

Rapid Watershed Assessment

Twin Cities

(MN) HUC: 07010206



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.

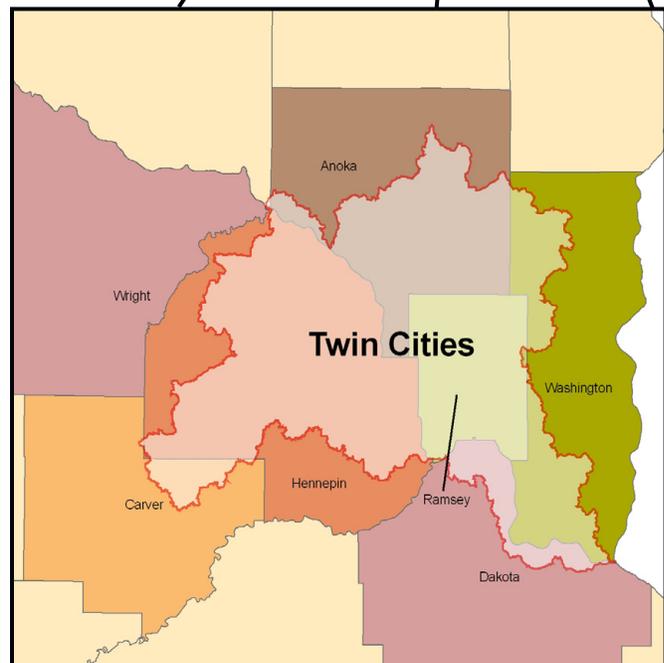
Introduction

The Twin Cities 8-Digit Hydrologic Unit Code (HUC) subbasin lies almost entirely in the North Central Hardwoods Forest Ecoregion, with a very small portion near the mouth of the watershed lying in the Western Cornbelt Plains Ecoregion. Approximately ninety percent of the 656,990 acres in this HUC are privately owned. The remaining acres are owned by federal, state, or county entities.

Assessment estimates indicate 1,158 Farms in the watershed. Approximately seventy six percent of the operations are less than 180 acres in size, twenty one percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size. Of the 1,074 Operators in the basin, fifty one percent are full-time producers not reliant on off-farm income.

The main resource concerns in the watershed are Soil Quality, Surface/ drinking Water Quality, Nutrient / Animal Waste Management, Stormwater Management, Sediment and Erosion Control, Groundwater Protection, Water quality and Quantity, and Protection of Shoreland / Riparian Areas.

Many of the resource concerns relate directly to agricultural practices and increased development in the region, resulting in fragmentation and increased sediment and pollutant (mercury, PCBs, excess nutrients) loadings to surface waters.



County Totals

County	Acres in HUC	% HUC
Sherburne	180	0.02%
Wright	1	0.0%
Anoka	141,722	21.6%
Washington	89,897	13.7%
Hennepin	260,182	39.6%
Ramsey	107,948	16.4%
Carver	18,311	2.8%
Dakota	38,750	5.9%
Total acres:	656,990	100%

Physical Description

Elevations in the Twin Cities subbasin range from 985 feet above mean sea level in the western portions of the watershed, sloping to elevations between 800 and 900 feet around the North Central and southern regions, and 700 feet nearing the mouth of the watershed.

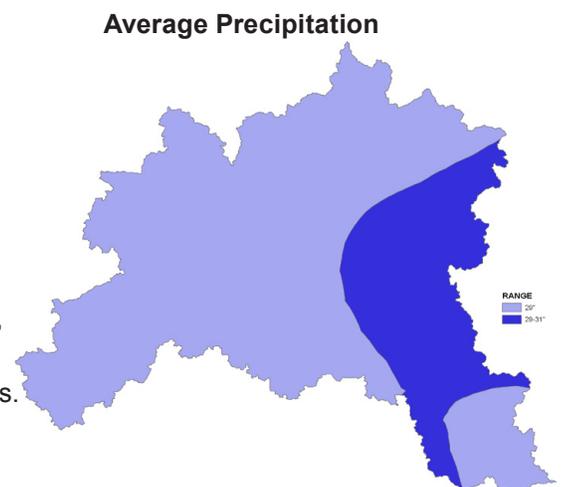
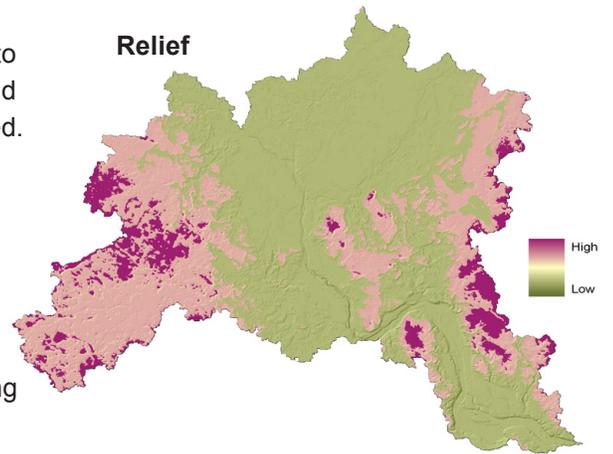
Precipitation in the watershed ranges from 27 to 31 inches each year. Mean annual runoff in the watershed is about five to six inches, slightly increasing from west to east (MPCA, 1999).

A noteworthy portion of the lands within this HUC are considered potentially highly erodible to highly erodible. Soils range from being poorly to moderately well suited to agricultural uses.

Predominate land uses / land covers are Residential and Commercial (47.3%), Forest (13.4%), Grass/Pasture/Hay (12.8%), Row Crops (8.9%), Open Water (8.6%), and Wetlands (7.6%).

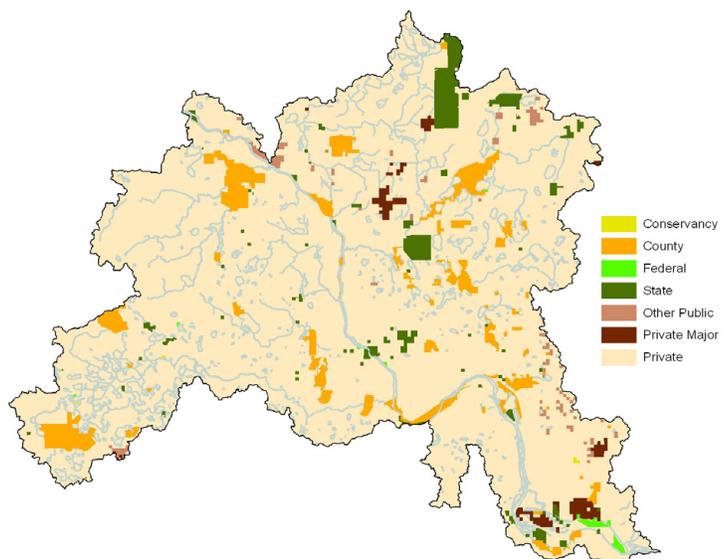
Land use within the watershed is moderately agricultural, with crop and pasture lands accounting for approximately 22% of the overall watershed acres.

Development pressure is considerable in most undeveloped areas, with existing farms, timberland, and lakeshore being parceled out for recreation, lake homes and expanding suburban populations.



