

Rapid Watershed Assessment

Resource Profile

Beartrap-Nemadji (MN/WI) HUC: 04010301



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.

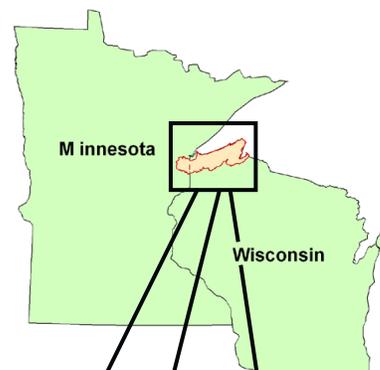
Introduction

The Beartrap-Nemadji 8-Digit Hydrologic Unit Code (HUC) subbasin is located in the Lake Superior Lacustrine Clay Plain and Minnesota/Wisconsin Upland Till Plain portions of the Northern Lakes and Forest Ecoregion. This largely forested watershed is 1,180,073 acres in size.

Approximately sixty percent of the land in this HUC is privately owned, and the remainder is state, federal and county land, or held by corporate interests.

Assessment estimates indicate 1,617 farms located in the watershed. Approximately sixty percent of the operations are less than 180 acres in size, thirty seven percent are from 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Of the 1,533 operators in the basin, fifty four percent are full-time producers not reliant on off-farm income.

The main resource concerns throughout the watershed are Bankfull Flow and Channel Downcutting, Woodland Management, Surfacewater Quality, Streambank Stabilization, Stormwater Management and wetland management. Sediment and pollutant loadings to Lake Superior are directly associated with the Bankfull Flow, Channel Downcutting, stormwater and streambank issues in the basin.



County Totals

County	Acres in HUC	% HUC
Carlton	145,471	12.3%
Pine	32,304	2.7%
Bayfield	518,286	43.9%
Ashland	37,887	3.2%
Douglas	446,126	37.8%
Total acres:	1,180,073	100%

Physical Description

The Beartrap-Nemadji Watershed, located in Northwest Wisconsin and Northeast Minnesota, is unique in that it contains easily erodible soil and high riverbanks that contribute large amounts of sediment to area waters through mass wasting events. Sediment is transported and ultimately deposited in Western Lake Superior.

In 1998 the MN NRCS estimated that the Nemadji River transports an average of 120,000 tons of sediment to Lake Superior each year, making the watershed the largest single source of sediment to Lake Superior. Approximately 33,000 tons of sediment is dredged annually by the U.S. Army Corps of Engineers to maintain adequate depth for shipping traffic in Superior Bay.

Due to the deep incision of streams in the watershed, there is a strong dependence of land use on terrain. Agricultural and residential land use is confined to the relatively flat uplands, leaving the valleys predominantly forested.

Precipitation in the watershed ranges from 27 to 35 inches annually. The subbasin yields 42% of its annual precipitation as discharge (NRCS, 1998).

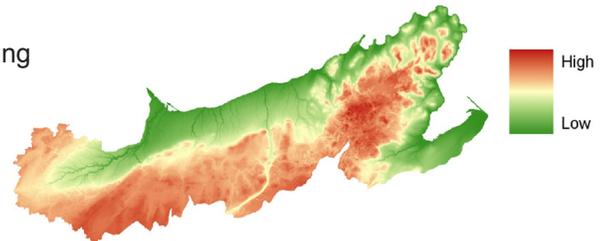
Predominate land uses / land covers are Forest (74%), Grass/Pasture/Hay (10.2%), Wetlands (10%), and Residential/Commercial Development (3.8%).

Land use within the watershed is modestly agricultural, accounting for approximately eleven percent of the available acres.

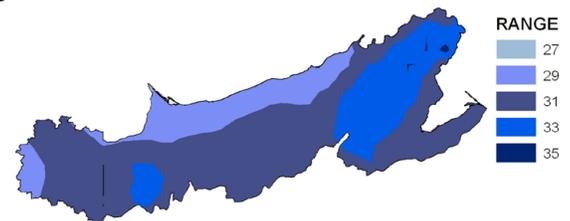
Development pressure is moderate, with occasional farms, timberland, and lakeshore being parceled out for recreation, lake or country homes.



