

## Rapid Watershed Assessment

### Clearwater

(MN) HUC: 09020305



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 Clearwater 8-Digit Hydrologic Unit Code (HUC) subbasin is part of the Red River Basin in northwestern Minnesota. The watershed occurs in the Glacial Lake Agassiz Plain, North Central Hardwoods, Northern Lakes and Forests, and Northern Minnesota Wetlands Level III Ecoregions.

The greater Red River basin characteristically has a poorly defined floodplain and low gradient that combine with extensive drainage, widespread conversion of tallgrass prairie to farmland, and urban/suburban development to leave the basin subject to frequent floods that affect urban and rural infrastructure and agricultural production.

The main resource concerns in the watershed are wind and water erosion, nutrient management, wetland management, surface water quality, flood damage reduction, and wildlife habitat. Many of the resource concerns relate directly to flooding and increased sediment and pollutant loadings to surface waters.



### County Totals

<i>County</i>	<i>Acres in HUC</i>	<i>% HUC</i>
Clearwater	315,395	35.6%
Polk	315,357	35.6%
Red Lake	179,174	20.2%
Pennington	37,588	4.2%
Beltrami	27,600	3.1%
Mahnomen	11,518	1.3%
<b>Total acres:</b>	<b>886,632</b>	<b>100%</b>

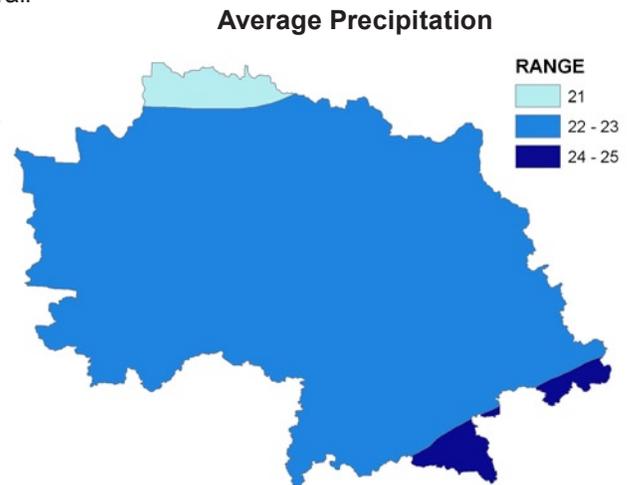
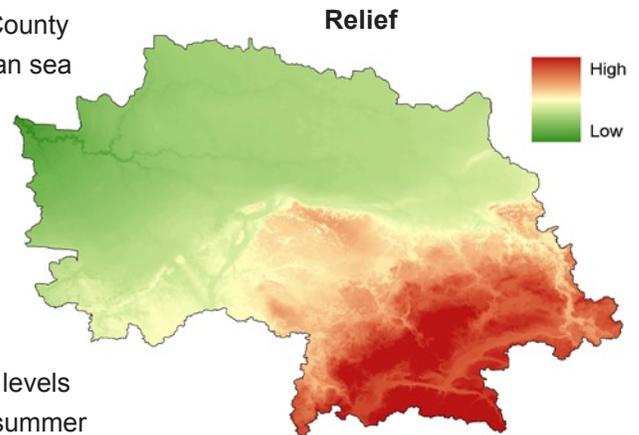
## Physical Description

Clearwater River begins its course in western Clearwater County near the town of Ebro at an elevation of 1,440 ft above mean sea level (msl). The river flows to the northwest and southwest, eventually emptying into Red Lake River near Red Lake Falls at an elevation of 955 ft. Clearwater's two largest tributaries are Lost River and Badger Creek.

Precipitation in the watershed ranges from 21 to 25 inches annually. Above-normal amounts of precipitation in the late fall of the year or from May to October lead to high levels of soil moisture, periodically producing the snow-melt and summer floods that are known to affect the further reaches of the overall Red River Basin.

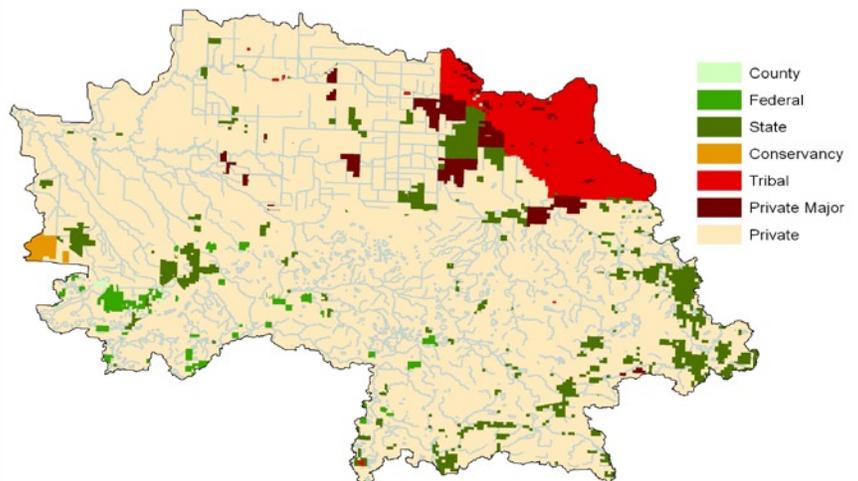
Predominate land uses / land covers are Row Crops (33%), Forest (24%), Grass/Pasture/Hay (21%), Wetlands (14%), and Residential/Commercial Development (4%). Agricultural land use in the basin accounts for approximately 54% of the overall watershed acres.

Development pressure is moderate in most areas, with occasional farms, timberland, and lakeshore being parceled out for recreation, lake or country homes.