Ownership¹

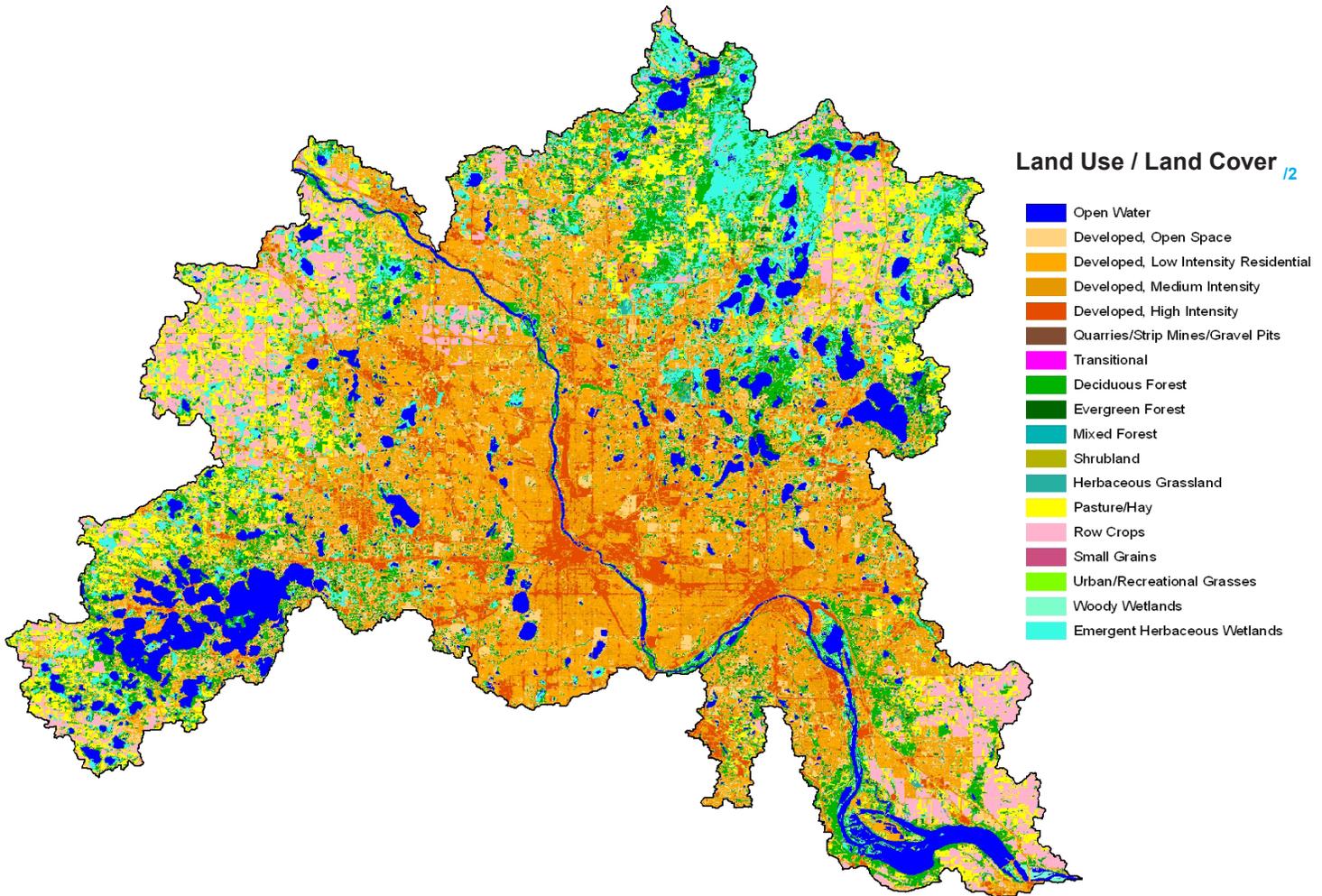
Ownership Type	Acres	% of HUC
Conservancy	184	0.0
County	36,211	5.5
Federal	1,220	0.2
State	17,897	2.7
Other	5,231	0.8
Tribal	-	-
Private Major	6,643	1.0
Private	589,604	89.7
Total Acres:	656,990	100



¹ 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 Twin Cities watershed covers an area of 656,990 acres. Slightly less than ninety percent of the land in the watershed is owned by private landholders (589,604 acres). The second largest ownership type is County, with approximately 36,211 acres (5.5%), followed by State with 17,897 acres (2.7%), Private Major with 6,643 acres (1.0%), Miscellaneous "Other Public" lands amounting to 5,231 acres (0.8%), and Federal with 1,220 acres (0.2%). There are 184 acres of Conservancy lands, and existing ownership data shows no major Tribal land holdings in the region. Land use by ownership type is represented in the table below.



Ownership / Land Use

¹³

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	13,495	2.1%	74,845	11.4%	0	0.0%	88,339	13.4%
Grass, etc	7,610	1.2%	76,422	11.6%	0	0.0%	84,032	12.8%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	2,382	0.4%	56,284	8.6%	0	0.0%	58,666	8.9%
Shrub etc	1,751	0.3%	7,180	1.1%	0	0.0%	8,930	1.4%
Wetlands	12,103	1.8%	37,793	5.8%	0	0.0%	49,896	7.6%
Residential/Commercial	13,634	2.1%	297,089	45.2%	0	0.0%	310,723	47.3%
Open Water*	8,582	1.3%	47,816	7.3%	0	0.0%	56,397	8.6%
Watershed Totals:	59,556	9.06%	597,428	90.9%	0	0.0%	656,990	100%

* ownership undetermined

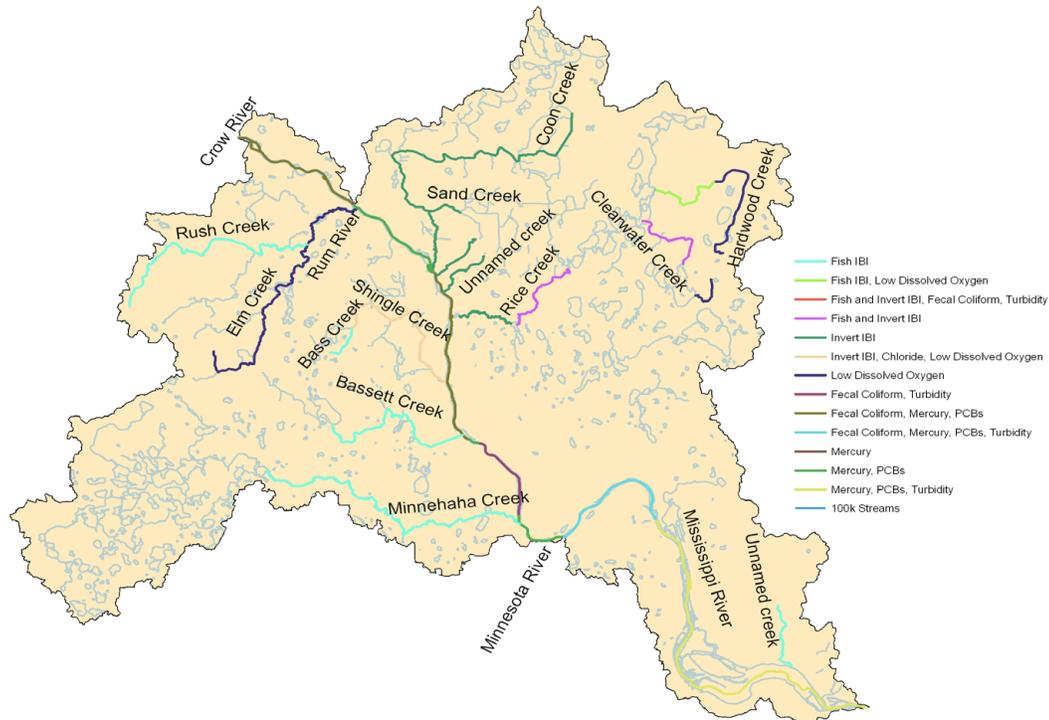
** includes private-major

Physical Description (continued)

