

The Winnebago River Rapid Watershed Assessment (RWA) provides initial estimates of where conservation investments would best address the resource 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 to conserve and improve soil and water resources.

The Winnebago River 8-Digit Hydrologic Unit Code (HUC) watershed contains 440,244 acres (1). Thirty-six percent of the watershed is in Cerro Gordo County, Iowa, 30 percent in Winnebago County, Iowa, 17 percent in Worth County, Iowa, 10 percent in Freeborn County, Minnesota, 6 percent in Hancock County, Iowa, and the remaining 1 percent is split between Floyd County, Iowa, and Faribault County, Minnesota (1). Eighty-nine percent of the watershed is privately owned, 3 percent is publicly owned, and the remaining 8 percent is split between municipal areas and private conservation areas (2).

Seventy-three percent of the watershed is in cropland, 11.4 percent is pasture or hayland, 3 percent is woodland or natural areas, 9.2 percent is urban or developed land, and almost 4 percent is in water, including wetlands (3).

Elevations range from 980 feet to 1,445 feet (4). The average watershed slope is 6.3 percent (5). The primary Land Capability Class (LCC) in the watershed is class 2. The LCC breakdown for the watershed is: 11 percent in class 1; 60.7 percent in class 2; 22.7 percent in class 3; 3 percent in class 4; and the remaining 2.6 percent is split between classes 5, 6, 7, and 8 (6). Rainfall ranges from 31 to 35 inches per year (7). The HUC includes one interstate highway (35), three US highways (65, 69, and 18), and two state highways (107 and 9) (8).

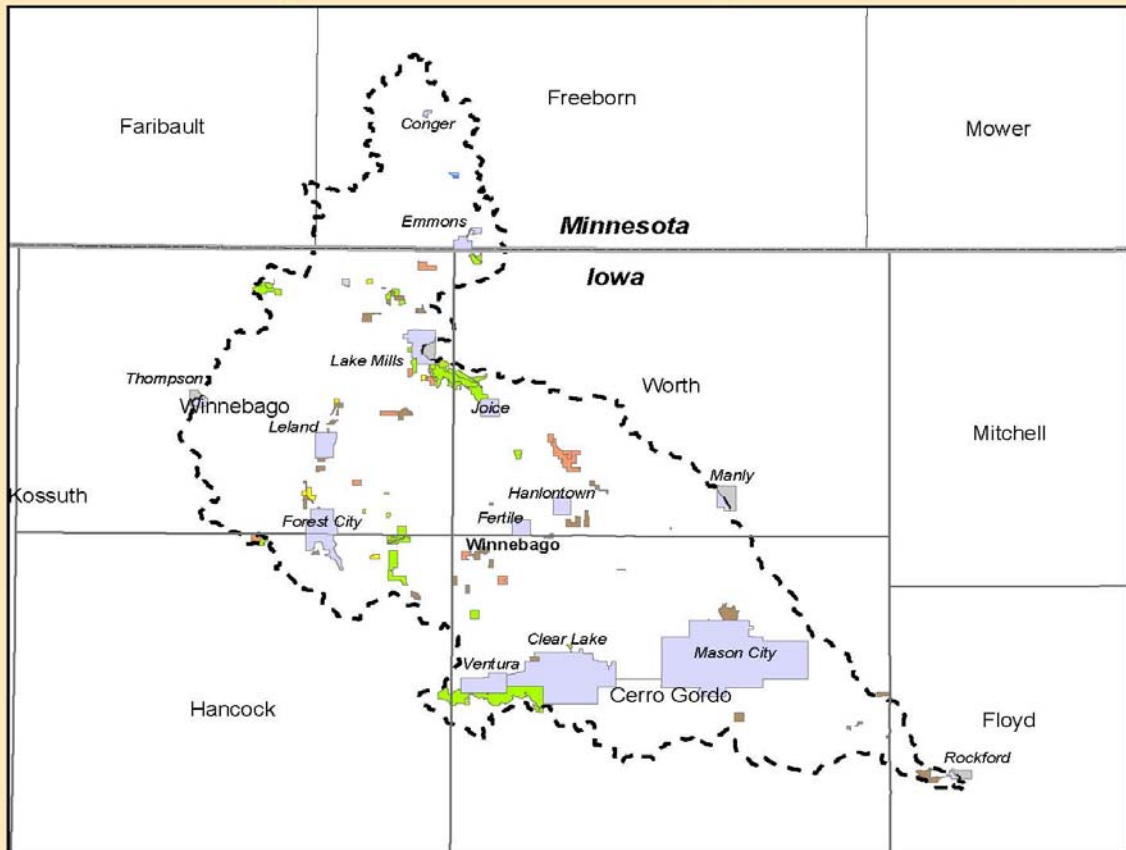
Conservation assistance is provided by six Soil and Water Conservation Districts (SWCD) and Natural Resources Conservation Service (NRCS) field offices located in Mason City, Garner, Thompson, Northwood, and Charles City in Iowa, and Albert Lea and Blue Earth in Minnesota. There are two Resource Conservation and Development (RC&D) offices in Iowa that cover the watershed, including Prairie Winds in Garner and Cedar Valley in Charles City. In addition, there are two RC&D offices in Minnesota including Hiawatha Valley in Rochester and Three Rivers in Mankato. An office locator is found at <http://offices.sc.egov.usda.gov/locator/app>.

