
Rapid Watershed Assessment Resource Profile

Upper Iowa (MN / IA) HUC: 07060002



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

Located in Southeast Minnesota and Northeast Iowa, the Upper Iowa 8-Digit Hydrologic Unit Code (HUC) subbasin lies within the Driftless area and Western Corn Belt Plains Ecoregions of both States.

The watershed is home to the last known native Brook Trout population in Iowa, boasts 11 streams with evidence of natural trout reproduction, contains nearly 30 percent of Iowa's coldwater streams, and has extensive cave networks, including the National Natural Landmark Coldwater Cave.

Approximately ninety eight percent of the 640,812 acres in this HUC are privately owned. The remaining acres are state, federal or county lands or covered by open water.

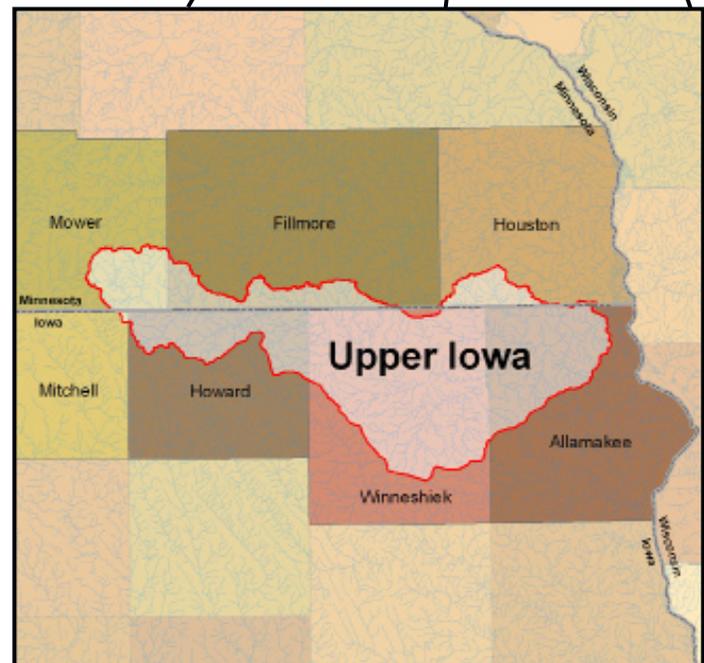
Assessment estimates indicate 1,943 farms in the watershed. Approximately thirty eight percent of the operations are less than 180 acres in size, fifty five percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

The main resource concerns in the watershed are sediment and erosion control, stormwater management, drinking and source water protection, animal waste management, nutrient management and wetland management.



County Totals

County	Acres in HUC	% HUC
Allamakee	130,576	20.4%
Winneshiek	280,118	43.7%
Howard	89,892	14.0%
Mitchell	1,088	0.2%
Houston	28,906	4.5%
Fillmore	59,278	9.2%
Mower	51,072	8.0%
Total acres:	640,812	100%



Physical Description

The Upper Iowa watershed is an area of rugged hills and steep topography with diverse land use. The surfacewater system in this watershed includes a complex network of spring fed coldwater trout streams.

The Upper Iowa river begins its 134 mile course in Mower County, Minnesota at Lake Louise. From the headwaters, the river flows through Mower, Howard, Winneshiek and Allamakee counties before converging with the Mississippi River.

Much of the drainage area of the basin is within a geologic region known as the 'Driftless Area', with gently rolling to steeply sloped topography comprised of a unique landform known as 'karst'. Karst features are characterized by numerous underground streams, sinkholes, caves, blind valleys and springs, and are highly susceptible to groundwater contamination.



Average elevation in the basin is 1,157 feet above mean sea level, with a high of 1,438 feet, and a low of 612. Precipitation in the Upper Iowa watershed ranges between 31 and 33 inches each year.

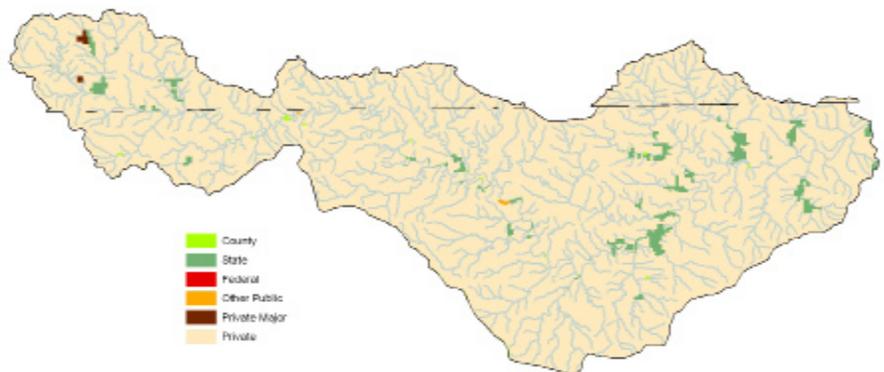
Average Precipitation



Predominate land covers / land uses in the basin are Row Crops (44.2%), Grass, Pasture & Hay (32.9%), Forest (17.0%), and Residential / Commercial Development (5.3%).