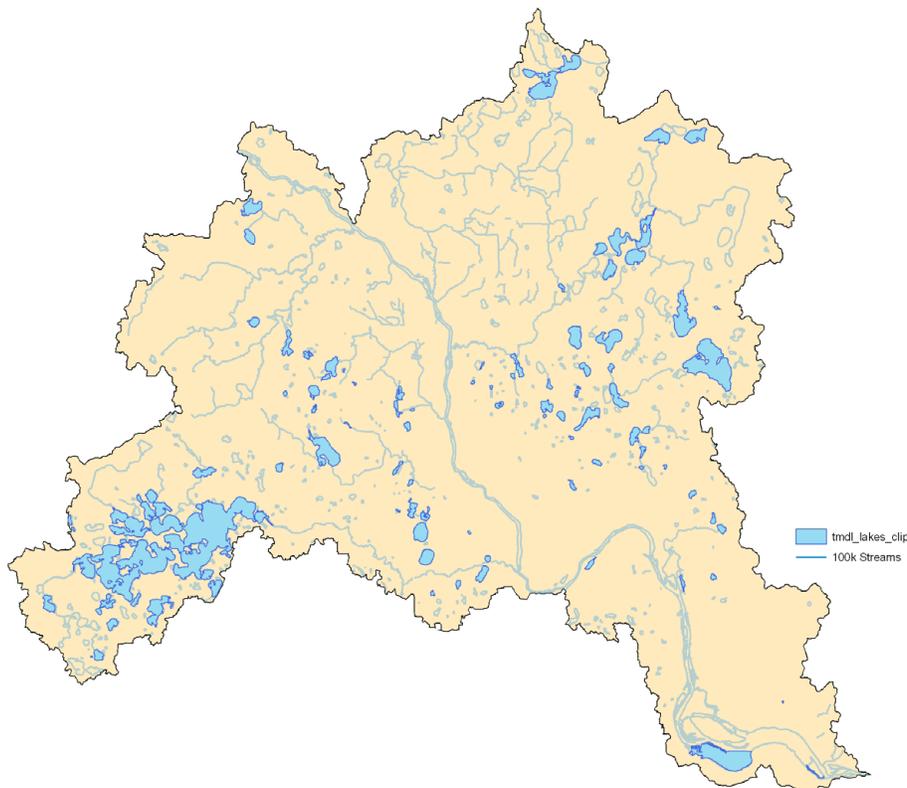
		ACRES	cu. ft/sec	
Stream Flow Data	USGS 05288500 MISSISSIPPI RIVER NEAR ANOKA, MN	Total Avg.	8274.2	
		May – Sept. Yield	9,580	
		MILES	PERCENT	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)	Total Miles – Major (100K Hydro GIS Layer)	1,319.5	---	
	303d/TMDL Listed Streams (DEQ)	223.0	16.9%	
Riparian 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	6,691	21.6%	
	Grain Crops	0	0.0%	
	Grass, etc	1,845	6.0%	
	Orchards	0	0.0%	
	Row Crops	1,007	3.3%	
	Shrub etc	322	1.0%	
	Wetlands	4,783	15.5%	
	Residential/Commercial	6,915	22.4%	
	Open Water*	9,360	30.3%	
		Total Buffer Acres:	30,922	100%
Crop and Pastureland Land Capability Class¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	4,300	3%	
	2 – moderate limitations	47,100	31%	
	3 – severe limitations	44,500	30%	
	4 – very severe limitations	45,400	30%	
	5 – no erosion hazard, but other limitations	0	0%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	8,400	6%	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	200	0%	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	400	0%	
		Total Croplands & Pasturelands	150,300	---
	TYPE OF LAND	ACRES	% of Crop Lands	% of HUC
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%	0%

Assessment of Waters

2006 Minnesota 303d Listed Streams - Twin Cities Watershed



2006 Minnesota 303d Listed Lakes - Twin Cities Watershed



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 Minnesota 303d Listed Streams - Twin Cities Watershed

Listed Stream / Reach ¹⁸	Impairment	Affected Use
Mississippi RiverElk R to Crow R	Hg, PCB	Aquatic Consumption
Crow RiverS Fk Crow R to Mississippi R	B-F, FC, T	Aquatic Life, Aquatic Recreation
Mississippi RiverLock & Dam #2 to St. Croix River	Hg, PCB, T	Aquatic Consumption and Aquatic Life
Mississippi RiverRock Island RR bridge to Lock & Dam 2	Hg, PCB, T	Aquatic Consumption and Aquatic Life
Mississippi RiverLower St. Anthony Falls to Lock & Dam 1	FC, Hg	Aquatic Consumption and Aquatic Recreation
Mississippi RiverMetro WWTP to Rock Island RR bridge	Hg, PCB, T	Aquatic Consumption and Aquatic Life
Mississippi RiverMinnesota R to Metro WWTP	FC, Hg, PCB, T	Aquatic Consumption, Aquatic Life, Aquatic Recreation
Shingle Creek (Cty Ditch 13)Headwaters to Mississippi R	B-I, Cl, DO	Aquatic Life
Elm CreekHeadwaters (Lk Medina) to Mississippi R	DO	Aquatic Life
Mississippi RiverCoon Cr to Upper St. Anthony Falls	FC, Hg, PCB	Aquatic Consumption and Aquatic Recreation
Mississippi RiverRum R to Elm Cr	Hg, PCB	Aquatic Consumption
Mississippi RiverElm Cr to Coon Rapids Dam	Hg, PCB	Aquatic Consumption
Mississippi RiverCoon Rapids Dam to Coon Cr	Hg, PCB	Aquatic Consumption
Mississippi RiverUpper St. Anthony Falls to Lower Falls	Hg, PCB	Aquatic Consumption
Mississippi RiverLock & Dam #1 to Minnesota R	Hg, PCB	Aquatic Consumption
Unnamed creekHeadwaters to Mississippi R	B-F	Aquatic Life
Clearwater CreekBald Eagle Lk to Peltier Lk	B-FI	Aquatic Life
Bass CreekHeadwaters to Eagle Cr	B-F	Aquatic Life
Rush CreekHeadwaters to Elm Cr	B-F	Aquatic Life
Coon CreekUnnamed Cr to Mississippi R	B-I	Aquatic Life
Bassett CreekMedicine Lk to Mississippi R	B-F	Aquatic Life
Minnehaha CreekLk Minnetonka to Mississippi R	B-F	Aquatic Life
Unnamed creekHeadwaters to Mississippi R	B-I	Aquatic Life
Sand CreekUnnamed Cr to Coon Cr	B-I	Aquatic Life
Ramsey/Washington Ditch1Headwaters to Bald Eagle Lk	DO	Aquatic Life
Mississippi RiverCrow R to NW city limits of Anoka	FC, Hg, PCB	Aquatic Consumption and Aquatic Recreation
Mississippi RiverNW city limits of Anoka to Rum R	FC, Hg, PCB	Aquatic Consumption and Aquatic Recreation
Rice CreekUnnamed LK (02-0041) to Long Lk	B-FI	Aquatic Life
Rice CreekLong Lk to Locke Lk	B-I	Aquatic Life
Unnamed ditchHeadwaters to Mississippi R	B-I	Aquatic Life
Hardwood CreekHeadwaters to Hwy 61	DO	Aquatic Life
Hardwood CreekHwy 61 to Peltier Lk	B-F, DO	Aquatic Life
Rum RiverMadison/Rice St in Anoka to Mississippi R	Hg	Aquatic Consumption
Minnesota RiverRM 22 to Mississippi R	FC, Hg, PCB, T	Aquatic Consumption, Aquatic Life, Aquatic Recreation

Assessment of Waters (continued)