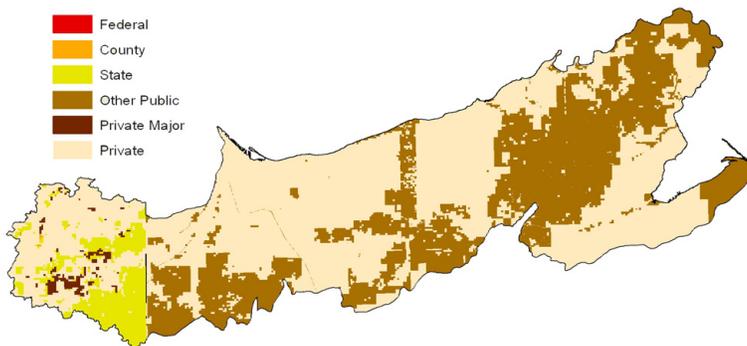
Relief



Average Precipitation



Ownership¹



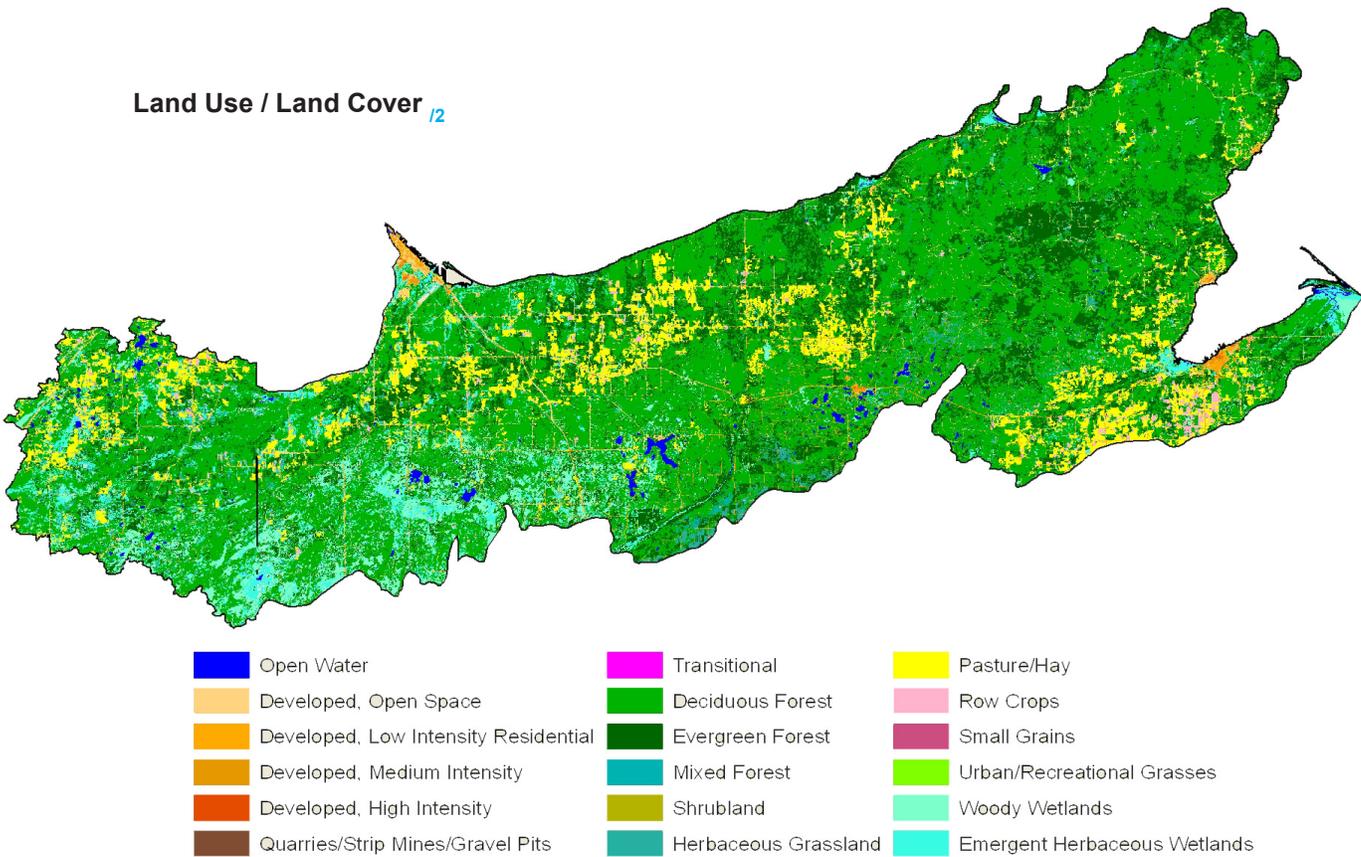
Ownership Type	Acres	% of HUC
Conservancy	-	-
County	520.6	0.04
Federal	34.6	0.003
State	61,753.0	5.2
Other Public	400,411.4	33.9
Tribal	-	-
Private Major	9,608.6	0.8
Private	707,695.8	60.0
Total Acres:	1,180,024	100

¹ Ownership totals derived from MN/WI 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 watershed covers an area of approximately 1,180,024 acres. Sixty percent of the land in the watershed is Privately owned (707,696 acres). The second largest ownership type is Miscellaneous “Other Public” lands, with approximately 400,411 acres (25.1%), followed by State with 61,753 acres (5.2%), Private-Major (Corporate), with 9,608 acres (0.8%), and County with 521 acres (0.04%). Ownership data indicates an additional 35 acres of Federal land in the basin. Land use by ownership type is represented in the table below.

Land Use / Land Cover ¹²



Ownership / Land Use ¹³

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	385,115.5	32.7%	485,793.0	41.2%	0.0	0.0%	870,908.4	73.9%
Grass/Pasture/Hay	9,749.9	0.8%	110,915.3	9.4%	0.0	0.0%	120,665.2	10.2%
Orchards	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Row Crops	1,188.3	0.1%	11,101.5	0.9%	0.0	0.0%	12,289.8	1.0%
Shrub etc	1,219.9	0.1%	1,543.8	0.1%	0.0	0.0%	2,763.7	0.2%
Wetlands	54,118.0	4.6%	63,334.0	5.4%	0.0	0.0%	117,452.1	10.0%
Residential/Commercial	8,237.9	0.7%	36,229.1	3.1%	0.0	0.0%	44,467.0	3.8%
Open Water*	2,021.3	0.2%	8,622.1	0.7%	0.0	0.0%	10,643.4	0.9%
Watershed Totals:	461,651	39.1%	717,539	60.9%	0.0	0.00%	1,180,024	100.00%

* ownership undetermined

** includes private-major

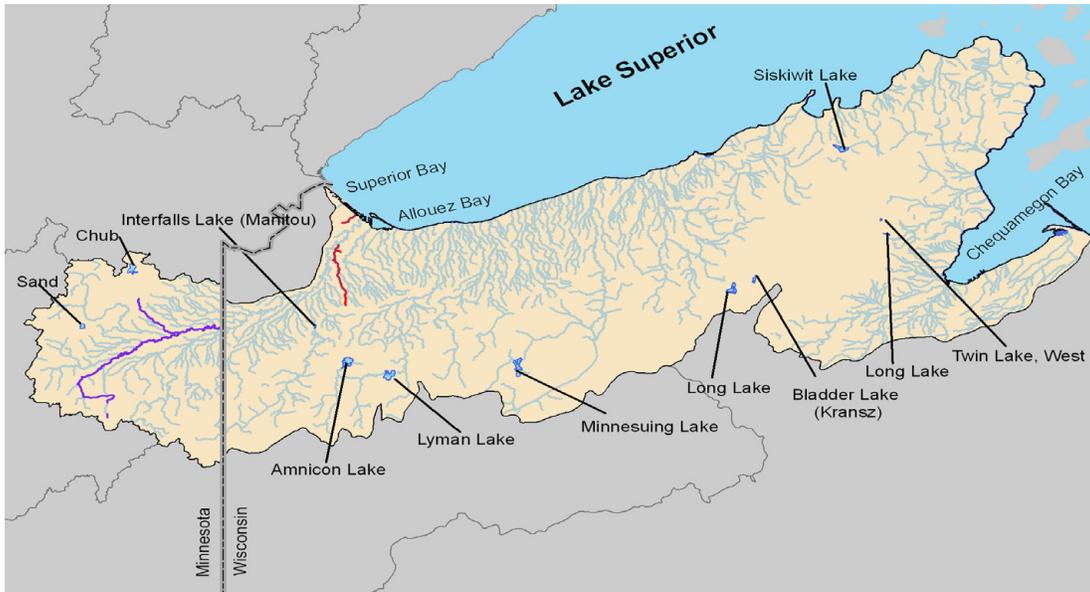
Physical Description (continued)

