Rapid Watershed Assessment
Platte-Spunk
(MN) HUC: 7010201

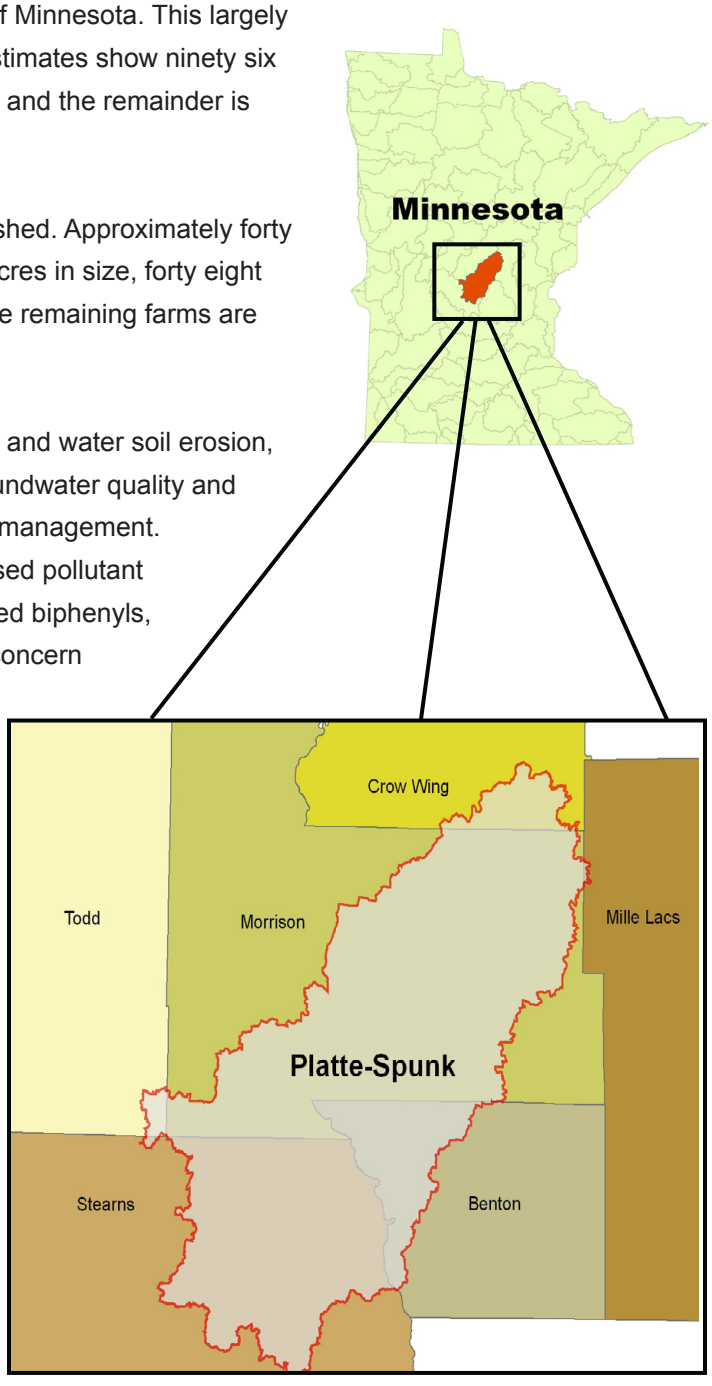
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land–owners and local leaders set priorities and determine the best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

Introduction

The Platte-Spunk 8-Digit Hydrologic Unit Code (HUC) subbasin is located in the North Central Hardwood Forest ecoregion of Minnesota. This largely agricultural watershed is 652,677 acres in size. Estimates show ninety six percent of the land in this HUC is privately owned, and the remainder is County, State or Federally owned public land.

There are 1,919 Farms in the Platte-Spunk Watershed. Approximately forty nine percent of the operations are less than 180 acres in size, forty eight percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

The main resource concerns in the basin are wind and water soil erosion, woodland management, surfacewater quality, groundwater quality and quantity, surfacewater management, and wetland management. Associated with the resource concerns are increased pollutant loadings to surface waters (mercury, polychlorinated biphenyls, fecal coliform). Declining wildlife habitat is also a concern throughout the watershed.

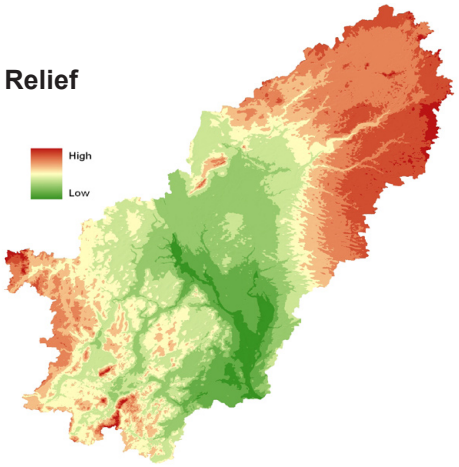


County Totals

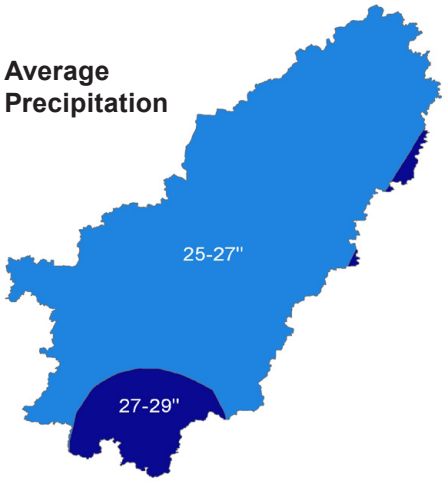
County	*Acres in HUC*	*% HUC*
Crow Wing	24,949	3.8%
Todd	5,055	0.8%
Morrison	359,424	55.1%
Mille Lacs	507	0.1%
Benton	63,911	9.8%
Stearns	198,830	30.5%
Total acres:	**652,677**	**100%**

Physical Description

Average elevation in the Platte-Spunk subbasin is 1098 feet above sea level, with the highest values being in the Northeastern and extreme Southwestern portions of the watershed, while the lowest are found across the central regions, near the Mississippi River channel.