2006 Minnesota 303d Listed Lakes - Twin Cities Watershed

Listed Lake	Impairment	Affected Use	Listed Lake	Impairment	Affected Use
Peltier	Excess nutrients	Aquatic Recreation	Eagle/Pike	Mercury	Aquatic Recreation, Consumption
George Watch	Excess nutrients	Aquatic Recreation	Pike	Mercury	Aquatic Consumption
Centerville	Excess nutrients	Aquatic Recreation	Weaver	Mercury	Aquatic Consumption
Marshan	Excess nutrients	Aquatic Recreation	Fish	Mercury	Aquatic Consumption
Reshanau	Excess nutrients	Aquatic Recreation	Cedar Island	Excess nutrients	Aquatic Recreation
Howard	Excess nutrients	Aquatic Recreation	Diamond	Excess nutrients	Aquatic Recreation
Coon	Mercury	Aquatic Consumption	French	Excess nutrients	Aquatic Recreation
Golden	Excess nutrients	Aquatic Recreation	Minnetonka	Mercury	Aquatic Consumption
East Moore	Excess nutrients	Aquatic Recreation	Christmas	Mercury	Aquatic Consumption
Unnamed (Highland)	Excess nutrients	Aquatic Recreation	Long	Mercury	Aquatic Consumption
Sandy	Excess nutrients	Aquatic Recreation	Little Long	Mercury	Aquatic Consumption
Minnewashta	Mercury	Aquatic Consumption	Northwood	Excess nutrients	Aquatic Recreation
Virginia	Mercury	Aquatic Recreation, Consumption	Twin	Excess nutrients	Aquatic Recreation
Zumbra-Sunny	Mercury	Aquatic Consumption	Grass	Excess nutrients	Aquatic Recreation
Parley	Excess nutrients	Aquatic Recreation	Bald Eagle	Mercury	Aquatic Recreation, Consumption
Steiger	Mercury	Aquatic Consumption	Kohlman	Excess nutrients	Aquatic Recreation
Wassermann	Mercury	Aquatic Recreation, Consumption	Gervais	Mercury	Aquatic Consumption
Rebecca	Mercury	Aquatic Consumption	Keller	Excess nutrients	Aquatic Recreation
Spring	Excess nutrients	Aquatic Recreation	Wakefield	Excess nutrients	Aquatic Recreation
Pickrel	Mercury	Aquatic Consumption	Round	Excess nutrients	Aquatic Recreation
Powderhorn	Mercury	Aquatic Recreation, Consumption	Beaver	Excess nutrients	Aquatic Recreation
Harriet	Mercury	Aquatic Consumption	Sucker	Mercury	Aquatic Consumption
Hiawatha	Excess nutrients	Aquatic Recreation	East Vadnais	Mercury	Aquatic Consumption
Nokomis	Mercury, PCB	Aquatic Recreation, Consumption	Pleasant	Mercury	Aquatic Consumption
Diamond	Excess nutrients	Aquatic Recreation	Bennett	Excess nutrients	Aquatic Recreation
Calhoun	Mercury	Aquatic Consumption	McCarron	Mercury	Aquatic Consumption
Crystal	Excess nutrients	Aquatic Recreation	Como	Mercury	Aquatic Recreation, Consumption
Sweeney	Excess nutrients	Aquatic Recreation	Owasso	Mercury	Aquatic Consumption
Wirth	Mercury	Aquatic Recreation, Consumption	Josephine	Mercury	Aquatic Consumption
Brownie	Mercury	Aquatic Recreation, Consumption	Little Johanna	Excess nutrients	Aquatic Recreation
Cedar	Mercury	Aquatic Consumption	Turtle	Mercury	Aquatic Consumption
Lake of the Isles	Mercury	Aquatic Recreation, Consumption	Long	Mercury	Aquatic Recreation, Consumption
Twin	Hg, PCB	Aquatic Consumption	Pike	Excess nutrients	Aquatic Recreation
Upper Twin	Excess nutrients	Aquatic Recreation	Valentine	Excess nutrients	Aquatic Recreation
Middle Twin	Excess nutrients	Aquatic Recreation	Snail	Mercury	Aquatic Consumption
Lower Twin	Excess nutrients	Aquatic Recreation	Island (Basin S.of I-694)	Excess nutrients	Aquatic Recreation
Meadow	Excess nutrients	Aquatic Recreation	Island (Basin N.of I-694)	Excess nutrients	Aquatic Recreation
Ryan	Excess nutrients	Aquatic Recreation	Johanna	Mercury	Aquatic Consumption
Magda	Excess nutrients	Aquatic Recreation	Silver (West)	Excess nutrients	Aquatic Recreation
Bass	Excess nutrients	Aquatic Recreation	Unnamed (North Star)	PCB	Aquatic Consumption
Pomerleau	Excess nutrients	Aquatic Recreation	Unnamed	Excess nutrients	Aquatic Recreation
Schmidt	Excess nutrients	Aquatic Recreation	Battle Creek	Excess nutrients	Aquatic Recreation
Medicine	Mercury	Aquatic Recreation, Consumption	Tanners	Mercury	Aquatic Consumption
Parkers	Mercury	Aquatic Consumption	Fish	Excess nutrients	Aquatic Recreation
White Bear	Mercury	Aquatic Consumption	Clear	Mercury	Aquatic Consumption
			Carver	Mercury	Aquatic Consumption

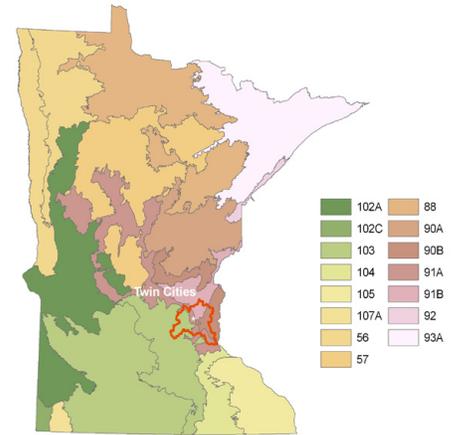
Common Resource Areas

The Twin Cities Watershed encompasses five CRAs, 104.1, 103.2, 91A.1, 91B.1, and 90B.1. ^{/9}

104.1 Silty and Loamy Mantled Firm Till Plain: Gently sloping to very steep dissected till plain. Soils are predominantly well drained and are formed in thin silty material over loamy till, underlain by sedimentary bedrock. Cropland and grazing land on ridge tops and valley bottoms with a mix of dairy, beef and cash grain agricultural enterprises. Deciduous forest on side slopes. Primary resource concerns are cropland erosion, surface water quality, grazing land and woodland productivity, and soil erosion during timber harvest.

103.2 Iowa and Minnesota Rolling Prairie/Forest Moraines:

Primarily loamy glacial till soils with some potholes, outwash and flood plains. Gently undulating to rolling with relatively short, complex slopes. Organic soils occur in the larger basins. Primary land use is cropland. Corn, soybeans, and hay are the major crops. Native vegetation was dominantly mixed tall grass prairie and deciduous trees. Resource concerns are water and wind erosion, nutrient management, water quality and wildlife habitat 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.

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

91B.1 Anoka Sand Plain and 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.

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.

Geology / Soils ^{/10}

The bedrock geology of the watershed is made up of Precambrian and Paleozoic sedimentary rocks. The watershed lies mainly in the Des Moines Lobe association of calcareous glacial deposits, with the lower part of the watershed lying in the Superior Lobe association. The Des Moines Lobe left clay-rich calcareous deposits containing fragments of limestone and shale, while the Superior Lobe left siliceous and sandy deposits.

Soils in the western and lower portions of the watershed are mainly alfisols, which have thin, gray to brown surface horizons underlain with alluvial clay. Alfisols generally form beneath deciduous forests underlain by silty sands, and are typically present in woodland and mixed woodland/cropland areas. Soils in the central band of the watershed are mainly mollisols, which have a thick, dark, organic-rich, fertile surface horizon. Mollisols typically form on prairies underlain by calcareous sediments. They are the most agriculturally productive soils in the Upper Mississippi River Basin. Soils in the northeastern portion of the watershed are entisols with a band of histosols. Entisols are recently formed soils that form on sandy soils in areas of sandy glacial outwash or alluvium. Histosols consist of yellow-brown to black organic-rich soils generally formed in wetlands.

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.”



Visit the online Web Soil Survey at

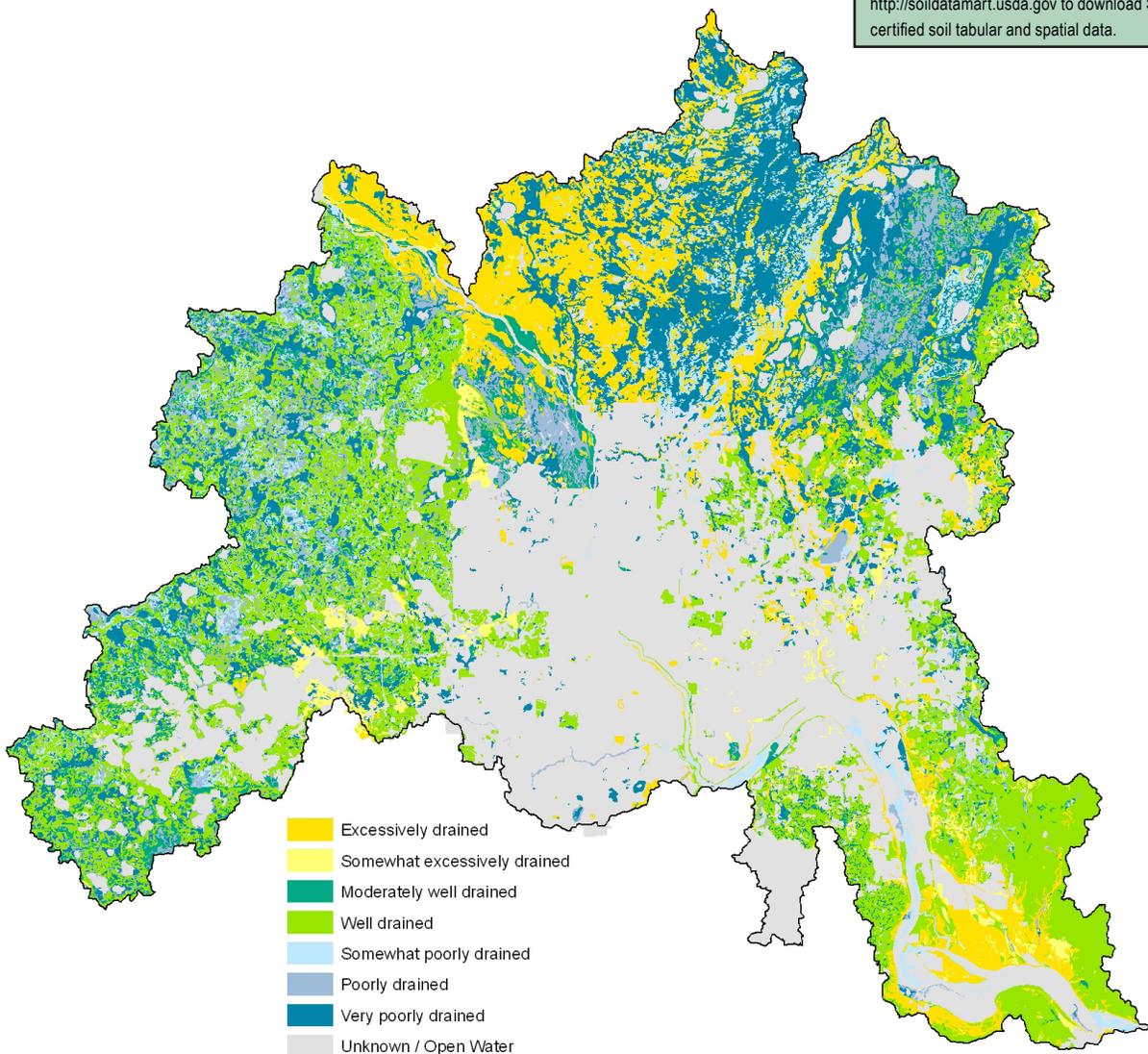
<http://websoilsurvey.nrcs.usda.gov> for official and