			cu. ft/sec	
Stream Flow Data	USGS 04024430 NEMADJI RIVER NEAR SOUTH SUPERIOR, WI	Total Avg.	137.8	
		May – Sept. Avg.	110.4	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)		MILES	PERCENT	
	Total Miles – Major (100K Hydro GIS Layer)	2,367	---	
	303d/TMDL Listed Streams (DEQ)	108	0%	
Riparian Land Cover/Land Use¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Land Use Type	Acres	Percent	
	Forest	43,926	78.1%	
	Grain Crops	0	0.0%	
	Grass, etc	4,199	7.5%	
	Orchards	0	0.0%	
	Row Crops	491	0.9%	
	Shrub etc	106	0.2%	
	Wetlands	4,562	8.1%	
	Residential/Commercial	1,311	2.3%	
	Open Water*	1,620	2.9%	
	Total Buffer Acres:	56,216	100%	
Crop and Pastureland Land Capability Class¹⁶ (NLCD Croplands & Pasturelands extracted from SSURGO Non-irrigated Land Capability Classification)	1 – slight limitations	289	0.2%	
	2 – moderate limitations	1,421	1.1%	
	3 – severe limitations	50,193	37.8%	
	4 – very severe limitations	31,886	24.0%	
	5 – no erosion hazard, but other limitations	0	0.0%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	24,897	18.7%	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	23,617	17.8%	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	641	0.5%	
	Total Croplands & Pasturelands	132,945		
		TYPE OF LAND	ACRES	% of Irrigated Lands
Irrigated Lands¹⁷ (1997 NRI Estimates for Non- Federal Lands Only)	Cultivated Cropland / Pastureland	0	0%	0%
	Uncultivated Cropland	0	0%	0%
	Total Irrigated Lands	0	---	0%

Assessment of Waters

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

2006 303d Listed Waters - Beartrap - Nemadji Watershed⁸



Waterbody Name	Impairment	Affected Use
Chub	Excess nutrients	Aquatic Consumption
Sand	Mercury	Aquatic Consumption
Amnicon Lake	Mercury, DO, Degraded Habitat	Aquatic Consumption, Aquatic Life
Lyman Lake	Mercury	Aquatic Consumption
Minnesuing Lake	Mercury	Aquatic Consumption
Bladder Lake (Kransz)	Mercury	Aquatic Consumption
Long Lake	Mercury	Aquatic Consumption
Siskiwit Lake	Mercury	Aquatic Consumption
Long Lake	Mercury	Aquatic Consumption
Twin Lake, West	Mercury	Aquatic Consumption
Interfalls Lake (Manitou)	Mercury, E-coli	Aquatic Consumption, Life and Recreation
Allouez Bay	Mercury	Aquatic Consumption
Superior Bay	Toxics, Mercury	Aquatic Consumption, Aquatic Life
Superior Bay	Mercury	Aquatic Consumption
Chequamegon Bay	Mercury, Contam. Sediment	Aquatic Consumption
Lake Superior	Mercury, Contam Sediment	Aquatic Life, Aquatic Recreation
Crawford Creek	Contam. Sediment	Aquatic Life, Aquatic Recreation
Newton Creek	Contam. Sediment	Aquatic Life, Aquatic Recreation
Unnamed	Contam. Sediment	Aquatic Life, Aquatic Recreation
Interfalls Lake (Manitou)	EC, Mercury	Aquatic Life, Aquatic Recreation
St Louis River (St Louis Bay)	BP, Mercury, PCB	Aquatic Consumption
Deer Creek	Turbidity	Aquatic Consumption
Nemadji River	Turbidity	Aquatic Consumption

Common Resource Areas

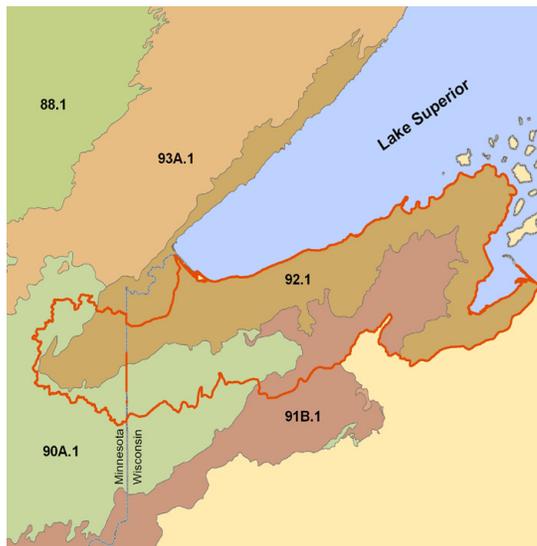
The Beartrap-Nemadji watershed encompasses three common resource areas, 90A.1, 91B.1, and 92.1⁹

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 of the growing season. Primary resource concerns are timber management, wildlife habitat, recreation and agricultural forage production. Surface water quality is a localized concern.

91B.1 Northwest Wisconsin Outwash: Gently sloping to moderately steep outwash plains and moraines. Soils range from excessively drained sandy soils to very poorly drained organic soils. Mostly deciduous and coniferous forestland, pasture with more cropland in the western part. The primary resource concerns are forestland productivity, erosion control on cropland and timbered areas during harvest, upland wildlife habitat management, and recreation.

92.1 Lake Superior Clay Plain: Gently sloping to steep, clayey and loamy lakebed deposits with deep v-shaped ravines. Well drained to somewhat poorly drained clayey soils with some organic soils. Mixed deciduous and coniferous forest predominate, with significant areas of forage based cropland and grazing land. Primary resource concerns are forestland, cropland productivity, wetland habitat restoration, erosion control on deeply incised streams along with urban expansion.



Soils of the Basin¹⁰

The soils within the Greater Lake Superior watershed formed as a result of the weathering of unconsolidated materials derived from very deep to shallow glacial and organic deposits. This material has been subjected to climate and organisms as conditioned by relief over the last 14,000 years.

The relative proportions of soil types vary dramatically within the Lake Superior watershed mostly due to the depth to bedrock, slope gradient, geologic parent material and landscape position.

Approximately one third of the basin is comprised of glacial till and glacial lake-laid clay soils. These soils are commonly referred to as “red clay” and were formed during the last glaciation of the area some 10,000 years ago. Red clay is considered highly erodible and is prone to extensive mass wasting through “slumping” along streams and tributaries. The upland two thirds of the basin is sandy and loamy tills and glacial outwash. These soils are generally sandier and much less erodible than red clay.

