

**Rapid Watershed Assessment**  
**Resource Profile**  
**Middle Minnesota (MN) HUC: 7020007**



Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

## Introduction

The Middle Minnesota 8-Digit Hydrologic Unit Code (HUC) subbasin is located in the Prairie Parkland Ecological Province of Southwestern Minnesota. This largely agricultural watershed is 862,410 acres in size. Over ninety nine percent is private land, with the remainder owned or managed by a variety of public and tribal entities.

There are 1,011 farms in the subbasin. About 43 percent of the operations are less than 180 acres in size, over 48 percent are 180 to 1,000 acres in size, and the remaining farms are more than 1,000 acres in size. Most of the producers are full time operators and do not rely on off-farm income.

The main resource concerns on the cropland are wind and water soil erosion, nutrient management, and water quality. Associated with the cropland runoff are increased pollutant loadings to surface waters (mercury, turbidity, polychlorinated biphenyls, nitrogen, fecal coliform). Declining wildlife habitat is also a concern throughout the subbasin.



### County Totals

| <b>County</b>       | <b>Acres in HUC</b> | <b>% HUC</b> |
|---------------------|---------------------|--------------|
| Blue Earth          | 113,700.29          | 13.18        |
| Brown               | 186,122.65          | 21.58        |
| Cottonwood          | 25,136.51           | 2.91         |
| Le Sueur            | 55,682.09           | 6.46         |
| Nicollet            | 209,202.48          | 24.26        |
| Redwood             | 90,640.59           | 10.51        |
| Renville            | 158,127.51          | 18.34        |
| Sibley              | 23,669.40           | 2.74         |
| Watowwan            | 128.17              | 0.01         |
| <b>Total acres:</b> | <b>862,409.9</b>    | <b>100%</b>  |



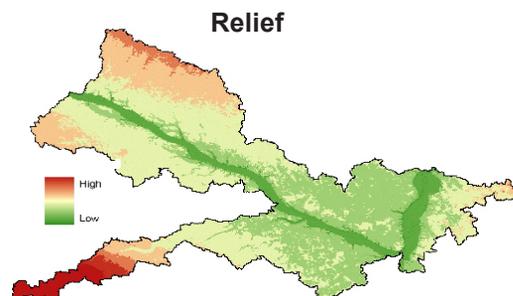
## Physical Description

This once glaciated area is part of the Prairie Pothole Region. Soils in this HUC are predominantly glacial till plains. Average elevation in the watershed is 918 feet above sea level, with the highest values being in the Southwest and Northern portions of the watershed, while the lowest are found across the central regions, near the Minnesota River channel.

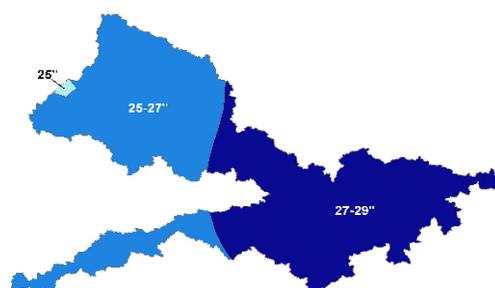
Precipitation in the watershed ranges from 25 to 29 inches annually. Most lands within this watershed are not highly erodible, and are well to moderately well suited to agricultural uses. Predominate land uses are row crops (75%), grass/pasture/hay (9%), and Forest (5.6%).

Land use within the Middle Minnesota watershed is primarily agricultural, accounting for approximately 80% of the available acres. Two-year corn/soybean rotations comprise close to 90% of cropped lands within the watershed; small grains, hay, and grasslands enrolled in the Conservation Reserve Program (CRP) make up the majority of the balance.

Development pressure is negligible, with occasional farms being parceled out for recreation or country homes.

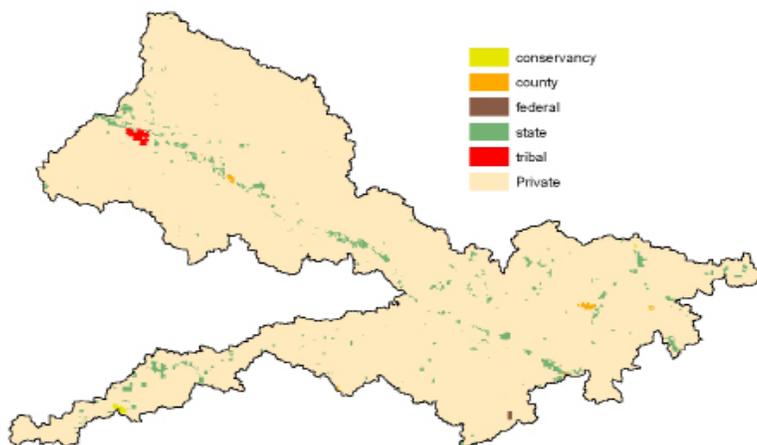


**Average Precipitation (inches)**



## Ownership\* <sup>1</sup>

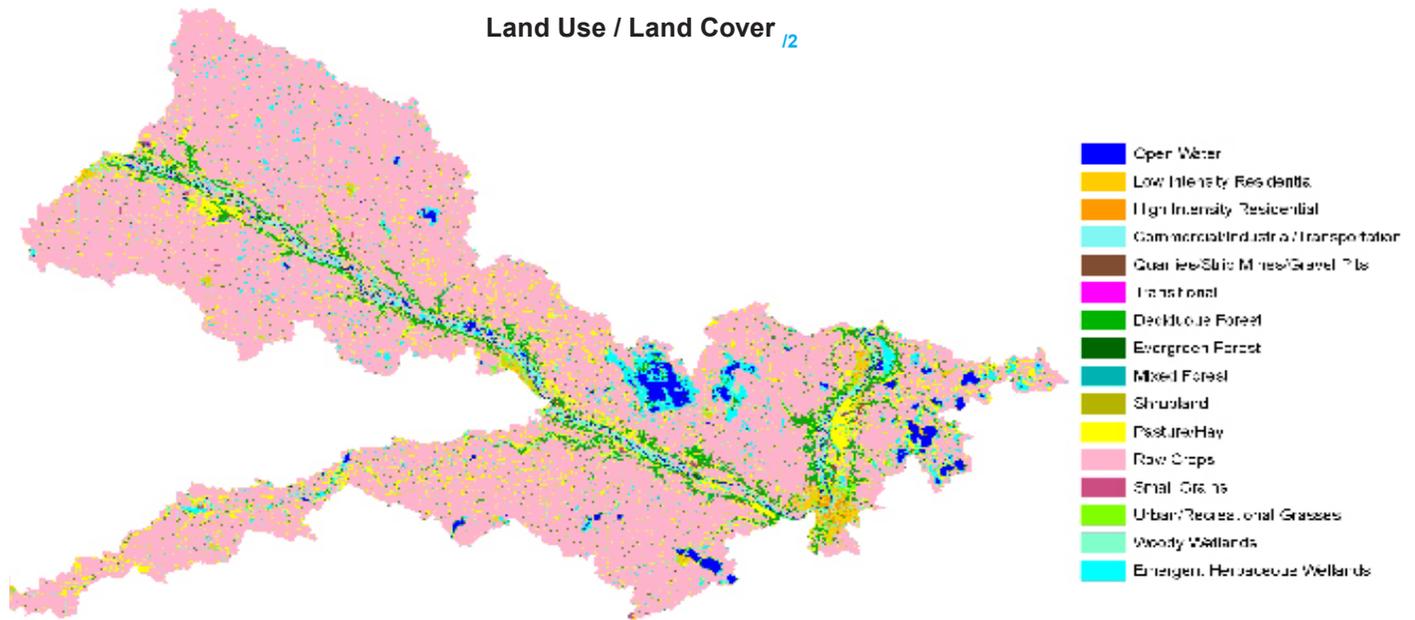
| Ownership Type          | Acres          | % of HUC       |
|-------------------------|----------------|----------------|
| Conservancy             | 594.4          | 0.07%          |
| County                  | 1,067.9        | 0.12%          |
| Federal                 | 323.9          | 0.04%          |
| State-Misc.             | 21,396.4       | 2.48%          |
| Other Public            | 0.0            | 0.00%          |
| Tribal                  | 1,746.3        | 0.20%          |
| Private Major           | 677            | 0.08%          |
| Private                 | 836,604        | 97.01%         |
| <b>Ownership Total:</b> | <b>862,391</b> | <b>100.00%</b> |