Ownership

Ownership Type	Acres	% of HUC
Conservancy	-	-
County	647	0.1
Federal	3	0.0
State	14,269	2.2
Other	202	0.0
Tribal	-	-
Private Major	614	0.1
Private	625,077	97.5
Total Acres:	640,812	100

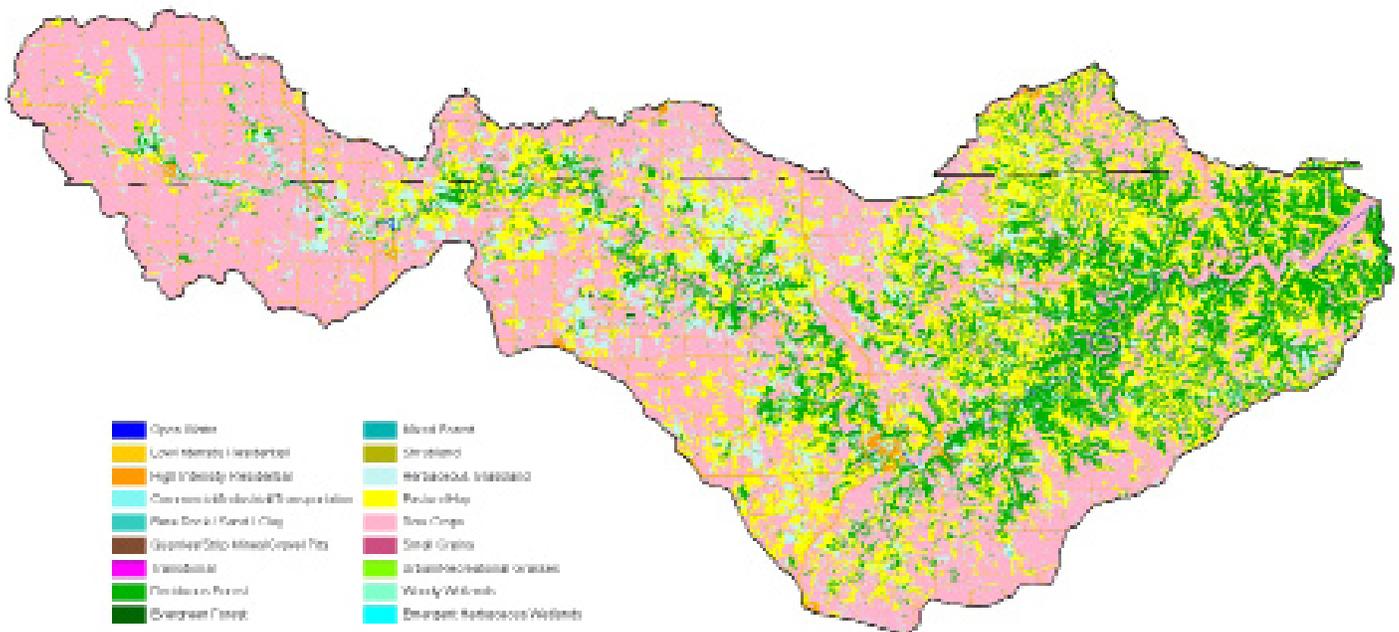


* Ownership totals derived from 2007 MN DNR GAP Stewardship and Iowa GAP Coverage data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Ownership / Land Use

The Upper Iowa watershed covers an area of 640,812 acres. Approximately ninety eight percent of the land in the watershed is owned by private landholders (625,077 acres). The second largest ownership class is State, with approximately 14,269 acres (2.2%), followed by County with 647 acres (0.1%), Private Major, with approximately 614 acres (0.1%), and miscellaneous "Other Public" lands with 202 acres (<0.1%). Federal Comprises the smallest ownership class, with 3 acres (<0.01%). 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	9,000	1.4%	99,943	15.6%	0	0.0%	108,943	17.0%
Grass, etc	4,338	0.7%	206,482	32.2%	0	0.0%	210,820	32.9%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	826	0.1%	282,524	44.1%	0	0.0%	283,350	44.2%
Shrub etc	0	0.0%	212	0.0%	0	0.0%	212	0.0%
Wetlands	251	0.0%	1,969	0.3%	0	0.0%	2,219	0.3%
Residential/Commercial	527	0.1%	33,423	5.2%	0	0.0%	33,951	5.3%
Open Water*	175	0.0%	1,083	0.2%	0	0.0%	1,258	0.2%

* ownership undetermined

** includes private-major

Watershed Totals:	15,117	2.36%	625,637	97.6%	0	0.0%	640,812	100%
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Physical Description (continued)

		ACRES	cu. ft/sec	
Stream Flow Data	USGS 05388250 Upper Iowa River near Dorchester, IA	2007 Total Avg.	720.9	
		May-Sep. 2007 Avg.	941.5	
		ACRES/MILES	PERCENT	
Stream Data¹⁴ (*Percent of Total HUC Stream Miles)	Total Miles – Major (100K Hydro GIS Layer)	1,437	---	
	303d/TMDL Listed Streams (DEQ)	92.9	6.5%	
Riparian Land Cover/Land Use¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Forest	9,373	27.0%	
	Grain Crops	0	0.0%	
	Grass, etc	13,130	37.8%	
	Orchards	0	0.0%	
	Row Crops	8,988	25.9%	
	Shrub etc	3	0.0%	
	Wetlands	993	2.9%	
	Residential/Commercial	1,494	4.3%	
	Open Water	745	2.1%	
	Total Buffer Acres:	34,726	100%	
Crop and Pastureland Land Capability Class¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	10,300	8%	
	2 – moderate limitations	68,000	56%	
	3 – severe limitations	32,600	27%	
	4 – very severe limitations	2,900	2%	
	5 – no erosion hazard, but other limitations	2,400	2%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	2,600	2%	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	3,400	3%	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%	
	Total NRI Crop/Pasture land (MN)	122,200	-	
	Irrigated Lands¹⁷ (1997 NRI Estimates for Non-Federal Lands Only)	TYPE OF LAND	Acres	% of Crop Lands
Cultivated Cropland / Pastureland		0	0%	0%
Uncultivated Cropland		0	0%	0%
Total Irrigated Lands		0	0%	0%