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

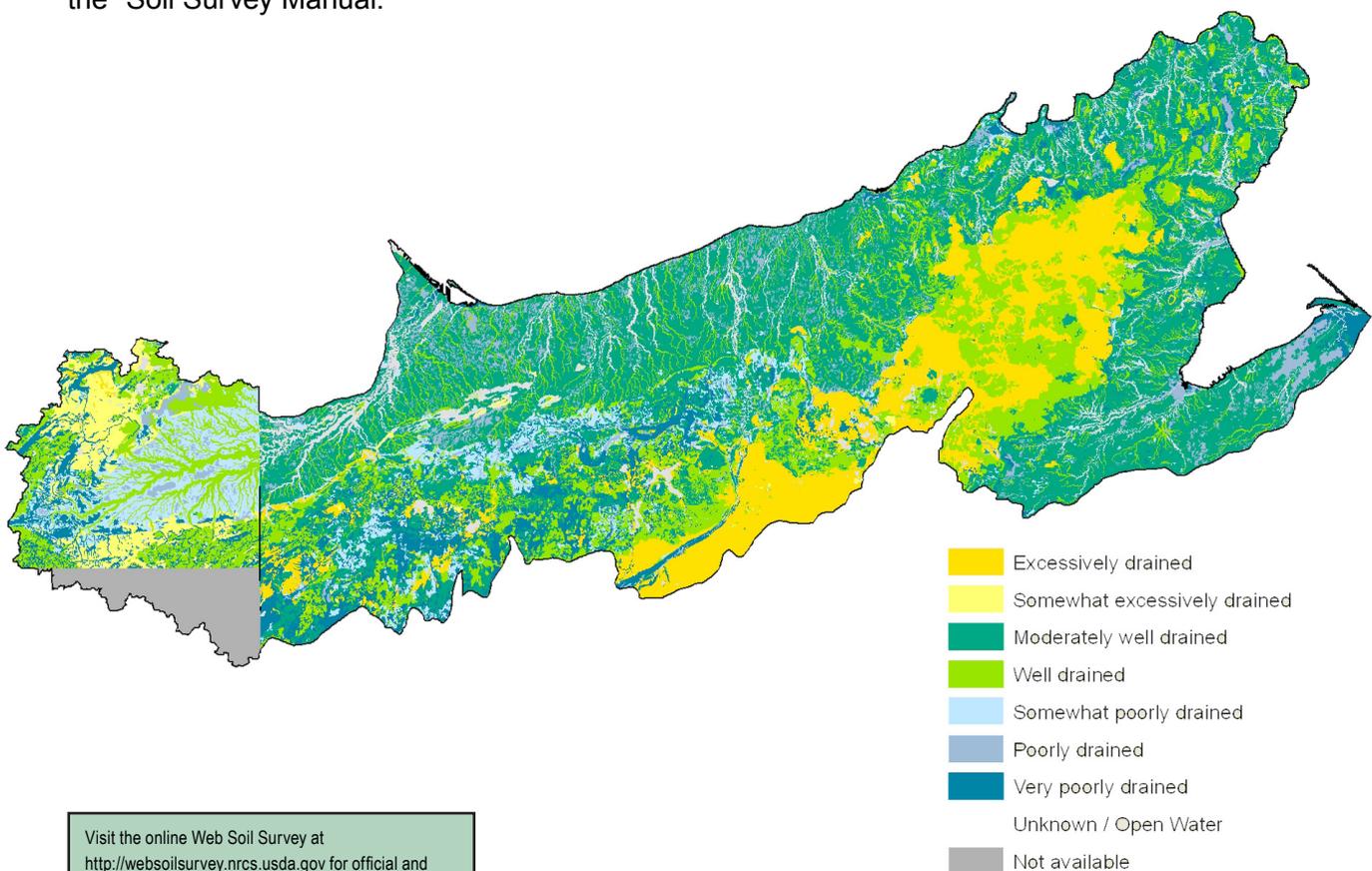
<http://soildatamart.usda.gov> to download SSURGO

 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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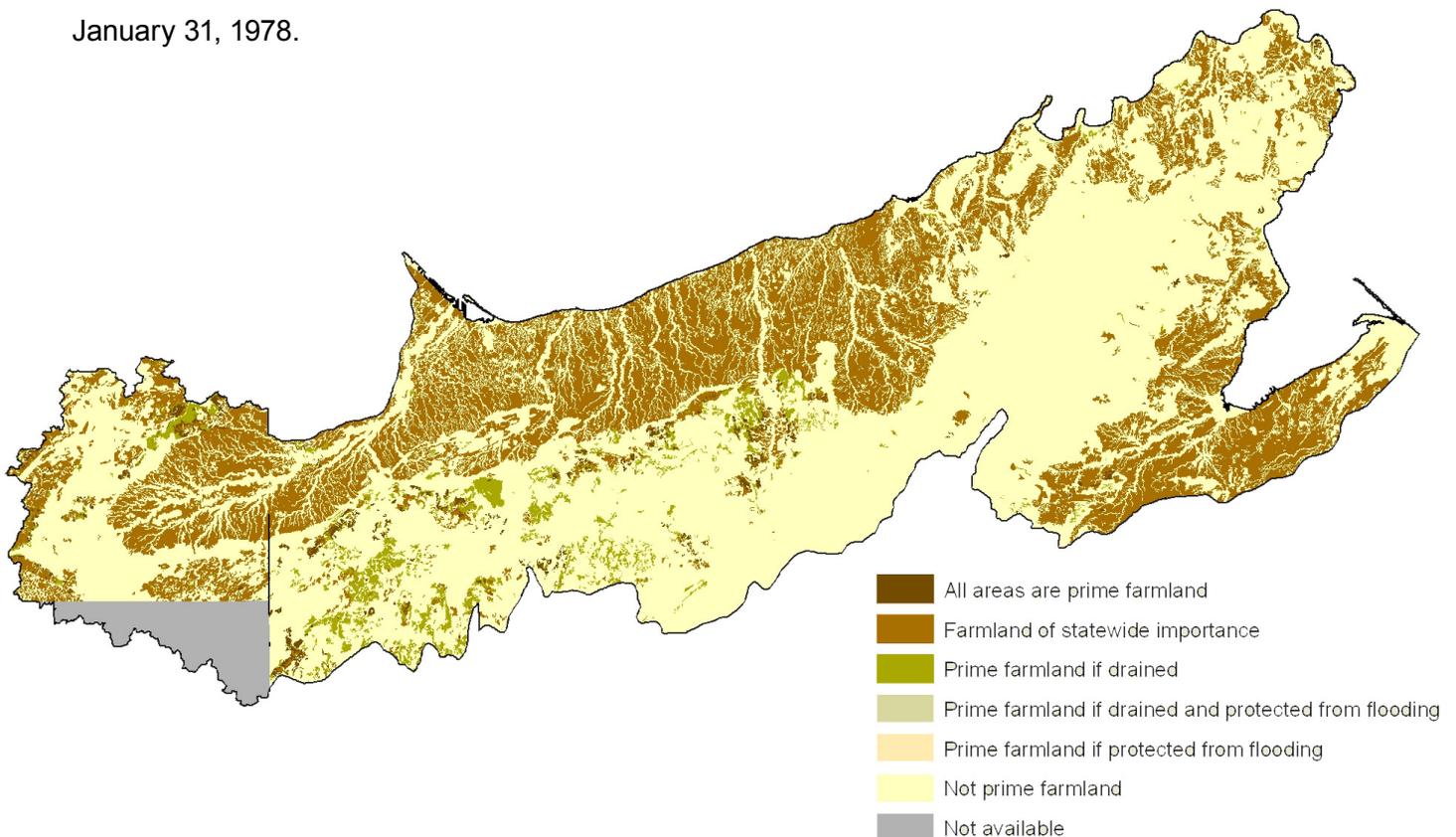
Note: Historical Drainage Class Determination Standards, scale, and methodology can vary on a county-to-county basis, leading to irregularities in thematic maps representing drainage classification determinations.