Precipitation in the watershed ranges from 25 to 29 inches annually. Most lands within this HUC are not highly erodible, and are well to moderately well suited to agricultural uses. Predominate land uses are Grass/pasture/hay (35.4%), Row crops (28.7%), Forest (19.3%), and Wetlands (9.0%).

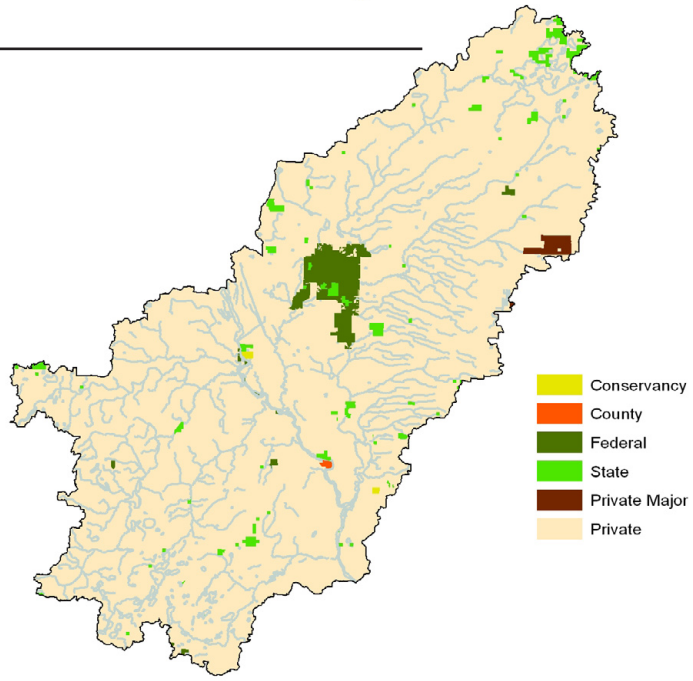


Land use within the Platte-Spunk watershed is largely agricultural, accounting for approximately 67% of the available acres. Livestock, poultry, and their products comprise approximately 82% of the total market value of agricultural products sold. Nearly 48% of the land in farms is noted as being harvested cropland.

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

Ownership[1]

Ownership Type	Acres	% of HUC
Conservancy	408	0.1
County	245	0.0
Federal	13,392	2.1
State	9,822	1.5
Other	-	-
Tribal	-	-
Private Major	2,459	0.4
Private	626,351	96.0
Total Acres:	**652,677**	**100**

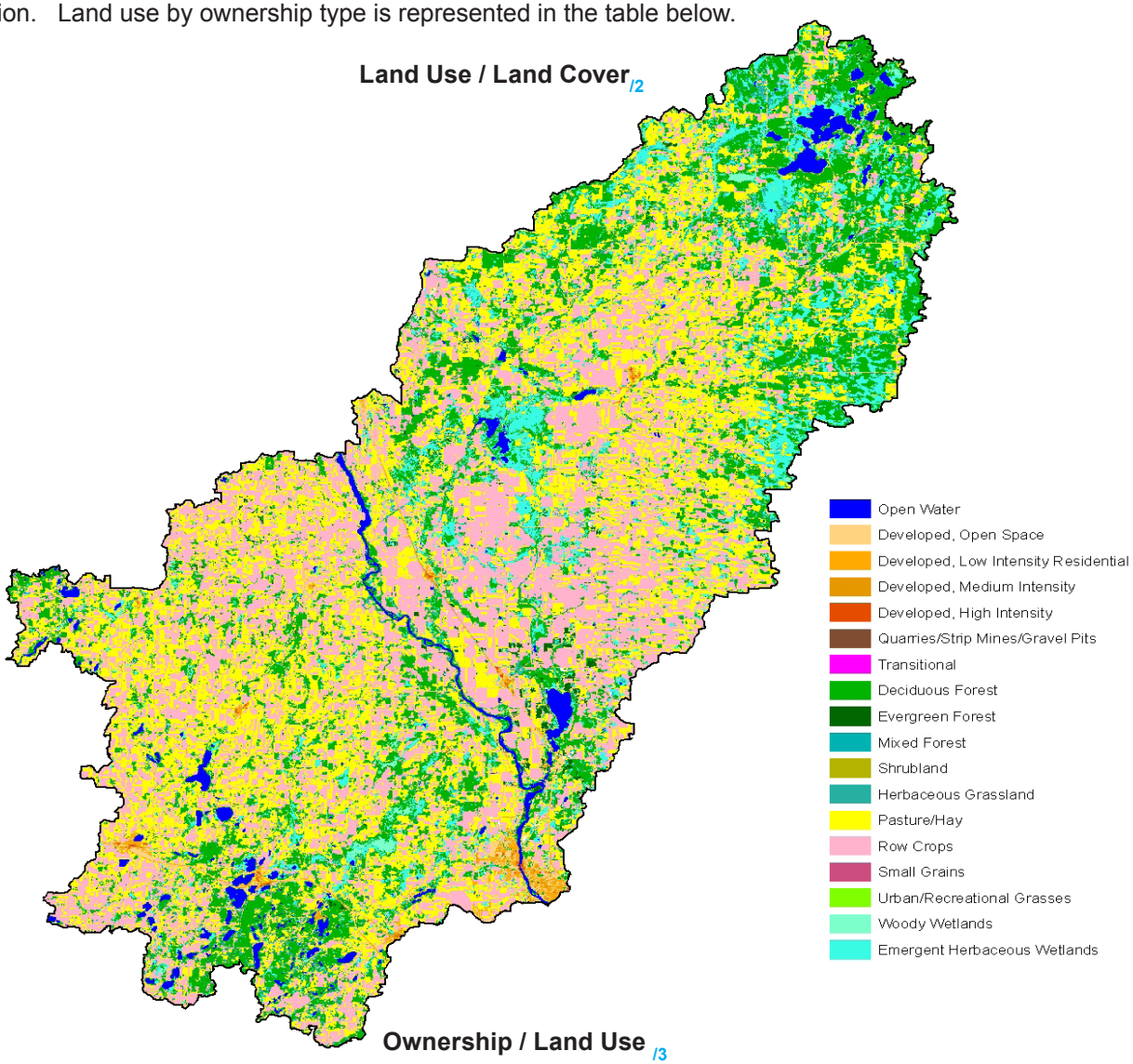


* Ownership totals derived from 2007 MN DNR GAP Stewardship Coverage data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Ownership / Land Use

The Platte-Spunk Watershed covers an area of 652,677 acres. Ninety six percent of the land in the watershed is owned by private landholders (626,351 acres). The second largest ownership type is Federal, with approximately 13,392 acres (2.1%), followed by State with 9,822 acres (1.5%), Private Major with 2,459 acres (0.4%), and Conservancy, with 408 acres (0.1%). County lands account for the smallest ownership percentage, covering just under 250 acres (0.04%). Ownership data shows no tribal land holdings in the region. Land use by ownership type is represented in the table below.