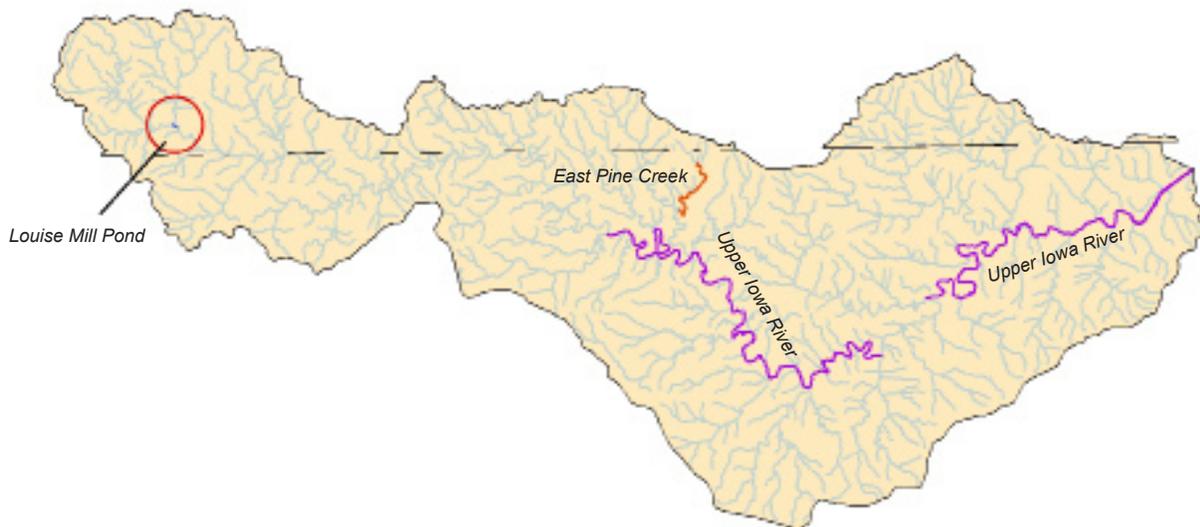
Assessment of Waters

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 States to identify and restore impaired waters. The primary tool for addressing impaired waters is a pollution reduction plan called a Total Maximum Daily Load, or TMDL.

After impaired use(s) have been identified, the TMDL process identifies all sources of each pollutant. The plan then determines how much each source must reduce its contribution in order to meet the applicable water quality standard.

2006 TMDL Listed Waters - Upper Iowa Watershed^{1/8}



Listed Waterbody	Impairment	Affected Use
Upper Iowa River	IBI, Mercury, Indicator Bacteria	Aquatic Life, Aquatic Recreation, Aquatic Consumption
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East Pine Creek	IBI	Aquatic Life
Louise Mill Pond	Mercury	Aquatic Consumption

Common Resource Areas ^{/9}

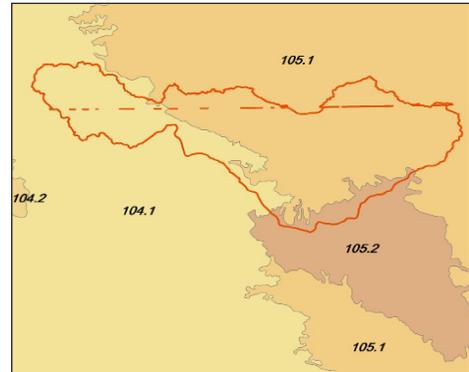
The Upper Iowa Watershed encompasses three common resource areas, CRA 104.1, 105.1, and 105.2.

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.

105.1 Driftless Loess Hills and Bedrock: Highly dissected hills and valleys. Well drained and moderately well drained silty soils over bedrock residuum. Predominantly cropland and grazing land on ridge tops and valley bottoms with a mix of dairy, beef and cash grain agricultural enterprises. Deciduous forest on steep side slopes. Primary resource concerns are cropland soil erosion, surface water quality, grazing land and forestland productivity, stream bank erosion, and erosion during timber harvest.

105.2 Iowa Driftless Loess Hills: This area consists of gently sloping to very steep soils on moderately broad to narrow ridges with highly dissected side slopes. Most of the soils formed in loess or colluvium from loess. Native vegetation was mostly deciduous forest. Deciduous forest dominates the steeper side slopes. Corn, soybeans, hay supporting cash crop and dairy and swine operations are dominate. Resource concerns are soil water erosion, soil quality, water quality and nutrient management.



Geology / Soils ^{/10}

Much of the watershed is in the “Driftless Area” or Paleozoic Plateau landform. The area is characterized by differential weathering and erosion that results in a steep, rugged landscape referred to as “karst” topography. Karst topography is defined by land that is underlain by soluble bedrock, such as limestone, and characterized by depressions in the ground, or sinkholes, caves, and underground drainage. The far western portion of the watershed in Howard and Mower Counties, lies on the edge of a landform known as the lowan Surface, a gently rolling to flat landscape with the presence of Clayey soils.

Soils in the Upper Iowa Watershed are dominated by Fayette (28.9%) and Downs (16.6%) type soils. The remainder (54.5%) of the watershed is composed of 14 different soil types, but no type accounts for more than 10%.

The Fayette series consists of very deep well drained soils formed in loess. Fayette type soils are found on convex crests, interfluvies and side slopes, uplands and treads and risers on high stream terraces. Slopes range from 0 to 60 percent. Fayette soils are well drained and surface runoff potential is negligible to high. Nearly level to gently sloping areas of Fayette soils are cultivated, with the primary crops being corn, soybeans, small grains, and legume hays. Steeper slopes of Fayette soils are pastured, wooded or both wooded and pastured. The native vegetation of Fayette soils is deciduous trees, mainly oak and hickory.

