

Rapid Watershed Assessment

Resource Profile

Lac qui Parle (MN) HUC: 7020003



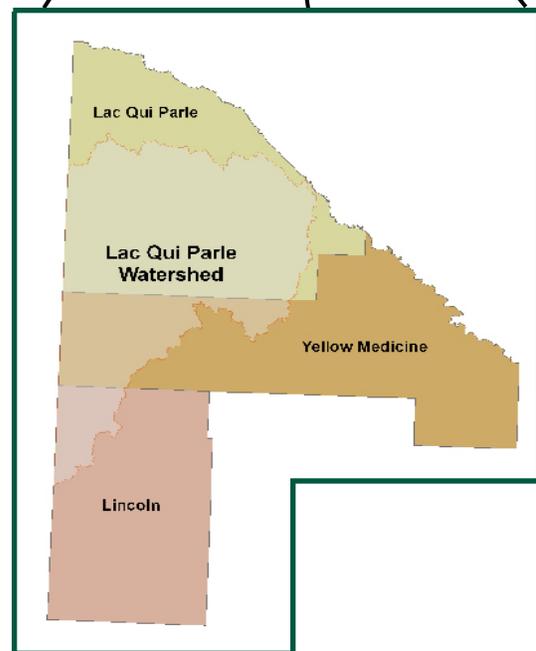
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best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

Introduction

The Lac qui Parle 8-digit Hydrological Unit Code (HUC) Subbasin is located in the Prairie Parkland Ecological Province of Southwestern Minnesota. This agriculturally dominated watershed is 487,315 acres in size. Over ninety eight percent of the land is privately owned.

There are 928 farms in the subbasin. Just over 40 percent of the operations are less than 180 acres in size, nearly 45 percent are 180 to 1000 acres in size, and the remaining 15 percent of farms are larger than 1000 acres. Seventy one percent 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 erosion and flooding resulting in cropland runoff. Associated with the cropland runoff are increased sediment and pollutant loadings to surface water. Additional resource concerns include surface and groundwater quality (Mercury, Turbidity, and Fecal Coliform), Agricultural waste management, and declining wildlife habitat.



County Totals

County	Acres in HUC	% HUC
Lac Qui Parle	325,481.66	66.8
Lincoln	43,009.78	8.8
Yellow Medicine	118,834.80	24.4
Total acres:	1,327,587.7	100

Physical Description

The Lac Qui Parle River Watershed is situated in the Northern Glaciated Plains Ecoregion. Soils in this HUC are generally loamy clays and sands, with considerable deposits of glacial till and outwash. Average elevation in the watershed is 1082 feet above sea level.

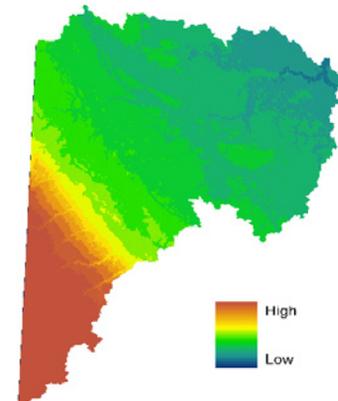
Most land within this watershed is not highly erodible, and is well to moderately well suited to agricultural uses. Predominate land use / land cover is row crops (71%), followed by grass and pasture (21%), and wetlands (3%).

Land use within the Lac qui Parle watershed is primarily agricultural, accounting for approximately 86% of the available acres. Corn and soybeans are grown on approximately 79% of cropped lands; small grains, hay, and grasslands enrolled in the Conservation Reserve Program (CRP) make up the majority of the balance.

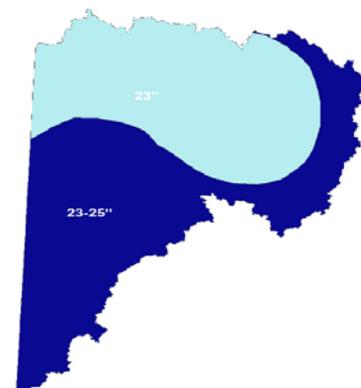
Development pressure is relatively negligible, with occasional farms being parceled out for recreation or country homes.

Precipitation in the watershed averages between 23 to 25 inches annually. There are an additional 350 square miles draining into this watershed from across the South Dakota Border, the majority of which are agricultural lands.