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

Ownership Type	Acres	% of HUC
Conservancy	3,231	0.4
County	812	0.1
Federal	9,558	1.1
State	78,321	8.8
Other	-	-
Tribal	56,444	6.4
Private Major	31,338	3.5
Private	706,928	79.7
<b>Total Acres:</b>	<b>886,632</b>	<b>100</b>

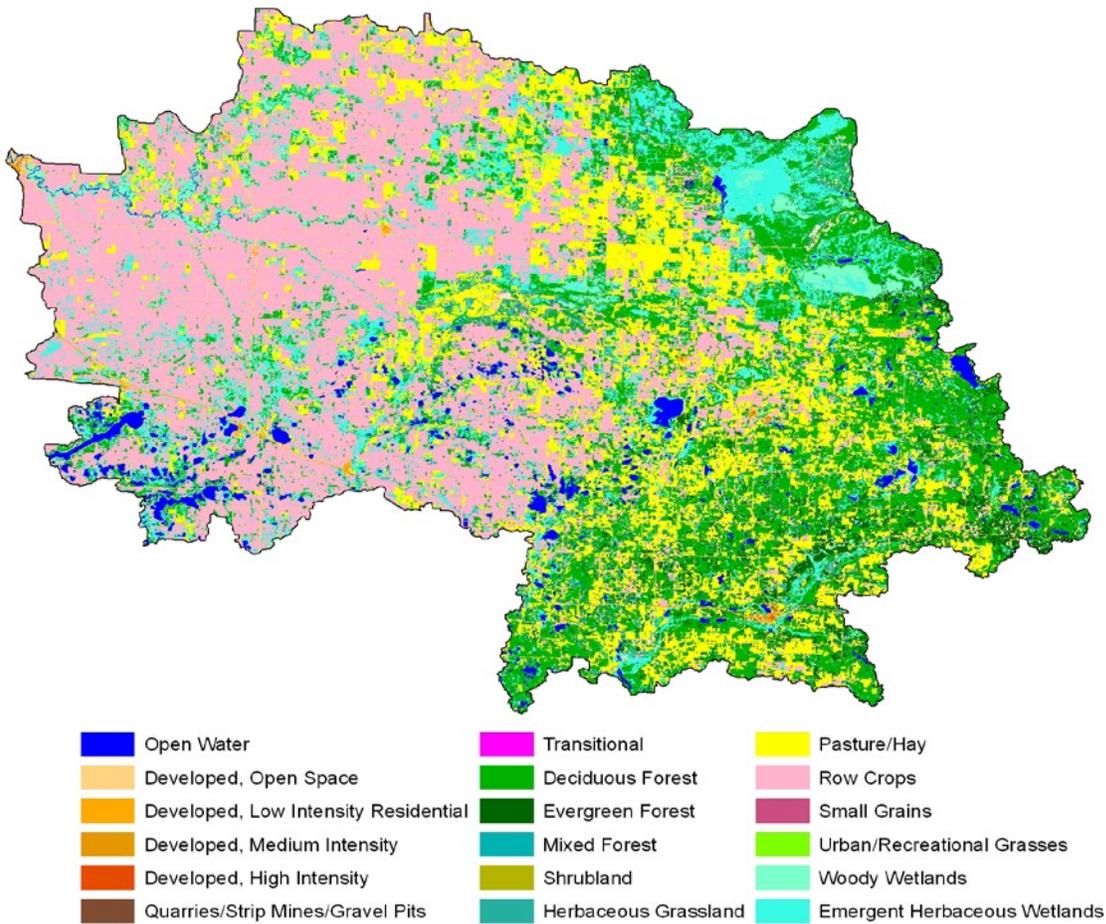


\* Ownership totals derived from 2007 MN DNR GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

## Ownership / Land Use

The Clearwater watershed covers an area of 886,632 acres. Approximately eighty percent of the land in the watershed is owned by private landholders (706,928 acres). The second largest ownership type is State, with approximately 78,320 acres (8.8%), followed by Tribal with 56,444 acres (6.4%), Private-Major with 31,388 acres (3.5%), Federal with 9,558 acres (1.1%), and Conservancy with 3,231 acres (0.4%). County lands account for the smallest percentage, with slightly more than 800 acres (0.1%). Land use by ownership type is represented in the table below.

Land Use / Land Cover <sup>/2</sup>



- |  |   |  |
|--|---|--|
| <span style="color: blue;">■</span> Open Water                                 | <span style="color: magenta;">■</span> Transitional       | <span style="color: yellow;">■</span> Pasture/Hay                    |
| <span style="color: orange;">■</span> Developed, Open Space                    | <span style="color: green;">■</span> Deciduous Forest     | <span style="color: pink;">■</span> Row Crops                        |
| <span style="color: darkorange;">■</span> Developed, Low Intensity Residential | <span style="color: darkgreen;">■</span> Evergreen Forest | <span style="color: purple;">■</span> Small Grains                   |
| <span style="color: brown;">■</span> Developed, Medium Intensity               | <span style="color: cyan;">■</span> Mixed Forest          | <span style="color: lightgreen;">■</span> Urban/Recreational Grasses |
| <span style="color: red;">■</span> Developed, High Intensity                   | <span style="color: olive;">■</span> Shrubland            | <span style="color: lightcyan;">■</span> Woody Wetlands              |
| <span style="color: brown;">■</span> Quarries/Strip Mines/Gravel Pits          | <span style="color: teal;">■</span> Herbaceous Grassland  | <span style="color: cyan;">■</span> Emergent Herbaceous Wetlands     |

Ownership / Land Use <sup>/3</sup>

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	39,174	4.4%	153,352	17.3%	23,957	2.7%	216,483	24.4%
Grass, etc	8,822	1.0%	173,671	19.6%	3,758	0.4%	186,250	21.0%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	8,018	0.9%	283,956	32.0%	318	0.0%	292,292	33.0%
Shrub etc	1,966	0.2%	4,781	0.5%	1,214	0.1%	7,961	0.9%
Wetlands	24,553	2.8%	70,680	8.0%	26,258	3.0%	121,491	13.7%
Residential/Commercial	1,957	0.2%	35,260	4.0%	410	0.0%	37,627	4.2%
Open Water*	4,150	0.5%	19,834	2.2%	530	0.1%	24,514	2.8%
<b>Watershed Totals:</b>	<b>88,640</b>	<b>10.0%</b>	<b>741,534</b>	<b>83.6%</b>	<b>56,444</b>	<b>6.4%</b>	<b>886,632</b>	<b>100%</b>