Land Use / Land Cover /2



Ownership / Land Use /3

	Public		Private**		Tribal			
Landcover/Use	**Acres**	**% Public**	**Acres**	**% Private**	**Acres**	**% Tribal**	**Total Acres**	**Percent**
Forest	7,097	1.1%	119,021	18.2%	0	0.0%	126,119	19.3%
Grass, etc	4,545	0.7%	226,341	34.7%	0	0.0%	230,885	35.4%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	2,937	0.4%	184,392	28.3%	0	0.0%	187,329	28.7%
Shrub etc	52	0.0%	641	0.1%	0	0.0%	693	0.1%
Wetlands	7,379	1.1%	51,103	7.8%	0	0.0%	58,482	9.0%
Residential/Commercial	426	0.1%	32,642	5.0%	0	0.0%	33,068	5.1%
Open Water*	1,002	0.2%	15,091	2.3%	0	0.0%	16,093	2.5%
* ownership undetermined			** includes private-major					
Watershed Totals:	**23,438**	**3.59%**	**629,231**	**96.4%**	**0**	**0.0%**	**652,677**	**100%**

Physical Description (continued)

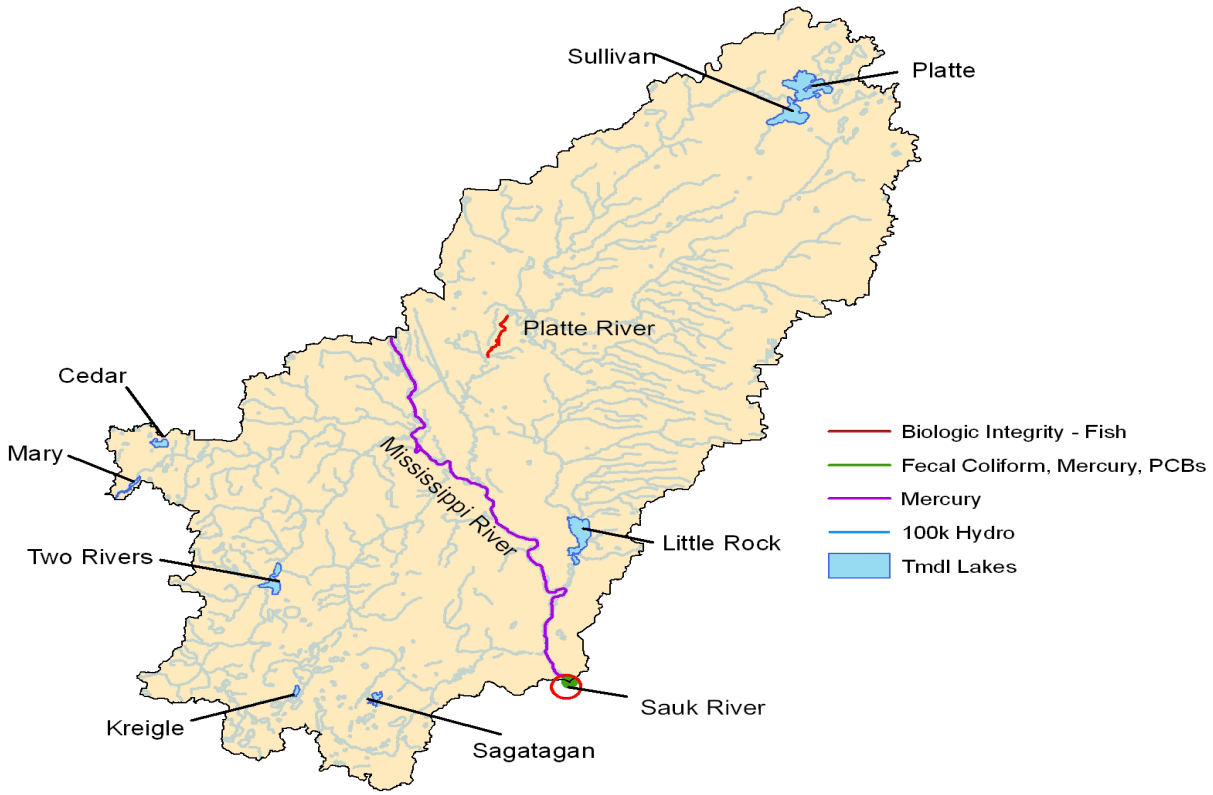
		ACRES	cu. ft/sec
Stream Flow Data	USGS 05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN	**Total Avg.**	4,816.6
		May – Sept. Yield	5,526
		ACRES/MILES	**PERCENT**
Stream Data[4] *(*Percent of Total HUC Stream Miles)*	Total Miles – Major (100K Hydro GIS Layer)	1174.6	---
	303d/TMDL Listed Streams (DEQ)	36.1	3%
Riparian Land Cover/Land Use[5] *(Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)*	Forest	6,330	22.4%
	Grain Crops	0	0.0%
	Grass, etc	8,382	29.6%
	Orchards	0	0.0%
	Row Crops	4,161	14.7%
	Shrub etc	30	0.1%
	Wetlands	4,956	17.5%
	Residential/Commercial	865	3.1%
	Open Water*	3,548	12.5%
	Total Buffer Acres:	28,270	100%
Crop and Pastureland Land Capability Class[6] *(Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	91,100	25%
	3 – severe limitations	91,900	25%
	4 – very severe limitations	71,500	19%
	5 – no erosion hazard, but other limitations	1,800	0.04%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	105,200	29%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	8,200	2%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands & Pasturelands	**368,800**	**---**

	TYPE OF LAND	ACRES	% of Cropland	% of HUC
Irrigated Lands[7] *(2002 NASS Figures)*	**Cultivated Cropland**	20,922	5.7%	3.2%
	Uncultivated Cropland	0	0%	0%
	Pastureland	0	0%	0%
	Total Irrigated Lands	20,922	--	3.2%

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.