\* Ownership totals derived from 2007 MN DNR GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

## Ownership / Land Use

The Middle Minnesota Watershed covers an area of 862,410 acres. Ninety seven percent of the land in the watershed is held by private landowners (836,604 acres). The second largest ownership type is State, with just less than 21,400 acres (2.48%), followed by Tribal with 1,746 acres (0.20%), County with approximately 1,068 acres (0.12%), and Private Major with 677 acres (0.08%). Private Conservancy lands amount to 594 acres (0.07%), and Federally owned lands account for the smallest ownership class, covering 324 acres (0.04%). Land use by ownership type is represented in the table below.



## Ownership / Land Use

<sup>13</sup>

| Landcover/Use          | Public   |         | Private    |         | Tribal |         | Total Acres | Percent |
|------------------------|----------|---------|------------|---------|--------|---------|-------------|---------|
|                        | Acres    | Percent | Acres      | Percent | Acres  | Percent |             |         |
| Forest                 | 2,552.0  | 11.20   | 46,502.65  | 5.39    | 365.38 | 20.92   | 49420       | 5.73%   |
| Grain Crops            | 445.4    | 1.96    | 642.13     | 0.07    | 4.63   | 0.27    | 1092.18     | 0.13%   |
| Grass, etc             | 3,257.3  | 14.30   | 74,545.18  | 8.64    | 215    | 12.31   | 78,017      | 9.05%   |
| Orchards               | 0.0      | 0.00    | 0.00       | 0.00    | 0      | 0.00    | 0           | 0.00%   |
| Row Crops              | 10,321.8 | 45.32   | 642,199.13 | 74.47   | 813.72 | 46.60   | 653,335     | 75.76%  |
| Shrub etc              | 90.8     | 0.40    | 3,337.30   | 0.39    | 29.97  | 1.72    | 3,458       | 0.40%   |
| Wetlands               | 5,058.9  | 22.21   | 38,186.73  | 4.43    | 258.11 | 14.78   | 43,504      | 5.04%   |
| Residential/Commercial | 83.62    | 0.37    | 14,621.83  | 1.70    | 30.43  | 1.74    | 14,736      | 1.71%   |
| Open Water*            | 966.57   | 4.24    | 17,858     | 2.07    | 29     | 1.66    | 18,854      | 2.19%   |

\* ownership undetermined

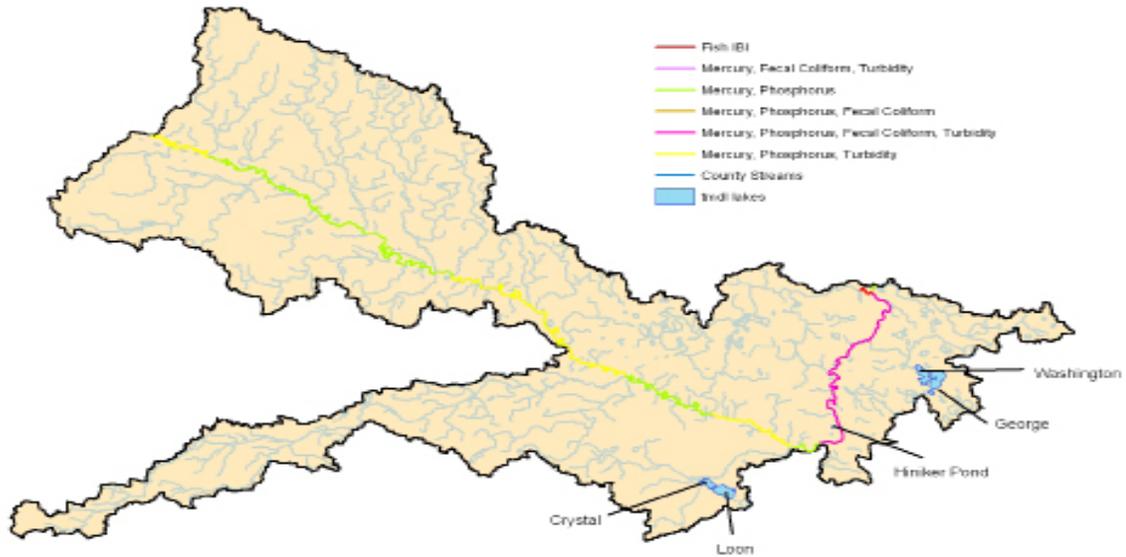
|                |                  |              |                |               |                |             |                |                |
|----------------|------------------|--------------|----------------|---------------|----------------|-------------|----------------|----------------|
| <b>Totals:</b> | <b>22,776.35</b> | <b>2.64%</b> | <b>837,893</b> | <b>97.16%</b> | <b>1746.24</b> | <b>0.20</b> | <b>862,416</b> | <b>100.00%</b> |
|----------------|------------------|--------------|----------------|---------------|----------------|-------------|----------------|----------------|

Physical Description (continued)

