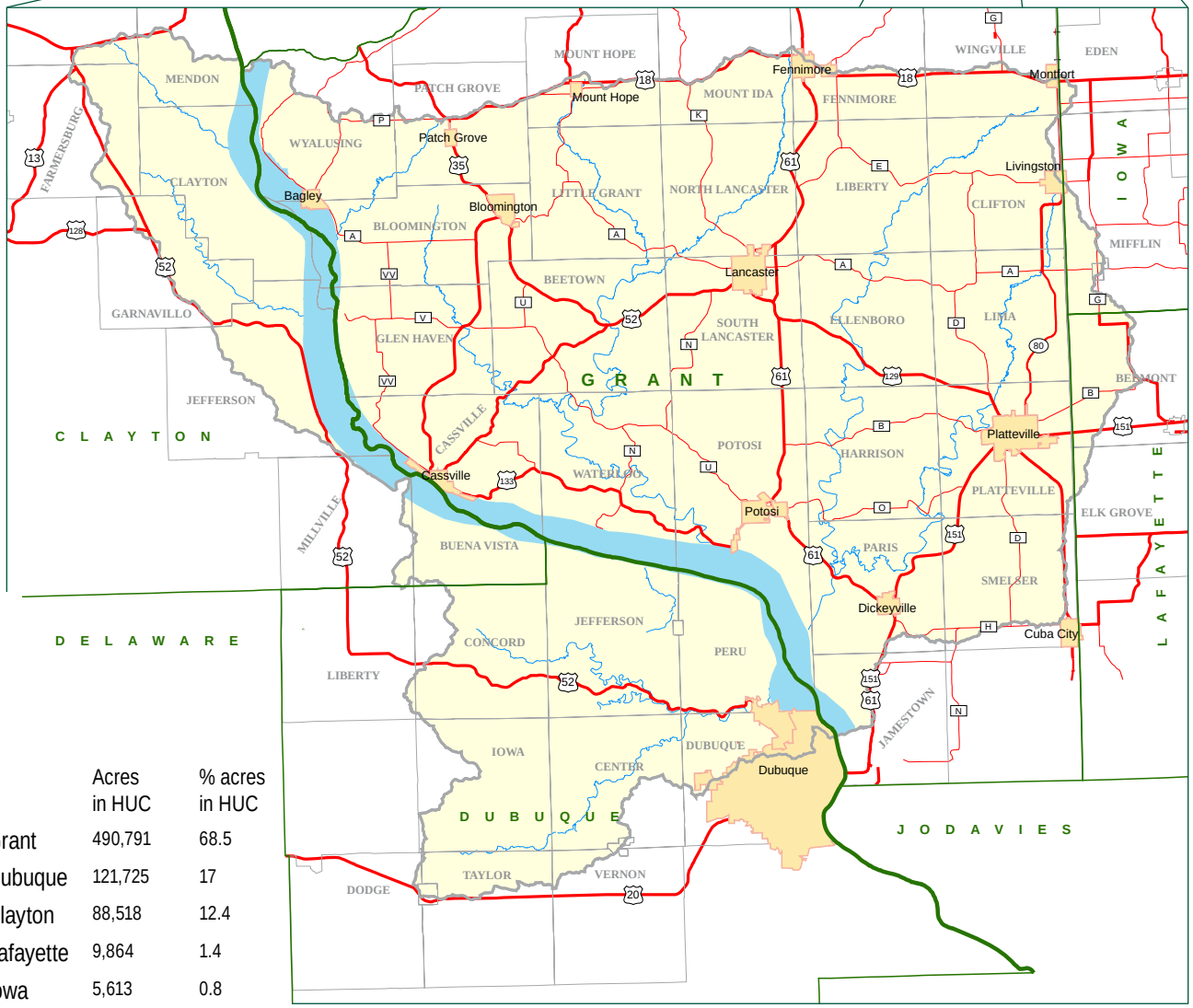
Rapid Watershed Assessment
Grant–Little Maquoketa River

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 landowners and local leaders set priorities and determine the best actions to achieve their goals.