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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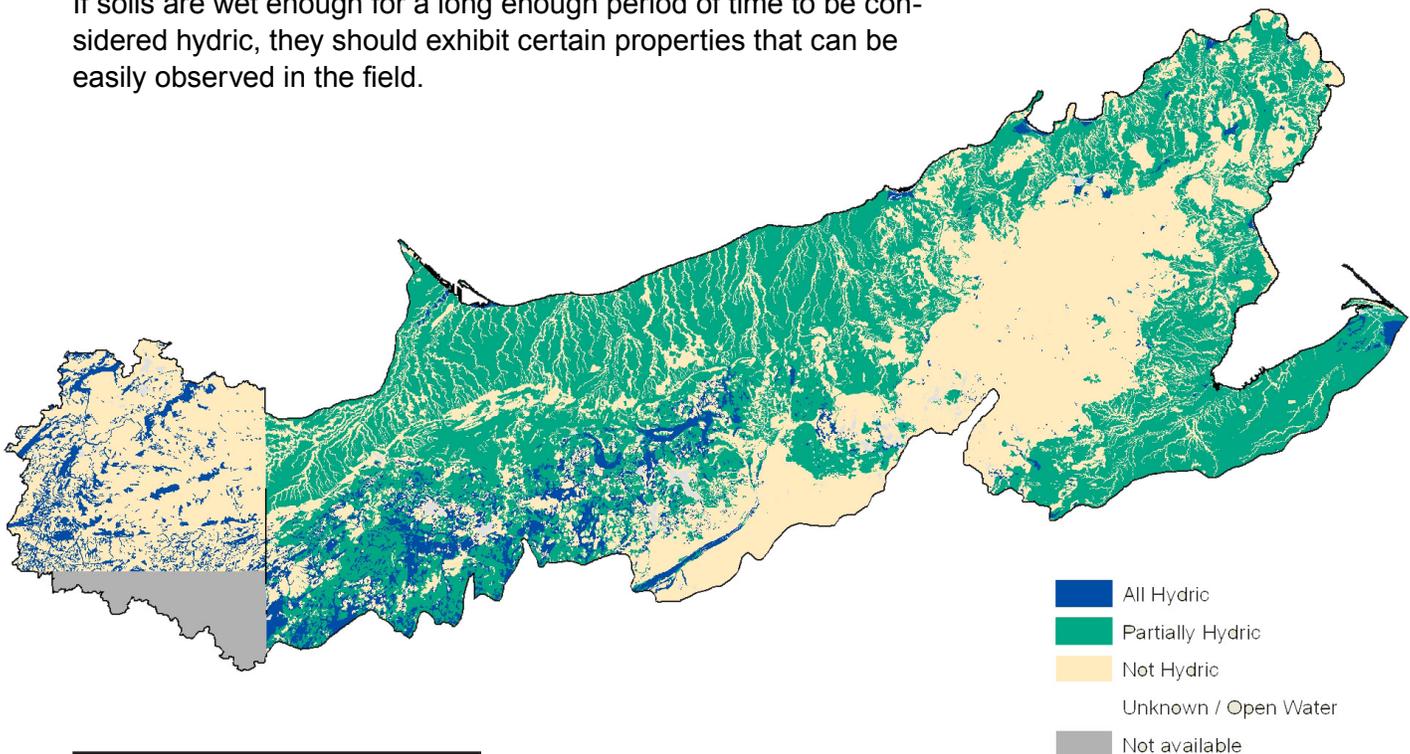
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Hydric Soils