The Downs series consists of very deep well drained soils formed in loess. These soils are on interfluvies and side slopes of uplands and on treads and risers on stream terraces. Slopes range from 0 to 25 percent. Downs soil parent material is loess. Downs soils are well drained and surface runoff potential is negligible to high, depending on slope. Nearly level to gently sloping areas of Downs soils are cultivated. The principal crops are corn, soybeans, small grains, and legume hays. Steeper slopes are pastured, wooded or both wooded and pastured. The native vegetation is big bluestem, little bluestem, switchgrass, other grasses of the tall grass prairie and widely spaced oak and hickory trees.

Visit the online Web Soil Survey at

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

 current USDA soil information as viewable maps and

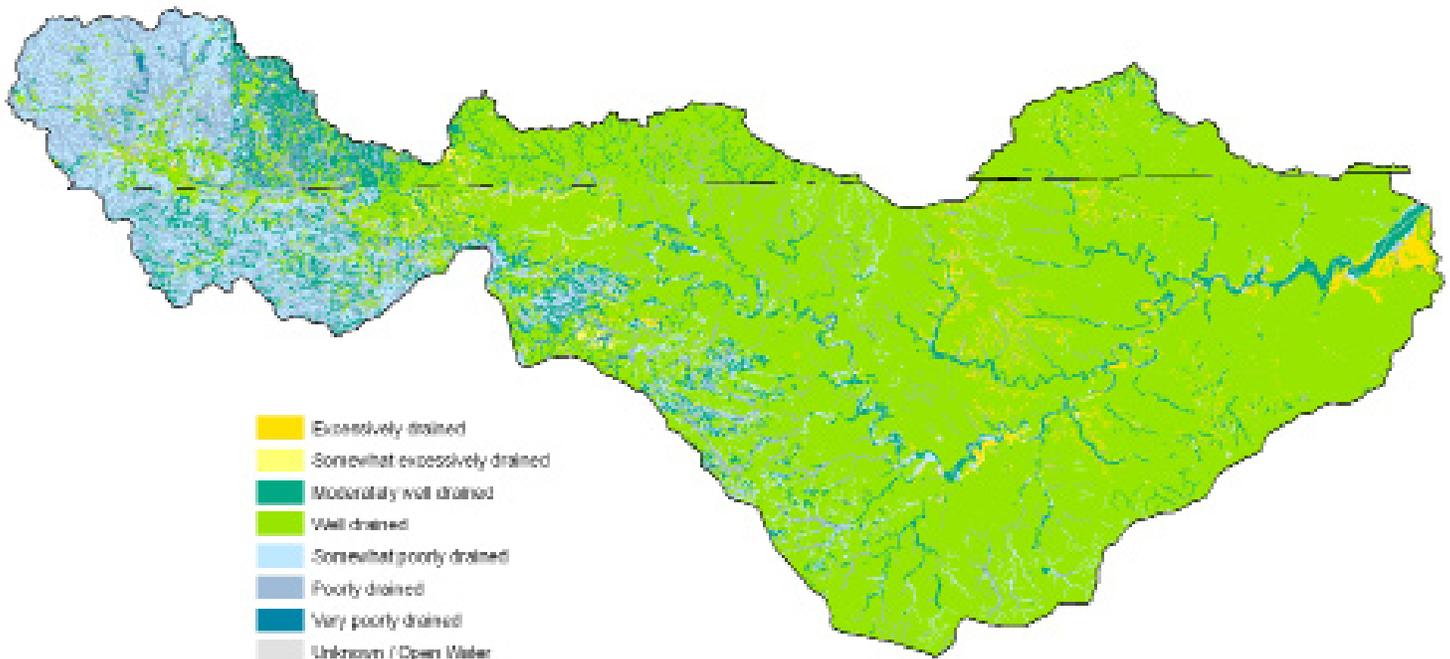
 tables. Visit the Soil Data Mart at soildatamart.usda.gov