Contents

Introduction

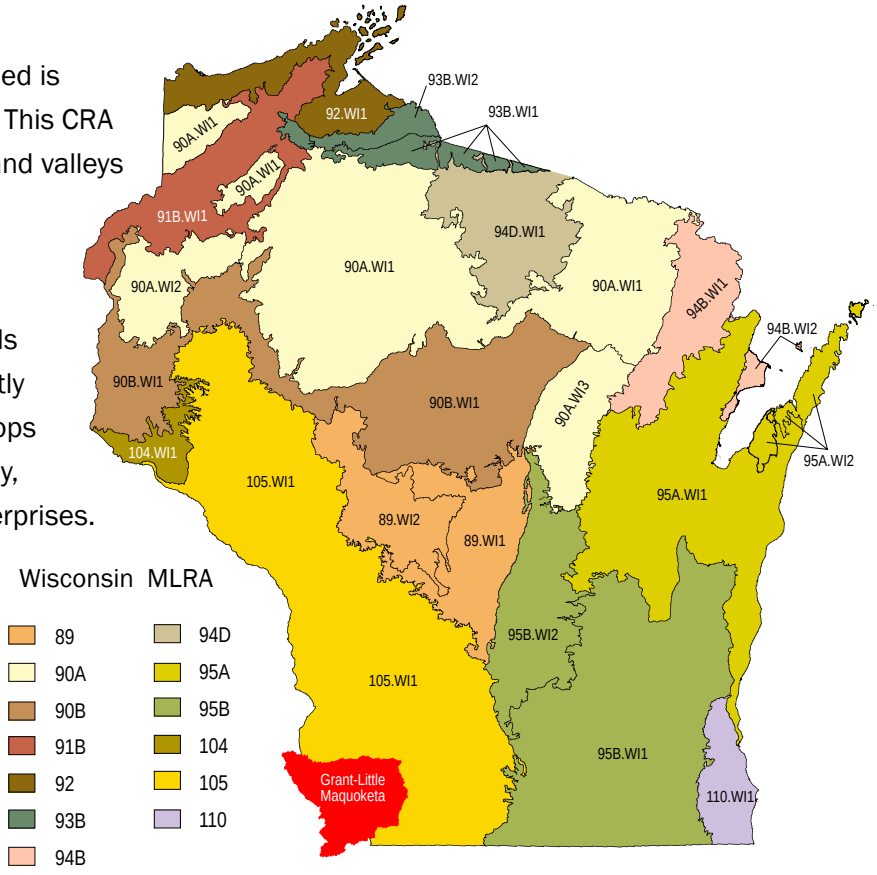
The Grant–Little Maquoketa River Watershed is located in the Driftless Region of Southwest Wisconsin and northeast Iowa. The highly agricultural watershed is 714,953 acres in size, with slightly over 80% of that area in farms. Agricultural operations are a mix of cash grain and livestock farms. Corn, soybeans and alfalfa are the dominant field crops. Livestock operations consist of dairy, beef and hog enterprises, in both confinement and grass-based systems. The largest nearby city is Dubuque, Iowa, located just south of the watershed.



	Acres in HUC	% acres in HUC
Grant	490,791	68.5
Dubuque	121,725	17
Clayton	88,518	12.4
Lafayette	9,864	1.4
Iowa	5,613	0.8

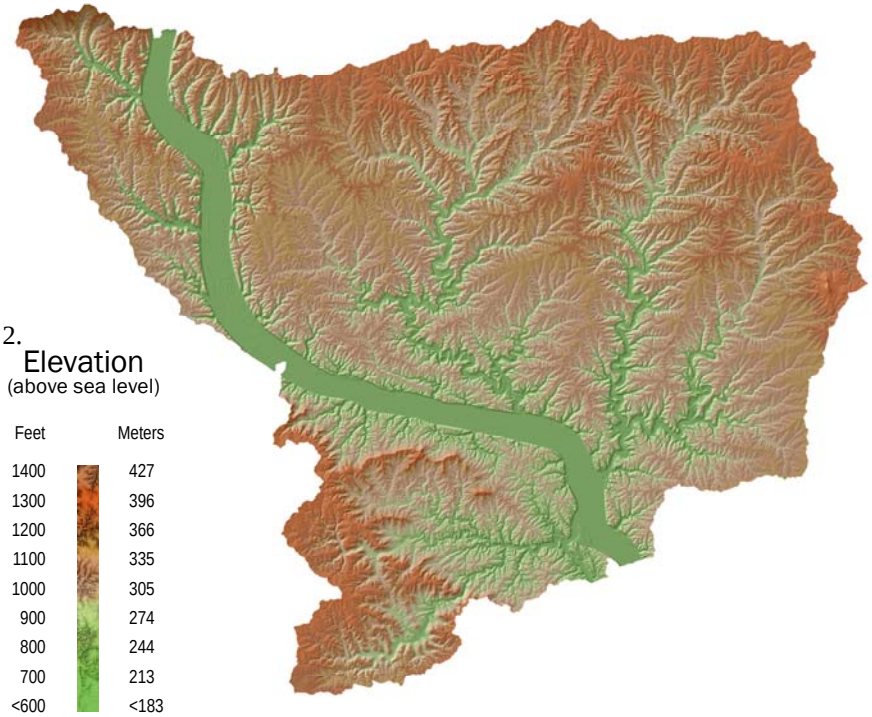
Common Resource Area [1].
105.WI1 Description

The Grant–Little Maquoketa watershed is located entirely within CRA 105.WI1. This CRA is made up of highly dissected hills and valleys including the Mississippi, Chippewa, and Wisconsin River valleys and the western Baraboo Hills. 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. Eau Claire, LaCrosse and Dubuque urban areas, and increasing demand for recreational land are influencing land use in the area. Primary resource concerns are cropland soil erosion, surface water quality, grazing land and forestland productivity, stream bank erosion, and erosion during timber harvest.