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

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

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

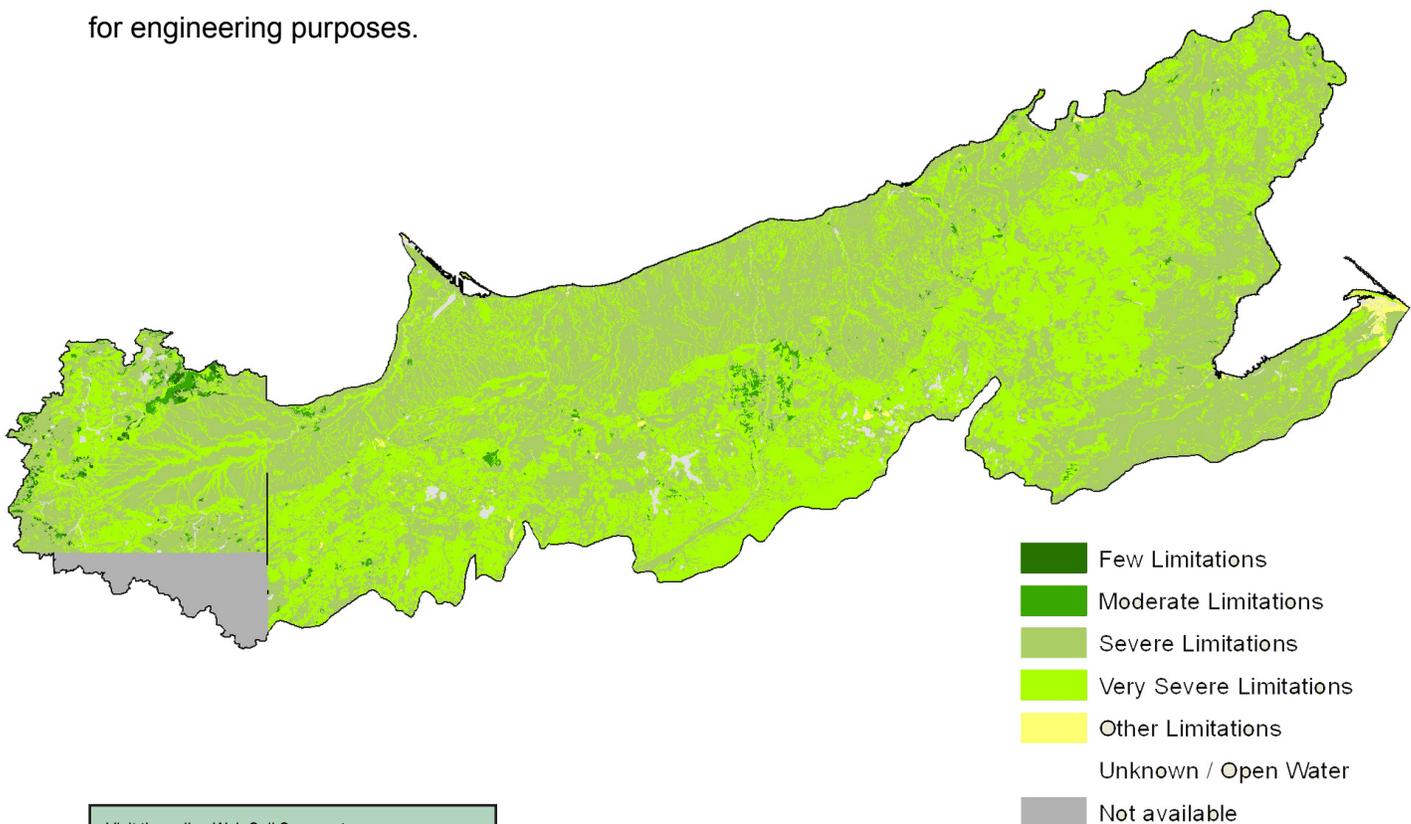


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Land Capability Classification

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: Beartrap-Nemadji				Watershed Number: 04010301						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	MN & WI TOTALS
Total Conservation Systems Planned (acres)	1,551	913	887	1,133	2,951	N/A	8,401	4,463	1,679	21,978
Total Conservation Systems Applied (acres)	96	1,423	734	1,133	1,708	N/A	8,192	5,423	3,730	22,439
Conservation Practices										
Total Waste Management (313) (numbers)	0	1	1	3	0	0	0	0	0	5
Riparian Forest Buffers (391) (acres)	0	0	1,540	0	15	2,566	6	13	58	4,198
Erosion Control Total Soil Saved (tons/year)	0	2,676	499	2,088	2,649	N/A	N/A	N/A	N/A	7,912
Total Nutrient Management (590) (Acres)	0	0	0	231	91	750	1,395	1,974	1,148	5,589
Pest Management Systems Applied (595A) (Acres)	0	0	670	212	212	0	0	0	0	1,094
Prescribed Grazing 528a (acres)	53	53	57	133	151	235	633	100	305	1,720
Tree & Shrub Establishment (612) (acres)	0	10	5	871	84	2	15	40	12	1,039
Residue Management (329A-C) (acres)	0	0	0	0	0	0	0	203	0	203
Total Wildlife Habitat (644 - 645) (acres)	0	657	497	383	859	3,005	3,014	1,608	843	10,866
Total Wetlands Created, Restored, or Enhanced (acres)	1	73	713	378	326	0	182	4	0	1,677
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	0	0	0	0	0	N/A	1	482	21	504
Wetlands Reserve Program	0	20	100	0	128	N/A	182	0	0	430
Environmental Quality Incentives Program	0	344	159	229	1,118	N/A	2,643	1,862	1,387	7,742
Wildlife Habitat Incentive Program	0	8	100	0	4	N/A	12	0	24	148
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

RESOURCE CONCERNS

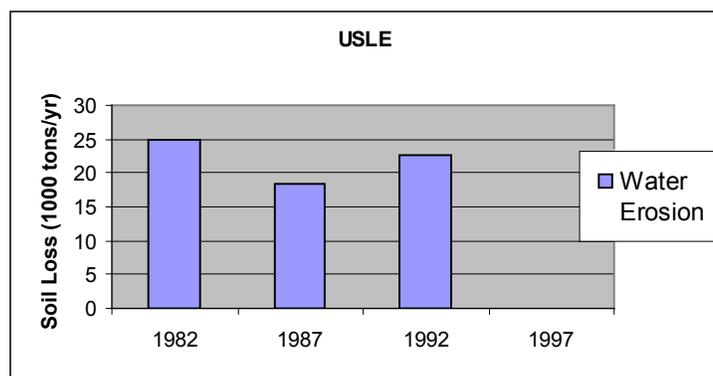
County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:



- Bankfull Flow and Channel Downcutting.** Much of the excessive Erosion, sedimentation and turbidity can be attributed to past land use changes. The old growth coniferous forest conversion of evergreen to poplar forest causes greatly increased water yield. Clear-cut logging and agricultural activity create a hydrological response similar to that of open lands.
- Woodland Management.** Districts seek to manage timber harvest and forestry practices to maintain 40% or less open space in riparian and priority areas. Management opportunities include planting trees or shrubs, timber stand improvement, timber sales, conversion to coniferous forests in red-clay areas, enhancing wildlife habitat, and more.
- Surface Water Quality, Nutrients, Sediment & Priority Pollutants.** Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing a fish community with depressed populations and limited diversity. Sediment, Mercury and other heavy metal levels are affecting the health of Aquatic communities, and affecting the consumption of fish in many areas of concern.
- Streambank Stabilization.** Stabilizing stream banks can prevent the loss of land or damage to utilities, roads, buildings or other facilities adjacent to a watercourse, and prevent the loss of stream bank vegetation, reduce sediment loads to streams, maintain the capacity of the stream channel, improve the stream for recreational use or as habitat for fish and wildlife, and control unwanted meander of a river or stream.
- Stormwater Management.** Local districts recognize that runoff volume will likely increase as development of the watershed continues. Districts seek to require that peak runoff rates be kept below the capacity of downstream conveyance facilities through the use of retention measures.