\* ownership undetermined

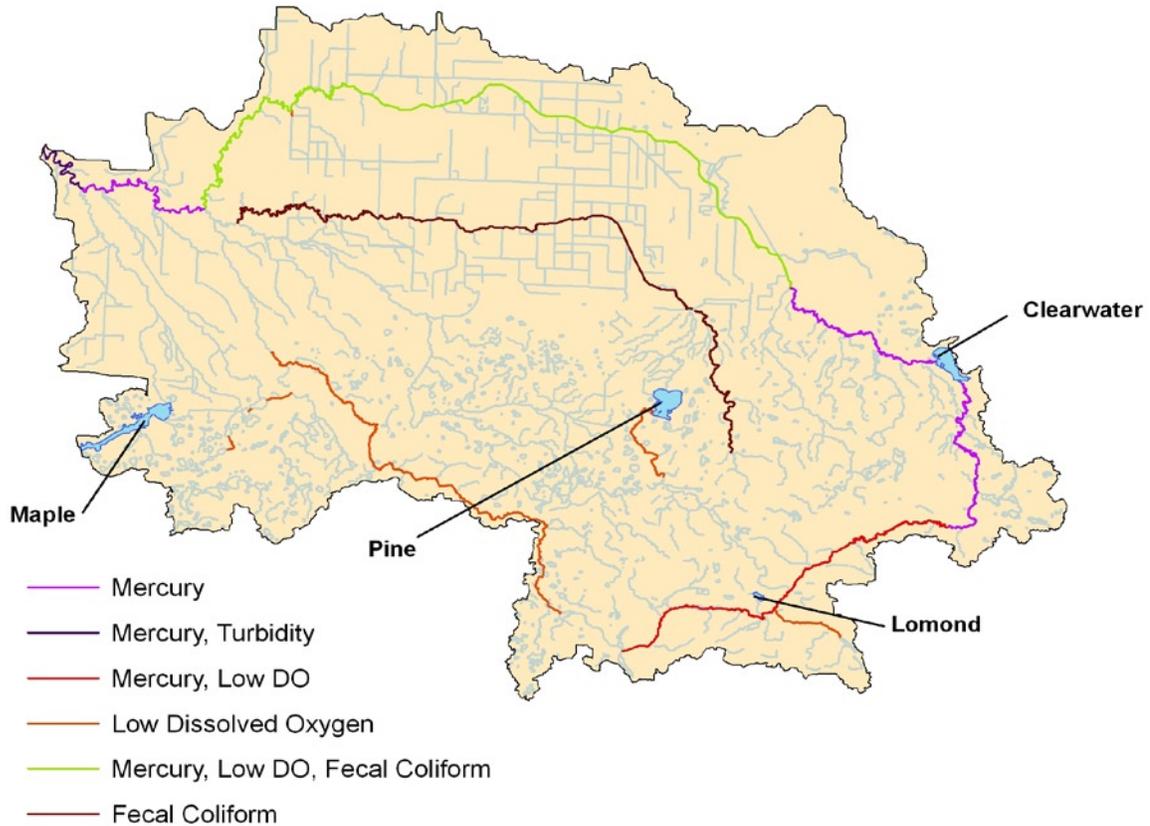
\*\* includes private-major

**Physical Description (continued)**

		ACRES	cu. ft/sec	
<b>Stream Flow Data</b>	USGS 05078500 CLEARWATER RIVER AT RED LAKE FALLS, MN	<b>2008 Avg.</b>	228.1	
		<b>May – Sept. Avg.</b>	306.8	
		<b>ACRES/MILES</b>	<b>PERCENT</b>	
<b>Stream Data<sup>14</sup></b> (*Percent of Total HUC Stream Miles)	Total Miles – Major (100K Hydro GIS Layer)	1,916.5	---	
	303d/TMDL Listed Streams (DEQ)	246.6	12.9%	
<b>Riparian Land Cover/Land Use<sup>15</sup></b> (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	<b>Land Use Type</b>	<b>Acres</b>	<b>Percent</b>	
	Forest	9,741	21.2%	
	Grain Crops	0	0.0%	
	Grass, etc	6,603	14.4%	
	Orchards	0	0.0%	
	Row Crops	10,148	22.1%	
	Shrub etc	361	0.8%	
	Wetlands	10,311	22.4%	
	Residential/Commercial	2,200	4.8%	
	Open Water*	6,637	14.4%	
	<b>Total Buffer Acres:</b>	<b>46,001</b>	<b>100%</b>	
<b>Crop and Pastureland Land Capability Class<sup>16</sup></b> (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	<b>1 – slight limitations</b>	30,800	7%	
	<b>2 – moderate limitations</b>	153,500	37%	
	<b>3 – severe limitations</b>	97,600	24%	
	<b>4 – very severe limitations</b>	95,900	23%	
	<b>5 – no erosion hazard, but other limitations</b>	5,600	1%	
	<b>6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest</b>	27,300	7%	
	<b>7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat</b>	0	0%	
	<b>8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply</b>	0	0%	
	<b>Total NRI Crop &amp; Pasture Lands</b>	<b>410,700</b>	<b>-</b>	
	<b>TYPE OF LAND</b>	<b>ACRES</b>	<b>% of Crop Lands</b>	<b>% of HUC</b>
<b>Irrigated Lands<sup>17</sup></b> (2002 NASS Estimates)	Cultivated Cropland / Pastureland	8,400.6	2.0%	0.9%
	Uncultivated Cropland	0	0%	0%
	<b>Total Irrigated Lands</b>	<b>8,400.6</b>	<b>2.0%</b>	<b>0.9%</b>

## 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.



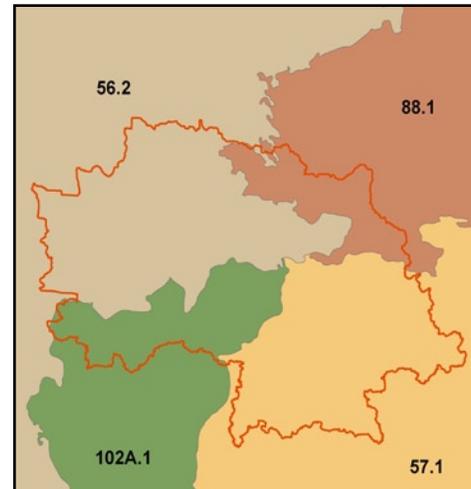
Waterbody Name	Impairment	Affected Use	Waterbody Name	Impairment	Affected Use
Red Lake River Unnamed Creek to Clearwater R	Mercury	Aquatic Consumption	Clearwater River Beau Gerlot Cr to Lower Badger Cr	Mercury	Aquatic Consumption
Clearwater River Lower Badger Cr to Red Lk R	Mercury, Turbidity	Aquatic Consumption, Aquatic Life	Silver Creek Headwaters to Anderson Lk	Fecal Coliform	Aquatic Recreation
Lost River Anderson Lk to Hill R	Fecal Coliform	Aquatic Recreation	Lost River T148 R38W S17 south line to Pine Lk	Low Dissolved Oxygen	Aquatic Life
County Ditch 57 Unnamed Ditch to Clearwater R	Low Dissolved Oxygen	Aquatic Life	Unnamed creek Eighteen Lk to Bee Lk	Low Dissolved Oxygen	Aquatic Life
Walker Brook Walker Bk Lk to Clearwater R	Low Dissolved Oxygen	Aquatic Life	Unnamed creek Mitchell Lk to Badger Lk	Low Dissolved Oxygen	Aquatic Life
Clearwater River Ruffy Bk to Lost R	Low DO, Fecal Coliform, Mercury	Aquatic Consumption, Life and Recreation	Poplar River Diversion Unnamed Ditch to Badger Lk	Low Dissolved Oxygen	Aquatic Life
Clearwater River Lost R to Beau Gerlot Cr	Mercury	Aquatic Consumption	Clearwater	Mercury	Aquatic Consumption
Clearwater River Clearwater Lk to Ruffy Bk	Mercury	Aquatic Consumption	Lomond	Mercury	Aquatic Consumption
Clearwater River T148 R35W S31 west line to Clear	Mercury	Aquatic Consumption	Pine	Mercury	Aquatic Consumption
Clearwater Rvr Headwaters to T148 R36W S36, east	Low Dissolved Oxygen, Mercury	Aquatic Consumption, Aquatic Life	Maple	Mercury	Aquatic Consumption
Poplar River Spring Lk to Highway 59	Low Dissolved Oxygen	Aquatic Life			