2006 303d Listed Waters - Platte - Spunk

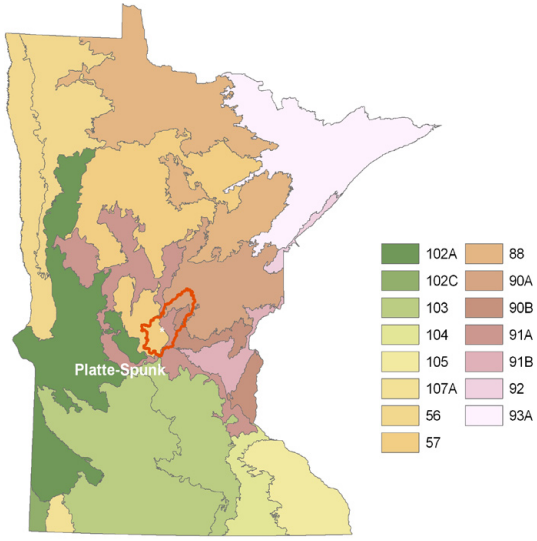


Listed Stream / Reach[/8]	Impairment	Affected Use
Mississippi R End HUC below Swan R to Two R	Mercury	Aquatic Consumption
Mississippi River Watab River to Sauk River	Mercury	Aquatic Consumption
Mississippi River Platte R to Little Rock Creek	Mercury	Aquatic Consumption
Mississippi River Spunk Cr to Platte River	Mercury	Aquatic Consumption
Mississippi River Two R to Spunk Creek	Mercury	Aquatic Consumption
Mississippi River Little Rock Cr to Sartell Dam	Mercury	Aquatic Consumption
Mississippi River Sartell Dam to Watab River	Mercury	Aquatic Consumption
Platte River Rice-Skunk Lakes Dam to Unnamed Cr	Fish IBI	Aquatic Life

Listed Lake	Impairment	Affected Use
Little Rock	Excess nutrients	Aquatic Consumption
Platte	Mercury	Aquatic Consumption
Sullivan	Mercury	Aquatic Consumption
Cedar	Mercury	Aquatic Consumption
Sagatagan	Mercury	Aquatic Consumption
Kreigle	Mercury	Aquatic Consumption
Two Rivers	Mercury	Aquatic Consumption
Mary	Mercury	Aquatic Consumption

Common Resource Areas

The Platte-Spunk Watershed encompasses four Common Resource Areas, CRA 57.1, 90A.1, 90B.1, and 91A.1. [9]



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

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.

90A.1 Loamy Till Ground Moraines and Drumlins: Nearly level to moderately steep, loamy, sandy, and organic soils. Mixed deciduous and coniferous forest is the primary land use with some glacial lakes and wetlands. Scattered cropland and grazing land are present. Cropland productivity is limited by the short length

90B.1 Dense Till Ground Moraine: Nearly level and gently sloping moderately well and somewhat poorly drained loamy soils underlain by loamy glacial residuum and bedrock. Mostly cropland and grazing land, with areas of mixed deciduous and coniferous forest, wetlands, and a few lakes. Dairy and beef production with some cash grain are the primary agricultural enterprises. Primary resource concerns include nutrient management, cropland soil erosion, grazing land productivity, and forestry management.

91A.1 Central Minnesota Outwash: Nearly level to gently sloping well drained sandy soils on outwash plains and stream terraces. There are also numerous poorly and very poorly drained mineral and organic soils. Irrigated crop land, pasture and hayland are the major land uses. Forestland is common in parts. Corn, soybeans, edible beans and potatoes are the primary irrigated crops. Forage crops are also extensively grown. Resource concerns are wind erosion water quality, nutrient management, improperly managed grazing.

Geology / Soils [10]

The major types of soils within the watershed are Alfisols, Entisols and Mollisols. The bedrock geology consists of primarily Precambrian crystalline rocks (Sims and Morey, 1972, Stark et al, 1996). The Watershed lies within calcareous glacial deposits associated with the Des Moines Lobe Association and the siliceous deposits characteristic of the Superior and Rainy Lobe Associations.