The Winnebago River HUC includes 94 NRCS conservation easements totaling 9,385 acres. The easements include the Emergency Watershed Protection (EWP) program and Wetlands Reserve Program (WRP). Fifty-four percent of the easements are in Winnebago County, 27 percent in Worth County, 11 percent in Cerro Gordo County, and 8 percent in Hancock County (9).

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Iowa Rapid Watershed Assessment Winnebago River - Ownership/Stewardship



Ownership	No. Of Areas	Acres
County Conservation Board	48	3,548
FWS	15	2,053
Iowa DNR	51	9,424
Minnesota DNR	1	64
Private Conservation Area	17	625
The Nature Conservancy	2	199
Municipal Areas	18	34,424
Private Agricultural Land	0	389,908

Data Source: 2002 Iowa GAP Landcover Dataset
 2008 Minnesota GAP Landcover Dataset; Minnesota DNR
 Iowa DNR & Iowa DOT INCORP Data Set, 1997

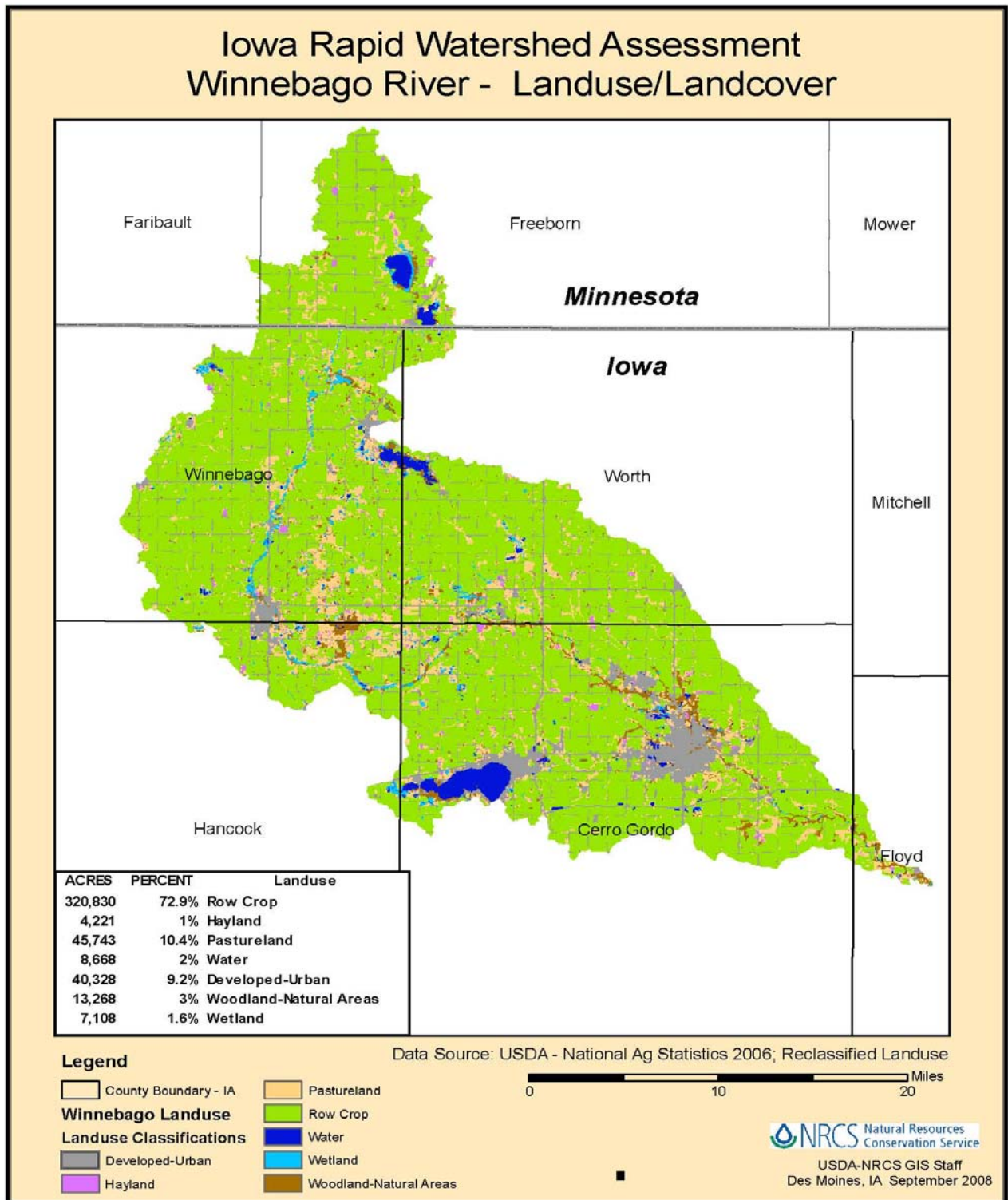
Total Acres in Winnebago River Watershed - 440,245
 Municipal City Boundary Acres - 34,424 (7.8% of basin)
 GAP Stewardship Acres - 15,913 (3.6% of basin)
 Private Agricultural Land Acres - 389,908 (88.6% of basin)