## Common Resource Areas

Clearwater River watershed encompasses four Common Resource Areas, 56.2, 57.1, 88.1 and 102A.1. <sup>19</sup>

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 (General Manual Title 450 Subpart C 401.21)

Common Resource Areas are created by subdividing MLRAs by resource concerns, soil groups, hydrologic units, resource use, topography, other landscape features, and human considerations affecting use and treatment needs.



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

**56.2 Glacial Lake Agassiz Basin:** This area is a complex of sandy beach material, stratified interbeach material, lacustrine silts and lake washed glacial till. Soils range from excessively drained on ridges to very poorly drained basins. Many areas have been partially drained. The main crops are small grain, soybeans and hay. Native vegetation was mixed tall and short grass prairie with scattered woodland and brush. Primary resource concerns are wind erosion, droughtiness on sandy soils and wetness in low lying and seepy areas.

**57.1 Northern Minnesota Till Moraine:** Rolling glacial moraine and associated outwash with short, choppy and complex slopes. Soils are generally loamy with some clayey and sandy soils included. Organic soils occur in depressions. Land use is cropland, pasture timber and recreation. Numerous lakes occur in this region. Main crops are small grain, soybeans and forage crops. Resource concerns include improved drainage for crop production, grazing management of forest and grassland, water and wind erosion and water quality impacts.

**88.1 Northern Minnesota Glacial Lake Basins:** Nearly level to gently sloping areas formed in lake washed till, lacustrine and organic soil material. Generally the soils are silty, clayey and loamy with small amounts of sandy and gravelly soils on beach ridges. Timber land is the main use. Scattered cropland and grazing land for beef and dairy are present. Cropland is used mostly for small grain, silage and hay. Resource concerns include management of excessive wetness, short growing season, pasture management, and water quality.

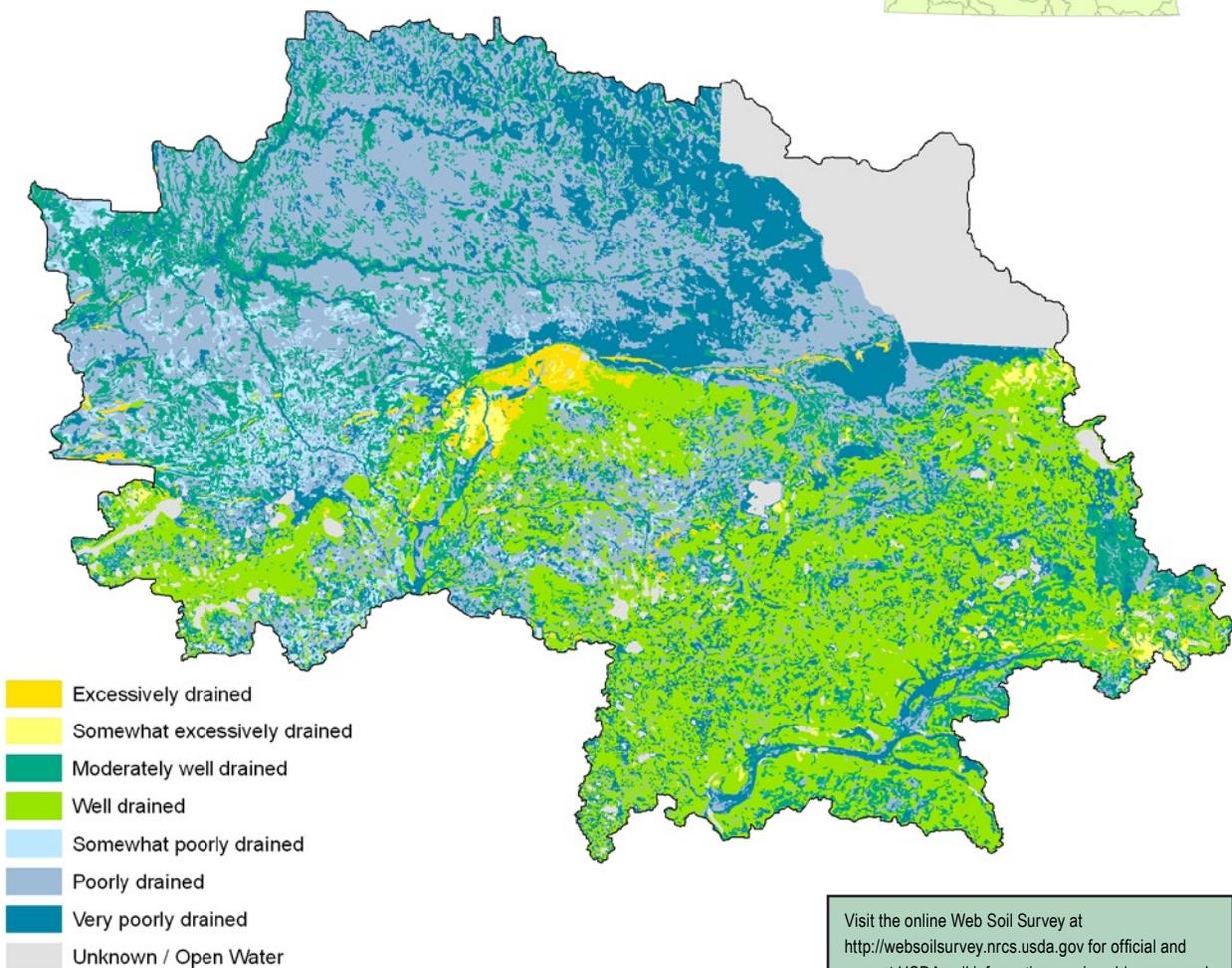
**102A.1 Rolling Till Prairie:** Gently sloping to steep, loamy glacial till soils with scattered sandy outwash soils and silty alluvial flood plains soils. This area is part of the Prairie Pothole region of the upper Midwest. Predominantly cropped to corn and soybeans with increasing hayland and pasture and small grains in the western part. Resource concerns are water and wind erosion, nutrient management and water quality.