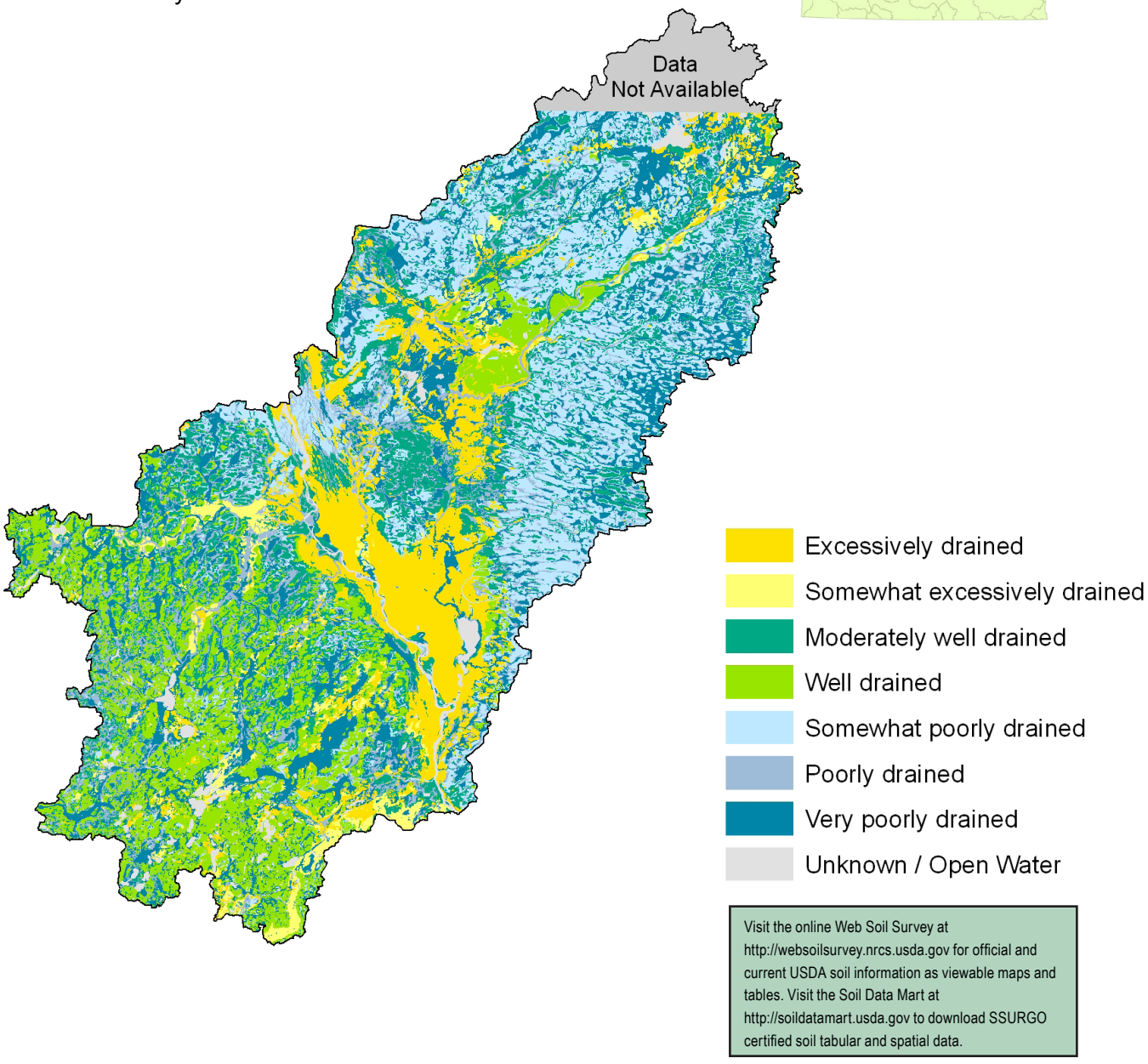
The bedrock hydrogeology and ground water in the Platte-Spunk Watershed consists of primarily Precambrian igneous and metamorphic rocks.

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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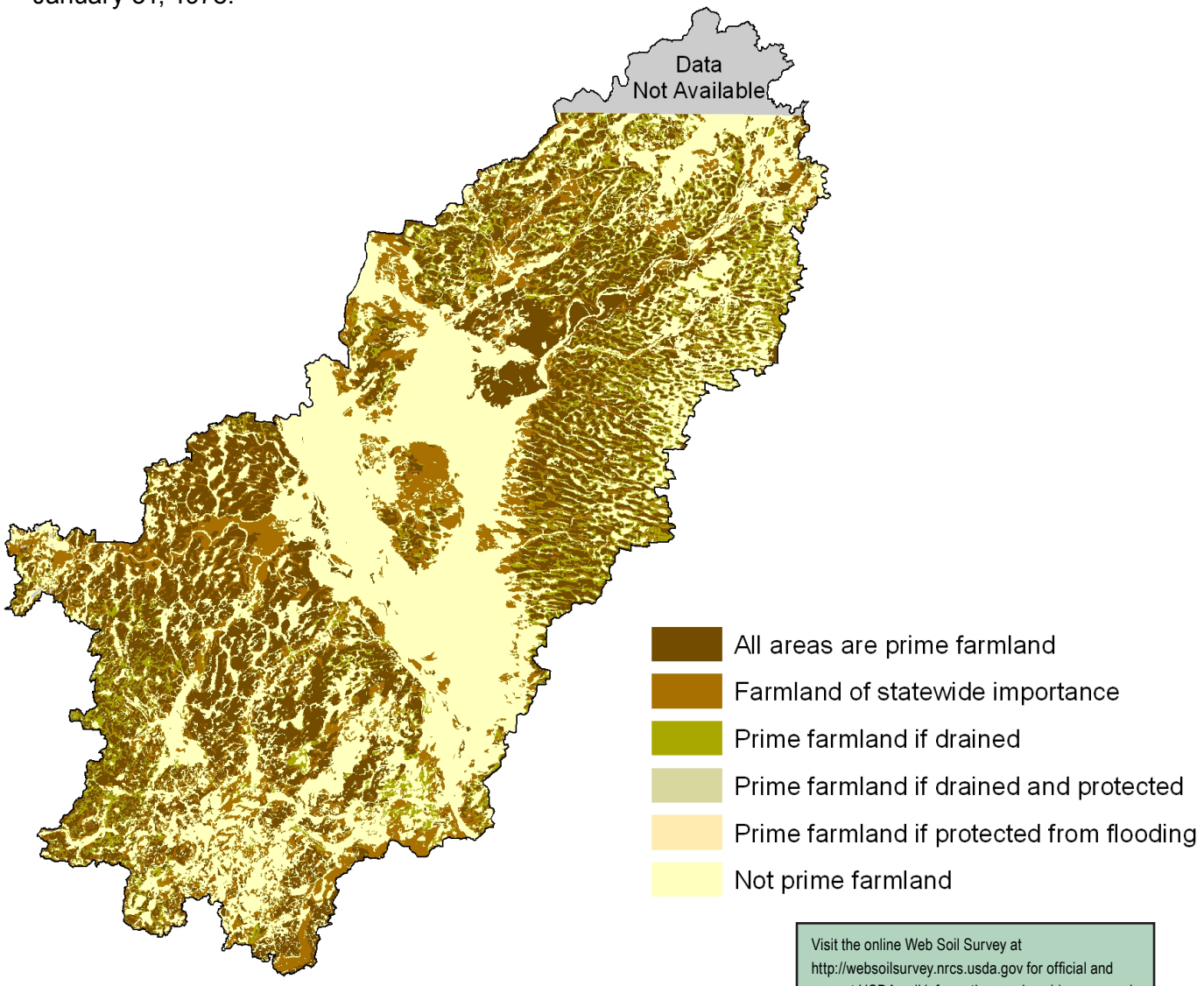
Farmland Classification