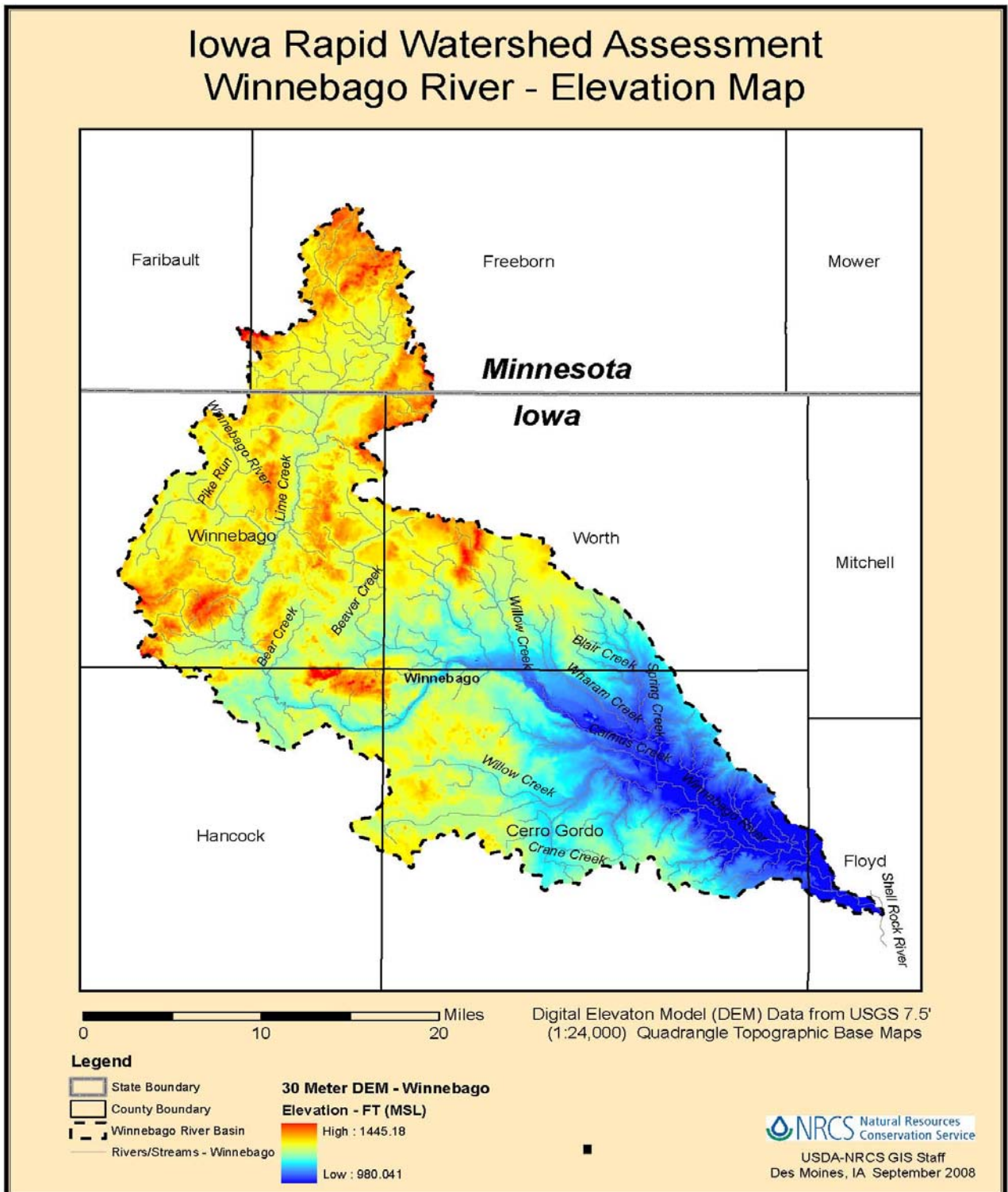
Stewardship data identifies ownership and management
 boundaries for conservation and recreation areas.