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
   
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 certified soil tabular and spatial data.

## Drainage Classification<sup>10</sup>

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.”



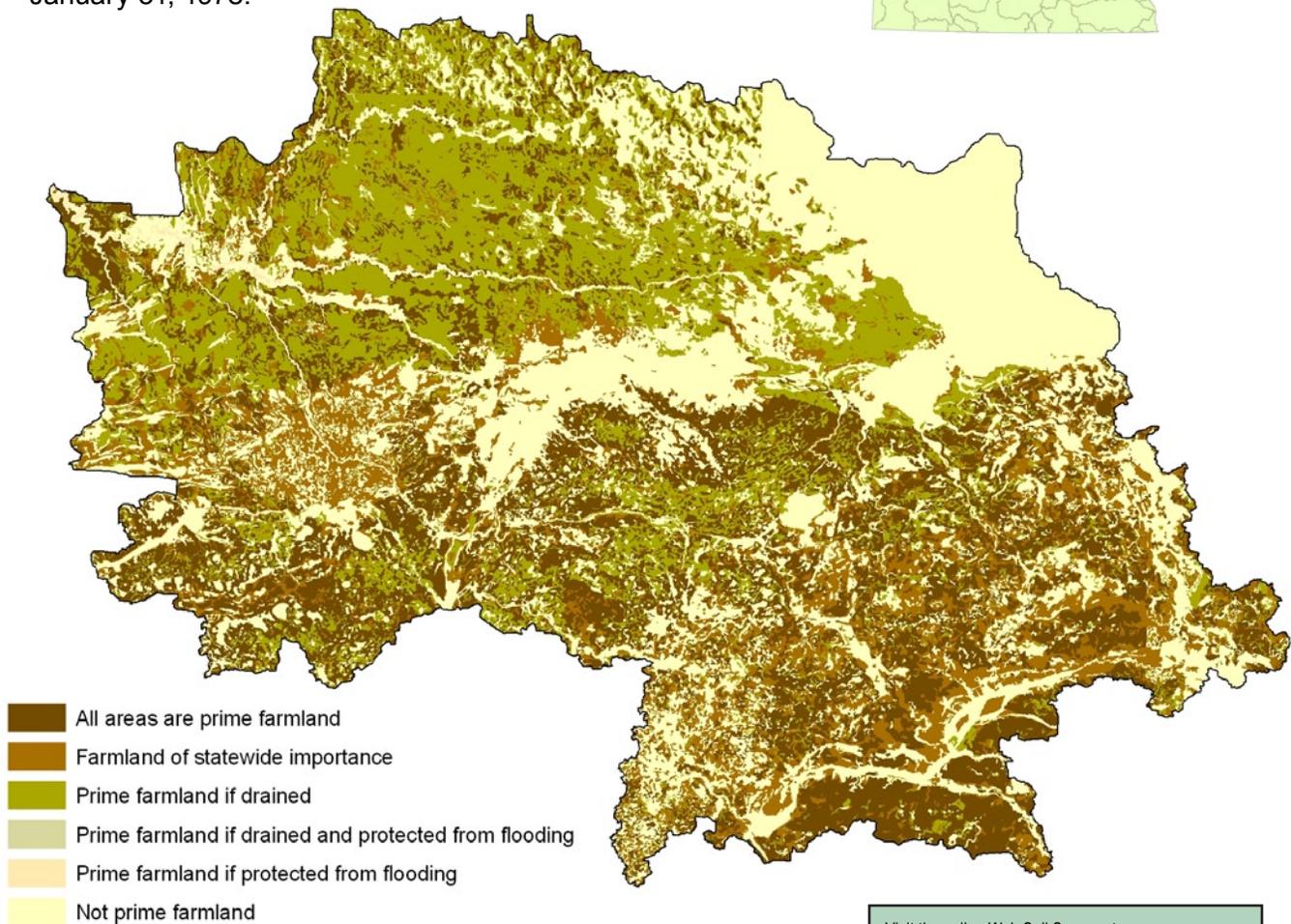
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## Farmland Classification <sup>/10</sup>

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.