 download SSURGO certified soil tabular /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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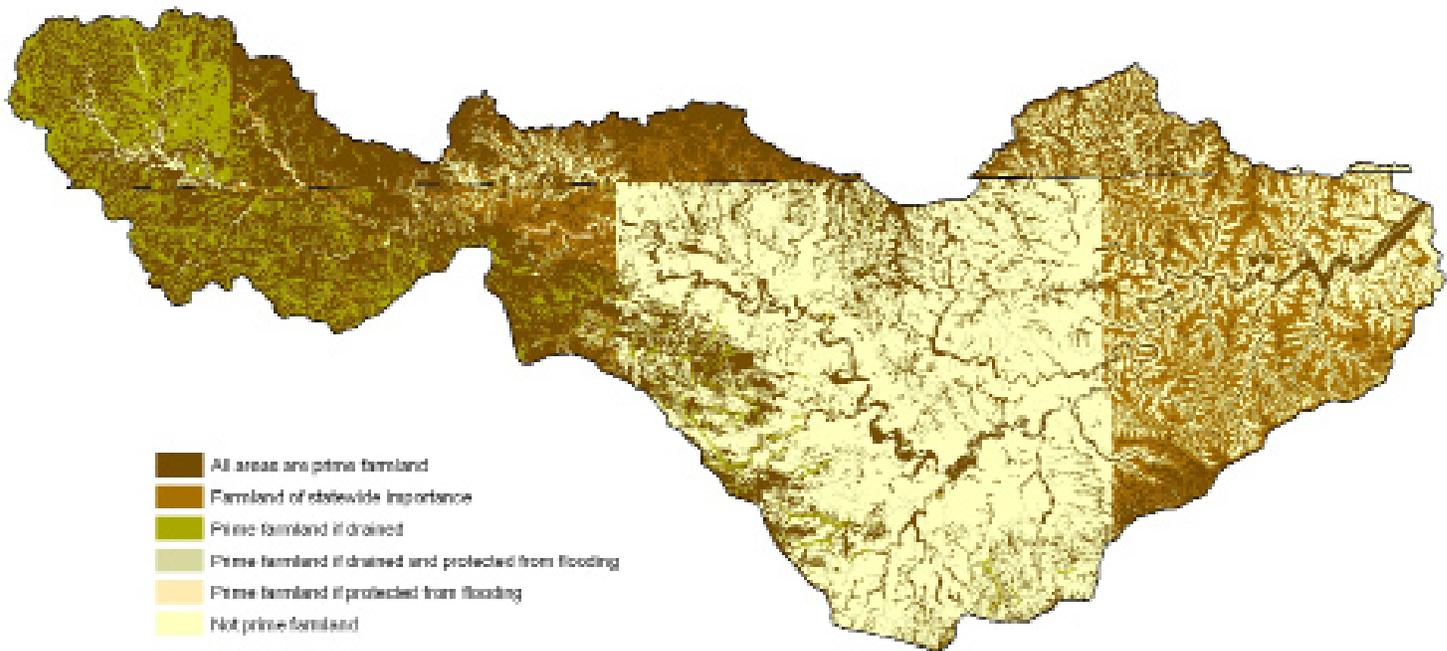
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Farmland Classification

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.



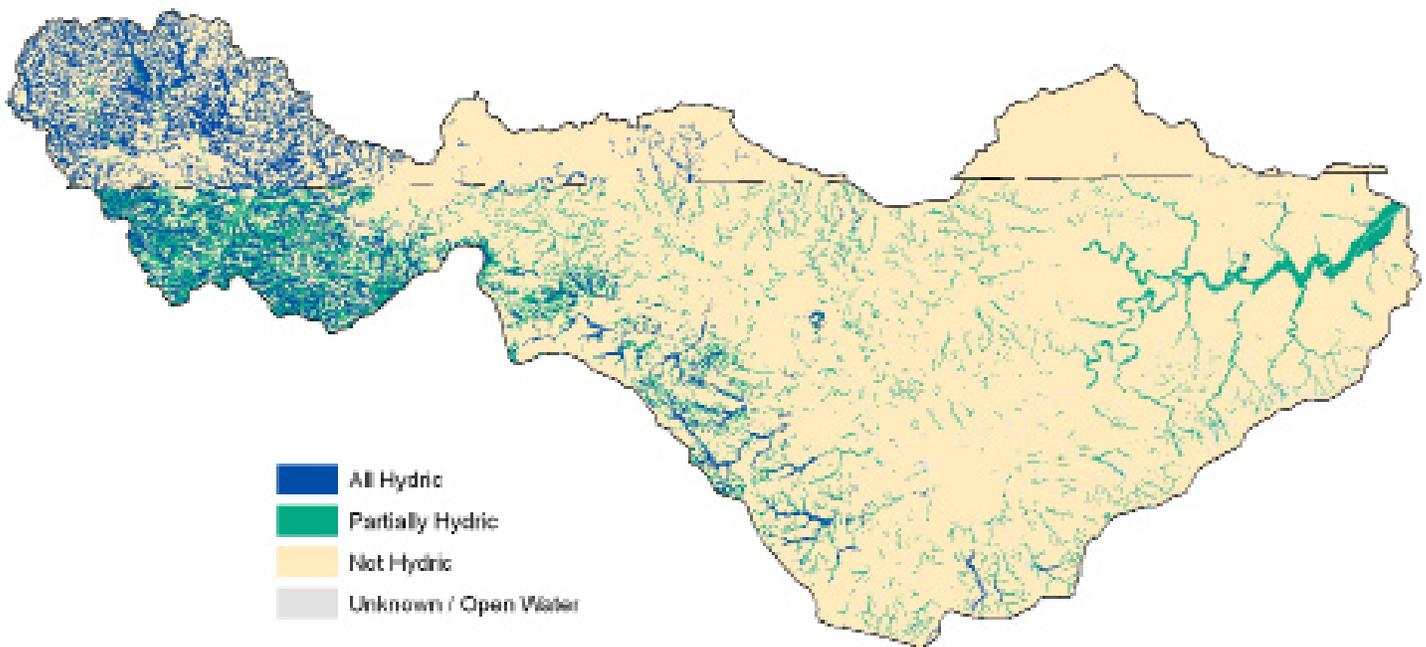
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Note: Historical Soil Determination Standards, scale, and methodology can vary on a county-to-county basis, leading to irregularities in thematic maps representing farmclass determinations.