Legend

 State Boundary	Stewardship - Winnebago	 Minnesota DNR
 County Boundary - IA	OWNGROUP	 Private
 Cities-Towns	 County Conservation Board	 State Land
	 FWS	 The Nature Conservancy
	 Iowa DNR	

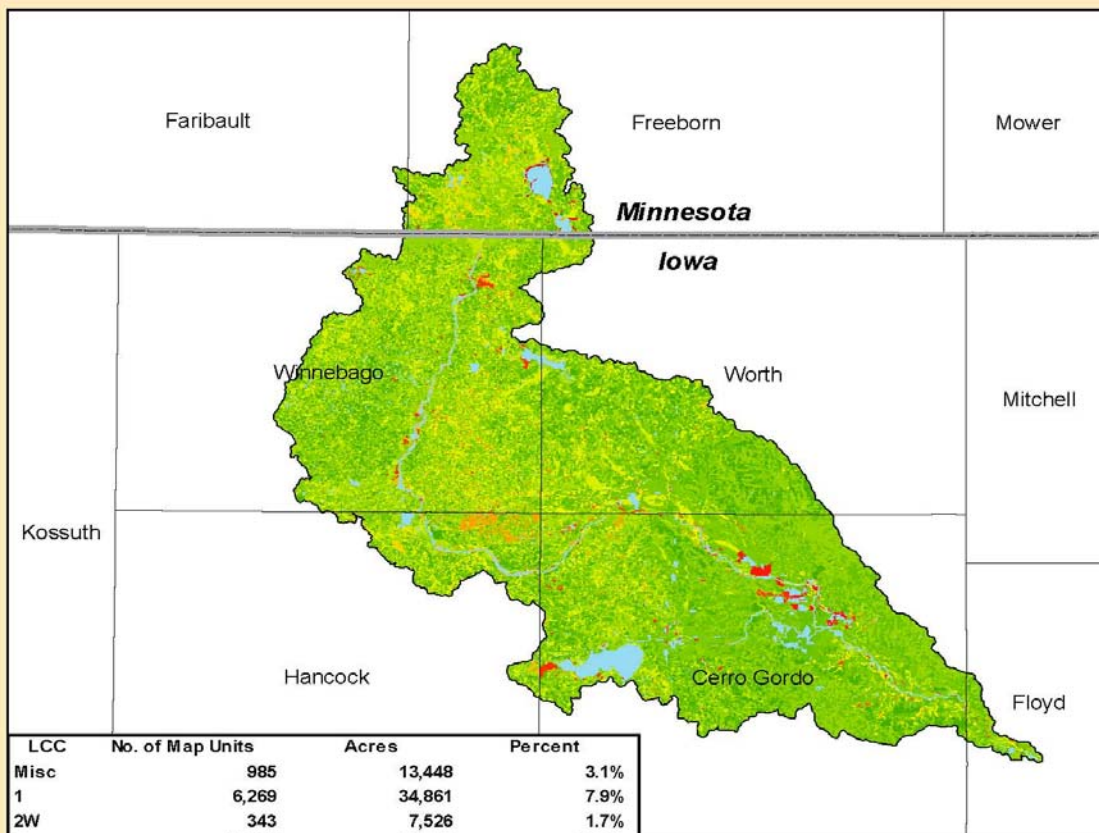
0 10 20 Miles







Iowa Rapid Watershed Assessment Winnebago - Land Capability Class



LCC	No. of Map Units	Acres	Percent
Misc	985	13,448	3.1%
1	6,269	34,861	7.9%
2W	343	7,526	1.7%
2e	13,627	98,101	22.3%
2s	2,447	25,346	5.8%
2w	12,441	136,222	30.9%
3e	11,526	54,776	12.4%
3s	674	5,604	1.3%
3w	6,340	39,545	9.0%