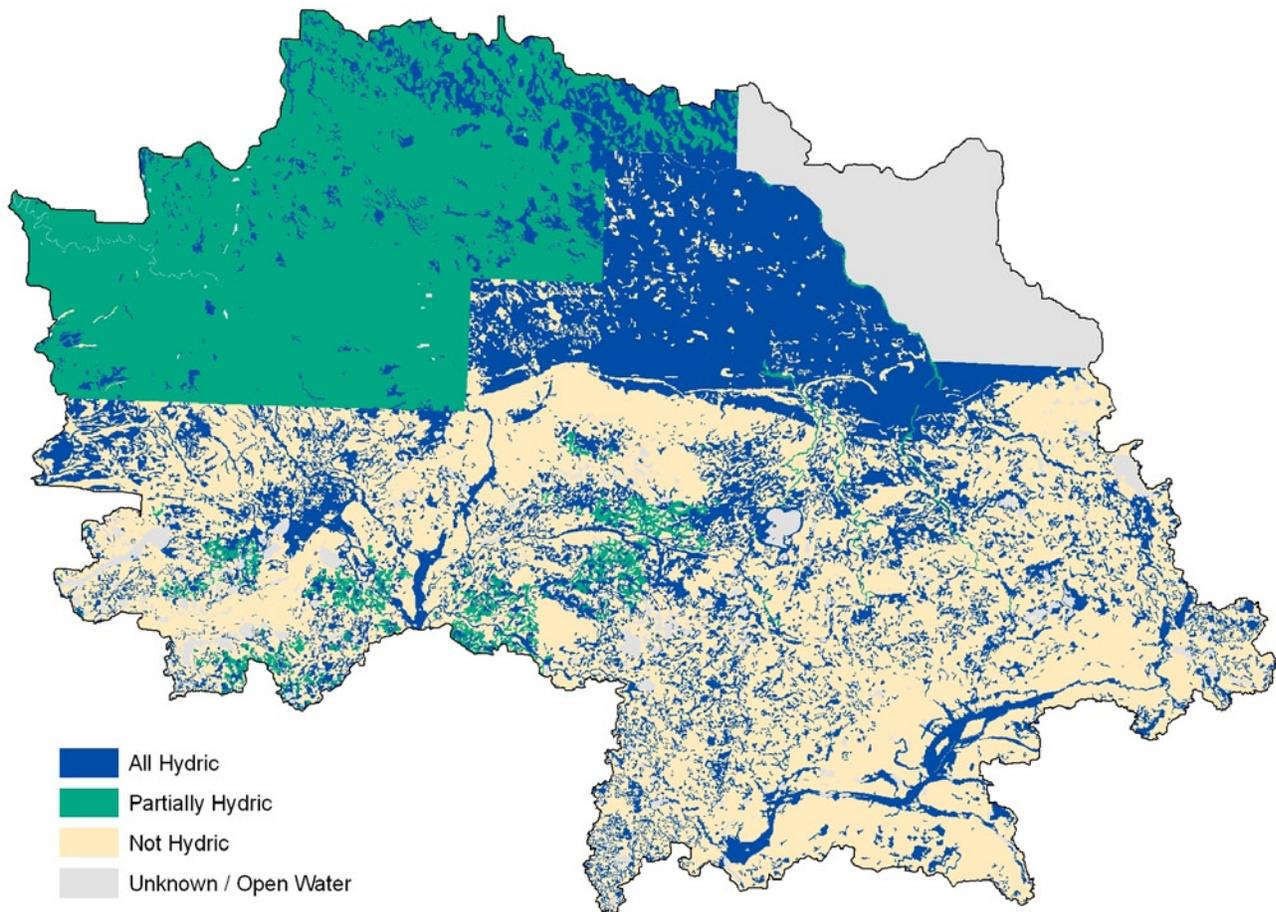


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## Hydric Soils 7/10

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 non-hydric 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.



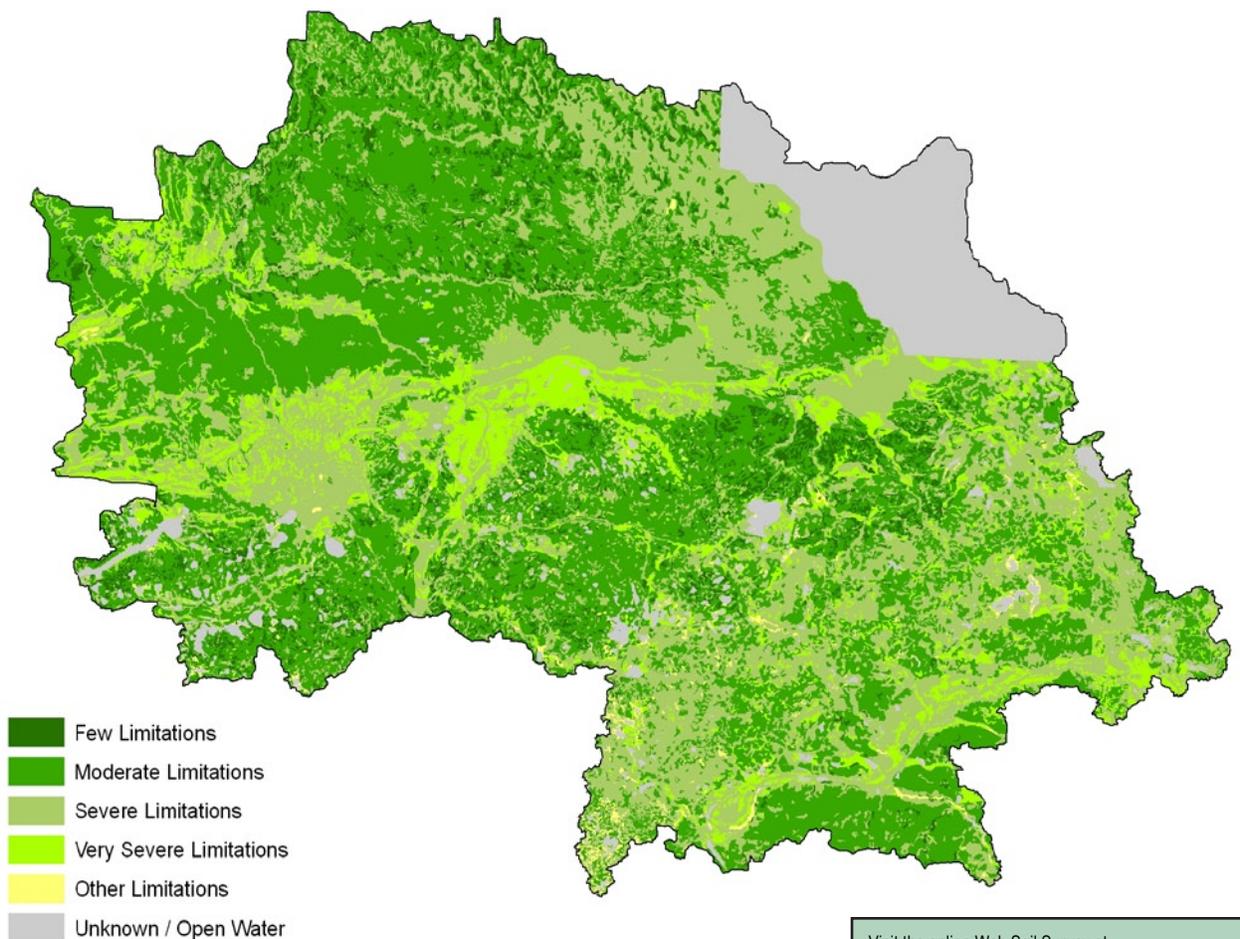
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*Note: Historical Hydric Soil Determination Standards, scale, and methodology can vary on a county-to-county basis, leading to irregularities in thematic maps representing hydric soil determinations.*