|  |  | ACRES                    | cu. ft./sec          |          |
|--|--|--------------------------|----------------------|----------|
| <b>Stream Flow Data</b>  | USGS 05325000 MINNESOTA RIVER AT MANKATO, MN   | <b>2005 Total Avg.</b>   | 5,369                |          |
|  |  | <b>May – Sept. Yield</b> | 5,753.6              |          |
|  |  | ACRES/MILES              | PERCENT              |          |
| <b>Stream Data<sup>14</sup></b><br>(*Percent of Total HUC Stream Miles)  | Total Miles – Major (100K Hydro GIS Layer)   | 1564                     | ---                  |          |
|  | 303d/TMDL Listed Streams (DEQ)   | 299                      | 15%                  |          |
| <b>Riparian Land Cover/Land Use<sup>15</sup></b><br>(Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)            | Dev/Barren   | 343.567                  | 0.96                 |          |
|  | Fallow   | 0                        | 0                    |          |
|  | Forest   | 4946.561                 | 13.9                 |          |
|  | Grain Crops  | 29.724                   | 0.08                 |          |
|  | Grass/Pasture  | 4456.259                 | 12.5                 |          |
|  | Orchards/Vine  | 0                        | 0                    |          |
|  | Row Crops  | 16251.527                | 45.5                 |          |
|  | Shrub/Range  | 239.277                  | 0.67                 |          |
|  | Water  | 4041.6                   | 11.3                 |          |
|  | Wetlands   | 5383.4                   | 15.1                 |          |
|  | <b>Total Buffer Acres</b>  |                          | <b>62,421.30</b>     | ---      |
| <b>Crop and Pastureland Land Capability Class<sup>16</sup></b><br>(Croplands & Pasturelands Only)<br>(1997 NRI Estimates for Non-Federal Lands Only) | <b>1</b> – slight limitations  | 132200                   | 19%                  |          |
|  | <b>2</b> – moderate limitations  | 393,600                  | 57%                  |          |
|  | <b>3</b> – severe limitations  | 149,900                  | 22%                  |          |
|  | <b>4</b> – very severe limitations   | 4,400                    | 1%                   |          |
|  | <b>5</b> – no erosion hazard, but other limitations  | 3,400                    | 0%                   |          |
|  | <b>6</b> – severe limitations; unsuitable for cultivation; limited to pasture, range, forest                 | 6,200                    | 1%                   |          |
|  | <b>7</b> – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat | 4,200                    | 1%                   |          |
|  | <b>8</b> – miscellaneous areas; limited to recreation, wildlife habitat, water supply                        | 0                        | 0%                   |          |
|  | <b>Total Croplands &amp; Pasturelands</b>  |                          | <b>693,900</b>       | ---      |
|  | TYPE OF LAND   | ACRES                    | % of Irrigated Lands | % of HUC |
| <b>Irrigated Lands<sup>17</sup></b><br>(1997 NRI Estimates for Non-Federal Lands Only)   | Cultivated Cropland  | 0                        | 0%                   | 0%       |
|  | Uncultivated Cropland  | 0                        | 0%                   | 0%       |
|  | Pastureland  | 0                        | 0%                   | 0%       |
|  | <b>Total Irrigated Lands</b>   | 0                        | 0%                   | 0%       |

## Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies with impaired use(s) must be placed on a state's impaired waters list. A water body is "Impaired" or polluted when it fails to meet one or more of the Federal Clean Water Act's water quality standards. Federal Standards exist for basic pollutants such as sediment, bacteria, nutrients, and mercury. The Clean Water Act requires the Minnesota Pollution Control Agency (MPCA) to identify and restore impaired waters.



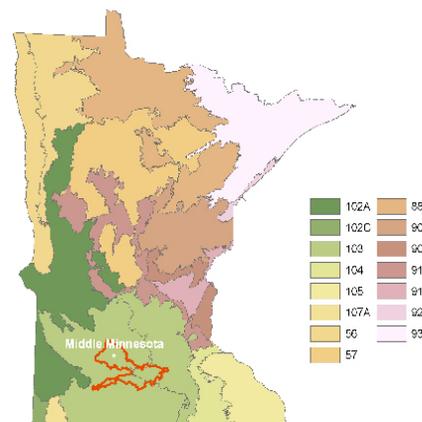
| Listed Stream / Reach <sup>8</sup>                   | Impairment                                     | Affected Use  |
|--|--|---|
| Minnesota River; Cherry Cr to Le Sueur Cr            | Mercury, Phosphorus, Fecal Coliform            | Aquatic Recreation and Aquatic Consumption            |
| Minnesota River; Rogers Cr to Cherry Cr              | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Cottonwood River; JD #30 to Minnesota R              | Mercury, Fecal Coliform, Turbidity             | Aquatic Life, Aquatic Recreation, Aquatic Consumption |
| Minnesota River; Shanaska Cr to Rogers Cr            | Mercury, Phosphorus, Fecal Coliform, Turbidity | Aquatic Life, Aquatic Recreation, Aquatic Consumption |
| Minnesota River; Blue Earth R to Shanaska Cr         | Mercury, Phosphorus, Fecal Coliform, Turbidity | Aquatic Life, Aquatic Recreation, Aquatic Consumption |
| Minnesota River; Cottonwood R to Little Cottonwood R | Mercury, Fecal Coliform, Turbidity             | Aquatic Life and Aquatic Consumption                  |
| Minnesota River; Minneopa Cr to Blue Earth R         | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Swan Lk outlet to Minneopa Cr       | Mercury, Fecal Coliform, Turbidity             | Aquatic Life and Aquatic Consumption                  |
| Minnesota River; Morgan Cr to Swan Lk                | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Little Cottonwood R to Morgan Cr    | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Eight Mile Cr to Cottonwood R       | Mercury, Fecal Coliform, Turbidity             | Aquatic Life and Aquatic Consumption                  |
| Minnesota River; Little Rock Cr to Eight Mile Cr     | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Spring Cr to Little Rock Cr         | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Fort Ridgely Cr to Spring Cr        | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Wabasha Cr to Fort Ridgely Cr       | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Birch Coulee to Wabasha Cr          | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| Minnesota River; Beaver Cr to Birch Coulee           | Mercury, Fecal Coliform, Turbidity             | Aquatic Life and Aquatic Consumption                  |
| Rogers Creek; Unnamed Cr to Minnesota R              | Fish IBI                                       | Aquatic Life  |
| Minnesota River; Redwood R to Beaver Cr              | Mercury, Phosphorus                            | Aquatic Consumption                                   |
| <b>Listed Lake / Water Body</b>                      | <b>Impairment</b>                              | <b>Affected Use</b>                                   |
| George   | Mercury  | Aquatic Consumption                                   |
| Loon   | Mercury  | Aquatic Consumption                                   |
| Crystal  | Excess nutrients                               | Aquatic Recreation                                    |
| Hiniker Pond   | Mercury  | Aquatic Consumption                                   |

## Common Resource Areas

The Middle Minnesota Watershed is located within a single common resource area, CRA 103.1. <sup>9</sup>

**103.1 – Iowa and Minnesota Till Prairies:** Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash and flood plains. Nearly level to gently undulating with relatively short slopes. Most of the wet soils have been artificially drained to maximize crop production.

Primary land use is cropland. Corn, soybeans, sugar beets, peas and sweet corn are the major crops. Native vegetation was dominantly tall grass prairie. Resource concerns are water and wind erosion, nutrient management, and water quality.



Only the major CRA units are described above. For further information, go to: <http://soils.usda.gov/survey/geography/cra.html>

## Geology / Soils <sup>10</sup>

The northern side of the Middle Minnesota River watershed has a gently undulating land surface formed on glacial deposits. Buried beds of sand and gravel are found at various depths within the glacial deposits and are generally thin and discontinuous. Directly underlying the glacial deposits in the western part of this region are Cretaceous sedimentary deposits of shale and sandstone. Moving in an easterly direction from Courtland to Mankato, underlying deposits shift to thick beds of Paleozoic and Precambrian shale, sandstone, and dolomite.

In the southern half of the Middle Minnesota watershed thin glacial deposits and thin discontinuous Cretaceous deposits cover Cambrian sandstone, which thickens in an eastward gradient. Deep Precambrian crystalline rocks underlie the sedimentary deposits throughout the entire watershed. (Van Voast, 1972).