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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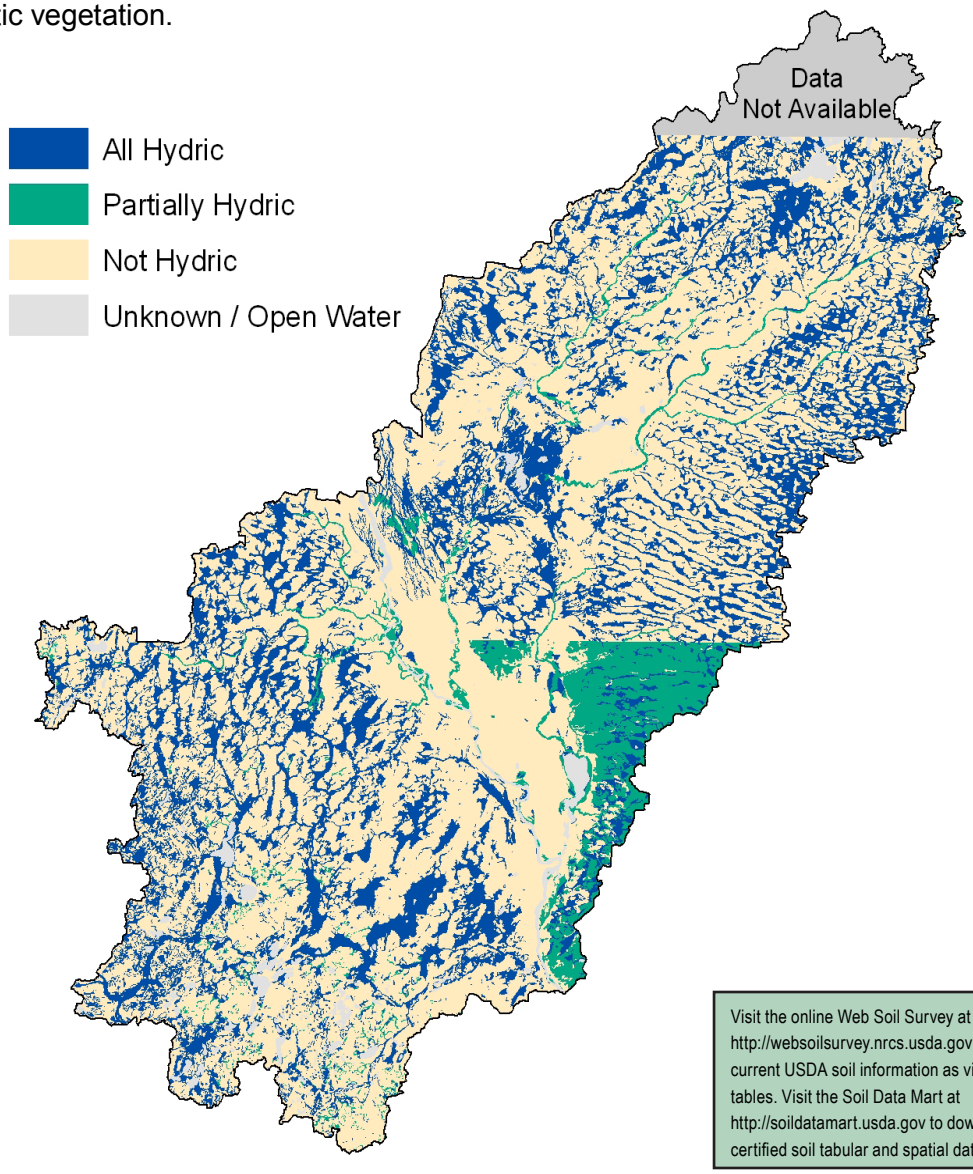
Hydric Soils

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.



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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

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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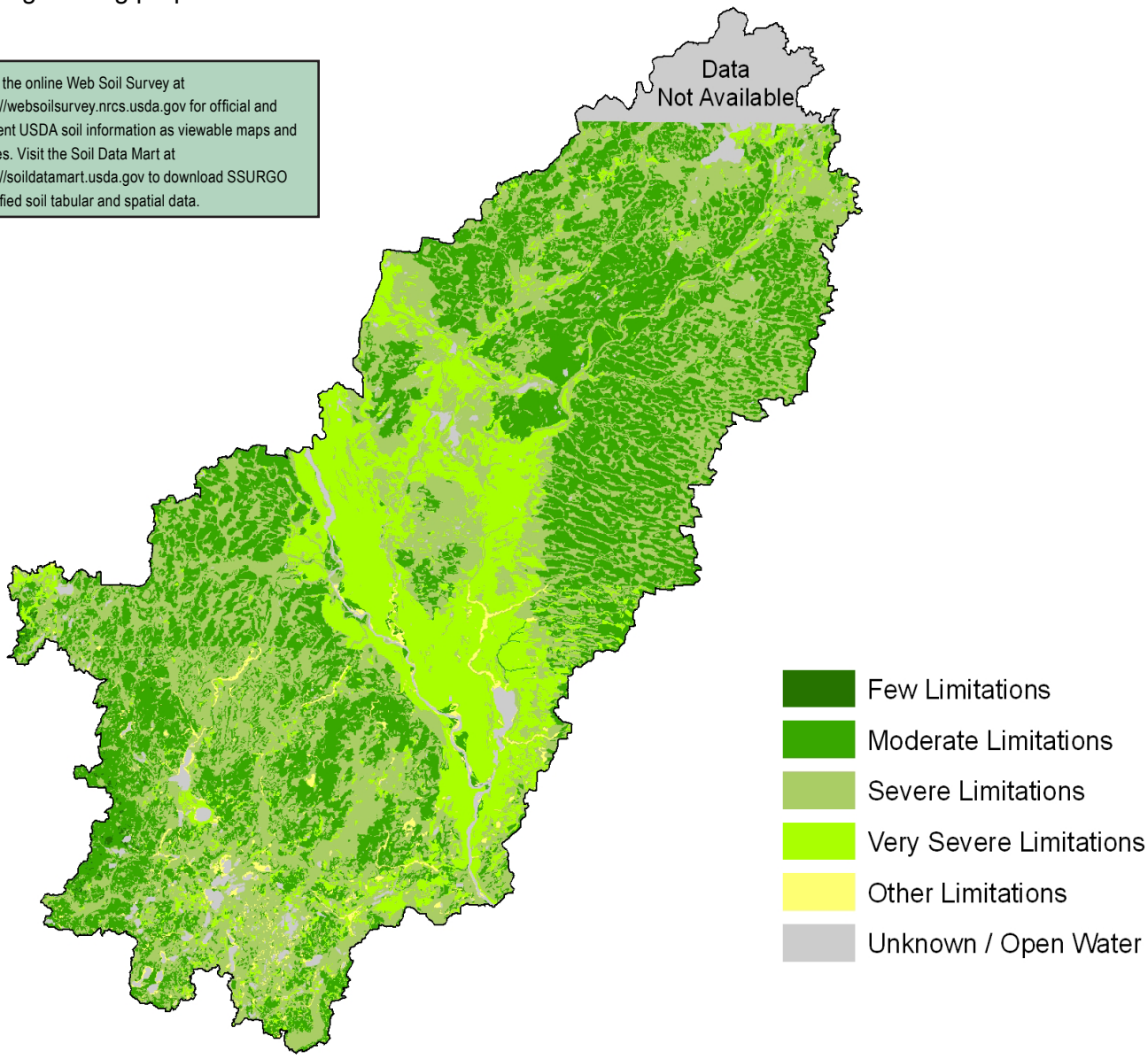