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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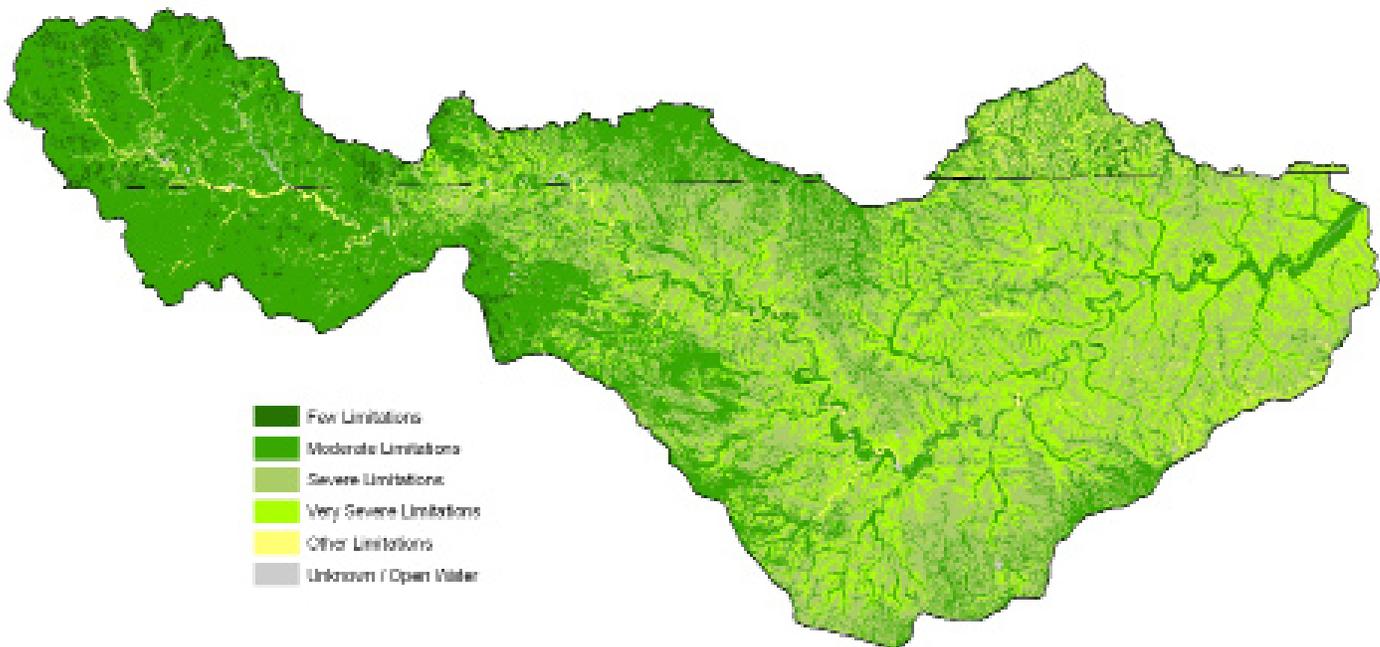
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Land Capability Classification

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

PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	MN & IA TOTALS
Total Conservation Systems Planned (acres)	8428	41339	32939	23253	30848	N/A	18722	38209	32747	226,485
Total Conservation Systems Applied (acres)	6884	21976	19927	15148	22184	N/A	13726	22611	20226	142,682
Conservation Practices										
Total Waste Management (313) (numbers)	1	3	8	5	2	5	9	7	5	45
Riparian Forest Buffers (391) (acres)	647	487	600	451	541	42	0	0	0	2,768
Erosion Control Total Soil Saved (tons/year)	1756	192681	153235	74799	93582	N/A	N/A	N/A	N/A	516,053
Total Nutrient Management (590) (Acres)	14118	20789	21594	5576	4672	2524	3961	3757	3801	80,792
Pest Management Systems Applied (595A) (Acres)	12570	7640	16257	2285	2538	4215	1611	2564	986	50,666
Prescribed Grazing 528a (acres)	155	1612	1627	2207	3847	1820	92	0	2083	13,443
Tree & Shrub Establishment (612) (acres)	286	427	218	197	62	260	27	37	42	1,556
Residue Management (329A-C) (acres)	5517	19674	15879	6678	7161	10356	8392	8374	1107	83,138
Total Wildlife Habitat (644 - 645) (acres)	683	13496	7229	5812	10263	3525	1162	1671	3504	47,345
Total Wetlands Created, Restored, or Enhanced (acres)	4	0	68	79	156	7	27	54	44	439
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	5091	14030	9124	6228	8942	N/A	3362	2410	3347	52,534
Wetlands Reserve Program	0	0	44	97	120	N/A	0	19	0	280
Environmental Quality Incentives Program	847	5089	3938	3409	3847	N/A	3299	6401	8655	35,485
Wildlife Habitat Incentive Program	0	0	0	0	0	N/A	60	149	242	451
Farmland Protection Program	0	56	0	1998	161	N/A	0	0	0	2,215

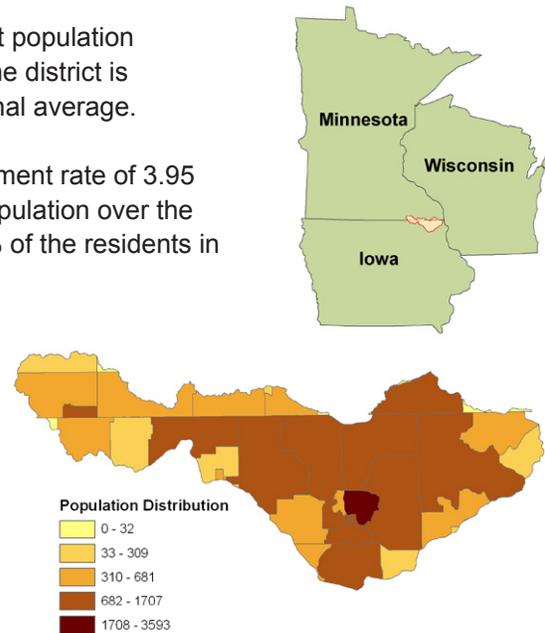
Socioeconomic and Agricultural Data (Relevant)

Estimations for the Upper Iowa subbasin indicate a current population of 26,414 people. Median household income throughout the district is approximately \$36,863 annually, roughly 79% of the national average.

