois de Sioux Watershed District resolve the Stevens/Traverse county line dispute.  
**Who:** BdS, CB  
SWCD, NRCS **When:** Ongoing **Cost:** Staff Time
  - 3.) Participate in project team in the Stevens County portion of the Bois de Sioux.  
**Who:** SWCD, NRCS, ES **When:** Ongoing **Cost:** Staff Time
  - 4.) Work countywide in each watershed to implement best management practices to reduce flooding, erosion and sedimentation.  
**Who:** SWCD, NRCS **When:** Ongoing **Cost:** Staff Time
  - 5.) Work countywide in each watershed to promote the Wetland Reserve Program (WRP) and restore 2,000 acres per year.  
**Who:** NRCS, SWCD **When:** 2005 -2006 **Cost:** 3,000,000
  - 6.) Enroll landowners in the CCRP in which the landowner would receive a CRP payment for the one-rod buffer required and the additional buffer required or the CRP. Increase the number of cropland acres into CCRP by 1% per year along the County Ditch System.  
**Who:** SWCD, NRCS **When:** 2005-2010 **Cost:** CRP Dollars
  - 7.) 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 identify highly erodible areas, flooding problem areas, storage potential, etc).  
**Who:** CB, CHD **When:** 2007-2010 **Cost:** \$10,000
  - 8.) Investigate developing a GIS layer for public drainage systems showing watershed boundaries, open ditches, tile lines, etc.  
**Who:** CHD, CB **When:** 2007-2010 **Cost:** Ditch Funds

**OBJECTIVE C:** Educate landowners/operators in the County on drainage programs/issues.

**ACTIONS:**

- 1.) Educate landowners/operators of the importance of keeping buffer strips in place to protect the drainage ditch systems and concerns about farming right next to the ditch system in Stevens County.  
**Who:** CHD, SWCD, NRCS **When:** Ongoing **Cost:** Staff Time

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<b>PRIORITY CONCERN: Land Use/Development Issues - develop a Comprehensive Plan including updating the County Zoning Ordinance and Shoreland Standards.</b>
---

**GOAL:** *Prepare and adopt a countywide comprehensive plan to emphasize the importance of proper planning and ensure decisions are best for the citizens of Stevens County as well as the environment.*

**OBJECTIVE A:** Coordinate with the County Board to seek a process for developing a comprehensive plan that includes updating the County Zoning Ordinance and Shoreland Standards.

**ACTIONS:**

- 1.) Seek grant funding sources to assist the County in promotion and development of a County comprehensive plan.
- 2.) Encourage County Board to appoint a task force to undertake a strategy in developing a comprehensive plan. The task force should include representatives from County cities, townships, state and local resource agencies, organizations and private citizens.
- 3.) Develop a process and engage people in the County to participate throughout the planning process.
- 4.) Establish a shared understanding of the most important issues about economics, environmental and social implications.
- 5.) Identify future needs and desires, and develop the vision, goals, policies and progress indicators that reflect them.
- 6.) Develop alternative strategies for addressing the County's vision, goals and policies.
- 7.) Understand relationships between possible plan strategies, accounting for their long-term costs and benefits, and choosing those that best fit a community.
- 8.) Select plan monitoring indicators, and complete and adopt the plan.
- 9.) Implement the plan, tracking the progress and changing the plan in future years as needed.

**Who:** CPTF, CB, PC, BA

**When:** 2005-2010

**Cost:** Unknown

## CHAPTER 4: IMPLEMENTATION OF ONGOING ACTIVITIES

This chapter identifies other activities and programs that make up the local water management program, but are not reflected in the priority concern section. There are many agencies in Minnesota at the local, regional, state and federal levels that are involved with water and land use issues either in a regulatory capacity, or through an education and information development role. Programs administered by local agencies such as the Environmental Services Office, the Planning and Zoning Office, and the Soil and Water Conservation District; state agencies such as the Board of Water and Soil Resources, the Minnesota Pollution Control Agency and the University of Minnesota Extension Service; and federal agencies such as the Natural Resource Conservation Service and Farm Service Agency, will continue to be used during this 10 year plan update. Table-7 indicates these ongoing programs and activities expected to be carried out annually. The following acronyms are used in the table:

BMP – Best Management Practices  
 BWSR – Board of Water and Soil Resources  
 CRP – Conservation Reserve Program  
 ES – Environmental Services  
 EQIP – Environment Quality Incentive Program  
 HHW – Household Hazardous Waste  
 MPCA – Minnesota Pollution Control Agency  
 NRCS – Natural Resource Conservation Service  
 P/Z – Planning and Zoning  
 SCORE – Select Committee on Recycling and the Environment  
 SWCD – Soil and Water Conservation District  
 USDA – United States Department of Agriculture  
 WCA – Wetland Conservation Act

**Table-7**

<b>IMPLEMENTATION SCHEDULE: ONGOING ACTIVITIES</b>				
<b>Programs</b>	<b>Cooperators</b>	<b>Annual Staff Cost</b>	<b>Funding</b>	<b>Watershed</b>
WCA	ES, SWCD	\$10,000	BWSR Grant	All
Feedlot Program	ES	\$15,000	MPCA Grant	All
Shoreland Management	P/Z	\$ 3,000	BWSR Grant	All
Zoning Administration	P/Z	\$15,000	Local	All
CRP	SWCD/NRCS	\$65,000	USDA	All
State Cost-share	SWCD	\$ 6,000	BWSR	All
EQIP	NRCS	\$10,500	USDA	All
Ag BMP Loans	ES	\$ 3,000	Department of Ag	All
Recycling/HHW	ES	\$15,000	SCORE Grant	All
Solid Waste	ES	\$15,000	Local	All