4e	1,852	7,811	1.8%
4s	635	2,959	0.7%
4w	168	2,003	0.5%
5w	95	2,610	0.6%
6e	778	4,352	1.0%
6s	74	365	0.1%
7e	27	206	0.0%
7s	22	117	0.0%
7w	172	2,363	0.5%
8s	64	1,487	0.3%
8w	29	544	0.1%

*Misc - Includes Water, Pits, Lagoons, Quarries and Ortherents, Loamy type soil

Data Source: Iowa USDA-NRCS Soil Survey
 Des Moines, Iowa, July 2008. Summarized data
 from individual County SSURGO data sets.

0 10 20 Miles

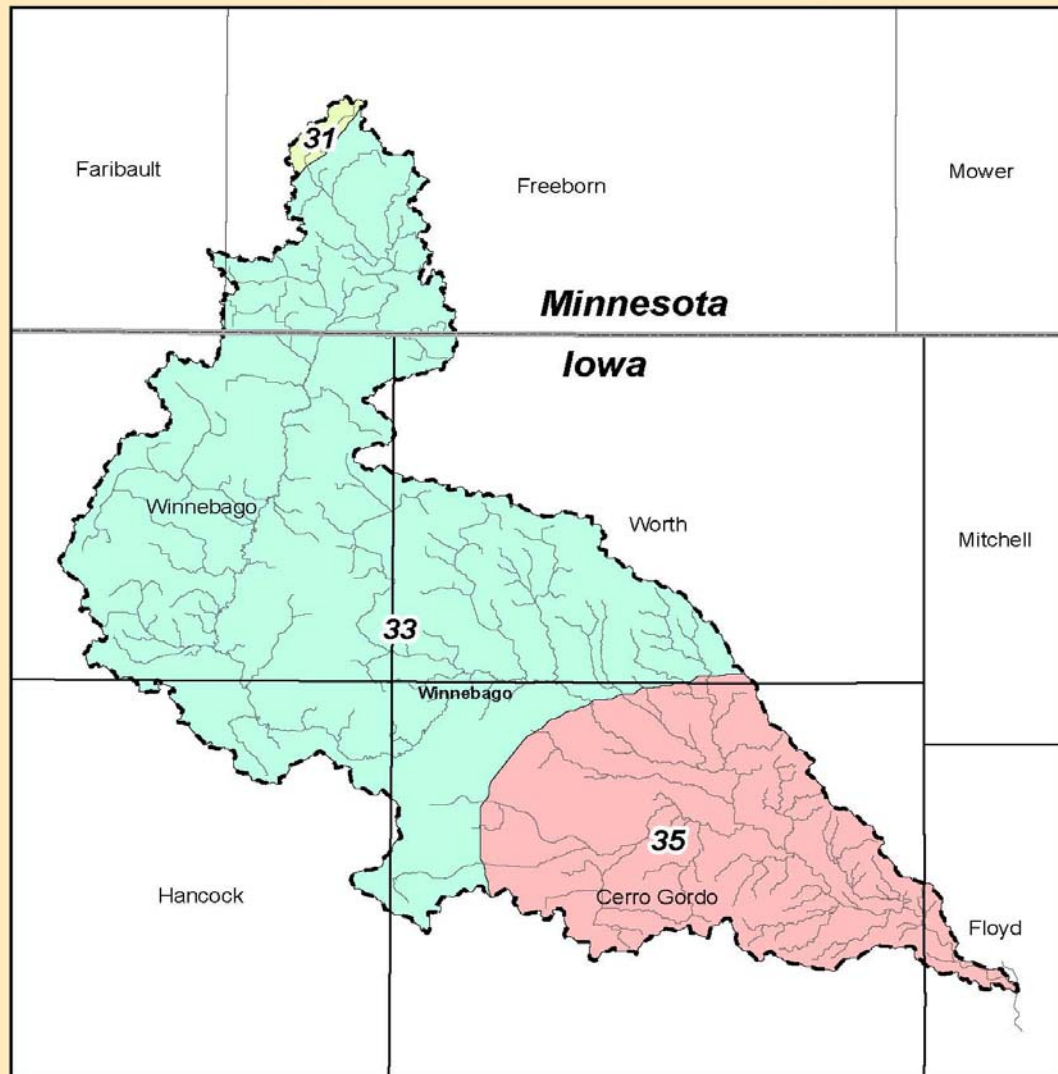
Legend



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 Des Moines, IA October 2008