Relief

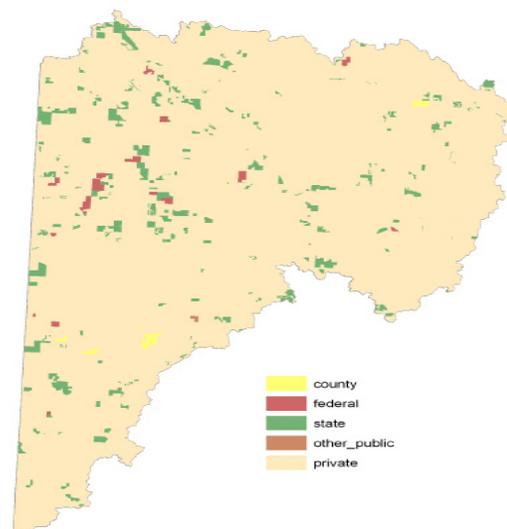


Average Precipitation (inches)



Ownership* ¹

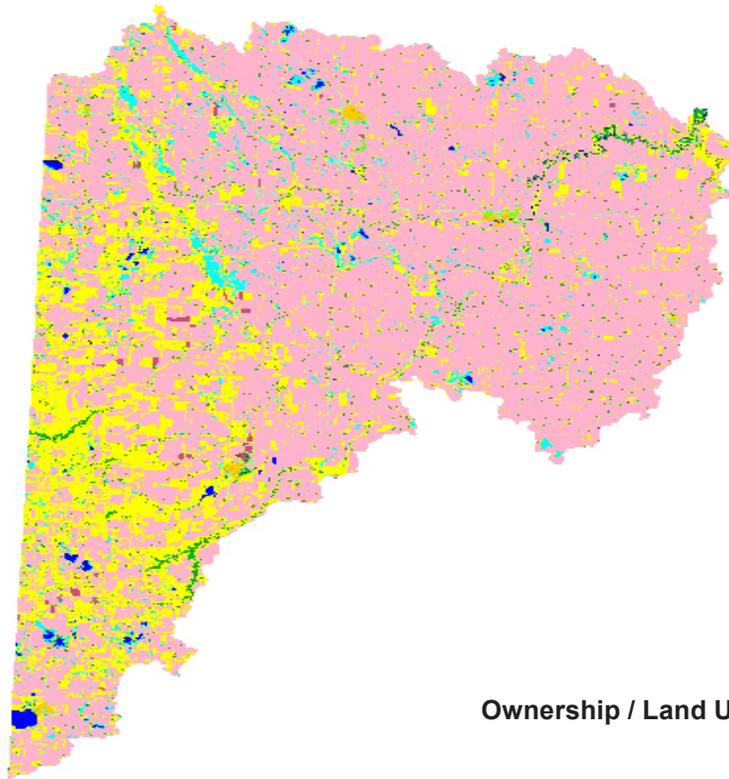
Ownership Type	Acres	% of HUC
Conservancy	0.00	0.00
County	1,313.72	0.27
Federal	2,779.76	0.57
Private Major	0.00	0.00
State-Misc.	19,514.15	4.00
Tribal	0.00	0.00
Private	463,585.91	95.13
Other Public	121.46	0.02
Ownership Totals:	487,315.00	100



* 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 Lac qui Parle Watershed covers an area of 487,315 acres. Slightly more than ninety five percent of the land in the watershed is held by private landowners (463,585 acres). The second largest ownership type is State, with just over 19,500 acres (4%), followed by Federal with approximately 2,780 acres (0.57%). County owned lands amount to 1,314 acres (0.27%), and there are a remaining 121 acres of other miscellaneous public lands. Ownership data indicates no Private-Major, Conservancy, or Tribal land holdings in the region. Land use by ownership type is represented in the table below.



Land Use / Land Cover ^{1/2}

- Open Water
- Low Intensity Residential
- High Intensity Residential
- Commercial/Industrial/Transportation
- Quarries/Strip Mines/Gravel Pits
- Transitional
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrubland
- Pasture/Hay
- Row Crops
- Small Grains
- Urban/Recreational Grasses
- Woody Wetlands
- Emergent Herbaceous Wetlands

Ownership / Land Use ^{1/3}

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent	
	Acres	Percent	Acres	Percent	Acres	Percent			
Forest	872.3	0.18	9,508.67	1.95	0.0	0.00	10381.00	2.13%	
Grain Crops	63.7	0.01	1,385.29	0.28	0.0	0.00	1449.00	0.30%	
Grass, etc	8,211.4	1.69	97,581.57	20.02	0.0	0.00	105793.00	21.71%	
Orchards	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00%	
Row Crops	7,912.4	1.62	340,270.61	69.83	0.0	0.00	348183.00	71.45%	
Shrub etc	6.1	0.00	240.29	0.05	0.0	0.00	246.40	0.05%	
Wetlands	5,096.7	1.05	12,461.34	2.56	0.0	0.00	17558.00	3.60%	
Residential/Commercial	20.21	0.001	2,904.79	0.60	0.0	0.00	2925.00	0.60%	
Open Water*	1536.90	6.48	--	--	--	--	3421.50	0.70%	
*ownership not determined		** includes private-major							
Totals:	23,719.74	4.87%	464,353	95.29%	0	0.00%	487315.00	100%	