Physical Description

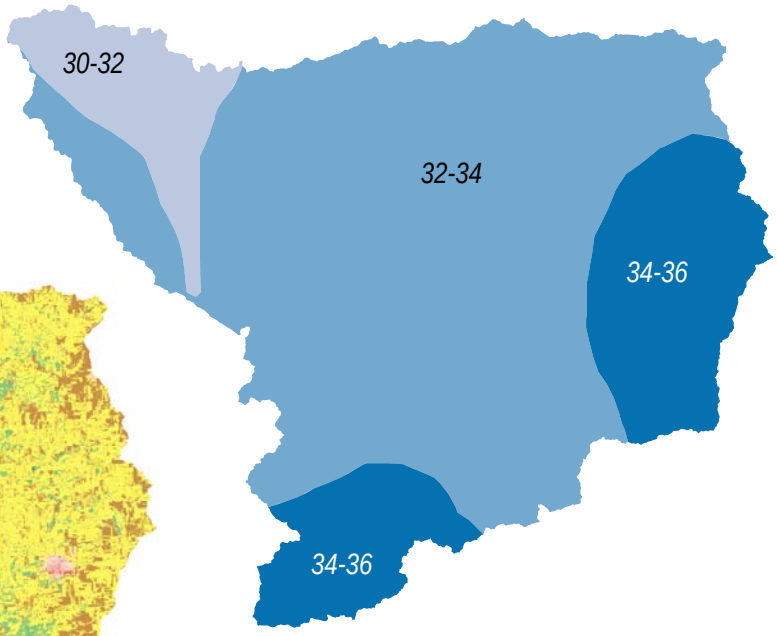
This unglaciated area consists of highly dissected hills and valleys with many spring-fed trout and smallmouth bass streams and very few natural lakes. Soils are mainly loess derived, well drained and moderately well drained silt loams over bedrock residuum. Land use is predominantly cropland and grazing land on ridge tops and valley bottoms. Deciduous forests are found on steep, side slopes. Development pressure is moderate with farms commonly being parceled out for recreation or country homes.



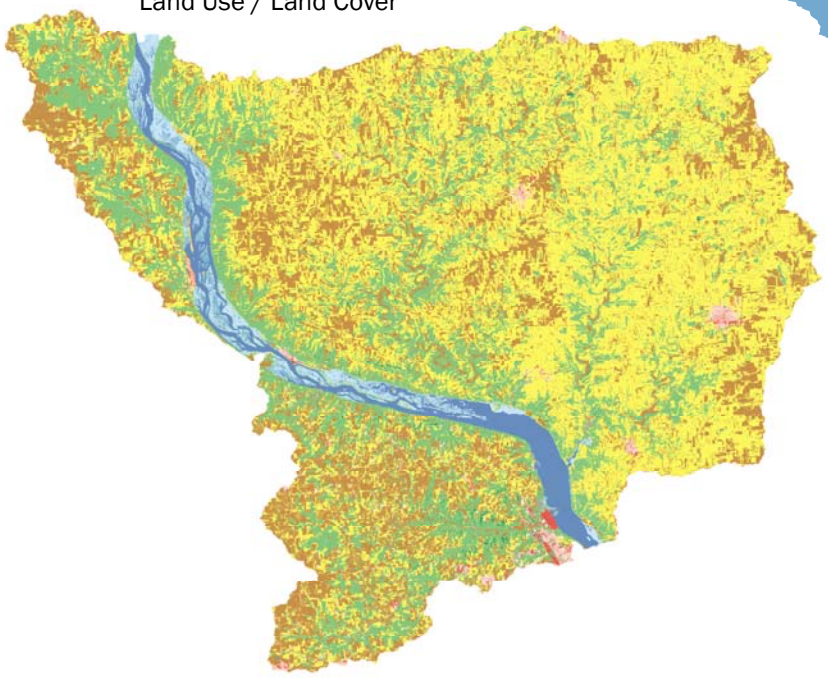
Grant–Little Maquoketa River Watershed

(WI) HUC: 7060003

Average Annual Precipitation (inches) [3]



Land Use / Land Cover [4].



	Acres	Percent		Acres	Percent
Pasture Hay	332,494.51	46.43	Low Intensity Residential	3,790.14	0.53
Deciduous Forest	163,678.58	22.85	High Intensity Residential	1,620.76	0.23
Row Crops	159,819.27	22.32	Evergreen Forest	1,494.44	0.21
Open Water	22,606.97	3.16	Mixed Forest	553.74	0.08
Woody Wetlands	11,738.47	1.64	Small Grains	453.67	0.06
Emergent Herbaceous Wetlands	7,501.78	1.05	Urban / Recreational Grasses	450.33	0.06
Commercial/Industrial / Transport	5,770.94	0.81	Quarries / Strip Mines, Gravel Pits	259.08	0.04
Grasslands / Herbaceous	3,957.38	0.55	Bare Rock / Sand / Clay	3.34	0.00
			Total Acres	716,193.40	

Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies that are not meeting their designated uses (fishing, swimming), due to pollutants, must be placed on this list. The 303(d) impaired Waters List is updated every two years. Wisconsin is required to develop TMDLs, Total Maximum Daily Loads, for water bodies on this list. ERW Surface waters (exceptional resource waters), which provide valuable fisheries, hydrologically or geologically unique features, outstanding recreational opportunities, unique environmental settings, and which are not significantly impacted by human activities may be classified as exceptional resource waters. ORW waters (outstanding resource waters), and ERW differ in that ORW do not have an associated point source discharge, where ERW do.

303d Listed Streams [5].