## Land Capability Classification <sup>10</sup>

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

Watershed Name: Clearwater				Watershed Number: 9020305						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	29,497	51,887	0	10,000	10,505	N/A	12,045	14,111	29,073	157,118
Total Conservation Systems Applied (acres)	35	39,904	0	40,940	40,940	N/A	11,815	12,657	43,215	189,506
<b>Conservation Practices</b>										
Total Waste Management (313) (numbers)	0	0	0	0	0	0	0	0	0	0
Riparian Forest Buffers (391) (acres)	0	12	18	550	161	86	134	2,307	47	3,315
Erosion Control Total Soil Saved (tons/year)	49	433,655	239,256	326,438	201,167	N/A	N/A	N/A	N/A	1,200,565
Total Nutrient Management (590) (Acres)	0	0	5,848	7,045	8,115	500	1,508	1,508	2,006	26,530
Pest Management Systems Applied (595A) (Acres)	0	0	0	0	0	0	1,898	1,136	2,006	5,040
Prescribed Grazing 528a (acres)	0	0	0	2,169	44	879	159	0	0	3,251
Tree & Shrub Establishment (612) (acres)	0	1,164	1,235	1,217	938	306	140	91	186	5,277
Residue Management (329A-C) (acres)	0	0	0	0	0	767	767	2,891	1,433	5,858
Total Wildlife Habitat (644 - 645) (acres)	14	44,484	23,156	23,087	18,374	3,731	23,087	6,682	28,117	170,732
Total Wetlands Created, Restored, or Enhanced (acres)	0	2,651	833	1,200	1,742	1,925	1,262	1,730	295	11,638
<b>Acres enrolled in Farmbill Programs</b>										
Conservation Reserve Program	35	38,841	17,701	39,191	27,309	N/A	3,241	5,461	21,031	152,810
Wetlands Reserve Program	0	69	0	0	0	N/A	18	117	98	302
Environmental Quality Incentives Program	0	4	0	400	0	N/A	6,697	4,429	21,015	32,545
Wildlife Habitat Incentive Program	0	0	0	0	0	N/A	19	95	93	207
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

## THREATENED AND ENDANGERED SPECIES OF THE BASIN <sup>14</sup>

NRCS assists in the conservation of threatened and endangered species and avoids or prevents activities detrimental to such species. NRCS' concern for these species includes the species listed by the Secretary of the Interior (as published in the Federal Register) and species designated by state agencies.



The following is a list of threatened, endangered, candidate species and species of special concern that occur in the subbasin.

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Acipenser fulvescens</i>	Lake Sturgeon	Zoological	<i>Eleocharis rostellata</i>	Beaked Spike-rush	Botanical
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Zoological	<i>Gaillardia aristata</i>	Blanket-flower	Botanical
<i>Ammodramus nelsoni</i>	Nelson's Sharp-tailed Sparrow	Zoological	<i>Gentiana affinis</i>	Northern Gentian	Botanical
<i>Asio flammeus</i>	Short-eared Owl	Zoological	<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological
<i>Botrychium campestre</i>	Prairie Moonwort	Botanical	<i>Helictotrichon hookeri</i>	Oat-grass	Botanical
<i>Botrychium mormo</i>	Goblin Fern	Botanical	<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Botrychium pallidum</i>	Pale Moonwort	Botanical	<i>Lasmigona costata</i>	Fluted-shell	Zoological
<i>Calcarius ornatus</i>	Chestnut-collared Longspur	Zoological	<i>Ligumia recta</i>	Black Sandshell	Zoological
<i>Carex hallii</i>	Hall's Sedge	Botanical	<i>Limosa fedoa</i>	Marbled Godwit	Zoological
<i>Carex obtusata</i>	Blunt Sedge	Botanical	<i>Najas marina</i>	Sea Naiad	Botanical
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	Botanical	<i>Orobanche fasciculata</i>	Clustered Broomrape	Botanical
<i>Carex sterilis</i>	Sterile Sedge	Botanical	<i>Phalaropus tricolor</i>	Wilson's Phalarope	Zoological
<i>Cladium mariscoides</i>	Twig-rush	Botanical	<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	Botanical
<i>Coturnicops noveboracensis</i>	Yellow Rail	Zoological	<i>Rhynchospora capillacea</i>	Hair-like Beak-rush	Botanical
<i>Cygnus buccinator</i>	Trumpeter Swan	Zoological	<i>Salix maccalliana</i>	Mccall's Willow	Botanical
<i>Cypripedium candidum</i>	Small White Lady's-slipper	Botanical	<i>Senecio canus</i>	Gray Ragwort	Botanical
<i>Drosera anglica</i>	English Sundew	Botanical	<i>Tympanuchus cupido</i>	Greater Prairie-chicken	Zoological

## RESOURCE CONCERNS

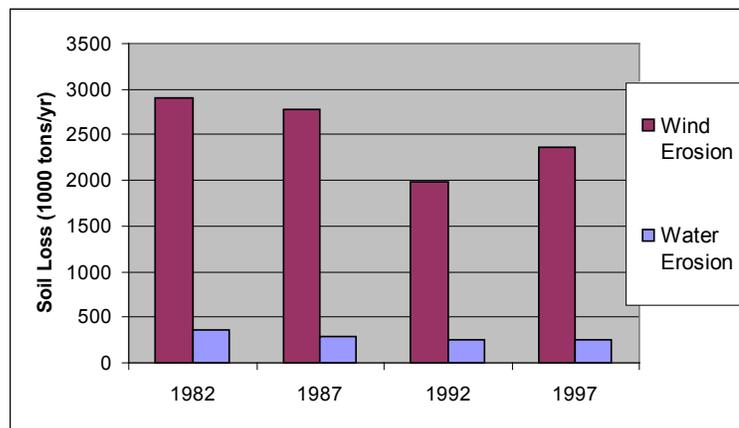
County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

- Soil Quality; Excessive Sheet and Rill Erosion.** In addition to erosion on the cropland, sedimentation caused by the clearing and grading of shoreland property is neither desirable nor necessary. Erosion issues relate directly to lake pollution/eutrophication and shoreland development, and compound effects of erosion from agricultural lands.
- Soil Quality; Excessive Wind Erosion.** Soil loss from high and constant wind is considerable. Though there has been recent progress in this area, reduction of Wind erosion continues to be a pressing concern in eastern areas approaching the Red River Valley.
- Flood Damage Reduction.** Local districts recognize that annual flood damage is a main concern. Concerns over flooding in the basin include tiling practices, drainage management, stormwater conveyance, protection of city and private sewer systems, property damage, excessive erosion and sedimentation.
- Surface and Ground Water Quality; Nutrients, Priority Pollutants.** 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 a fish community with depressed populations and limited diversity. Increased levels of phosphorus and chlorophyll-a are reaching area lakes as impervious surface increases and natural buffers disappear.
- Wildlife Habitat.** Given the fragmentation caused by increased development, and agricultural land use there are few to no natural corridors of natural habitat for wildlife. Districts recognize the need for the protection and enhancement of Prairie and Wetland areas throughout the watershed.
- Wetland Management.** Due to documented development pressures within shoreland and agricultural areas, priority should be given to preserving the wetlands within 1000 feet of a lake or 300 feet of a river. Restoration of wetlands, dam repair and placing flood-prone lands in CRP/RIM all serve to lessen the impact of flooding and sedimentation, and improve drainage.