Physical Description (continued)

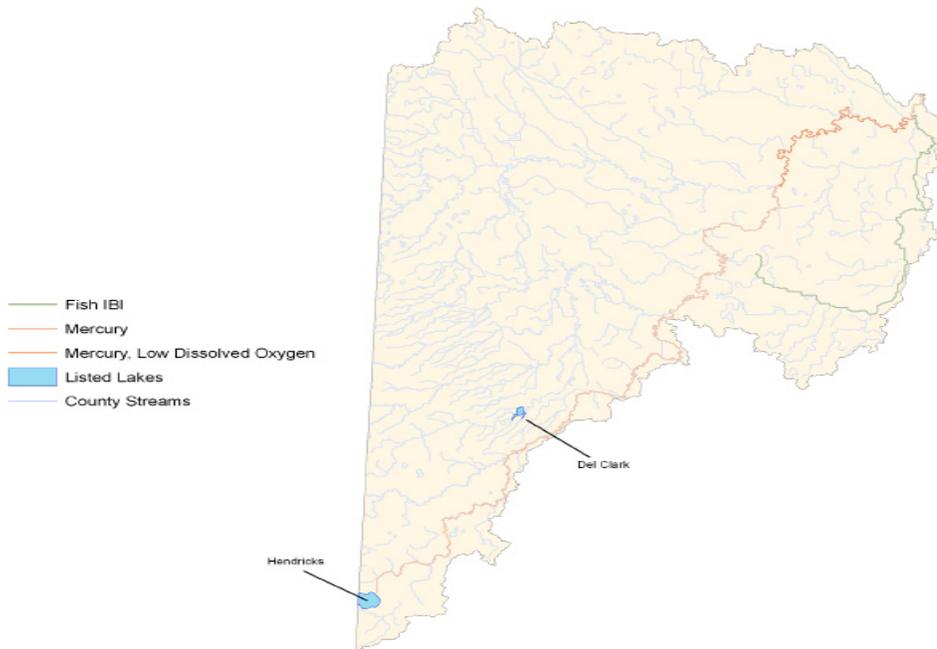
		cu. ft/sec		
Stream Flow Data	USGS 05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MN	2005 Total Avg.	135.5	
		May – Sept. Avg.	190.4	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)		ACRES/MILES	PERCENT	
	Total Miles – Major (100K Hydro GIS Layer)	1180.13	---	
	Total Miles –303d/TMDL Listed Streams	233.81	19.81*	
Riparian Land Cover/Land Use¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Dev/Barren	101	0.35	
	Fallow	0	0	
	Forest	2313	8.16	
	Grain Crops	52	0.18	
	Grass/Pasture	10,013	35.3	
	Orchards/Vine	0	0	
	Row Crops	12,529	44.2	
	Shrub/Range	11.46	0.04	
	Water	792	2.8	
	Wetlands	2,510	8.86	
	Total Buffer Acres	62,421.3	---	
Crop and Pastureland Land Capability Class¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	34,100	8.1	
	2 – moderate limitations	293,300	69.7	
	3 – severe limitations	58,300	13.6	
	4 – very severe limitations	17,000	4.03	
	5 – no erosion hazard, but other limitations	7,000	1.7	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	2,000	0.48	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	7,100	1.7	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	2,100	0.49	
	Total Crop & Pastureland	420,900	---	
Irrigated Lands¹⁷ (1997 NRI Estimates for Non-Federal Lands Only)	TYPE OF LAND	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	2300	100	0.47
	Uncultivated Cropland	0	0	0
	Pastureland	0	0	0
	Total Irrigated Lands	2300	---	0.47%

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.

Minnesota's impaired waters list, updated every two years, identifies assessed waters that do not meet water quality standards. The primary tool for addressing impaired waters is a pollution reduction plan called a Total Maximum Daily Load, or TMDL. After impaired use(s) have been identified, the TMDL process identifies all sources of each pollutant. The plan then determines how much each source must reduce its contribution in order to meet the applicable water quality standard. The Clean Water Act requires a completed TMDL for each water quality violation identified on a state's impaired waters list. Lakes or river reaches with multiple impairments require multiple TMDLs.