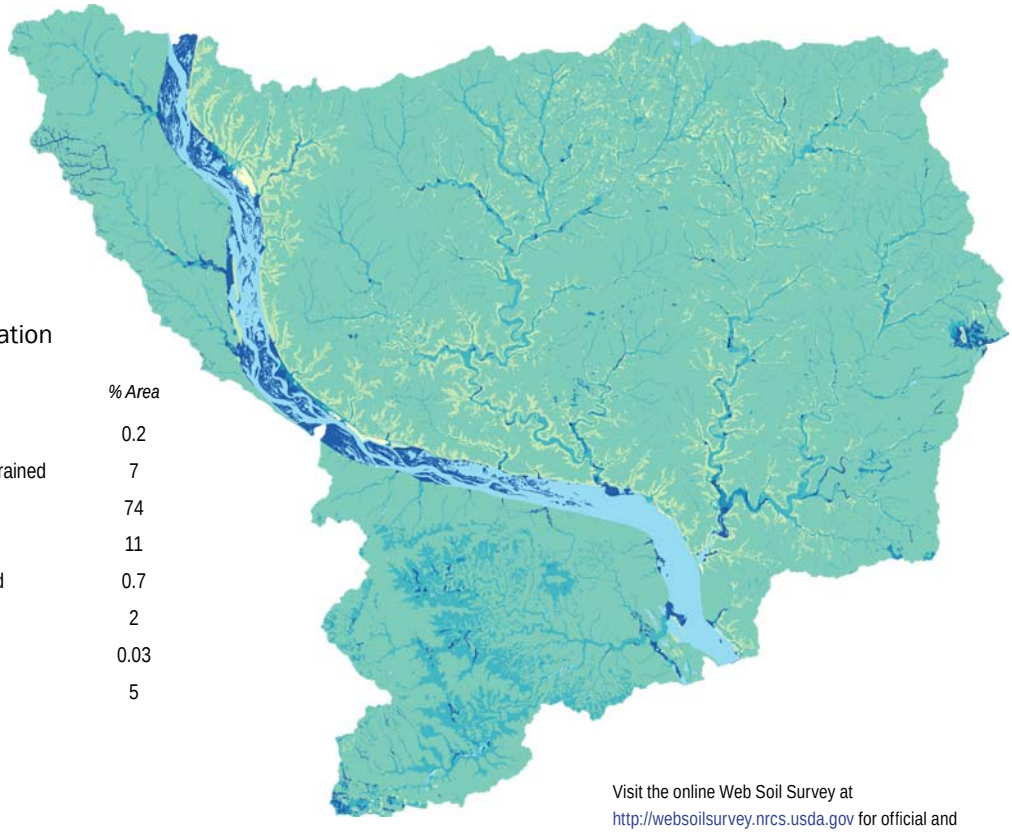
	Sediment	Degraded Habitat	Dissolved Oxygen	Phosphorous	Mercury	PCB's
Chase Creek	X	X				
Culver Branch	X	X				
Martin Branch	X	X				
Martinville Creek	X	X				
Rogers Branch	X		X	X		
Sandy Creek	X	X				
Snowden Branch	X	X				
Mississippi R. (WI portion)	X				X	X

Soils [6.]

The soils in this watershed have formed in a silty, wind blown covering. The deepest deposits are along the bluffs of the Mississippi River, but they thin towards the Northeast. The soils of the upland ridges have formed in the silty covering, but are underlain by bedrock at some depth. The valleys contain silty material that has been moved down the slope, following the drainage patterns. Higher benches along major rivers have reddish-brown lake clays. On the lowest area, next to the river, sandy outwash is exposed.

Drainage Classification

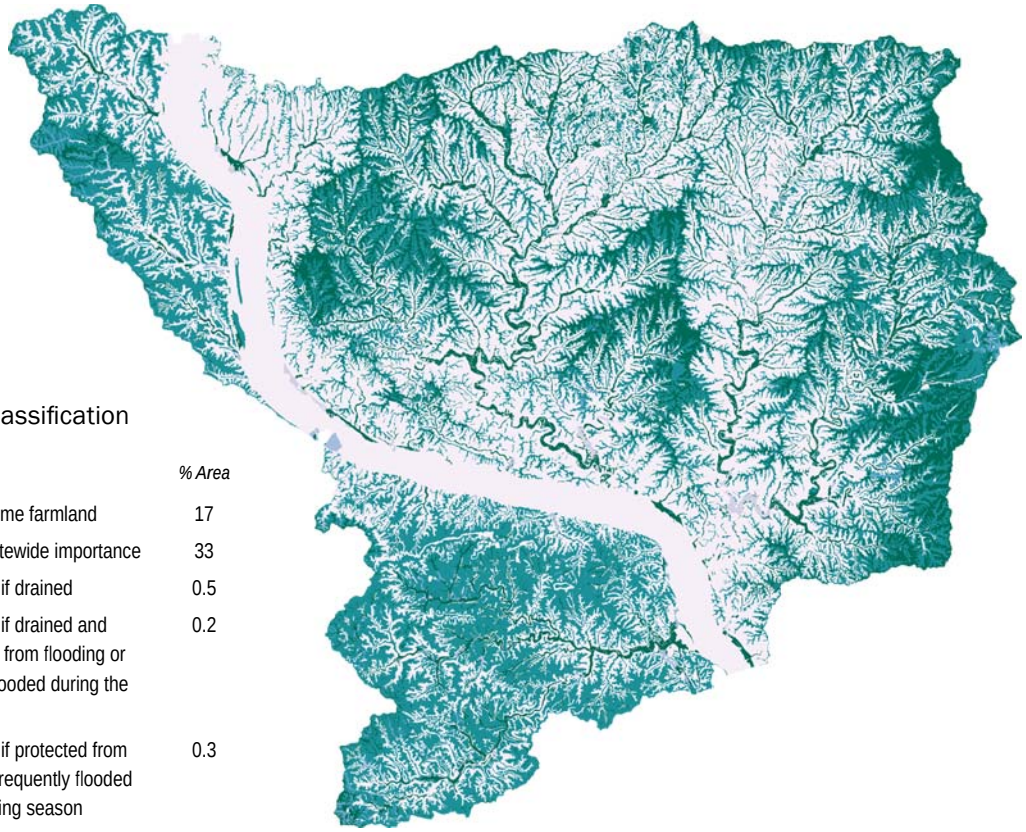
Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology 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.