According to the University of Minnesota's Department of Soil Water and Climate, the southern half of this watershed (including the Little-Cottonwood River watershed) is mainly comprised of Wetter Blue Earth till deposits. These deposits are a complex mixture of relatively flat (2-6%) well drained soils and very flat (0-2%) poorly drained soils. Soils within these deposits are generally loamy in texture. Artificial drainage to remove ponded water from flat and depressional areas is extensive.

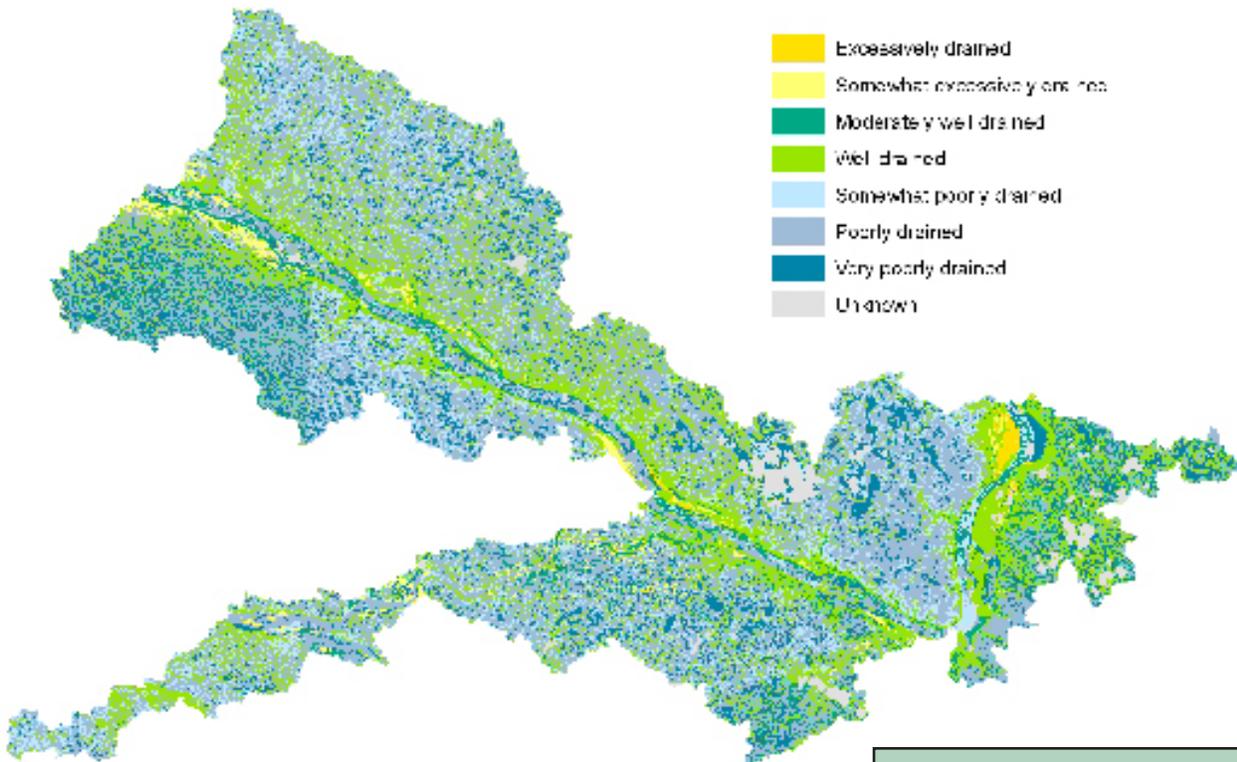
Surficial deposits within the northern half of the watershed fall primarily within the Olivia Till Plain although some clay/silt and morainal deposits exist in the eastern corner of the watershed. The Olivia Till Plain is characterized by landscapes with moderate slopes. Slightly over half of these lands have a moderate water erosion potential. Soils are mostly loams and silt loams, with roughly two thirds being well drained and the remainder being tile drained. Roughly one fourth of the land in the Olivia Till is adjacent to streams or drainage ditches.

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

## Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the “Soil Survey Manual.”



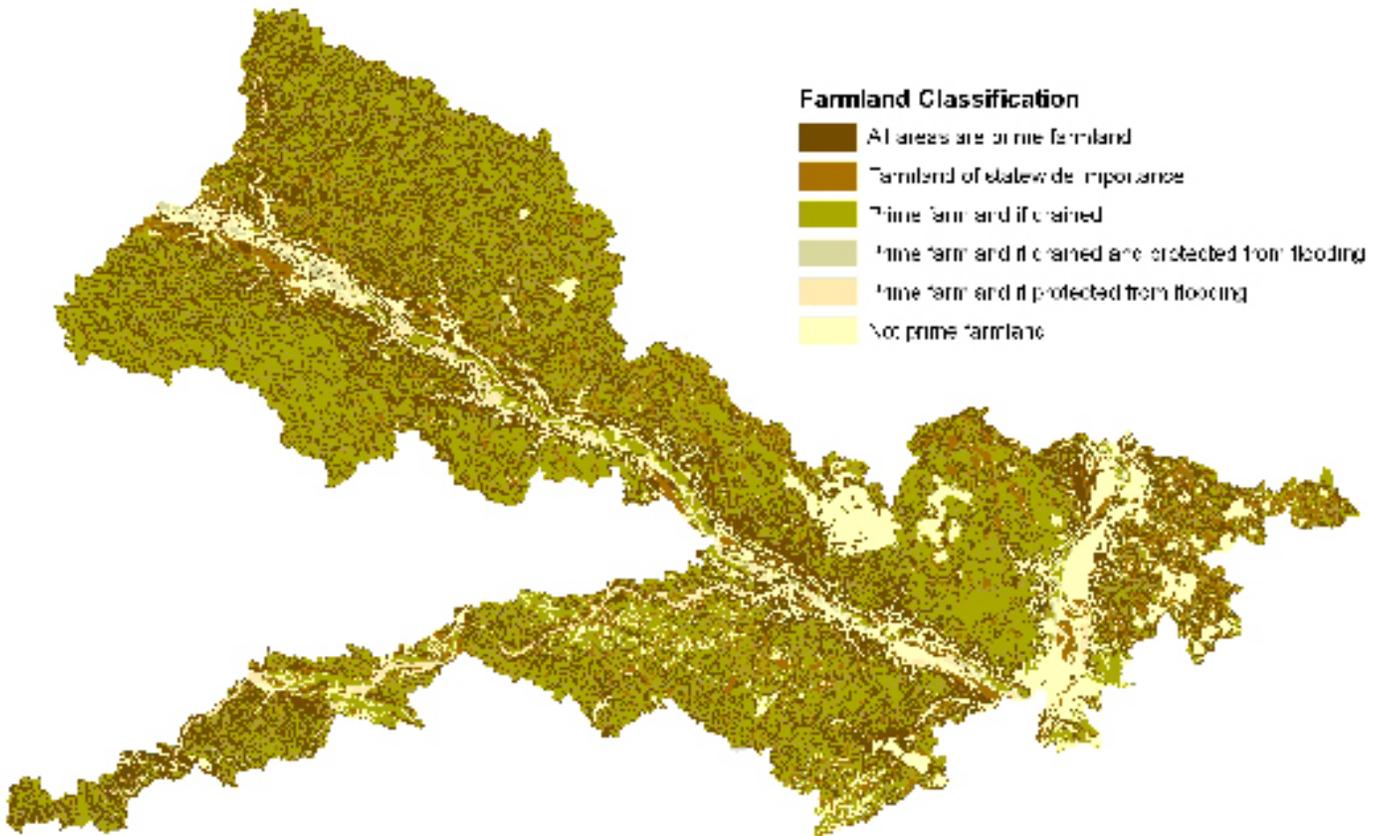
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## Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland.

Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



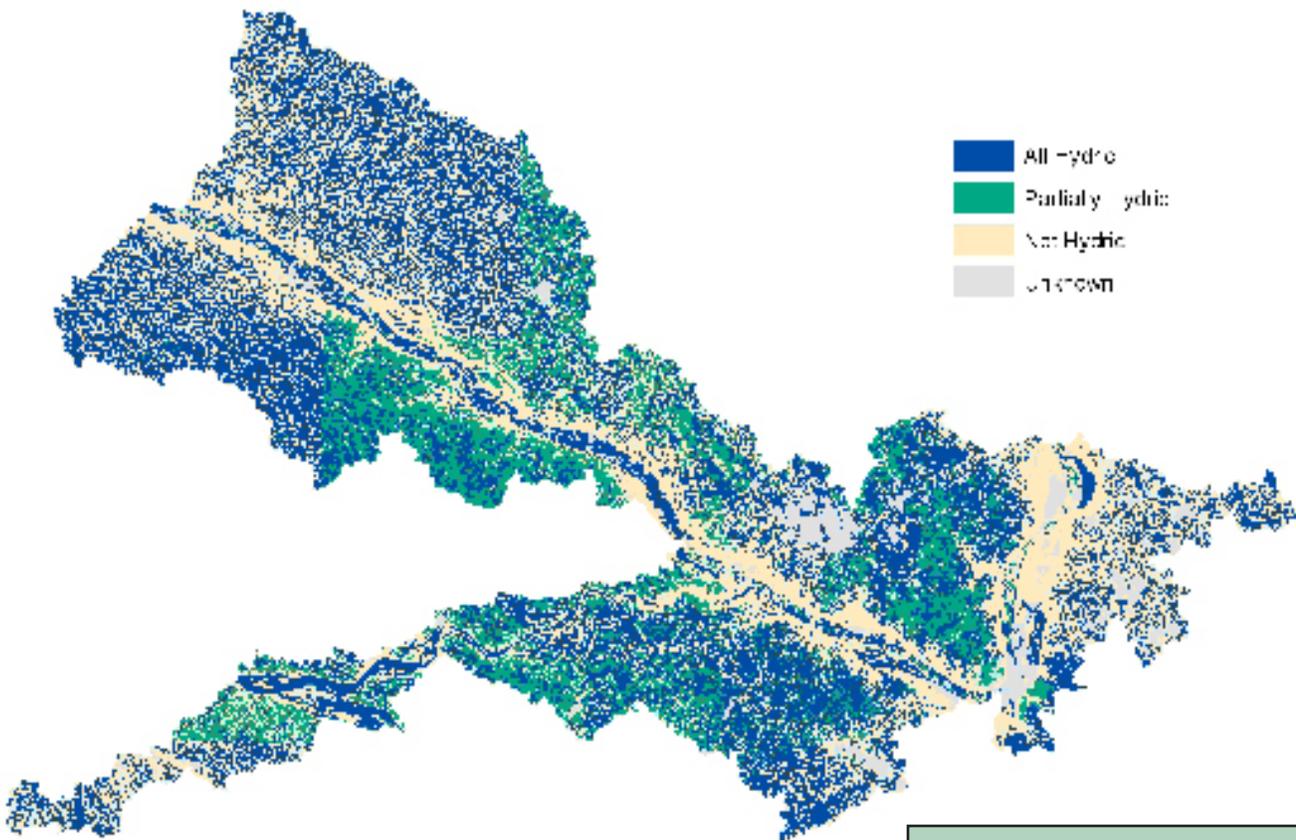
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## Hydric Soils

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of nonhydric soils in the higher positions on the landform. Map units of dominantly non-hydric soils may therefore have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field.



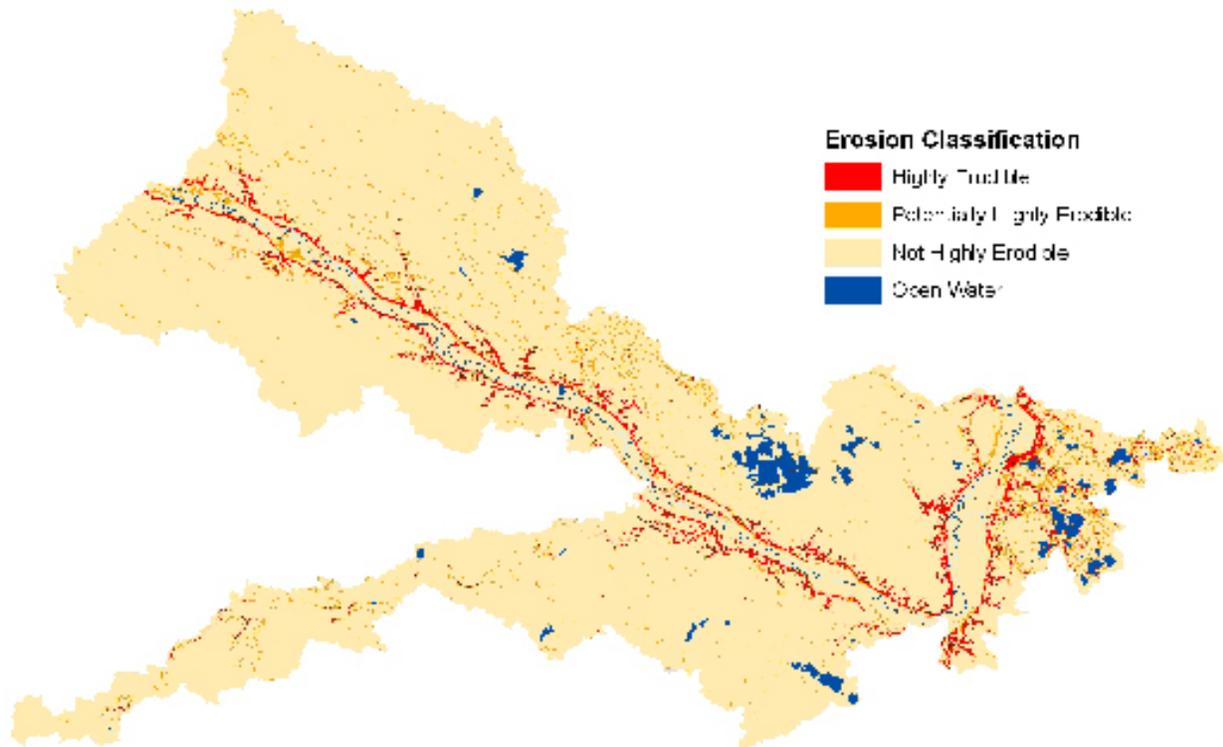
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## Highly Erodible Land (HEL)

The erodibility index (EI) for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990.