Performance Results System Data

Watershed Name: Platte - Spunk				Watershed Number: 07010201						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	11,898	1,920	0	5,287	1,603	N/A	8,741	17,213	12,926	59,588
Total Conservation Systems Applied (acres)	1,778	3,822	0	3,504	3,504	N/A	7,850	19,131	11,982	51,571
Conservation Practices										
Total Waste Management (313) (numbers)	1	0	0	1	0	1	0	1	2	6
Riparian Forest Buffers (391) (acres)	23	243	708	707	197	69	0	0	0	1,947
Erosion Control Total Soil Saved (tons/year)	87	37,687	9,767	11,171	2,326	N/A	N/A	N/A	N/A	61,038
Total Nutrient Management (590) (Acres)	593	1,476	635	830	84	1,074	11,542	11,542	3,813	31,589
Pest Management Systems Applied (595A) (Acres)	817	650	0	499	0	364	738	5,998	728	9,794
Prescribed Grazing 528a (acres)	0	130	0	124	0	11	0	79	79	423
Tree & Shrub Establishment (612) (acres)	379	198	399	496	108	110	11	42	6	1,749
Residue Management (329A-C) (acres)	55	3,739	1,435	473	160	1,893	1,893	7,633	3,930	21,211
Total Wildlife Habitat (644 - 645) (acres)	6,621	1,372	2,027	1,265	1,058	112	1,265	636	976	15,332
Total Wetlands Created, Restored, or Enhanced (acres)	0	73	377	25	55	22	0	37	3	592
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	1,528	3,631	1,201	2,141	422	N/A	77	313	753	10,066
Wetlands Reserve Program	0	0	0	0	0	N/A	0	0	0	0
Environmental Quality Incentives Program	1,357	0	508	120	243	N/A	7,029	14,828	8,395	32,480
Wildlife Habitat Incentive Program	0	0	0	0	0	N/A	0	0	0	0
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

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 Erosion.** Sheet and rill as well as gully erosion and consequential soil deposition have ranked as high concerns for the counties in the watershed.

- **Woodland Management.** Management opportunities include, but are not limited to planting trees or shrubs, timber stand improvement, timber sales, enhancing wildlife habitat, prescribed burning, and controlling invasive species.

- **Surface 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. Mercury and PCB levels are affecting Aquatic consumption, aquatic life, and aquatic recreation.

- **Ground Water Quality, Nutrients, Organics, Animal and Human Wastewater managment.** Aging septic systems, feedlot runoff, nutrient runoff, tilling practices, improper closure of old manure pits, and abandoned wells all pose threats to groundwater quality throughout the region. Improved management of wastewater ensures safe water for all uses.

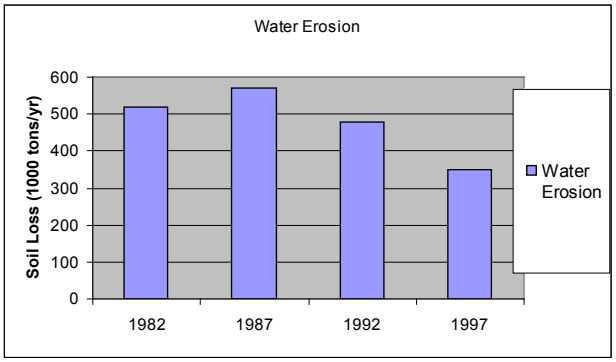
- **Ground Water Quantity.** Land alterations have transformed the flow, retention, and replenishment of the hydrologic cycle. Pattern tiling, ditching, wetland removal, development, stormwater drainage, excessive groundwater use, etc. have resulted in the cumulative effect of rapidly transporting a greater amount of water to major rivers and streams, and away from groundwater recharge potential.

- **Surface Water Management, Gully 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.

- **Wetland Management.** Area groups recognize that development and agricultural practices have had major impacts on wetlands. Physical changes have taken place, wildlife and plant species composition have been altered greatly changing the function and value of the areas plentiful wetlands. Priority should be given to the protection and enhancement of remaining wetlands in the basin.

NRI Erosion Estimates

- Sheet and rill erosion by water on the cropland and pastureland decreased by approximately 180,400 tons (34.9%) of soil between 1982 and 1997. /13



THREATENED AND ENDANGERED SPECIES /14

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 basin.