Farmland Classification

	% Area
All areas are prime farmland	17
Farmland of statewide importance	33
Prime farmland if drained	0.5
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	0.2
Prime farmland if protected from flooding or not frequently flooded during the growing season	0.3
Not prime farmland	49

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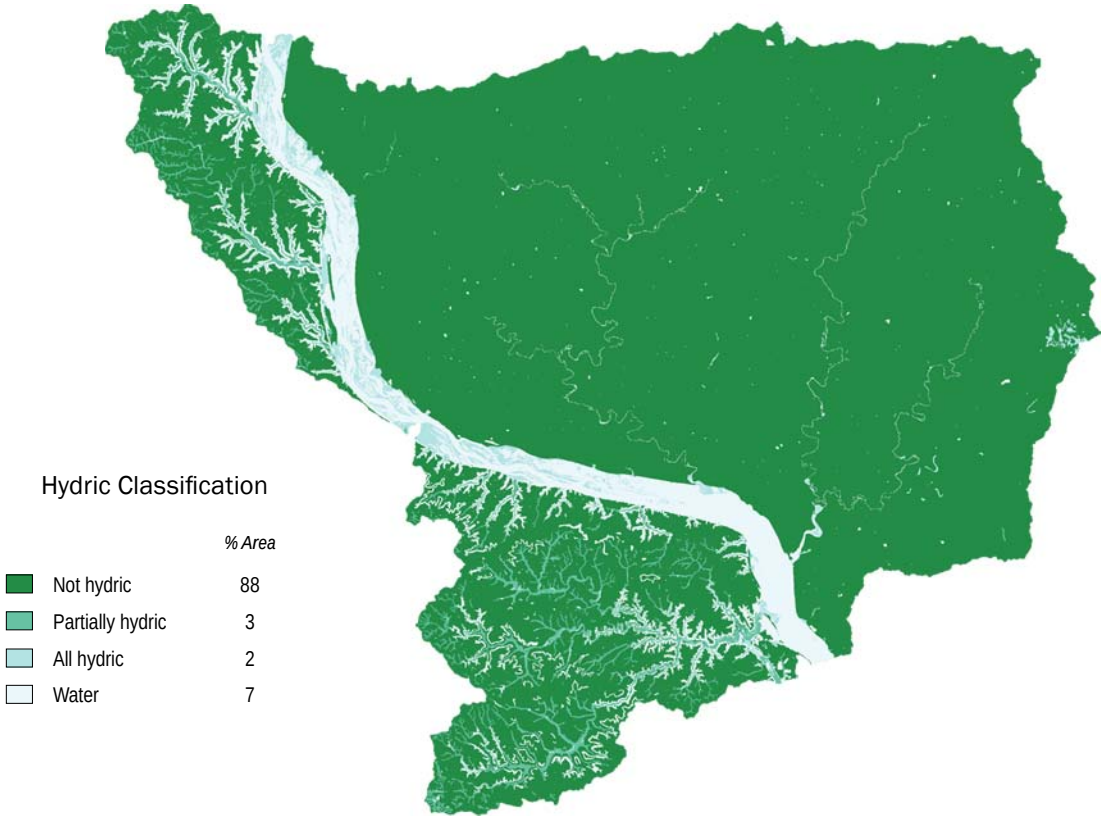
Hydric Soils

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, and map units dominantly made up of non–hydric soils may have inclusions of hydric soils in the lower positions on the landform.

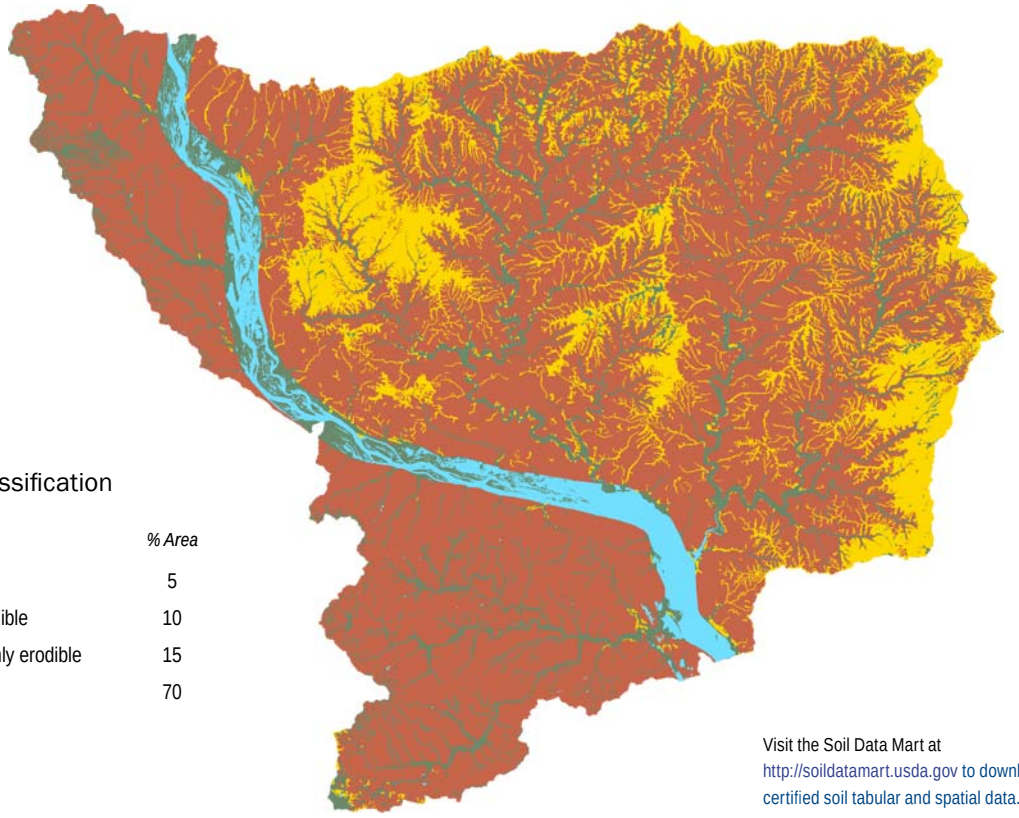
Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils, under natural conditions,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