NRI Erosion Estimates

- NRI Wind Erosion estimates were not reported by Hydrologic Unit Code for this basin between 1982 and 1997. Estimates for sheet and rill erosion on the cropland indicate an average loss of 21,500 tons between 1982 and 1992, and there were no estimates available for the 1997 reporting period. ¹³



THREATENED AND ENDANGERED SPECIES OF THE BASIN ¹⁴

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Adoxa moschatellina</i>	Moschatel	Botanical	<i>Hydrastis canadensis</i>	Golden-seal	Botanical
<i>Botrychium lanceolatum</i>	Triangle Moonwort	Botanical	<i>Iodanthus pinnatifidus</i>	Purple Rocket	Botanical
<i>Botrychium simplex</i>	Least Moonwort	Botanical	<i>Jeffersonia diphylla</i>	Twinleaf	Botanical
<i>Clemmys insculpta</i>	Wood Turtle	Zoological	<i>Juniperus horizontalis</i>	Creeping Juniper	Botanical
<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Zoological
<i>Falco peregrinus</i>	Peregrine Falcon	Zoological	<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological	<i>Lasmigona costata</i>	Fluted-shell	Zoological
<i>Hemidactylium scutatum</i>	Four-toed Salamander	Zoological	<i>Lechea tenuifolia</i>	Narrow-leaved Pinweed	Botanical
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	Zoological	<i>Melica nitens</i>	Three-flowered Melic	Botanical
<i>Littorella uniflora</i>	American Shore-plantain	Botanical	<i>Microtus ochrogaster</i>	Prairie Vole	Zoological
<i>Najas gracillima</i>	Thread-like Naiad	Botanical	<i>Microtus pinetorum</i>	Woodland Vole	Zoological
<i>Polygonum careyi</i>	Carey's Smartweed	Botanical	<i>Minuartia dawsonensis</i>	Rock Sandwort	Botanical
<i>Potamogeton vaseyi</i>	Vasey's Pondweed	Botanical	<i>Myotis septentrionalis</i>	Northern Myotis	Zoological
<i>Sterna hirundo</i>	Common Tern	Zoological	<i>Napaea dioica</i>	Glade Mallow	Botanical
<i>Tsuga canadensis</i>	Eastern Hemlock	Botanical	<i>Notropis nubilus</i>	Ozark Minnow	Zoological
<i>Heteranthera limosa</i>	Mud Plantain	Botanical	<i>Novasuccinea n. sp. minnesota a</i>	Minnesota Pleistocene Ambersnail	Zoological
<i>Isoetes melanopoda</i>	Blackfoot Quillwort	Botanical	<i>Novasuccinea n. sp. minnesota b</i>	Iowa Pleistocene Ambersnail	Zoological
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Zoological	<i>Obovaria olivaria</i>	Hickorynut	Zoological
<i>Limosella aquatica</i>	Mudwort	Botanical	<i>Oenothera rhombipetala</i>	Rhombic-petaled Evening Primrose	Botanical
<i>Microtus ochrogaster</i>	Prairie Vole	Zoological	<i>Orobanche fasciculata</i>	Clustered Broomrape	Botanical
<i>Notropis topeka</i>	Topeka Shiner	Zoological	<i>Orobanche uniflora</i>	One-flowered Broomrape	Botanical
<i>Oarisma powesheik</i>	Powesheik Skipper	Zoological	<i>Panax quinquefolius</i>	American Ginseng	Botanical
<i>Oeneis uhleri varuna</i>	Uhler's Arctic	Zoological	<i>Paronychia canadensis</i>	Canadian Forked Chickweed	Botanical
<i>Opuntia macrorhiza</i>	Plains Prickly Pear	Botanical	<i>Parthenium integrifolium</i>	Wild Quinine	Botanical
<i>Plantago elongata</i>	Slender Plantain	Botanical	<i>Pellaea atropurpurea</i>	Purple Cliff-brake	Botanical
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	Botanical	<i>Phalaropus tricolor</i>	Wilson's Phalarope	Zoological
<i>Rhynchospora capillacea</i>	Hair-like Beak-rush	Botanical	<i>Phegopteris hexagonoptera</i>	Broad Beech-fern	Botanical
<i>Schedonnardus paniculatus</i>	Tumblegrass	Botanical	<i>Phidippus apacheanus</i>	A Jumping Spider	Zoological
<i>Speotyto cunicularia</i>	Burrowing Owl	Zoological	<i>Pipistrellus subflavus</i>	Eastern Pipistrelle	Zoological
<i>Speyeria idalia</i>	Regal Fritillary	Zoological	<i>Pituophis catenifer</i>	Gopher Snake	Zoological
<i>Tropidoclonion lineatum</i>	Lined Snake	Zoological	<i>Pleurobema coccineum</i>	Round Pigtoe	Zoological
<i>Verbena simplex</i>	Narrow-leaved Vervain	Botanical	<i>Poa paludigena</i>	Bog Bluegrass	Botanical
<i>Solidago mollis</i>	Soft Goldenrod	Botanical	<i>Poa wolfii</i>	Wolf's Bluegrass	Botanical
<i>Speotyto cunicularia</i>	Burrowing Owl	Zoological	<i>Polytaenia nuttallii</i>	Prairie-parsley	Botanical
<i>Speyeria idalia</i>	Regal Fritillary	Zoological	<i>Psoralidium tenuiflora</i>	Slender-leaved Scurf Pea	Botanical
<i>Desmodium nudiflorum</i>	Stemless Tick-trefoil	Botanical	<i>Rudbeckia triloba</i>	Three-leaved Coneflower	Botanical
<i>Diarrhena obovata</i>	American Beakgrain	Botanical	<i>Sanicula trifoliata</i>	Beaked Snakeroot	Botanical
<i>Dicentra canadensis</i>	Squirrel-corn	Botanical	<i>Scirpus clintonii</i>	Clinton's Bulrush	Botanical
<i>Diplazium pycnocarpon</i>	Narrow-leaved Spleenwort	Botanical	<i>Scutellaria ovata</i>	Ovate-leaved Skullcap	Botanical
<i>Draba arabisans</i>	Rock Whitlow-grass	Botanical	<i>Sedum integrifolium ssp. leedyi</i>	Leedy's Roseroot	Botanical
<i>Dryopteris goldiana</i>	Goldie's Fern	Botanical	<i>Seiurus motacilla</i>	Louisiana Waterthrush	Zoological
<i>Dryopteris marginalis</i>	Marginal Shield-fern	Botanical	<i>Silene nivea</i>	Snowy Champion	Botanical
<i>Elliptio dilatata</i>	Spike	Zoological	<i>Solidago sciaphila</i>	Cliff Goldenrod	Botanical
<i>Empidonax virescens</i>	Acadian Flycatcher	Zoological	<i>Sullivantia sullivantii</i>	Reniform Sullivantia	Botanical
<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological	<i>Symphoricarpos orbiculatus</i>	Coralberry	Botanical
<i>Erimystax x-punctata</i>	Gravel Chub	Zoological	<i>Talinum rugospermum</i>	Rough-seeded Fameflower	Botanical
<i>Eryngium yuccifolium</i>	Rattlesnake-master	Botanical	<i>Tephrosia virginiana</i>	Goat's-rue	Botanical
<i>Eumeces fasciatus</i>	Five-lined Skink	Zoological	<i>Trillium nivale</i>	Snow Trillium	Botanical
<i>Eupatorium sessilifolium</i>	Upland Boneset	Botanical	<i>Valeriana edulis ssp. ciliata</i>	Valerian	Botanical

Socioeconomic and Agricultural Data (Relevant)

Estimations for the Beartrap-Nemadji subbasin indicate a current population of approximately 49,264 people. Median household income throughout the area is \$36,740 yearly, roughly 79% of the national average. Unemployment is estimated at 4.5%, and approximately 10% of the residents in the watershed live below the national poverty level.