A soil map unit with an EI of 8 or greater is considered to be highly erodible land (HEL).

Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.



### Erosion Classification

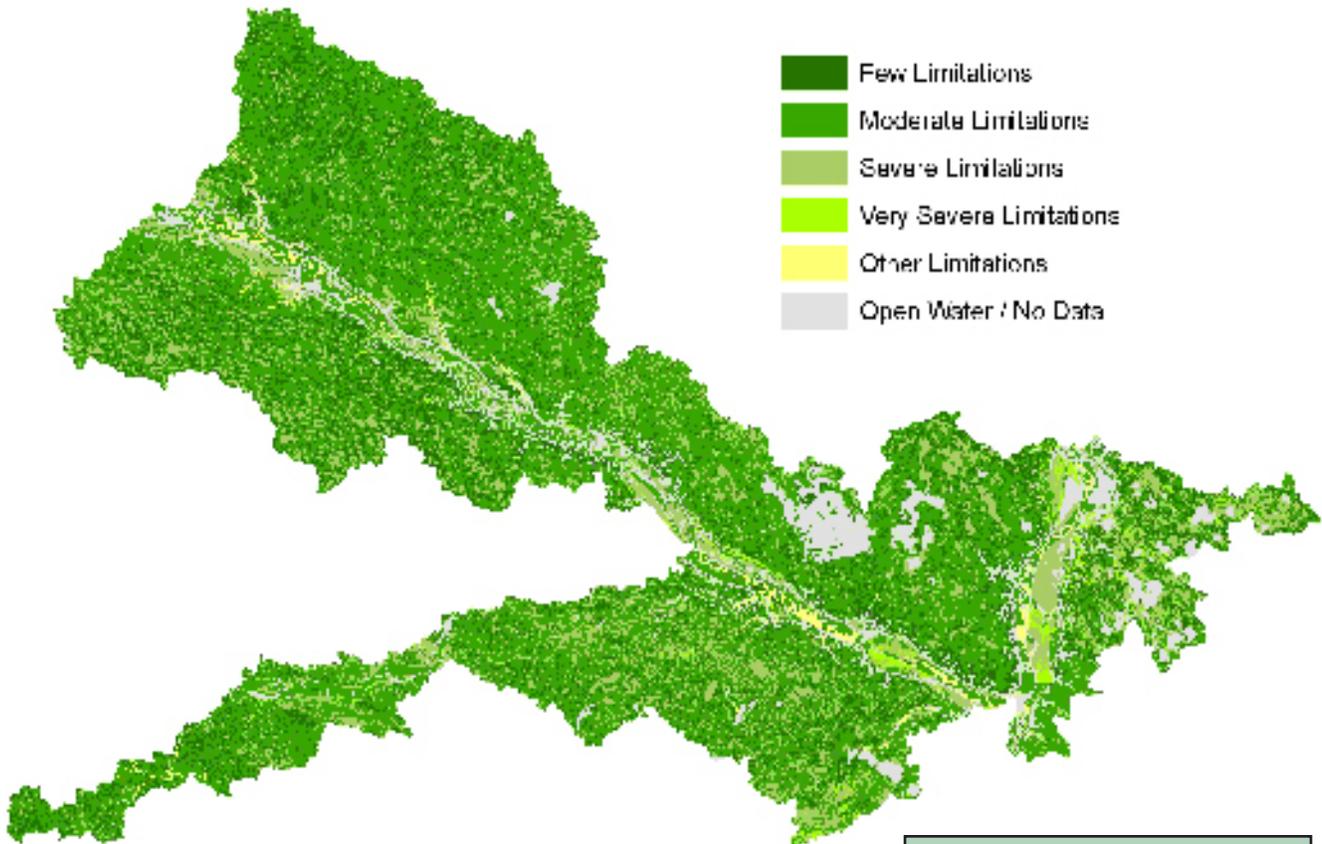
- Highly Erodible
- Potentially Highly Erodible
- Not Highly Erodible
- Open Water

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## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management.

The criteria used in grouping the soils does not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



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**Performance Results System and Other Data**

NRCS Conservation treatment practices applied or prescribed within the Middle Minnesota watershed in the three year reporting period primarily concentrated on Erosion control (6,581 acres/yr average), Conservation tillage (5,078 acres), Conservation crop rotations (4,419 acres), Wildlife Habitat (2,186 acres), and Prescribed Grazing (2,005 acres). Other notable efforts have been made in areas of air quality/ wind erosion management, with the addition of an average 5,400 feet of windbreak yearly.

| Conservation Treatment Acres   | NRCS Practice Code                               | FY 04 | FY 05 | FY 06        | Avg/Year | Total |
|--|--|-------|-------|--------------|----------|-------|
| Waste Management (Number)  | 313, 317, 359                                    | 0     | 0     | 0            | 0        | 0     |
| Buffers (Acres)  | 391, 393   | 237   | 255   | 725          | 406      | 1217  |
| Erosion Control (Acres)  | 311, 332, 589, 386, 412, 600, 601, 603, 380, 650 | 4644  | 5390  | 9709         | 6581     | 19743 |
| Irrigation Water Management (Acres)  | 449  | 0     | 0     | 0            | 0        | 0     |
| Wind Break (ft)  | 380  | 4641  | 4264  | 7555         | 5487     | 16460 |
| Atmospheric Resource Quality Management (Acres)                              | 370  | 0     | 0     | 0            | 0        | 0     |
| Nutrient Management (Acres)  | 590  | 398   | 1012  | 2111         | 1174     | 3521  |
| Pest Management (Acres)  | 595  | 0     | 121   | 1648         | 590      | 1769  |
| Prescribed Grazing (Acres)   | 528, 472, 528A                                   | 1831  | 1497  | 2687         | 2005     | 6015  |
| Prescribed Burning (Acres)   | 338  | 26    | 104   | 12           | 47       | 142   |
| Trees & Shrubs (Acres)   | 612, 666   | 25    | 51    | 22           | 33       | 98    |
| Conservation Tillage (Acres)   | 329A, 329B, 329C                                 | 3096  | 5976  | 6162         | 5078     | 15234 |
| Conservation Crop Rotations (Acres)  | 328  | 1666  | 3735  | 7856         | 4419     | 13257 |
| Cover Crops (Acres)  | 340  | 0     | 17    | 0            | 6        | 17    |
| Wildlife Habitat (Acres)   | 644, 645   | 1102  | 2179  | 3276         | 2186     | 6557  |
| Brush Management (Acres)   | 314  | 0     | 0     | 0            | 0        | 0     |
| Restoration of Declining Habitat (Acres)                                     | 643  | 588   | 177   | 764          | 510      | 1529  |
| Wetland Wildlife Habitat Management (Acres)                                  | 644  | 436   | 566   | 415          | 472      | 1417  |
| Wetlands (Acres)   | 657, 658, 659                                    | 767   | 841   | 816          | 808      | 2424  |
| <b>LANDS REMOVED FROM PRODUCTION THROUGH FARM BILL PROGRAMS<sup>11</sup></b> |  |       |       |              |          |       |
| <b>Program</b>   |  |       |       | <b>Acres</b> |          |       |
| Conservation Reserve Program (CRP)   |  |       |       | 7,099        |          |       |
| Wetland Restoration Program (WRP)  |  |       |       | 1,026        |          |       |
| Conservation Reserve Enhancement Program (CREP)                              |  |       |       | 4,322        |          |       |

## Socioeconomic and Agricultural Data (Relevant)

Estimates for the Middle Minnesota subbasin show a population of just under 27,600 people. Median household income throughout the district is over \$40,000 yearly, roughly 87% of the national average. Seventy percent of the population over the age of 18 is active in the workforce, and approximately 8% of the residents in the watershed are below the national poverty level.