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.

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. These visible properties are indicators of hydric soils. The indicators used to make on site determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

Highly Erodible Land (HEL)



A soil map unit with an erodibility index (EI) of 8 or greater is considered to be highly erodible land (HEL). The 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. Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do 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.

Land Capability Classification

	% Area
Well Suited	5
Moderately well suited	10
Poorly suited	15
Unsuited	70

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.

Resource Concerns

In the GLM for 2006, the Local Work Group (LWG) has identified the following resource concerns as being the top priority for cost share assistance:

- Soil Quality, Excessive Sheet and Rill Erosion Excessive Other Erosion, Classic Gully, Ephemeral Gully, Channel Scour, and Streambank.

  Soil erosion and deposition has ranked as the highest resource concern for the residents of Grant County.
- Surface Water Quality, Nutrients.

  Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.
- Surface Water Quality, Animal Waste, Organics, and Pathogens.

  Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.
- Ground Water Quality, Nutrients.

  The combination of the thin soils and sandstone bedrock allows containments on the land surface to be carried easily into the ground water from infiltrating water. Because of this condition, non–point pollutants such as fertilizers, pesticides, and livestock waste have the potential to contaminate the ground water aquifer.

Watershed Assessment

To assess a watershed's agricultural nonpoint pollution potential, a model was used to generate a watershed assessment score relative to other 8-digit watersheds in Wisconsin. Factors used in the model include acres of cropland, acres of highly erodible land (HEL), and the number of animal units in the watershed. Scores ranged from 0.0 (lowest conservation need) to 24.2 (highest conservation need). The scores may be useful in determining funding allocations on a watershed basis for agricultural nonpoint pollution control initiatives. The model does not attempt to measure pollution levels and does not reflect pollution potential from point sources of pollution or other nonpoint pollution sources beyond the above criteria.

The watershed assessment score for the Grant-Little Maquoketa River Watershed is 10.6.

PRS and Other Data[7.]

Grant County, the core county of the watershed, implemented new nutrient management plans on 1,378 acres and installed 38 acres of grassed waterways in 2004. Other surveys show approximately 6.2% of cropland acres in the southwest region of Wisconsin have a nutrient management plan. On a 100 point scale developed at the national level, current conservation in this watershed scores 93.48.

PRS Performance Measures

	FY99	FY00	FY01	FY02	FY03	FY04	FY05	total
Total Conservation Systems Planned (acres)	4,226	10,156	14,831	9,101	19,966	N/A	15,541	73,821
Total Conservation Systems Applied (acres)	5,159	5,862	14,268	8,332	16,939	N/A	14,040	64,600
Conservation Practices								
Total Waste Management (313) (numbers)	1	0	0	7	5	0	7	20
Riparian Forest Buffers (391) (acres)	370	251	17	221	419	258	26	1,562
Erosion Control Total Soil Saved (tons/year)	13,747	38,805	1,418	8,943	64,076	N/A	N/A	126,989
Total Nutrient Management (590) (Acres)	338	854	0	2,231	4,898	1,288	3,595	13,204
Pest Management Systems Applied (595A) (Acres)	338	854	0	48	0	0	0	1,240
Prescribed Grazing 528a (acres)	235	40	0	57	323	0	64	719
Tree & Shrub Establishment (612) (acres)	12	221	18	281	462	289	0	1,283
Residue Management (329A-C) (acres)	0	400	312	2,388	3,837	2,620	6,794	16,351
Total Wildlife Habitat (644 - 645) (acres)	12	114	92	741	821	77	105	1,962
Total Wetlands Created, Restored, or Enhanced (acres)	0	0	40	29	0	0	0	69
Acres enrolled in Farmbill Programs								
Conservation Reserve Program	4,900	3,302	384	1,153	2,127	N/A	553	12,419
Wetlands Reserve Program	0	0	0	0	0	N/A	0	0
Environmental Quality Incentives Program	70	0	0	1,428	4,397	N/A	4,724	10,619
Wildlife Habitat Incentive Program	0	61	0	0	10	N/A	40	111
Farmland Protection Program	0	0	0	0	0	N/A	0	0

Census and Social Data (Relevant)

There are 2,393 farms in the watershed that average 241 acres is size. The 2002 average gross farm income in Grant County, the core county of the watershed, was $74,958, just 2.8% above the Wisconsin statewide average. It is estimated that less than 15% of farmers meet the limited resource producer criteria.