### NRI Soil Loss Estimates<sup>13</sup>

- Sheet and rill erosion rates on crop and pasture land decreased by approximately 110,800 tons (30%) between 1982 and 1997.
- NRI estimates indicate wind erosion on crop and pasture land decreased by approximately 530,300 tons (18%) between 1982 and 1997.



## Socioeconomic and Agricultural Data (Relevant)

Population estimates for the subbasin indicate that approximately 13,429 people reside in the area. Median household income throughout the district is near \$32,300 yearly, roughly 72% of the national average. Figures show an unemployment rate of 6.2% for the basin, and approximately 13% of the residents in the watershed live below the national poverty level.



Estimates indicate there are 1,002 farms in the watershed. Of the 976 operators in the basin, sixty one percent are full time producers not reliant on off-farm income. Approximately forty one percent of the operations are less than 180 acres in size, forty four percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres. Average farm size in the basin is 136 acres.

<b>(MN) HUC# 9020305</b>		<b>Total Acres:</b>	<b>886,632</b>
<b>Population Data *</b>	Watershed Population	13,429	
	Unemployment Rate	6.2%	
	Median Household Income	32,333	
	% below poverty level	13%	
	Median Value of Home	63,350	
<b>Farm Data</b>	# of Farms	1,002	
	# of Operators	976	<b>Percent</b>
	# of Full Time Operators	595	61%
	# of Part Time Operators	380	39%
	<b>Total Cropland Acres</b>	<b>459,977</b>	<b>51.9%</b>
<b>Farm Size</b>	1 to 49 Acres	120	12%
	50 to 179 Acres	290	29%
	180 to 499 Acres	302	30%
	500 to 999 Acres	140	14%
	1,000 Acres or more	150	15%
	<b>Average Farm Size</b>	<b>136</b>	
<b>Livestock &amp; Poultry</b>	Cattle - Beef	9,881	25%
	Cattle - Dairy	1,939	5%
	Chicken	2,266	6%
	Swine	4,501	11%
	Turkey	38	0%
	Other	20,918	53%
	<b>Animal Count Total:</b>	<b>39,544</b>	
	<b>Total Permitted AFOs:</b>	<b>91</b>	
<b>Chemicals (Acres Applied)</b>	Insecticides	51,524	
	Herbicides	232,853	
	Wormicides	6,832	
	Fruiticides	5,530	
	<b>Total Acres Treated</b>	<b>296,738</b>	
	<b>% State Chemical Totals</b>	<b>2.1%</b>	

\* Adjusted by percent of HUC in the county or by percent of block group area in the HUC, depending on the level of data available

## Watershed Projects, Plans and Monitoring

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- **Clearwater River Nonpoint Project Project**  
Clearwater SWCD, Red Lake Watershed District
- **Clearbrook Urban Runoff Challenge Study**  
Clearwater SWCD
- **Ground Water Observation Wells**  
Clearwater SWCD, MN DNR
- **Clearwater Bank Stab and Revit. Project**  
Clearwater SWCD, Red Lake Watershed District
- **Rural Ring Dike Program**  
Area Districts, MN DNR
- **Clearwater River TMDL Study**  
Minnesota Pollution Control Agency
- **Red River Basin Riparian Project**  
Red River RC&D
- **Red River Water Management Consortium**  
USDA, UND EERC, Red River Basin Citizens
- **Red River Basin Water Quality Work Plan**  
Minnesota Pollution Control Agency
- **Red River Valley Water Supply Project**  
Red River International Joint Commission
- **Red River Basin Water Quality Monitoring Project**  
Red River Basin Commission
- **USGS Sediment to Streams Study - Red River Basin**  
USGS, Minnesota Pollution Control Agency

\* 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

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- **Beltrami SWCD**  
Bemidji Ave N Ste 3, Bemidji, MN 56601-4328  
Phone (218) 755-4339
- **Clearwater SWCD**  
312 Main Ave N Ste 3, Bagley, MN 56621  
Phone (218) 694-6845
- **Giziibii RC&D**  
3217 Bemidji Ave N Bemidji, MN 56601  
Phone (218) 751-1942, Ext 5
- **Mahnomen SWCD**  
200 US HWY 59, Box 381, Mahnomen, MN 56557  
Phone: (218) 935-2987
- **North Central Minnesota Joint Powers Board**  
3217 Bemidji Ave N, Bemidji, MN  
Phone (218) 755-4339
- **Pennington SWCD**  
201 Sherwood Ave S, Thief River Falls, MN 56701  
Phone (218) 683-7075
- **Polk SWCD East**  
PO Box 57, Mcintosh, MN 56556  
Phone: (218) 563-2777
- **Polk SWCD West**  
528 Strander Ave, Crookston, MN 56716  
Phone (218) 281-6077
- **Red Lake SWCD**  
2602 Wheat Dr, Red Lake Falls, MN 56750  
(218) 253-2593
- **Red Lake Watershed District**  
1000 Pennington Ave S Thief River Falls, MN 56701  
Phone (218) 681-5800
- **Red River Basin Commission**  
119th 5th St. P.O. Box 66 Moorhead, MN 56561  
[www.redriverbasincommission.org](http://www.redriverbasincommission.org)
- **Red River Basin Riparian Project**  
516 Cooper Ave Grafton, ND 58237  
Phone (701) 352-3550

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## Footnotes / Bibliography

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. 2002 NASS 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. For more information: <http://www.agcensus.usda.gov/>
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, where provided, were appended to SSURGO spatial data via an ARCEdit session. Addendum and publication dates vary by county.

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>.