2006 TMDL Listed Waters - Lac qui Parle



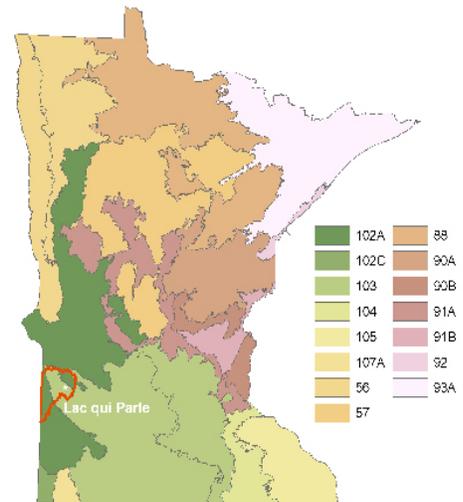
Listed Stream / Reach ¹⁸	Impairment	Affected Use
Lac Qui Parle River; West Br Lac Qui Parle R to Tenmile Cr	Mercury, Low Dissolved Oxygen	Aquatic Life, Aquatic Consumption
Lac Qui Parle River; Tenmile Cr to Minnesota R	Mercury	Aquatic Consumption
Lac Qui Parle River; Headwaters to Canby Cr	Mercury	Aquatic Consumption
Lac Qui Parle River; Canby Cr to West Br Lac Qui Parle R	Mercury	Aquatic Consumption
Tenmile Creek; Headwaters to Lac qui Parle R	Fish IBI	Aquatic Life
Listed Lake / Water Body	Impairment	Affected Use
Lake Hendricks	Mercury	Aquatic Consumption
Del Clark Reservoir	Mercury	Aquatic Consumption

Common Resource Areas

The Lac qui Parle Watershed is located within two common resource areas, CRA 102A.1, and 103.1. ^{/9}

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.

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>

Soils

Minnesota's portion of the watershed falls within one of two geomorphic settings: the Coteau des Prairies and the Blue Earth Till Plain. The Coteau des Prairie is characterized by landscapes with long northeast facing slopes which are undulating to rolling (4-6%), and loamy well drained soils, the majority (72%) classified as having a high water erosion potential.

The portion of the watershed within the Blue Earth Till Plain is represented by nearly level to gently sloping lands, ranging from 0-6% in steepness. Soils are predominantly loamy, with landscapes having a complex mixture of well and poorly drained soils. Drainage of depressional areas is often poor, and tile drainage is common. Water erosion potential is moderate on much of the land within this geomorphic setting. ^{/10}

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

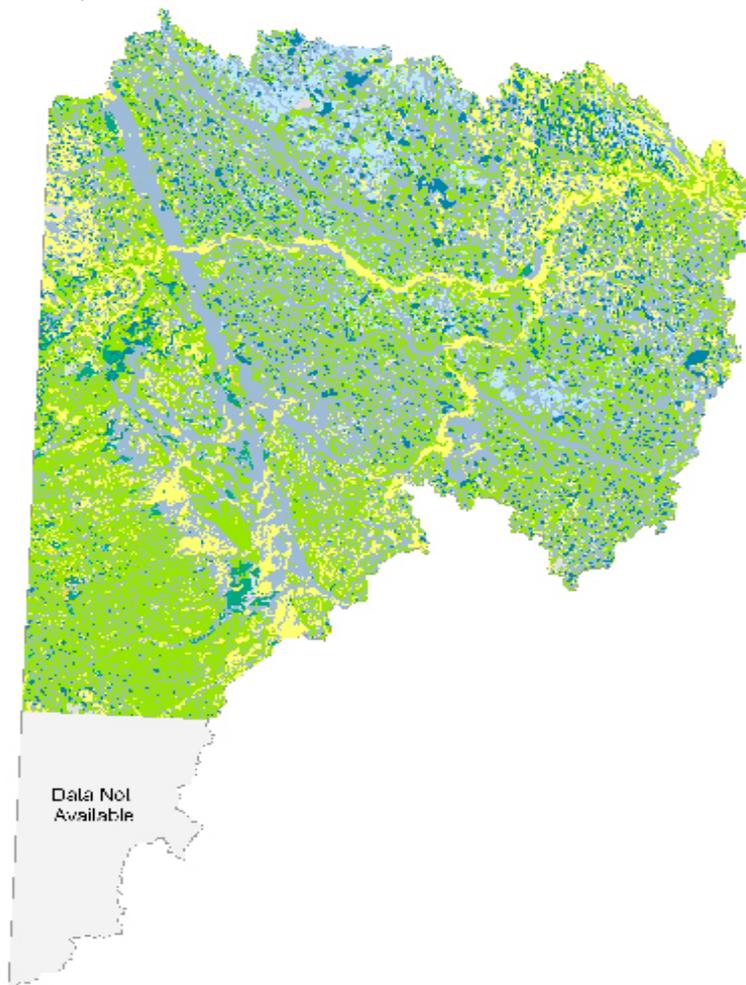
<http://soildatamart.usda.gov> to download SSURGO

 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.”