Urban Population | Median Houshold Income (1999)[10.]

	1990	2000	2004	Median Income
Potosi	963	831	826	$42,697
Dickeyville	862	1,043	1,056	$41,089
Cuba City	2,024	2,156	2,120	$38,750
Mount Hope	173	186	187	$37,813
Montfort	676	663	666	$37,500
Platteville	9,708	9,989	9,850	$35,742
Livingston	576	597	580	$35,417
Bloomington	776	701	687	$34,750
Fennimore	2,378	2,387	2,357	$34,453
Lancaster	4,192	4,070	3,980	$32,723
Cassville	1,144	1,085	1,051	$28,179
Bagley	306	339	347	$26,944
Patch Grove	202	166	169	$25,625

2002 Ag Census [8.]	County					
	Clayton	Dubuque	Grant	Iowa	Lafayette	Total
Farms (number)	272	459	1619	17	24	2,391
Land in farms (acres)	73563	97927	393793	3674	6856	575,814
Total cropland (acres)	11	16	68	0	1	97
Farms by size - 1 to 9 acres	36	75	259	3	5	378
Farms by size - 10 to 49 acres	92	171	543	6	7	819
Farms by size - 50 to 179 acres	92	158	585	5	8	848
Farms by size - 180 to 499 acres	32	32	125	1	2	193
Farms by size - 500 to 999 acres	9	7	38	0	1	55
Farms by size - 1,000 acres or more	82	6	189	66	4	347
Irrigated land (acres)	189	327	1034	9	16	1,574
Principal operator by primary occupation - Farming (number)	53543	74967	243740	2169	5287	379,705
Livestock and poultry - Cattle and calves inventory (farms)	130	260	999	8	16	1,414
Livestock and poultry - Cattle and calves inventory - Beef cows (farms)	73	123	423	3	6	629
Livestock and poultry - Cattle and calves inventory - Milk cows (farms)	50	86	432	3	7	579
Livestock and poultry - Hogs and pigs inventory (farms)	31	62	94	1	2	189
Livestock and poultry - Sheep and lambs inventory (farms)	7	12	48	0	1	69
Livestock and poultry - Layers 20 weeks old and older inventory (farms)	6	5	59	1	1	71
Livestock and poultry - Broilers and other meat-type chickens sold (farms)	2	2	18	0	0	21
Selected crops harvested - Corn for grain (acres)	22248	31881	78401	519	1924	134,973
Selected crops harvested - Corn for silage or greenchop (acres)	1433	2561	11282	119	255	15,650
Selected crops harvested - Wheat for grain, all (acres)	16	89	441	5	8	559
Selected crops harvested - Wheat for grain, all - Winter wheat for grain (acres)	16	89	441	0	4	550
Selected crops harvested - Wheat for grain, all - Spring wheat for grain (acres)	0	0	0	0	4	4
Selected crops harvested - Oats for grain (acres)	1194	2044	7842	38	94	11,211
Selected crops harvested - Barley for grain (acres)	53	106	345	6	14	524
Selected crops harvested - Soybeans for beans (acres)	10024	11165	31457	252	1099	53,997
Selected crops harvested - Forage - land used for all hay and all haylage, grass silage, and greenchop (see text) (acres)	8047	16187	67513	593	1196	93,536
Selected crops harvested - Vegetables harvested for sale (see text) (acres)	0	26	27	11	0	65
Selected crops harvested - Land in orchards (acres)	16	31	29	1	1	78

Population Ethnicity [9.]

Total Population	Urban Population	Rural Population	White Alone	Hispanic or Latino	Two or more races	Black or African American Alone	Some other race alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander alone
27,867	16,729	11,132	27,382	305	177	164	62	38	34	3

Watershed Projects, Studies, Monitoring, Etc

The Lower Grant River Priority Watershed ended in 2001 and focused on improving water quality in the watershed through cost–share contracts with farmers to install best management practices. The Wisconsin Department of Natural Resources and citizen groups conduct ongoing monitoring of streams and rivers in the watershed each year. In addition, the watershed is part of the larger, multi–state Driftless Initiative to restore streams and rivers in the region. The Southwest Badger Resource Conservation and Development Council and Trout Unlimited are local leaders in this effort.

Southwest Savanna Ecological Landscape

General Description

The Southwest Savanna Ecological Landscape is located in the far southwestern part of the state. It is characterized by deeply dissected topography, unglaciated for the last 2.4 million years, with broad open hilltops and river valleys, and steep wooded slopes. The climate is favorable for agriculture but the steep slopes limit it to the hilltops and valley bottoms. Soils are underlain with calcareous bedrock. Soils on hilltops are silty loams, sometimes of shallow depth over exposed bedrock and stony red clay subsoil. Some valley soils are alluvial sands, loams, and peats. Some hilltops are almost treeless due to the thin soil while others have a deep silt loam cap.

Management Opportunities

- This Ecological Landscape has many opportunities for restoring rare grassland and oak savanna communities.
- Large-scale restoration of prairies and oak savanna is possible throughout most of the Ecological Landscape including protection of prairie remnants.
- There are major opportunities for grassland bird management.
- Opportunities for rare prairie species restoration and management include the Henslow's sparrow, loggerhead shrike, Bell's vireo, prairie bush clover, regal fritillary butterfly, other rare invertebrates, and the Blanchard's cricket frog.
- There are management opportunities for aquatic resources such as restoration and preservation of high quality warmwater streams and smallmouth bass fisheries as well as trout stream management.