Unemployment figures for the basin indicate an unemployment rate of 3.95 percent. Census data shows sixty seven percent of the population over the age of 18 is active in the workforce, and approximately 9% of the residents in the watershed are living below the national poverty level.

Assessment estimates indicate 1,943 farms in the watershed. Approximately thirty eight percent of the operations are less than 180 acres in size, fifty five percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

Of the 2,008 Operators in the Basin, sixty six percent are full time producers not reliant on off-farm income.



(MN) HUC# 7060002		Total Acres:	640,812
Population Data*	Watershed Population	26,414	
	Unemployment Rate	3.95%	
	Median Household Income	36,863	
	% below poverty level	9%	
	Median Value of Home	78,129	
Farms	# of Farms	1,943	
	# of Operators	2,008	Percent
	# of Full Time Operators	1,334	66%
	# of Part Time Operators	675	34%
	Total Crop/Pasturelands:	122,200	19.1%
Farm Size	1 to 179 Acres	710	38%
	180 to 499 Acres	719	39%
	500 to 999 Acres	299	16%
	1,000 Acres or more	128	7%
Livestock & Poultry (Number)	Cattle - Beef	20,099	3%
	Cattle - Dairy	19,709	3%
	Chicken	161,583	21%
	Swine	182,204	24%
	Turkey	31	0%
	Other	387,375	50%
	Animal Count Total:	771,001	
	Total Permitted AFOs (MN):	301	

* 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

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, and candidate species as well as species of special concern that occur in the Minnesota portion of the subbasin.



Scientific Name	Common Name	Type
<i>Actinonaias ligamentina</i>	Mucket	Zoological
<i>Alasmidonta marginata</i>	Elktoe	Zoological
<i>Allium cernuum</i>	Nodding Wild Onion	Botanical
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Zoological
<i>Arnoglossum plantagineum</i>	Tuberous Indian-plantain	Botanical
<i>Asclepias amplexicaulis</i>	Clasping Milkweed	Botanical
<i>Asclepias hirtella</i>	Prairie Milkweed	Botanical
<i>Asclepias sullivantii</i>	Sullivant's Milkweed	Botanical
<i>Baptisia alba</i>	White Wild Indigo	Botanical
<i>Baptisia bracteata</i> var. <i>leucophaea</i>	Plains Wild Indigo	Botanical
<i>Cacalia suaveolens</i>	Sweet-smelling Indian-plantain	Botanical
<i>Carex annectens</i>	Yellow-fruited Sedge	Botanical
<i>Carex laevivaginata</i>	Smooth-sheathed Sedge	Botanical
<i>Cirsium hillii</i>	Hill's Thistle	Botanical
<i>Crotalus horridus</i>	Timber Rattlesnake	Zoological
<i>Desmodium cuspidatum</i> var. <i>longifolium</i>	Big Tick-trefoil	Botanical
<i>Dodecatheon meadia</i>	Prairie Shooting Star	Botanical
<i>Elliptio dilatata</i>	Spike	Zoological
<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological
<i>Erimystax x-punctata</i>	Gravel Chub	Zoological
<i>Eryngium yuccifolium</i>	Rattlesnake-master	Botanical
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	Zoological
<i>Juniperus horizontalis</i>	Creeping Juniper	Botanical
<i>Lanius ludovicianus</i>	Loggerhead Shrike	Zoological
<i>Lasmigona compressa</i>	Creek Heelsplitter	Zoological
<i>Lasmigona costata</i>	Fluted-shell	Zoological
<i>Napaea dioica</i>	Glade Mallow	Botanical
<i>Paronychia canadensis</i>	Canadian Forked Chickweed	Botanical
<i>Parthenium integrifolium</i>	Wild Quinine	Botanical
<i>Platanthera flava</i> var. <i>herbiola</i>	Tuberclad Rein-orchid	Botanical
<i>Platanthera praeclara</i>	Western Prairie Fringed Orchid	Botanical
<i>Scirpus clintonii</i>	Clinton's Bulrush	Botanical
<i>Silene nivea</i>	Snowy Champion	Botanical
<i>Sullivantia sullivantii</i>	Reniform Sullivantia	Botanical
<i>Trillium nivale</i>	Snow Trillium	Botanical
<i>Valeriana edulis</i> ssp. <i>ciliata</i>	Valerian	Botanical
<i>Venustaconcha ellipsiformis</i>	Ellipse	Zoological