-  Excessively drained
-  Moderately well drained
-  Somewhat excessively drained
-  Well drained
-  Somewhat poorly drained
-  Poorly drained
-  Very poorly drained
-  Unknown/Open Water

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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.



Farmland Classification

-  All areas are prime farmland
-  Farmland of statewide importance
-  Prime farmland if drained
-  Prime farmland if drained and protected
-  Prime farmland if protected from flooding
-  Not prime farmland

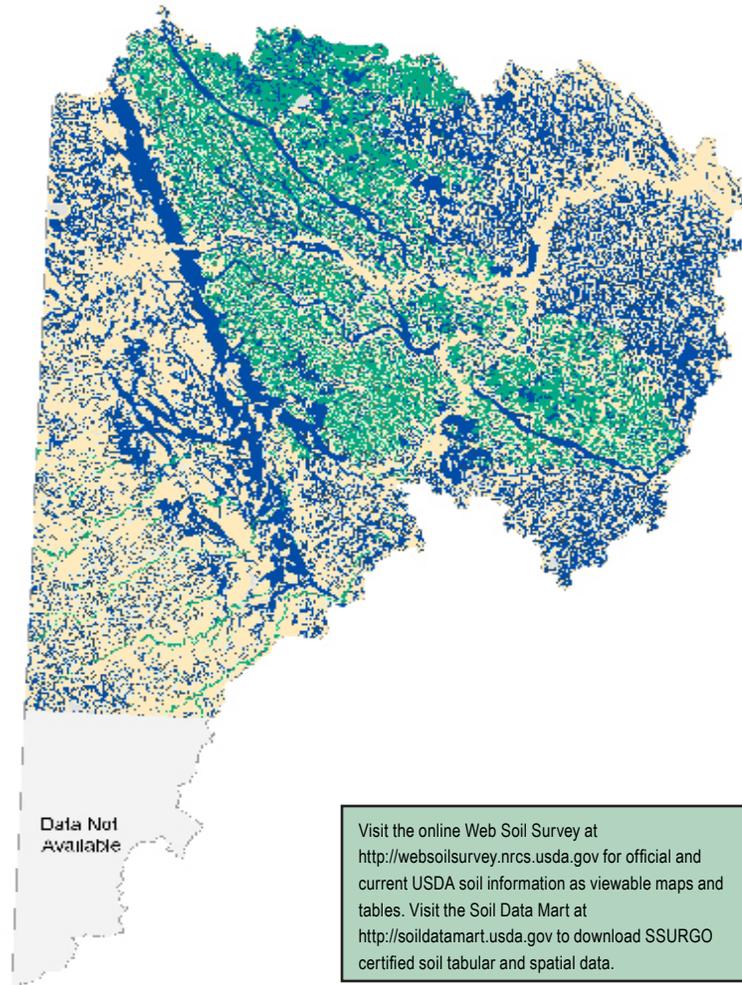
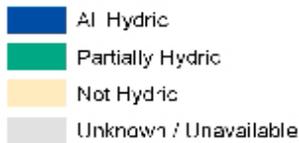
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Hydric Soils

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).

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.