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Iowa Rapid Watershed Assessment Winnebago River - Annual Precipitation



Data Source: National Climatic Data Center (NCDC)

 Average Rainfall (Inches) from 1961 - 2000

0 10 20 Miles

Legend

-  State Boundary
-  County Boundary - IA
-  Winnebago River Basin
-  Rivers/Streams - Winnebago

Annual Precipitation

RANGE

-  31
-  33
-  35

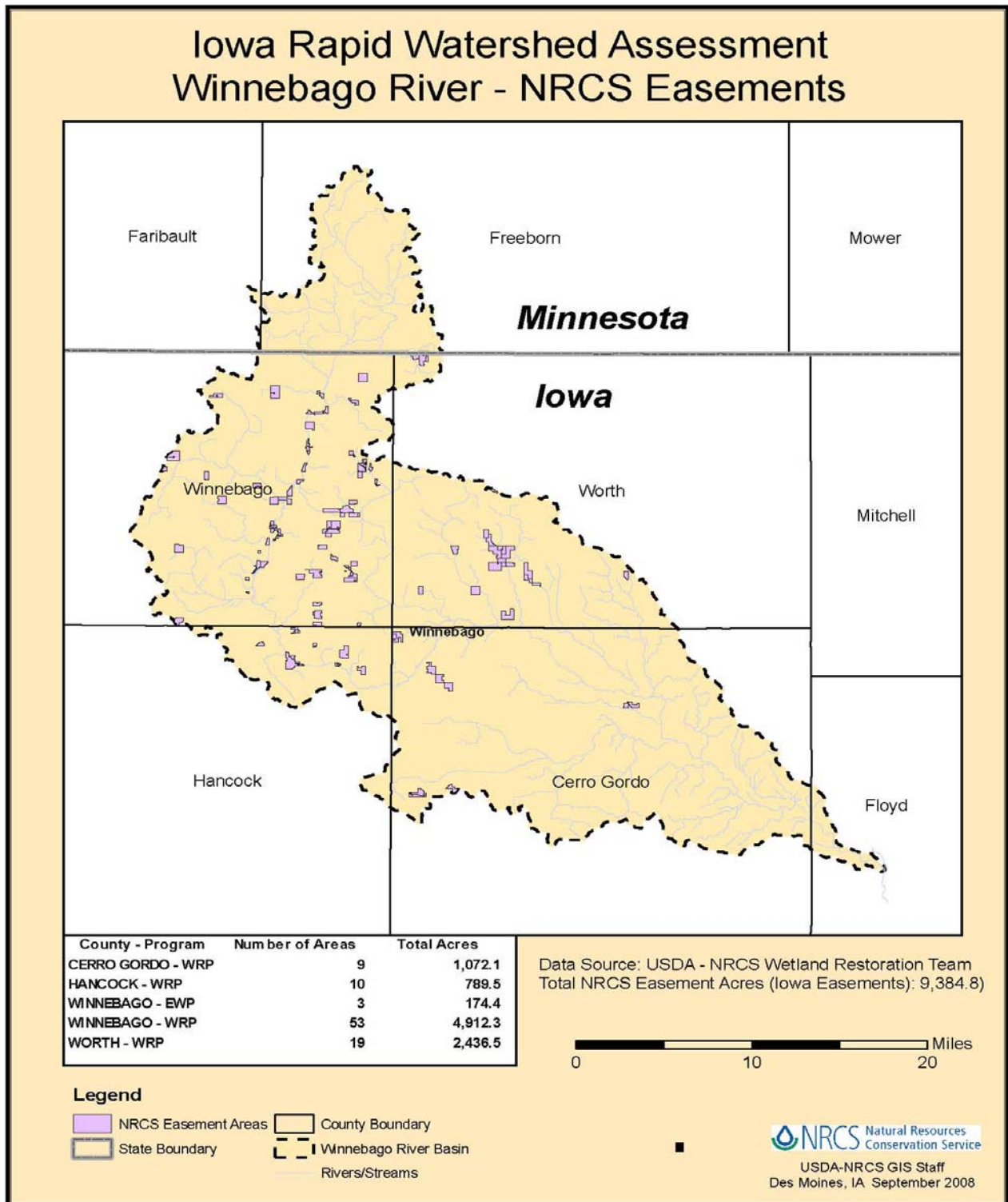
Iowa Rapid Watershed Assessment Winnebago River - Project Map