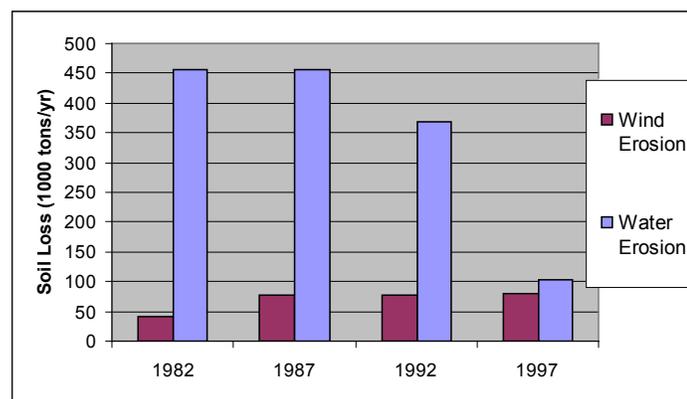
RESOURCE CONCERNS

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

- Sediment and Erosion Control.** Excessive amounts of suspended solids from cropland, urban lands, streambanks and streambeds is a primary threat to area waters. Working hand-in-hand with stormwater pollution and prevention plans and nutrient management plans, counties in the watershed seek to retain water on the landscape to reduce flooding and subsequent soil erosion, and improve water resources.
- Stormwater Management.** Local districts recognize that stormwater runoff volume from impervious surfaces will likely increase as development of the watershed continues. Existing stormwater systems typically bypass treatment plants and discharge storm water directly into sinkholes and streams
- Drinking Water and Source Water Protection.** Parts of the region are particularly susceptible to groundwater contamination. Ease of infiltration, aging septic systems, abandoned wells and historical tiling practices threaten public drinking water supplies.
- Feedlot and 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. Setback of open tile intakes and placement of agricultural waste systems in high priority riparian areas and areas with highly permeable soils will greatly reduce the effects of animal feed operations on area waters.
- Nutrient Management.** Excessive amounts of nutrients, namely phosphorus and nitrogen, contaminate groundwater and create nuisance algae presence in area waters. Major contributors are cropland, urban grasses, municipal wastewater, aging or non-compliant septic systems, and internal cycling.
- Wetland Management.** Due to the historical draining of much of the areas wetlands and homogenic agricultural practices, priority is given to both wetland preservation and restoration. Wetlands that have been filled and drained retain their characteristic soil and hydrology, often allowing their natural functions to be reclaimed. Restoration is a complex process requiring planning, implementation, monitoring, and management.

NRI Soil Loss Estimates ¹³

- NRI estimates for sheet and rill erosion by water on cropland and pastureland **decreased** by approximately 351,500 tons of soil between 1982 and 1997 (77.3%).
- NRI estimates for wind erosion on crop and pastureland **increased** by 38,600 tons of soil between 1982 and 1997 (95.8%).



Watershed Projects, Plans and Monitoring

- **Agricultural Land Buffer Incentive Program**
Minnesota Department of Agriculture
- **Basin Alliance for the Lower Mississippi in MN**
(BALMM)
- **Coldwater Pine Watershed Protection Project**
Winneshiek County SWCD
- **Driftless Area Restoration Effort**
Trout Unlimited, US Fish and Wildlife Service
- **Driftless Area Initiative**
DAI, NRCS, FSA, FWS, Forest Service, State DNRs
- **EPA Targeted Watersheds Grant Project**
US EPA, Vermillion River Joint Powers Board
- **Upper Iowa River Watershed Project**
Northeast Iowa RC&D
- **Lower Mississippi Regional TMDL Plan**
MN Pollution Control Agency
- **Mississippi River Env. Management Program**
US Army Corps of Engineers
- **Mississippi Source Water Protection Project**
Minnesota Department of Health
- **Mississippi River WS Forest Partnership**
USDA Forest Service
- **Mississippi River Watershed Fund**
USDA Forest Service / National Fish & Wildlife Federation
- **Mississippi River Basin W.Q. Plan**
Minnesota Pollution Control Agency
- **Northeast Iowa Driftless Area Initiative**
USDA Forest Service, Area RC&Ds
- **SE MN Coldwater Resources Management Plan**
Minnesota Department of Natural Resources
- **Staff / Beaver Water Quality Project**
Howard County SWCD
- **Southeast Minnesota Wastewater Initiative**
U of M, MPCA, BALMM
- **Upper IA Watershed Rainfall and Runoff Modeling**
Luther College

Conservation Districts, Organizations & Partners

- **Basin Alliance for the Lower Mississippi in MN**
18 Wood Lake Drive SE Rochester, MN 55904
Phone (507) 280-3592
- **Conservation Districts of Iowa**
1711 Osceola Ave Chariton, IA 50049
Phone (641)774-4461
- **Driftless Area Initiative**
150 West Alona Lane Lancaster, WI 53813
Phone (608) 723-6377 ext.135
- **Fillmore County SWCD**
900 Washington St NW, Preston, MN 55965
Phone (507) 765-3878
- **Hiawatha Valley RC&D**
1485 Industrial Drive NW Rochester, MN 55901
Phone (507) 282-6153
- **Iowa Natural Heritage Foundation**
505 Fifth Ave., Suite 444 Des Moines, IA 50309
Phone (515)288-1846
- **Iowa Department of Natural Resources**
502 E. 9th Street, Des Moines, IA 50319-0034
Phone (515) 281-5918
- **Iowa NRCS - USDA**
210 Walnut Street Des Moines, IA 50309
On the Web: www.ia.nrcs.usda.gov
- **Minnesota Department of Natural Resources**
500 Lafayette Road St. Paul, MN 55155-4040
Phone (651) 296-6157
- **Minnesota NRCS - USDA**
375 Jackson Street, Suite 600 St Paul, MN 55101
On the Web: www.mn.nrcs.usda.gov
- **Mower County SWCD**
1408 21st Ave NW Ste 2, Austin, MN 55912
Phone (507) 434-2603
- **Trout Unlimited Hiawatha Chapter**
Web: <http://www.mntu.org/index.php>
Phone (507) 287-6101
- **Trout Unlimited Iowa Driftless Chapter**
Decorah, Iowa
On the Web: www.iadriftless.org
- **Northeast Iowa RC&D**
101 E. Greene Street Postville, Iowa 52162
Phone (563) 864-7112

Footnotes / Bibliography

1. Ownership Layer – Source: MN Stewardship Data: Minnesota Department of Natural Resources, Section of Wildlife, BRW, Inc & Iowa Gap analysis Land Stewardship Data. 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: 20010631; 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. 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/>

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.