- Opportunities to manage for rare fish species including the slender madtom and the Ozark minnow.
- Protection and management of the Pecatonica and Sugar Rivers, to maintain the ecologically significant component of southern species which are at the edge of their ranges. The floodplains and adjacent communities represent one of the few places in the Ecological Landscape with extensive forest cover, and include remnant prairies, fens, and savannas as well as floodplain forests. These areas provide habitat for certain rare plants and invertebrates.
- Protection of some pine relics may be possible.

Partner Groups

- Wisconsin Department of Natural Resources http://dnr.wi.gov/
- Wisconsin Department of Agriculture, Trade, and Consumer Protection

http://www.datcp.state.wi.us

- County Land Conservation Departments (Directory Link = http://www.datcp.state.wi.us/arm/

agriculture/land-water/conservation/pdf/ar-pub-119web_dec2005.pdf)

- River Alliance http://www.wisconsinrivers.org/
- UW Cooperative Extension http://www.uwex.edu/ces/
- US Fish and Wildlife Service http://www.fws.gov/midwest/maps/wisconsin.htm
- USDA Farm Service Agency http://www.fsa.usda.gov/wi/news/default.asp
- Wisconsin Trout Unlimited http://www.wisconsintu.org/

Footnotes/Bibliography

All data is provided "as is." there are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Common Resource Area (CRA) Map delineations are defined as a geographical areas 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.
Online linkage: http://soils.usda.gov/survey/geography/cra.html.

2. The relief map was created using the National Elevation Dataset (NED) 1 arc second, approximately 30 meters, digital elevation model (DEM) raster product assembled by the U.S. Geological Survey (USGS). A hillshade grid was derived from the 30m DEM and draped over the DEM to symbolize the map and create a 3-D effect. The data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/.
For more information about NED visit http://ned.usgs.gov/.

3. Average Annual Precipitation data was originated by Chris Daly of Oregon State University and George Taylor of the Oregon Climate Service at Oregon State University and published by the Water and Climate Center of the Natural Resources Conservation Service in 1998. Annual precipitation data was derived from the climatological period of 1961-1990. Parameter-elevation Regressions on Independent Slopes Model (PRISM) derived raster data is the underlying data set from which the polygons and vectors were created. For more information about PRISM visit http://www.ocs.orst.edu/prism/prism_new.html. Precipitation data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/.

4. The Land Use/Land Cover data was generated from the National Land Cover Dataset (NLCD) compiled from Landsat satellite TM imagery (circa 1992) with a spatial resolution of 30 meters and supplemented by various ancillary data (where available). The data was assembled by the USGS and published in June of 1999. The analysis and interpretation of the satellite imagery was conducted using very large, sometimes multi-state image mosaics. For more information about NLCD visit http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html. The data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/.

5. 303d listed streams were derived from the Water Quality Standards Section of the Wisconsin Department of Natural Resources (WIDNR) website: http://dnr.wi.gov/org/water/wm/wqs/303d/Lists303d/Approved_2004_303(d)_list.pdf. The sub-watersheds were acquired from the Grant Platte Basin Page. For more information about the individual sub-watersheds visit http://dnr.wi.gov/org/gmu/gpsp/gpbasin/index.htm. For a list and explanation of Outstanding and Exception Resource Waters visit: http://dnr.wi.gov/org/water/wm/wqs/orwerw/.

6. Soil Survey Geographic Database (SSURGO) tabular and spatial data were downloaded for the following surveys:

Grant Co., WI (WI043) Published 20060301
Iowa Co., WI (W1049) Published 20060123
Lafayette Co., WI (WI065) Published 20060301
Sheboygan Co., WI (WI117) Published 20060120
Clayton Co., IA (IA043)) Published 20050916
Dubuque Co., IA(IAo61 Published 20050913

Metadata and SSURGO data for the aforementioned surveys were downloaded from the NRCS Soil Data Mart at http://soildatamart.nrcs.usda.gov. Component and layer tables from the tabular data were linked to the spatial data to derive the soil classifications found in this section. Visit the online Web Soil Survey at http://websoilsurvey.nrcs.usda.gov for official and current USDA soil information as viewable maps and tables.

7. Performance Results System (PRS) data was extracted from the PRS homepage by year, conservation systems and practices and Hydrologic Unit Code (HUC) level. HUC level reporting was not available where N/A is listed. For more information on these and other performance reports visit http://ias.sc.egov.usda.gov/prshome/.

8. Ag Census data were downloaded from the National Agricultural Statistics Service (NASS) Website and the data were adjusted by percent of HUC in the county. For more information on individual census queries visit the NASS website at http://www.nass.usda.gov/.

9. Population ethnicity data were extracted from the Census 2000 Summary File 3 compiled by the U.S. Census Bureau. The data were adjusted by Block Group percentage in the HUC. Population items were selected from the SF30001 table. For more information on census data and definitions visit http://www.census.gov/Press-Release/www/2002/sumfile3.html.

10. Urban population and median household income data were derived from the American FactFinder assembled by the U.S. Census Bureau. American FactFinder is a quick source for population, housing, income and geographic data. For other census items and trends visit http://factfinder.census.gov/home/saff/main.html?_lan