There are 1,011 Farms in the Middle Minnesota Watershed. Approximately forty-three percent of the operations are less than 180 acres in size, forty-seven percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

| Middle Minnesota Watershed HUC# 7020007 <sup>12</sup> |                                |                  |
|---|--------------------------------|------------------|
| Population Data                                       | Watershed Population           | 27,589           |
|   | Unemployment Rate              | 3.97%            |
|   | Median Household Income        | 40,394           |
|   | % below poverty level          | 8%               |
|   | Median Value of Home           | 85,291           |
| Farms   | # of Farms                     | 1,011            |
|   | # of Operators                 | 1,005            |
|   | # of Full Time Operators       | 756              |
|   | # of Part Time Operators       | 256              |
|   | <b>Total Crop/Pasturelands</b> | <b>693,900</b>   |
| Farm Size   | 1 to 49 Acres                  | 217              |
|   | 50 to 179 Acres                | 218              |
|   | 180 to 499 Acres               | 305              |
|   | 500 to 999 Acres               | 177              |
|   | 1,000 Acres or more            | 94               |
| Livestock & Poultry                                   | Cattle - Beef                  | 25,003           |
|   | Cattle - Dairy                 | 13,476           |
|   | Chicken                        | 1,060,398        |
|   | Swine                          | 316,947          |
|   | Turkey                         | 257,672          |
|   | Other                          | 7,816            |
|   | <b>Animal Count Total:</b>     | <b>1,681,312</b> |
| <b>Total Permitted Animal Feeding Operations:</b>     | <b>461</b>                     |                  |
| Chemicals Applied                                     | Insecticides                   | 27,259           |
|   | Herbicides                     | 226,863          |
|   | Wormicides                     | 5,186            |
|   | Fruiticides                    | 508              |
|   | Total Chemicals                | 259,816          |
|   | <b>% State Chemical Totals</b> | <b>1.82%</b>     |

## RESOURCE CONCERNS

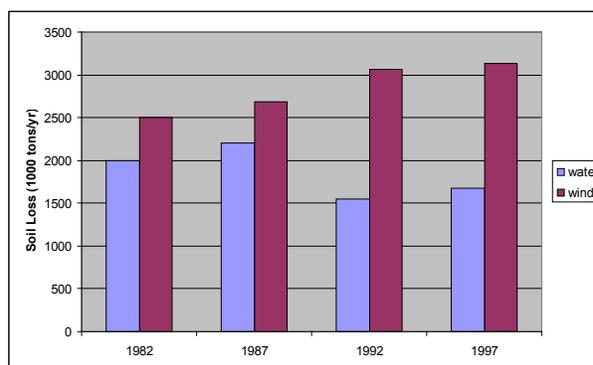
County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:



- Soil Quality, Excessive Sheet and Rill Erosion. Soil Erosion and Deposition has ranked as a top concern in each county within the watershed.
- Soil Quality, Excessive Wind Erosion. Prairie Topography makes wind erosion a major conservation issue. Wind erosion physically removes the lighter, less dense soil constituents such as organic matter, clays, silts, thus removing the fertile part of the soil and lowering productivity.
- Surface Water Quality, Nutrients. Reduction of priority pollutants and sediments in surface waters is a priority issue throughout the watershed. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.
- Ground Water Quality, Nutrients, Organics, Animal and Human Waste. Aging septic systems, feedlot runoff, cropland nutrient runoff, tilling practices, and abandoned wells all pose significant threats to groundwater quality throughout the region.
- Surface Water Management, Flood Control, Drainage Management. Drained wetlands, crop production in flood prone areas, and aging dams all diminish surface water quality and productivity. Restoration of wetlands, dam repair and placing flood-prone lands in CRP/RIM all serve to lessen the impact of flooding and improve drainage.

- NRI estimates for sheet and rill erosion on the crop and pasture land declined by approximately 329,000 (16.5%) tons of soil between 1982 and 1997.
- NRI estimates indicate wind erosion in the subbasin increased by 636,900 tons (25.48%) between 1982 and 1997.

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| Federally Listed Threatened And Endangered Species <sup>114</sup>   |                                |
|---|--------------------------------|
| <b>ENDANGERED SPECIES</b>   | <b>CANDIDATE SPECIES</b>       |
| <b>Fish</b> – Topeka Shiner   | <b>Insect</b> – Dakota Skipper |
| <b>THREATENED SPECIES</b>   | <b>PROPOSED SPECIES</b>        |
| <b>Plants</b> – Western Prairie Fringed Orchid, Prairie Bush Clover   | None                           |
| <b>Essential Habitat</b> - -Prairie river and stream habitat for the Topeka Shiner in Lincoln County. Gravelly soil, dry to mesic prairie for the Prairie bush-clover in Brown, Cottonwood, Redwood, and Renville counties. |                                |

## Watershed Projects, Plans and Monitoring

- **Blue Earth River TMDL Project,**  
     Minnesota Pollution Control Agency
- **Brown- Nicollet-Cottonwood CWP P I & II**  
     Brown-Nicollet-Cottonwood Water Quality Board
- **Lake Ballantyne Lake Assessment Program**  
     Minnesota Pollution Control Agency
- **Crystal Loon Mills Lakes CWP-Phase I**  
     Blue Earth County
- **Duck Lake CWP-Phase I&II**  
     Blue Earth County
- **Little Cottonwood River CWP-Phase I and  
     EQIP Prog Watershed Priority area**  
     Redwood / Cottonwood Control Area
- **Lake Crystal Lake Assessment Program**  
     Blackdog Water Management Commission
- **Lake Washington-CWP Phase I & II**  
     Le Sueur and Blue Earth County Joint Powers Board
- **Minnesota River Turbidity TMDL Work Plan**  
     Minnesota Pollution Control Agency.
- **MRAP Biological & Toxicological Assessment**  
     Minnesota Pollution Control Agency
- **MRAP Land Use Assessment LevelsIII,IV**  
     Minnesota Pollution Control Agency
- **South Central MN Comprehensive County  
     Water Planning Project,**  
     Minnesota River Basin Joint Powers Board

\* Have a watershed project you'd like to see included? Submit suggestions online @ <http://www.mn.nrcs.usda.gov/technical/rwa/>