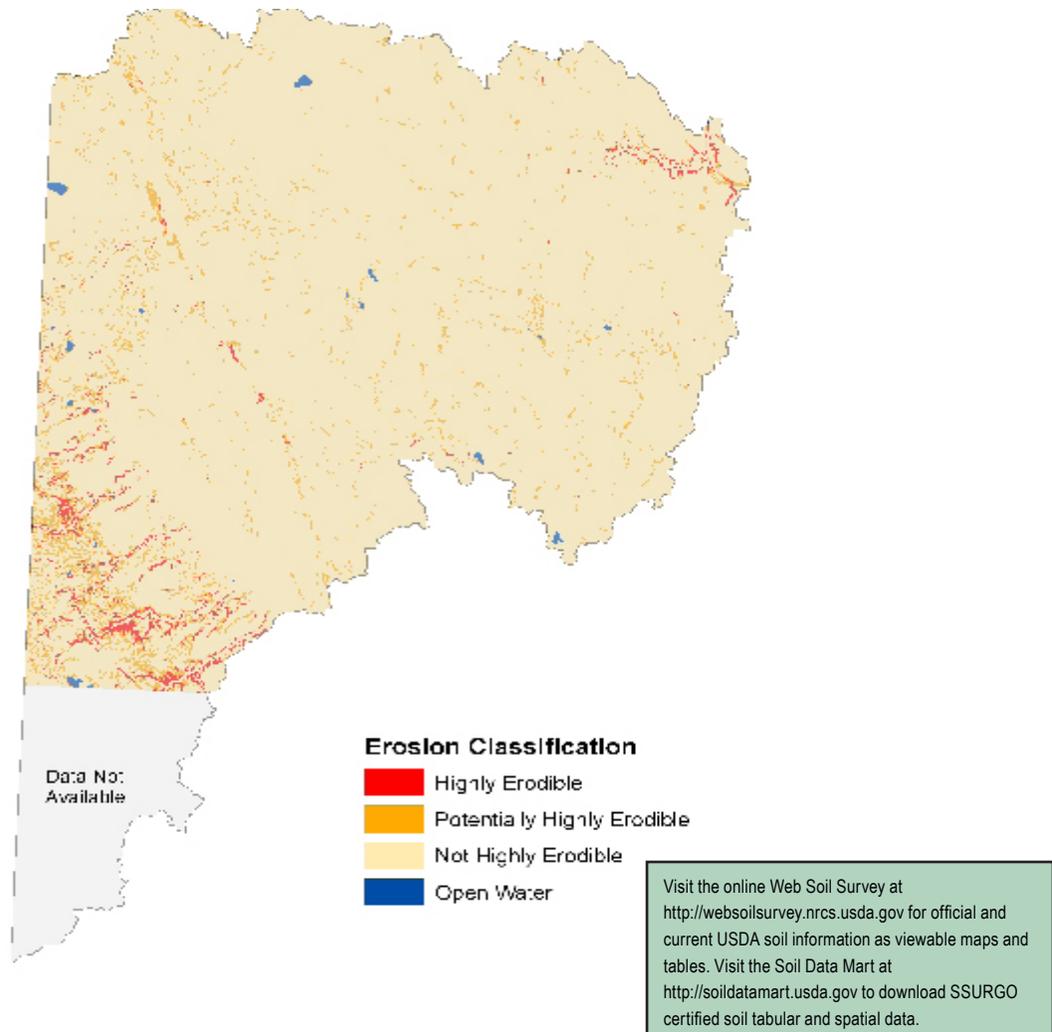
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Highly Erodible Land (HEL)

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.



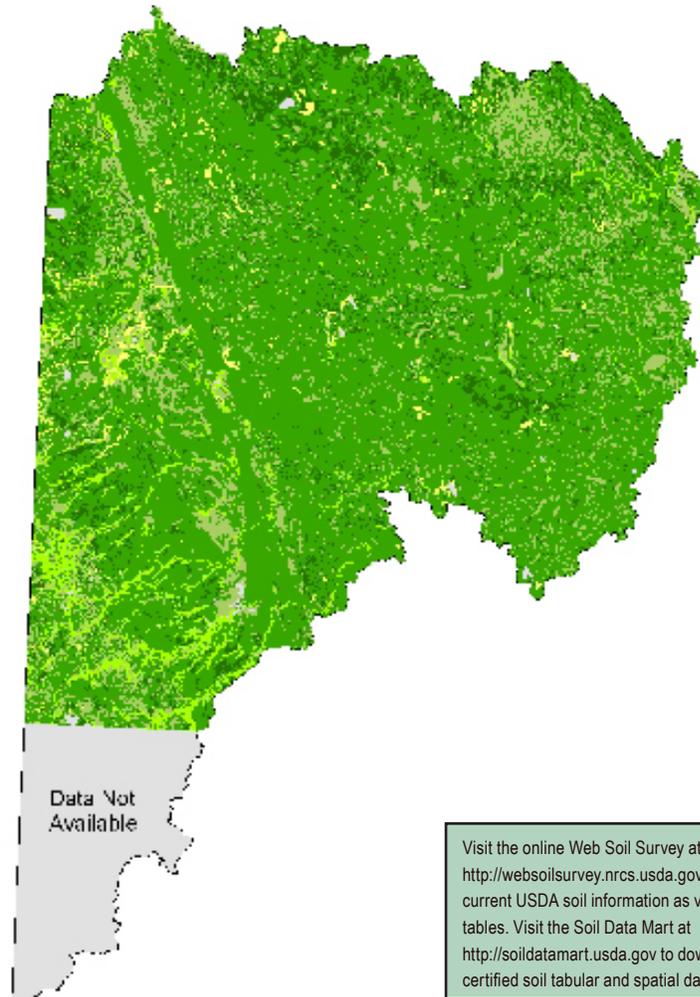
Land Capability Classification

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.