 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.



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.



Visit the online Web Soil Survey at

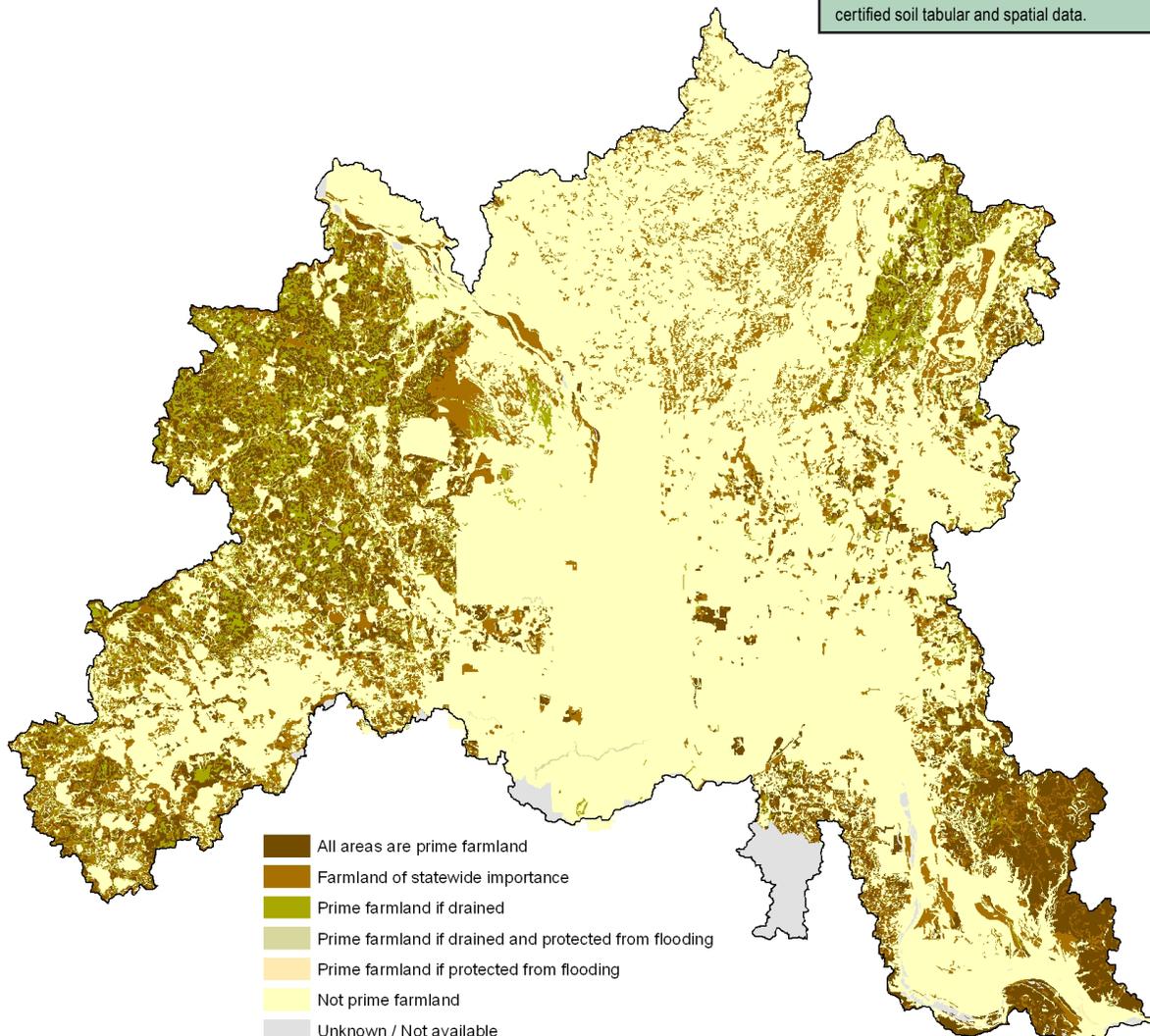
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Hydric Soils

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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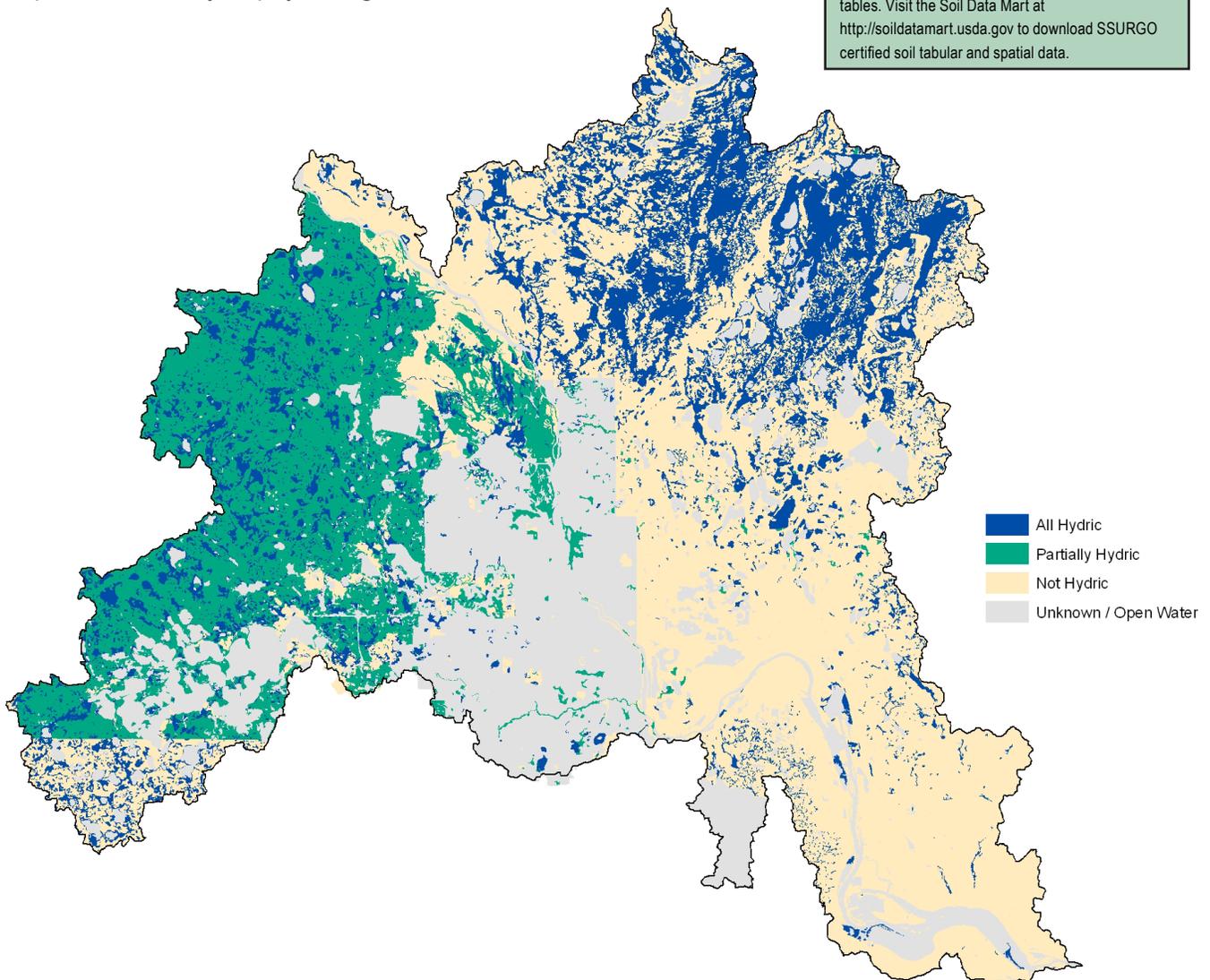
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*Note: Historical Hydric Soil Determination Standards, scale, and methodology can vary on a county-to-county basis,

 leading to irregularities in thematic maps representing hydric soil determinations.*

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.