Scientific Name	Common Name	Type
Ammodramus nelsoni	Nelson's Sharp-tailed Sparrow	Zoological
Botrychium lanceolatum	Triangle Moonwort	Botanical
Buteo lineatus	Red-shouldered Hawk	Zoological
Carex obtusata	Blunt Sedge	Botanical
Carex sterilis	Sterile Sedge	Botanical
Cirsium hillii	Hill's Thistle	Botanical
Coturnicops noveboracensis	Yellow Rail	Zoological
Cypripedium arietinum	Ram's-head Lady's-slipper	Botanical
Dendroica cerulea	Cerulean Warbler	Zoological
Emydoidea blandingii	Blanding's Turtle	Zoological
Etheostoma microperca	Least Darter	Zoological
Falco peregrinus	Peregrine Falcon	Zoological
Haliaeetus leucocephalus	Bald Eagle	Zoological
Heterodon nasicus	Western Hognose Snake	Zoological
Hudsonia tomentosa	Beach-heather	Botanical
Juglans cinerea	Butternut	Botanical
Lanius ludovicianus	Loggerhead Shrike	Zoological
Lasmigona compressa	Creek Heelsplitter	Zoological
Ligumia recta	Black Sandshell	Zoological
Limosa fedoa	Marbled Godwit	Zoological
Notropis anogenus	Pugnose Shiner	Zoological
Panax quinquefolius	American Ginseng	Botanical
Perognathus flavescens	Plains Pocket Mouse	Zoological
Phalaropus tricolor	Wilson's Phalarope	Zoological
Pituophis catenifer	Gopher Snake	Zoological
Platanthera flava var. herbiola	Tubercled Rein-orchid	Botanical
Potamogeton vaseyi	Vasey's Pondweed	Botanical
Sanicula trifoliata	Beaked Snakeroot	Botanical
Silene drummondii	Drummond's Campion	Botanical
Tympanuchus cupido	Greater Prairie-chicken	Zoological

Socioeconomic and Agricultural Data (Relevant)

The Platte-Spunk subbasin has an estimated population of 55,884 people. Median household income throughout the district is just over $45,000 yearly, roughly 97% of the national average. Unemployment is estimated at 5.08%, and approximately 10% of the residents in the watershed are below the national poverty level.

There are 1,919 Farms in the Platte-Spunk Watershed. Approximately forty nine percent of the operations are less than 180 acres in size, forty eight percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size. Of the 1,300 operators in the subbasin, 65% are full-time producers not reliant on off-farm income.

(MN) HUC# 7010201		Total Acres:	652,677
Population Data*	Watershed Population	55,884	
	Unemployment Rate	5.08%	
	Median Household Income	45,015	
	% below poverty level	10%	
	Median Value of Home	92,867	
Farms	# of Farms	1,919	
	# of Operators	1,990	**Percent**
	# of Full Time Operators	1,300	65%
	# of Part Time Operators	690	35%
	Total Crop/Pasturelands:	**368,800**	56.5%
Farm Size	1 to 179 Acres	121	49%
	180 to 499 Acres	99	40%
	500 to 999 Acres	20	8%
	1,000 Acres or more	6	2%
Livestock & Poultry	Cattle - Beef	11,000	0%
	Cattle - Dairy	30,447	1%
	Chicken	793,018	22%
	Swine	38,882	1%
	Turkey	902,077	25%
	Other**	1,779,435	50%
	Animal Count Total:	3,554,860	
	Total Permitted AFOs:	998	
Chemicals (Acres Applied)	Insecticides	10,551	
	Herbicides	115,900	
	Wormicides	386	
	Fruiticides	1,556	
	Total Acres Treated	128,393	
	% State Chemical Totals	**0.9%**	

* 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

** "Other" Category includes animal counts for Horses and Ponies, Milk Goats, Angora Goats, Sheep and Lambs as reported by county in the 2002 Ag Census

Watershed Projects, Plans and Monitoring

- **Biological & Toxicological Assessment**
  Minnesota Pollution Control Agency
- **Mississippi River Env. Management Program**
  US Army Corps of ENgineers
- **Morrison County Water Plan**
  Morrison County SWCD
- **MIssissippi River Watch**
  Mississippi Headwaters Board
- **Todd County Comprehensive Drainage Survey**
  Todd County SWCD
- **Upper Mississippi River Initiative**
  National Audobon Society
- **Upper Mississippi River Basin Planning**
  Minnesota Pollution Control Agency
- **Upper Mississippi Source Water Protection Project**
  Minnesota Department of Health
- **Upper Mississippi River WS Forest Partnership**
  USDA Forest Service
- **Upper Mississippi River Watershed Fund**
  USDA Forest Service / National Fish & Wildlife Federation

*** 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

- **Benton Co. Soil & Water Conservation District**
  14 2nd Avenue West, Foley, MN 56329
  Phone (320) 968-5300 Ext. 3
- **Crow Wing Co. Soil & Water Conservation District**
  322 Laurel St, Suite 14, Brainerd, MN 56401
  Phone (218) 828-6197
- **Friends of the MIssissippi River**
  360 N Robert St Saint Paul, MN 55101
  Phone (651) 222-2193
- **West Central Minnesota Joint Powers Board**
  809 SE 8th St, Detroit Lakes, MN 56501
  Phone (218) 847-9392
- **National Fish and Wildlife Foundation**
  1 Federal Drive Minneapolis MN 55111
  Phone 612-713-5185
- **Mille Lacs County SWCD**
  900 Hwy 23 W, Suite 2 Milaca, MN 56353
  Phone (320) 983-2160
- **Morrison County SWCD**
  213 SE 1st Ave Little Falls, MN 56345
  Phone: (320) 632-2941
- **Mississippi Headwaters Board**
  Cass Co. Courthouse Box 3000 Walker, MN 56484
  Phone (218) 547-7263
- **South Central Comprehensive Water Plan Joint Powers Board** P.O. Box 248, New Ulm, MN 56073 Phone 507-233-6642
- **Stearns Co. Soil& Water Conservation District**
  110 2nd St South, Suite 128 Waite Park, MN 56387
  Phone (320) 251-7800, Ext. 3
- **Todd Co. Soil & Water Conservation Dist**
  607 9th Street NE Long Prarie, MN 56347
  Phone (320) 732-2644
- **USDA Forest Service North East Area**
  1992 Folwell Ave. St. Paul MN 55108
  Phone 651-649-5239

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. U.S. Geological Survey National Hydrography Dataset (NHD) 1:100,000-scale Digital Line Graph (DLG) medium resolution hydrography data, integrated with reach-related information from the U.S. Environmental Protection Agency Reach File Version 3.0 (RF3). 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)

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. Bedrock Geology and Structure: Zumbro Watershed Parnership Management Plan, 9/30/2007.

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/easementsummary.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. Data were also taken from MPCA AFO/CAFO counts provided by county for 2006.

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/. Where listed, 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. Additional Information on listed individual projects can be obtained from the noted parties.