-  Few Limitations
-  Moderate Limitations
-  Severe Limitations
-  Very Severe Limitations
-  Other Limitations



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Performance Results System and Other Data

In the three year reporting period NRCS Conservation treatment practices applied or prescribed within the watershed have primarily concentrated on erosion control practices, nutrient and pest management on cropland, prescribed grazing on pastureland and rangeland, conservation crop rotations, and atmospheric resource management in the form of windbreaks. Much of the pasture is flood irrigated and lacks proper forage and grazing management. Rangeland commonly lacks proper grazing management and watering facilities for livestock and wildlife.

Conservation Treatment	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	283	152	333	256	768
Erosion Control (Acres)	311, 332, 589, 386, 412, 600, 601, 603, 380, 650	21368	48640	16640	28883	86648
Irrigation Water Management (Acres)	449	0	0	0	0	0
Wind Break (ft)	380	21364	47817	35045	34742	104226
Atmospheric Resource Quality Management (Acres)	370	0	0	0	0	0
Nutrient Management (Acres)	590	1958	1328	3820	2369	7106
Pest Management (Acres)	595	1020	294	466	593	1780
Prescribed Grazing (Acres)	528, 472, 528A	1046	1114	1795	1318	3955
Prescribed Burning (Acres)	338	0	0	179	60	179
Trees & Shrubs (Acres)	612, 666	3	1628	0	544	1631
Conservation Tillage (Acres)	329A, 329B, 329C	2306	5078	7122	4835	14506
Conservation Crop Rotations (Acres)	328	1389	444	477	770	2310
Cover Crops (Acres)	340	0	0	0	0	0
Wildlife Habitat (Acres)	644, 645	253	886	3181	1440	4320
Brush Management (Acres)	314	0	0	0	0	0
Restoration of Declining Habitat (Acres)	643	561	78	369	336	1008
Wetland Wildlife Habitat Management (Acres)	644	29	0	7	12	36
Wetlands (Acres)	657, 658, 659	226	178	306	237	710
LANDS REMOVED FROM PRODUCTION THROUGH FARM BILL PROGRAMS ¹¹						
Program					Acres	
Conservation Reserve Program (CRP)					26,773	
Wetland Restoration Program (WRP)					194	
Conservation Reserve Enhancement Program (CREP)					6,787	

Socioeconomic and Agricultural Data (Relevant)

Estimated population in the Lac qui Parle subbasin is just over 8,700 people. Median household income throughout the district is nearly \$33,000 yearly, roughly 71% of the national average. Sixty-three percent of the population over the age of 18 is active in the workforce, and approximately 7% of the residents in the watershed are below the national poverty level.

There are 928 Farms in the Lac qui Parle Watershed. Approximately 41 percent of the operations are less than 180 acres in size, over 44 percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.



Lac qui Parle HUC #7020003 ¹²		
Population Data	Watershed Population	8,751
	Unemployment Rate	3.83%
	Median Household Income	32,967
	% below poverty level	7%
	Median Value of Home	45,421
Farms	# of Farms	928
	# of Operators	1225
	# of Full Time Operators	868
	# of Part Time Operators	357
	Total Crop/Pasturelands	420,900
Farm Size	1 to 49 Acres	173
	50 to 179 Acres	215
	180 to 499 Acres	233
	500 to 999 Acres	183
	1,000 Acres or more	125
Livestock & Poultry	Cattle - Beef	20,917
	Cattle - Dairy	5,880
	Chicken	197,583
	Swine	146,584
	Turkey	54,586
	Other	5,581
	Total Permitted Animal Feed Operations:	323
Chemicals - Acres Treated	Insecticides	27,550
	Herbicides	242,799
	Wormicides	0
	Fruiticides	4,724
	Total Chemicals	275,074
	% State Chemical Totals	1.93%

RESOURCE CONCERNS

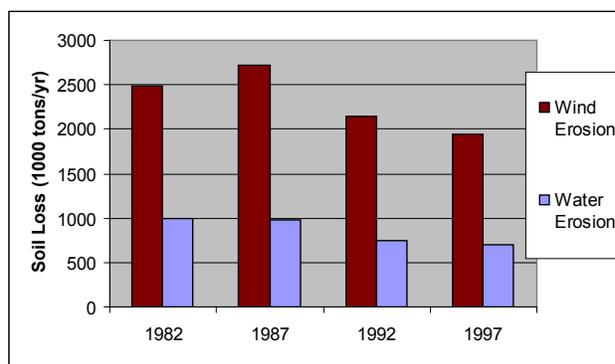
Soil and Water Conservation Districts in the Lac qui Parle Watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

- 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. Topography makes wind erosion a 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. Sealing of abandoned wells is a priority in addressing ground water quality.
- 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.