## Conservation Districts, Organizations & Partners

- **Area II Minnesota River Basin Projects, Inc**  
 1400 E Lyon Street, Bx 267 Marshall, MN 56258  
 Phone 507-537-6369 Fax 507-537-6368
- **Black Dog Water Management Commission**  
 100 Civic Center Pkwy, Burnsville, MN 55337  
 Phone 952-895-4505
- **Blue Earth Co. Soil & Water Conservation District**  
 1160 Victory Dr #3 Mankato, MN 56001-5307  
 Phone 507-345-4744
- **Brown Co. Soil & Water Conservation District**  
 184 Trafton Science Center S, Mankato, MN 56001  
 Phone 507-389-5492 Fax 507-389-5493
- **Brown-Nicollet-Cottonwood Water Quality Board**  
 322 South Minnesota Avenue. St. Peter, MN 56082.  
 Phone: 507-934-4140
- **Cottonwood Co. Soil & Water Conservation District**  
 339 9th St, Windom, MN 56101  
 Phone (507) 831-1153
- **Le Sueur Co. Soil & Water Conservation District**  
 181 W. Minnesota St. Le Center, MN 56057  
 Phone 507-357-4879
- **Mid-Lower Minnesota River CWP**  
 520 Lafayette Rd. St. Paul, MN 55155  
 Phone 612-282-5559
- **Minnesota River Basin Joint Powers Board**  
 600 E. 4th St Chaska, MN 55318-2108  
 Phone 952-361-6590 Fax 952-361-6594
- **Nicollet Co. Soil & Water Conservation District**  
 501 South Minnesota Avenue St. Peter, MN 56082  
 Phone 507- 931-6800
- **Redwood Soil & Water Conservation District**  
 1241 E Bridge Street Redwood Falls, MN 56283  
 Phone 507-637-2427 ext. 3 Fax 507-637-8136
- **Renville Soil & Water Conservation District**  
 1008 W Lincoln Olivia, MN 56277  
 Phone 320-523-1553 ext. 3 Fax 320-523-2389
- **South Central Comprehensive Water Plan  
 Joint Powers Board** P.O. Box 248, New Ulm,  
 MN 56073 Phone 507-233-6642
- **Sibley Co. Soil & Water Conservation District**  
 111 6th Street, PO Box 161, Gaylord, MN 55334  
 Phone -507-237-5435 Ext. 103
- **Prairie Country RC&D**  
 1005 High Avenue NE Willmar, MN 56201-4817  
 Phone 320-231-0008 Fax 320-235-8151
- **Watsonwan Co. Soil & Water Conservation Dist**  
 823 1st AVE. S., Suite 2 St. James, MN 56081  
 Phone 507-375-3104

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## Footnotes / Bibliography

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1. Ownership Layer – Source: MN Stewardship Data: Minnesota Department of Natural Resources, Section of Wildlife, BRW, Inc, 2007. This is the complete GAP Stewardship database containing land ownership information for the entire state of Minnesota. Date of source material is variable and ranges from 1976 to 2007, although a date range of 1983 to 1985 predominates. Land interest is expressed only when some organization owns or administers more than 50% of a forty except where DNR could create sub-forty accuracy polygons.
2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Minnesota Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA.
3. Ownership layer classes grouped to calculate Public ownership vs. Private and Tribal ownership by Minnesota NRCS Rapid Watershed Assessment Staff. Land cover / Land use data was then extracted from the National Landcover Dataset Classification System and related to ownership class polygons.
4. USGS 1:100,000 Hydrography Layer .This data set represents all features coded as ‘rivers’ on the USGS 1:100,000-scale DLG Hydrography data set. This current version was converted to ARC/INFO by the Land Management Information Center and edge-matched across map sheet boundaries. Minnesota DNR made further modifications to the files, verified lake feature identifiers, and created a state layer from the separate 100k data. The Hydro 100k layer was compared to MPCA’s 303(d) data to derive percentage of listed waters.
5. Land Cover / Land Use / Hydro 100k Buffer. Using the 100k Hydrology dataset, All streams within HUC were spatially buffered to a distance of 100 ft. National Landcover Dataset attributes were extracted for the spatial buffer to demonstrate the vegetation and landuse in vulnerable areas adjacent to waterways.
6. Land Capability Class. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. 1997 NRI Irrigated Land Estimates. Irrigated land: Land that shows evidence of being irrigated during the year of the inventory or during two or more years out of the last four years. Water is supplied to crops by ditches, pipes, or other conduits. Water spreading is not considered irrigation; it is recorded as a conservation practice. [NRI-97] For more information: <http://www.nrcs.usda.gov/technical/NRI/>
8. 303(d) Stream data. Minnesota’s Final Impaired Waters (per Section 303(d) Clean Water Act), 2006. Data obtained from Minnesota Pollution Control Agency (MPCA). The Minnesota Pollution Control Agency (MPCA) helps protect state water by monitoring quality, setting standards and controlling inputs through the development of TMDL plans. <http://www.pca.state.mn.us/water/tmdl/index.html#maps>.

## Footnotes / Bibliography (continued)

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9. National Coordinated Common Resource Area (CRA) Geographic Database. A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

10. Soil Survey Geographic Database (SSURGO) Tabular and spatial data obtained from NRCS Soil Data Mart at <http://soildatamart.nrcs.gov>. Publication dates vary by county. Component and layer tables were linked to the spatial data via SDV 5.1 and ARCGIS 9.1 to derive the soil classifications presented in these examples. Highly Erodible Land Classification Data obtained from USDA/NRCS EFOTG Section II, County Soil Data. HEL classifications were appended to SSURGO spatial data via an ARCEdit session. Addendum and publication dates vary by county. Geological description: Van Voast, W. A., Broussard, W. L., and Wheat, D. E., 1972, Water resources of the Minnesota River-Hawk Creek watershed, southwestern Minnesota: U.S. Geol. Survey Hydrol. Inv. Atlas, HA-391.

11. Lands removed from production through farm bill programs. County enrollment derived from the following: CRP Acres: [www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm](http://www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm) (7/30/04). CREP Acres: <http://www.bwsr.state.mn.us/easements/crep/easementssummary.html> (7/31/03). WRP Acres: NRCS (8/16/04). Data were obtained by county and adjusted by percent of HUC in the county.

12. Socioeconomic and Agricultural Census Data were taken from the U.S. Population Census, 2000 and 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Unemployment statistics obtained from the Bureau of Labor Statistics - Labor Force Data by County, 2006 Annual Averages <http://www.bls.gov> Data were also taken from MPCA AFO/CAFO counts provided by county for 2005.

13. 1997 NRI Estimates for sheet and rill erosion (WEQ & USLE). The NRI estimates sheet and rill erosion together using the Universal Soil Loss Equation (USLE). The Revised Universal Soil Loss Equation (RUSLE) was not used in the 1997 NRI. RUSLE was not available for previous inventories, therefore the use of USLE was continued to preserve the trending capacity of the NRI database. Wind erosion is estimated using the Wind Erosion Equation (WEQ). For further information visit <http://www.mn.nrcs.usda.gov/technical/nri/findings/erosion.htm>

14. Federally listed endangered and threatened species counts obtained from NRCS Field Office Technical Guide, Section II, Threatened and Endangered List. <http://www.nrcs.usda.gov/Technical/efotg/>. Essential fish habitat as established by Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended through October 11, 1996 <http://www.nmfs.noaa.gov/sfa/magact/>

15. Watershed Projects, Plans, Monitoring. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>.