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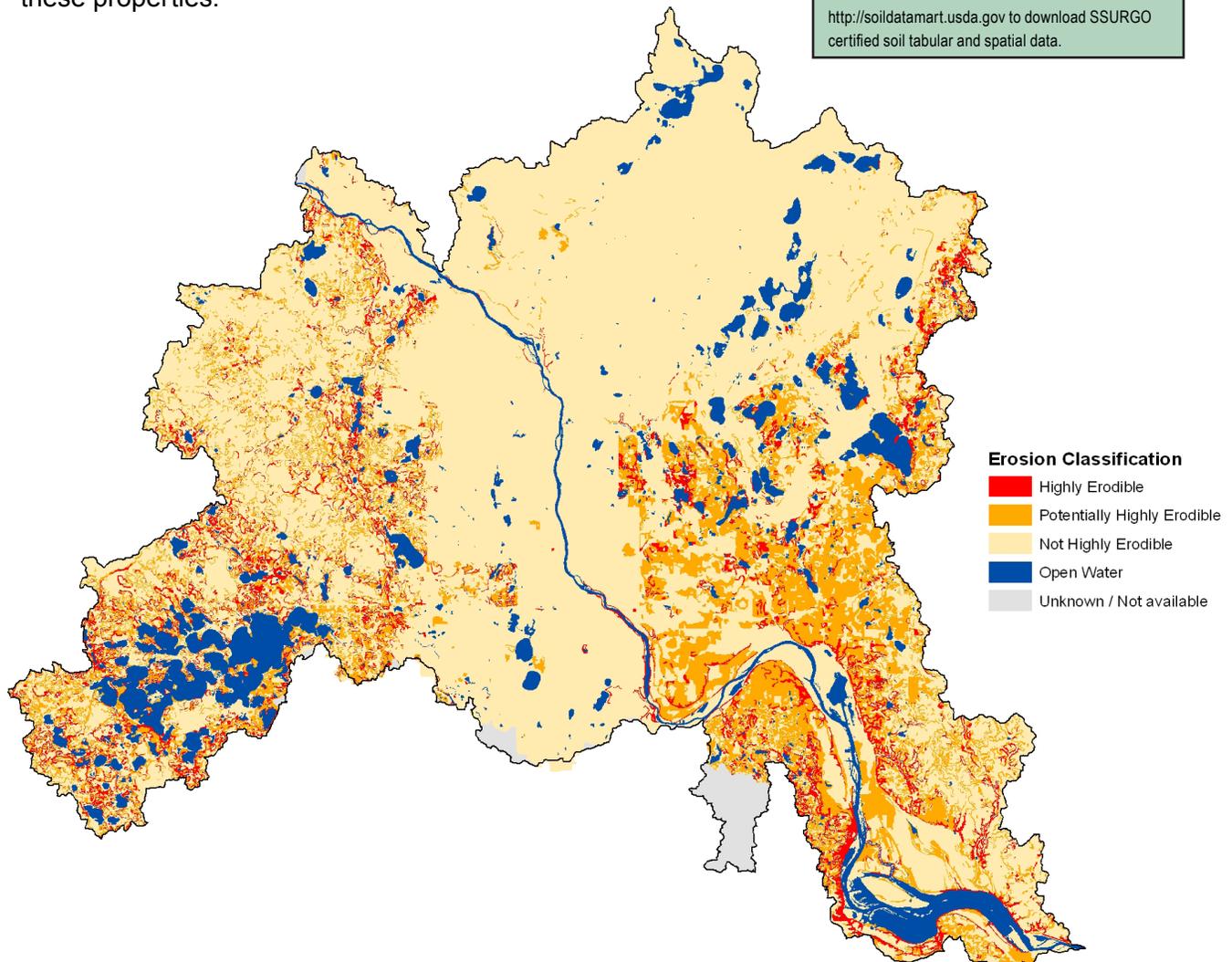
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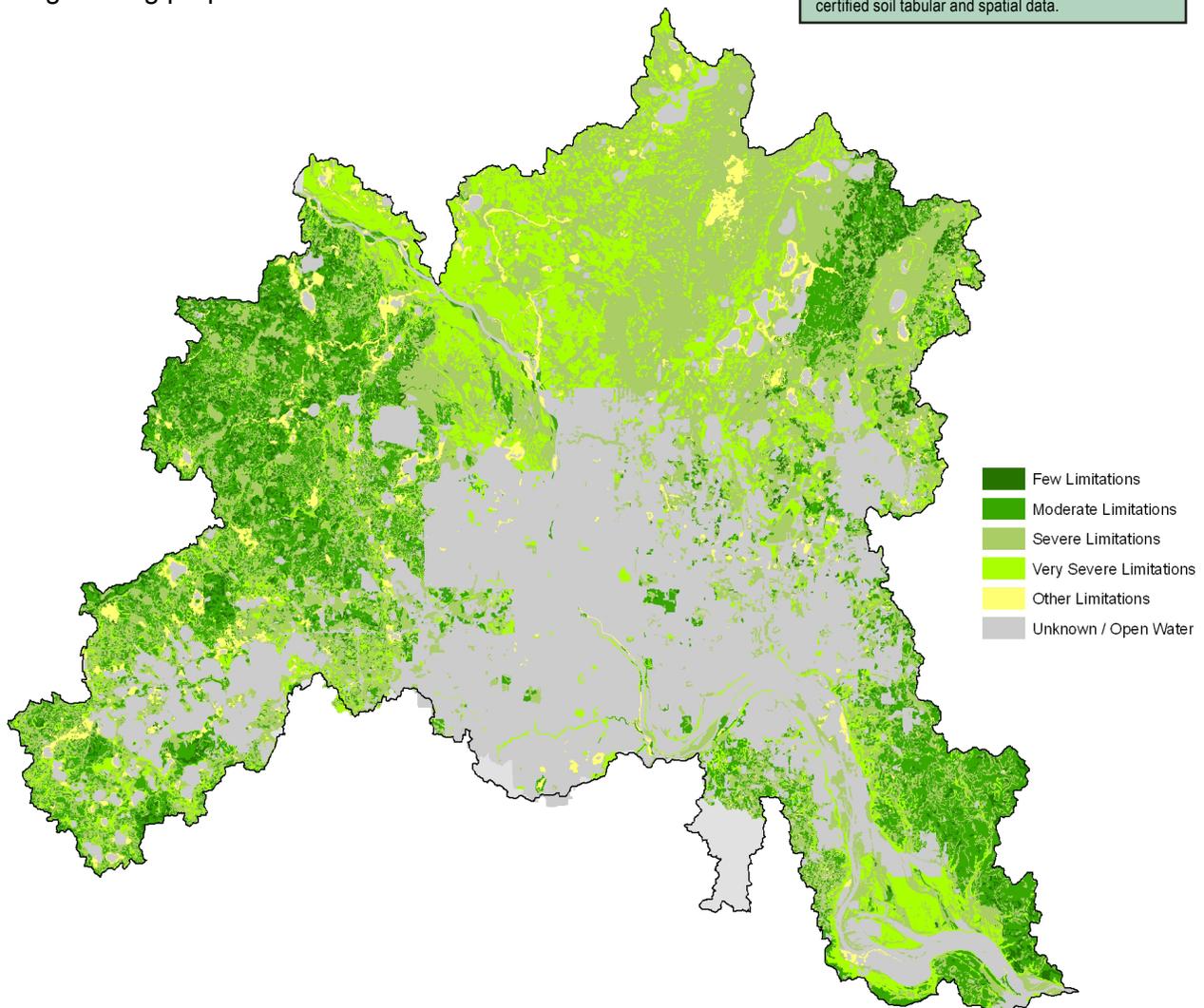
Land Capability Classification