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- NRI estimates show sheet and rill erosion by water on the cropland and pastureland declined by approximately 295,300 tons of soil (30%) between 1982 to 1997.
- NRI erosion estimates indicate wind erosion rates declined by 549,000 tons (22.1%) between 1982 and 1997.



/13

Federally Listed Threatened And Endangered Species ^{/14}	
ENDANGERED SPECIES	CANDIDATE SPECIES
Fish – Topeka Shiner	Insect – Dakota Skipper
THREATENED SPECIES	PROPOSED SPECIES
Plants – Western Prairie Fringed Orchid, Prairie Bush Clover	None
Essential Habitat - Prairie river and stream habitat for the Topeka Shiner, Native Prairie for Dakota Skipper	

Watershed Projects, Plans and Monitoring

- Del Clark Reservoir Project, MRBDC. This is a completed Area II Minnesota River Basin Project. It was sponsored by the Yellow Bank - Lac qui Parle Watershed District. The purpose of this project was to create a structure that would provide flood control, fishing, swimming, camping, and recreation (regional park).
- Lac qui Parle County Ditch #3 Project, Lac qui Parle County. The objectives of this project are 1) to gather baseline data on existing water quality in Lac qui Parle Ditch #3, 2) to assess nonpoint pollution sources within the ditch watershed, and 3) to model the watershed with the Agricultural Nonpoint Source Pollution Computer model (AGNPS).



- Lac qui Parle–Yellow Bank River Watershed Projects, Prairie Country RC&D Council. Provides funding and partnerships for Phase II Projects focusing on implementation of Best Management Practices (BMPs) in sub-watersheds that have been identified with high nutrient and/or sediment loadings.
- Greater Minnesota River Turbidity TMDL Work Plan, MPCA. This project concerns turbidity impairments in the Minnesota River Basin. The project area begins near Lac Qui Parle, and ends at Jordan. The effort involves 18 reaches on the mainstem and lower tributaries.

* 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

- | | |
|--|---|
| <ul style="list-style-type: none"> • Lac qui Parle Soil and Water Conservation District
122 8th Avenue S Madison, MN 56256
Phone 320-598-7321 ext 3 Fax 320-598-3432 | <ul style="list-style-type: none"> • Minnesota River Basin Joint Powers Board
600 E. 4th St #14 Chaska, MN 55318-2108
Phone 952-361-6590 Fax 952-361-6594 |
| <ul style="list-style-type: none"> • Lincoln Soil and Water Conservation District
P.O. Box 32 Ivanhoe, MN 56142
Phone 507-694-1630 ext. 3 Fax 507-694-1850 | <ul style="list-style-type: none"> • Greater Yellow Medicine River Watershed Dist.
122 North Jefferson Minneota, MN 56264
Phone: 507-872-6720 http://www.ymrwd.org/ |
| <ul style="list-style-type: none"> • Yellow Medicine SWCD
1000 10th Avenue, Bx 545 Clarkfield, MN 56223
Phone 320-669-4442 ext. 3 Fax 320-669-7525 | <ul style="list-style-type: none"> • Area II Minnesota River Basin Projects, Inc
1400 E Lyon Street, Bx 267 Marshall, MN 56258
Phone 507-537-6369 Fax 507-537-6368 |
| <ul style="list-style-type: none"> • NRCS - Lac qui Parle County
122 8th Avenue S Madison, MN 56256
Phone 320-598-7321 Fax 320-598-3432 | <ul style="list-style-type: none"> • Prairie Country RC&D
1005 High Avenue NE Willmar, MN 56201-4817
Phone 320-231-0008 Fax 320-235-8151 |
| <ul style="list-style-type: none"> • NRCS - Lincoln County
320 N Harold, P.O. Box 32 Ivanhoe, MN 56142
Phone 507-694-1630 Fax 507-694-1850 | <ul style="list-style-type: none"> • Region 6W Upper MN Valley Regional Development Commission
323 W Schlieman Appleton, MN 56208
Phone 320-289-1981 Fax 320-289-1983 |
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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. 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)

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.

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 (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>.