Assessment estimates indicate 1,617 farms located in the watershed. Approximately sixty percent of the operations are less than 180 acres in size, thirty seven percent are from 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Of the 1,533 operators in the basin, fifty four percent are full-time producers not reliant on off-farm income.



(MN/WI) HUC# 4010301		Total Acres:	1,180,024
Population Data *	Watershed Population	49,264	
	Unemployment Rate	5.5%	
	Median Household Income	36,740	
	% below poverty level	10%	
	Median Value of Home	84,900	
Farms	# of Farms	1,617	
	# of Operators	1,533	Percent
	# of Full Time Operators	830	54%
	# of Part Time Operators	703	46%
	Total Crop/Pasturelands:	42,200	3.58%
Farm Size	1 to 49 Acres	183	19%
	50 to 179 Acres	393	41%
	180 to 499 Acres	291	30%
	500 to 999 Acres	65	7%
	1,000 Acres or more	23	2%
Livestock & Poultry	Cattle - Beef	6,247	9%
	Cattle - Dairy	9,207	13%
	Chicken	2,733	4%
	Swine	14,323	21%
	Turkey	31	0%
	Other	36,241	53%
	Animal Count Total:	68,783	
Total Permitted AFOs:	559		
Chemicals (Acres Applied)	Insecticides	3,271	
	Herbicides	77,467	
	Wormicides	0	
	Fruiticides	40	
	Total Acres Treated	80,779	

* 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

** 1997 NRI Crop and Pastureland Totals show "0" acres classified and crop/pasture lands.

Watershed Projects, Plans and Monitoring

- **Bayfield Co. Shoreline Protection Campaign**
 - Lake Superior Alliance
- **Nemadji River Restoration Project**
 - Wisconsin Dept. of Natural Resources
- **Superior Lakewatch**
 - Sponsored by Great Lakes Aquarium
- **St. Louis River Area of Concern**
 - MPCA, WDNR, US EPA
- **Historic Land Use Reconstruction Project**
 - Minnesota Pollution Control Agency, SLRCAC
- **Lake Superior Shoreline Stabilization Project**
 - Minnesota Board of Water and Soil Resources
- **Western Lake Superior NEMO Project**
 - University of MN, Great Lakes Commission
- **Weber Stream Restoration Initiative**
 - NRRI, U of M, MPCA, ARDC, BWSR, USDA
- **LSSA Treeplanting Project**
 - Lake Superior Steelhead Association
- **Nemadji River Basin Project**
 - Carlton Co. Water Plan Advisory Committee
- **Watershed Guardian Program**
 - St. Louis River Citizens Action Committee, Cargill Inc.
- **Nemadji River Basin Project Report**
 - USDA NRCS, Minnesota
- **Nemadji River Remedial Action Plan**
 - St. Louis River Citizens Action Committee
- **Superior Coastal Wetlands Initiative**
 - US Fish and Wildlife Service, Wisconsin DNR
- **Nemadji Tributary Modeling Program**
 - USDA, Carlton County SWCD, USGS, Baird & Associates
- **Hog Island/Newton Creek Ecological Restoration Project**
 - MN/WI DNR, US EPA, City of Superior

* 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

- **Natural Resources Research Institute**
 - 5013 Miller Trunk Highway Duluth, MN 55811
 - Phone (218) 720-4294
- **Lake Superior Streams**
 - www.lakesuperiorstreams.org
- **Laurentian Resource Conservation and Development Council**
 - 4850 Miller Trunk Hwy, Suite 2A Duluth, MN 55811
 - Phone (218) 720-5225
- **Environmental Assn. for Great Lakes Education**
 - 394 Lake Ave So. Suite #222 Duluth, MN 55802
 - Phone (218) 726-1828
- **The Nature Conservancy**
 - 394 S Lake Ave # 308 Duluth, MN 55802
 - Phone (218) 727-6119
- **Carlton County SWCD**
 - 115 5th St S PO Box 29, Carlton, MN 55718-0029
 - Phone (218) 384-3891
- **Western Lake Superior Sanitary District (WLSSD)**
 - 2626 Courtland Street Duluth, MN 55806
 - Phone (218) 722-3336
- **Minnesota Sea Grant**
 - 2305 E 5th Street Duluth, MN 55805
 - Phone (218) 726-8106
- **Superior Lakewatch**
 - 6008 London Rd. Duluth, Minnesota 55804
 - Phone (218) 525-2265
- **Douglas Co. Land Conservation Department**
 - 1313 Belknap Street Superior, Wisconsin 54880
 - Phone (715) 395-1266
- **Great Lakes Commission**
 - 2805 S. Ind. Hwy, Suite 100 Ann Arbor, MI 48104
 - Phone: (734) 971-9135
- **Arrowhead Region Development Commission**
 - 221 West 1st Street Duluth, MN 55802
 - Phone (218) 722-5545
- **Ashland/ Bayfield Land Conservation Dept.**
 - 315 Sanborn Ave, Suite 100 Ashland, WI 54806
 - 715/682-7187
- **Pine County SWCD**
 - 260 Morris Ave N, Hinkley, MN 55037
 - Phone (320) 384-7431

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. 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. USGS Gap Analysis Program - Wisconsin Stewardship Data: U.S. Geological Survey; Upper Midwest Environmental Sciences Center Publication Date: 9/1/2005
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. SSURGO - Nonirrigated Capability Class - Land Classification: This data is a derived product from the digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. All the county layers were dissolved with single-part option using the attribute field, then merged into one layer using ArcMap 9.1 by MN NRCS RWA Staff to create this final product at the HUC8 Level. Land capability Classification was then extracted to areas classified as Crop and Pasture Land in the processed 2001 NLCD data.
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 county in the HUC or by percent of block group area in the HUC, depending on the level of data available. Data were also taken from 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/>. 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.