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: Twin Cities				Watershed Number: 07010206						
PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTAL
Total Conservation Systems Planned (acres)	1,504	2,743	0	281	1,396	N/A	2,399	1,619	1,893	11,835
Total Conservation Systems Applied (acres)	4,116	1,475	0	100	100	N/A	2,313	1,197	1,728	11,029
Conservation Practices										
Total Waste Management (313) (numbers)	0	0	0	1	0	0	0	0	0	1
Riparian Forest Buffers (391) (acres)	39	37	38	5	0	5	0	5	0	129
Erosion Control Total Soil Saved (tons/year)	1,074	11,626	7,807	3,573	5,046	N/A	N/A	N/A	N/A	29,126
Total Nutrient Management (590) (Acres)	0	1,077	1,511	655	8	1,746	295	295	0	5,587
Pest Management Systems Applied (595A) (Acres)	0	268	477	0	0	334	361	399	0	1,839
Prescribed Grazing 528a (acres)	0	0	49	0	22	0	0	0	0	71
Tree & Shrub Establishment (612) (acres)	10	53	43	6	0	11	0	5	0	128
Residue Management (329A-C) (acres)	1,459	1,573	1,712	575	44	927	927	360	169	7,746
Total Wildlife Habitat (644 - 645) (acres)	1,675	942	1,212	14	260	114	14	274	471	4,976
Total Wetlands Created, Restored, or Enhanced (acres)	20	9	19	0	0	4	15	5	0	72
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	4,116	165	187	9	8	N/A	34	11	83	4,613
Wetlands Reserve Program	0	0	0	0	0	N/A	0	0	0	0
Environmental Quality Incentives Program	4,116	995	1,163	26	0	N/A	1,867	1,044	1,438	10,649
Wildlife Habitat Incentive Program	385	6	0	0	0	N/A	0	0	0	391
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

THREATENED AND ENDANGERED SPECIES /14

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acipenser fulvescens</i>	Lake Sturgeon	<i>Lampsilis higginsii</i>	Higgins Eye
<i>Actinonaias ligamentina</i>	Mucket	<i>Lampsilis teres</i>	Yellow Sandshell
<i>Alasmidonta marginata</i>	Elktoe	<i>Lanius ludovicianus</i>	Loggerhead Shrike
<i>Ammodramus henslowii</i>	Henslow's Sparrow	<i>Lasmigona costata</i>	Fluted-shell
<i>Aphredoderus sayanus</i>	Pirate Perch	<i>Ligumia recta</i>	Black Sandshell
<i>Arcidens confragosus</i>	Rock Pocketbook	<i>Marpissa grata</i>	A Jumping Spider
<i>Aristida tuberculosa</i>	Sea-beach Needlegrass	<i>Microtus ochrogaster</i>	Prairie Vole
<i>Aureolaria pedicularia</i>	Fernleaf False Foxglove	<i>Myotis septentrionalis</i>	Northern Myotis
<i>Baptisia alba</i>	White Wild Indigo	<i>Najas gracillima</i>	Thread-like Naiad
<i>Besseyia bullii</i>	Kitten-tails	<i>Notropis amnis</i>	Pallid Shiner
<i>Botrychium oneidense</i>	Blunt-lobed Grapefern	<i>Notropis anogenus</i>	Pugnose Shiner
<i>Botrychium rugulosum</i>	St. Lawrence Grapefern	<i>Obovaria olivaria</i>	Hickorynut
<i>Botrychium simplex</i>	Least Moonwort	<i>Oenothera rhombipetala</i>	Rhombic-petaled Evening Primrose
<i>Buteo lineatus</i>	Red-shouldered Hawk	<i>Orobanche ludoviciana</i>	Louisiana Broomrape
<i>Carex formosa</i>	Handsome Sedge	<i>Panax quinquefolius</i>	American Ginseng
<i>Carex plantaginea</i>	Plantain-leaved Sedge	<i>Paradamoetas fontana</i>	A Jumping Spider
<i>Carex sterilis</i>	Sterile Sedge	<i>Perognathus flavescens</i>	Plains Pocket Mouse
<i>Cicindela lepida</i>	Little White Tiger Beetle	<i>Phalaropus tricolor</i>	Wilson's Phalarope
<i>Cicindela patruela patruela</i>	Northern Barrens Tiger Beetle	<i>Pipistrellus subflavus</i>	Eastern Pipistrelle
<i>Cirsium hillii</i>	Hill's Thistle	<i>Pituophis catenifer</i>	Gopher Snake
<i>Coluber constrictor</i>	Eastern Racer	<i>Platanthera clavellata</i>	Club-spur Orchid
<i>Cristatella jamesii</i>	James' Polanisia	<i>Platanthera flava</i> var. <i>herbiola</i>	Tuberclad Rein-orchid
<i>Cumberlandia monodonta</i>	Spectaclecase	<i>Plethobasus cyphus</i>	Sheepnose
<i>Cycleptus elongatus</i>	Blue Sucker	<i>Pleurobema coccineum</i>	Round Pigtoe
<i>Cyclonaias tuberculata</i>	Purple Wartyback	<i>Polygala cruciata</i>	Cross-leaved Milkwort
<i>Decodon verticillatus</i>	Waterwillow	<i>Polyodon spathula</i>	Paddlefish
<i>Dendroica cerulea</i>	Cerulean Warbler	<i>Potamogeton bicupulatus</i>	Snailseed Pondweed
<i>Ellipsaria lineolata</i>	Butterfly	<i>Potamogeton diversifolius</i>	Diverse-leaved Pondweed
<i>Elliptio crassidens</i>	Elephant-ear	<i>Psathyrella rhodospora</i>	A Species of Fungus
<i>Elliptio dilatata</i>	Spike	<i>Quadrula fragosa</i>	Winged Mapleleaf
<i>Empidonax virescens</i>	Acadian Flycatcher	<i>Quadrula metanevra</i>	Monkeyface
<i>Emydoidea blandingii</i>	Blanding's Turtle	<i>Quadrula nodulata</i>	Wartyback
<i>Epioblasma triquetra</i>	Snuffbox	<i>Rotala ramosior</i>	Tooth-cup
<i>Erythronium propullans</i>	Dwarf Trout Lily	<i>Scirpus clintonii</i>	Clinton's Bulrush
<i>Etheostoma microperca</i>	Least Darter	<i>Scleria triglomerata</i>	Tall Nut-rush
<i>Falco peregrinus</i>	Peregrine Falcon	<i>Seiurus motacilla</i>	Louisiana Waterthrush
<i>Fimbristylis autumnalis</i>	Autumn Fimbristylis	<i>Simpsonaias ambigua</i>	Salamander Mussel
<i>Fusconaia ebena</i>	Ebonyshell	<i>Sterna forsteri</i>	Forster's Tern
<i>Gallinula chloropus</i>	Common Moorhen	<i>Triplasis purpurea</i>	Purple Sand-grass
<i>Haliaeetus leucocephalus</i>	Bald Eagle	<i>Tritogonia verrucosa</i>	Pistolgrip
<i>Heterodon nasicus</i>	Western Hognose Snake	<i>Valeriana edulis</i> ssp. <i>ciliata</i>	Valerian
<i>Hudsonia tomentosa</i>	Beach-heather	<i>Venustaconcha ellipsiformis</i>	Ellipse
<i>Huperzia porophila</i>	Rock Clubmoss	<i>Viola lanceolata</i>	Lance-leaved Violet
<i>Juncus marginatus</i>	Margined Rush	<i>Wilsonia citrina</i>	Hooded Warbler
<i>Juniperus horizontalis</i>	Creeping Juniper	<i>Xyris torta</i>	Twisted Yellow-eyed Grass

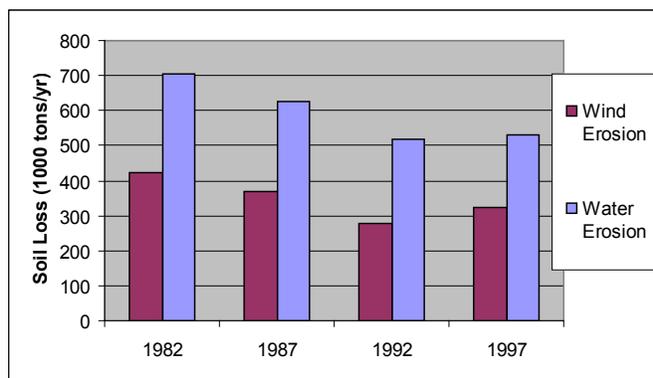
RESOURCE CONCERNS

There have been rapid increases in development in areas of the watershed in the past decades. Increasing development pressures and the contrariant needs of farming and residential / commercial development are exacerbating resource concerns in the area. With this in mind, 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, Surface Water Quality - Excessive Sheet & Rill Erosion.** Soil Erosion and Deposition has ranked as a top concern in each county in relation to both soil quality and surface water quality, and plays directly into additional concerns over nutrient management.
- Nutrient / Animal Waste Management.** Managing farms to minimize excess nutrients, pathogens, and odors released into the environment is important to the health of surface and ground water. There are increasing concentrations of Phosphorous, Nitrogen, and chloride in many area waterways and water bodies. Setback of open tile intakes and placement of waste systems in high priority riparian areas and areas with course grained soils will greatly reduce the effects of agricultural and development activities on area waters.
- 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 facilities. Runoff is increasing in both developing and developed areas of the watershed. Priority actions include identification of sites where storm water discharge has a high potential adversely affecting important natural resources.
- Sediment and Erosion Control.** Working hand-in-hand with stormwater pollution and prevention plans, counties in the watershed seek to minimize disturbances and prevent properties and waterbodies from receiving sediment deposits resulting in water quality degradation both directly and through transport of pollutants.
- Groundwater Protection, Water quality and Quantity.** County and watershed conservation groups seek to protect and improve groundwater quality throughout the subbasin. Aging septic systems, abandoned wells, and historical tiling practices all threaten public drinking water supplies. Increase extraction from shallow upper aquifers vs. deeper, more plentiful fractured bedrock is affecting both water quantity and quality.
- Protection of Shoreland / Riparian Areas.** Relevant to all area waterbodies, but particularly larger lakes, which are especially vulnerable to shoreline erosion from wave and ice action. Vegetative buffers and shoreland stabilization management practices must be employed to reach sustainable erosion rates to protect these valuable and threatened waters and landscapes.

NRI Erosion Estimates

- Sheet and rill erosion by water on the cropland and pastureland decreased by approximately 176,400 tons (25.02%) of soil between 1982 and 1997.
- NRI estimates indicate wind erosion rates decreased by 96,200 tons (22.83%) between 1982 and 1997. [13](#)



Socioeconomic and Agricultural Data (Relevant)

Estimations for the Twin Cities subbasin indicate a current population of 1,833,217 people. Median household income throughout the district is approximately \$54,540 annually, roughly 117% of the national average. Unemployment is estimated at 3.8%, and approximately 5% of the residents in the watershed are below the national poverty level.

Assessment estimates indicate 1,158 Farms in the watershed. Approximately seventy six percent of the operations are less than 180 acres in size, twenty one percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size. Of the 1,074 Operators in the basin, fifty one percent are full-time producers not reliant on off-farm income.



(MN) HUC# 7010206		Total Acres:	656,990
Population Data*	Watershed Population	1,833,217	
	Unemployment Rate	3.8%	
	Median Household Income	54,540	
	% below poverty level	5%	
	Median Value of Home	142,525	
Farms	# of Farms	1,158	
	# of Operators	1,074	Percent
	# of Full Time Operators	551	51%
	# of Part Time Operators	524	49%
	Total Crop/Pasturelands:	150,300	22.9%
Farm Size	1 to 49 Acres	2	47%
	50 to 179 Acres	1	29%
	180 to 499 Acres	1	16%
	500 to 999 Acres	0	5%
	1,000 Acres or more	0	3%
Livestock & Poultry	Cattle - Beef	1,684	5%
	Cattle - Dairy	2,774	8%
	Chicken	3,057	9%
	Swine	6,504	19%
	Turkey	4	0%
	Other	19,866	59%
	Animal Count Total:	33,889	
Total Permitted AFOs:	130		
Chemicals (Acres Applied)	Insecticides	8,390	
	Herbicides	62,393	
	Wormicides	287	
	Fruiticides	2,675	
	Total Acres Treated	73,745	
	% State Chemical Totals	0.5%	

* 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

Conservation Districts, Watershed Organizations & Partners

- **Anoka County SWCD**
16015 Central Ave NE Ham Lake, MN 55304
Phone (763) 434-2030
- **Carver County SWCD**
219 E Frontage Rd, Waconia, MN 55387-1862
Phone (952) 442-5101
- **Dakota County SWCD**
4100 220th St W 102, Farmington, MN 55024
Phone (651) 480-7777
- **Hennepin County Conservation District**
1313 5th St SE Ste 224C, Minneapolis, MN 55414
Phone (612) 379-3932
- **Ramsey County Conservation District**
1425 Paul Kirkwold Dr, Arden Hills, MN 55112
Phone (651) 266-7270
- **Sherburne County SWCD**
14855 Hwy 10, Elk River, MN 55330
Phone (763) 241-1170
- **Washington County Conservation District**
1380 W Frontage Rd Stillwater, MN 55082
Phone (651) 275-1136
- **Wright County SWCD**
306 C Brighton Ave, Buffalo, MN 55313
Phone (763) 682-1970
- **Citizen-Assisted Monitoring Program (CAMP)**
Met Council, 2400 Childs Road St. Paul, MN 55106
Phone (651) 602-8743
- **Coon Creek Watershed District**
12301 Central Ave. NE Blaine, Minnesota 55434
Phone (763)755-0975 <http://www.anokanaturalresources.com/ccwd>
- **Friends of the Mississippi River**
360 N Robert St Saint Paul, MN 55101
Phone (651) 222-2193
- **Land Stewardship Project**
2200 4th Street White Bear Lake, MN 55110
Phone (651) 653-0618 <http://landstewardshipproject.org>
- **Lower Phalen Creek Project**
729 East 7th Street Saint Paul, MN 55106
Phone (651) 771-2659
- **Lower Rum River Watershed Management Organization**
Phone (763) 755-5100
- **Minnehaha Creek Watershed District**
18202 Minnetonka Blvd. Deephaven, MN 55331
Phone: 952-471-0590 <http://www.minnehahacreek.org>
- **Minnesota Conservation Federation**
551 Snelling Av S, Suite B Saint Paul, MN 55116
Phone (651) 690-3077 <http://www.mncf.org/>
- **Minneapolis Park and Recreation Board**
3800 Bryant Ave S Minneapolis, MN 55409
Phone (612) 370-4900 <http://www.minneapolisparcs.org/home.asp>
- **Minnesota Adopt-a-River Program**
MN DNR., 500 Lafayette Road St. Paul, MN 55155-4052
Phone (651) 297-5476 <http://www.dnr.state.mn.us>
- **Minnesota Land Trust**
3256 University Ave #400 St. Paul, MN 55114
Phone: (651) 647-9590 <http://www.mnland.org>
- **Minnesota Sportfishing Congress**
7213 Major Avenue North Brooklyn Center, MN 55429
Phone (612) 561-8756
- **Minnesota Center for Environmental Advocacy**
26 E Exchange Street Ste 206 St Paul, MN 55101
Phone (651) 223-5969 <http://www.mncenter.org/>
- **Mississippi Corridor Neighborhood Coalition**
P.O. Box 18748 Minneapolis, MN 55418
Phone (612) 331-4738 <http://www.mcmc-mpls.org/>
- **Mississippi River Parkway Commission**
P.O. Box 59159 Minneapolis, MN 55459-8299
Phone (612) 212-2560 <http://www.mississippiriverinfo.com/>
- **Mississippi River Basin Alliance**
708 North First St., #238 Minneapolis, MN 55401
Phone (612) 334-9460 <http://www.mrba.org>
- **Ramsey-Washington Metro Watershed District**
2346 Helen Street, No. St. Paul, MN 55109
Phone (612) 704-2089 <http://www.rwmwd.org/>
- **Rice Creek Watershed District**
4325 Pheasant Ridge Drive, Suite 611 Blaine, MN 55449
Phone: (763) 398-3070 <http://www.ricecreekwd.com>
- **River Environmental Action Project**
901 16th Ave N. South St. Paul, MN 55075
Phone (651) 451-1038
- **St. Croix River Association**
PO Box 705 Hudson, Wisconsin 54016
Phone (503) 241-3506
- **Trout Unlimited Twin Cities Chapter**
PO Box 390207
Edina, MN 55439-0207
- **West Bank Community Coalition**
1808 Riverside Avenue Minneapolis, MN 55454
Phone (612) 338-6375 <http://www.westbankcc.org/>

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. 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. 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/>. 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/>