County	Acres	Percent
Worth County, Iowa	73,157	16.62
Winnebago County, Iowa	131,569	29.89
Hancock County, Iowa	27,125	6.16
Floyd County, Iowa	4,250	0.97
Cerro Gordo County, Iowa	158,441	35.99
Freeborn County, Minnesota	45,252	10.28
Faribault County, Minnesota	451	0.1

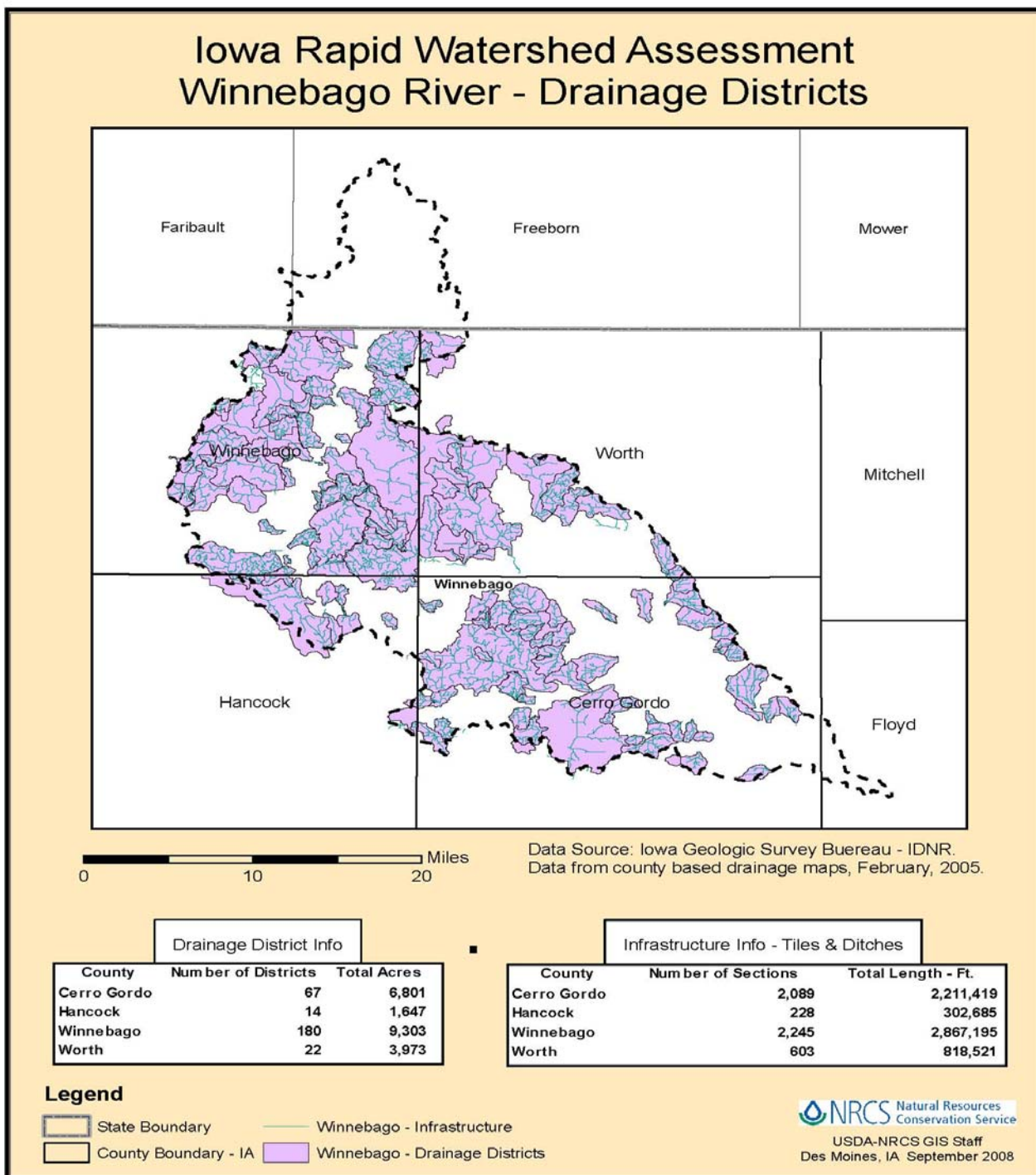
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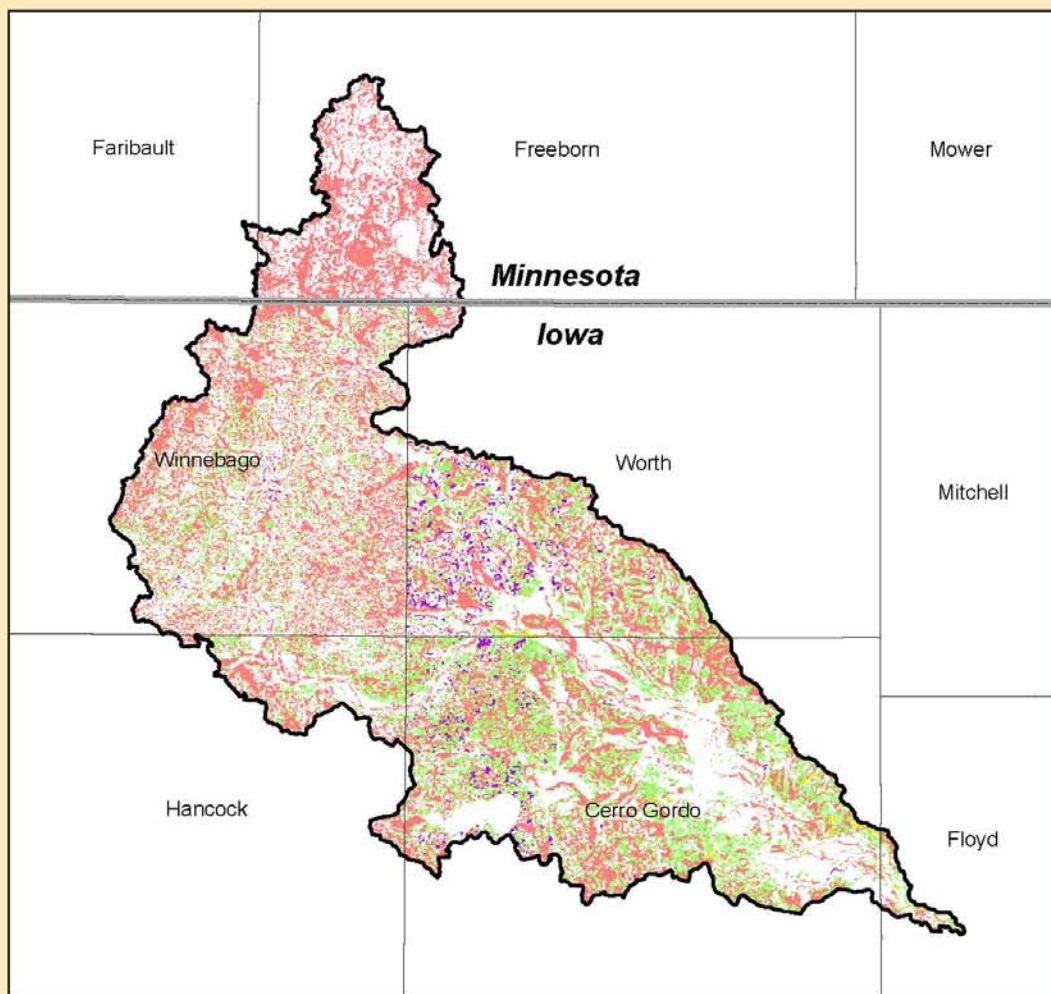


Physical Description

There are 283 drainage districts in the Winnebago River HUC. Sixty-four percent of the districts are located in Winnebago County, 24 percent in Cerro Gordo County, 8 percent in Worth County, and 4 percent in Hancock County (10).











Iowa Rapid Watershed Assessment Winnebago - Percent Hydric Soil Components



0 10 20 Miles

% Hydric Components	Acres	% of Watershed
0%	186,325	42.3%
1 - 25%	73,297	16.6%
26 - 50%	1,025	0.2%
51 - 75%	7,154	1.6%
76 - 100%	172,444	39.2%

Legend

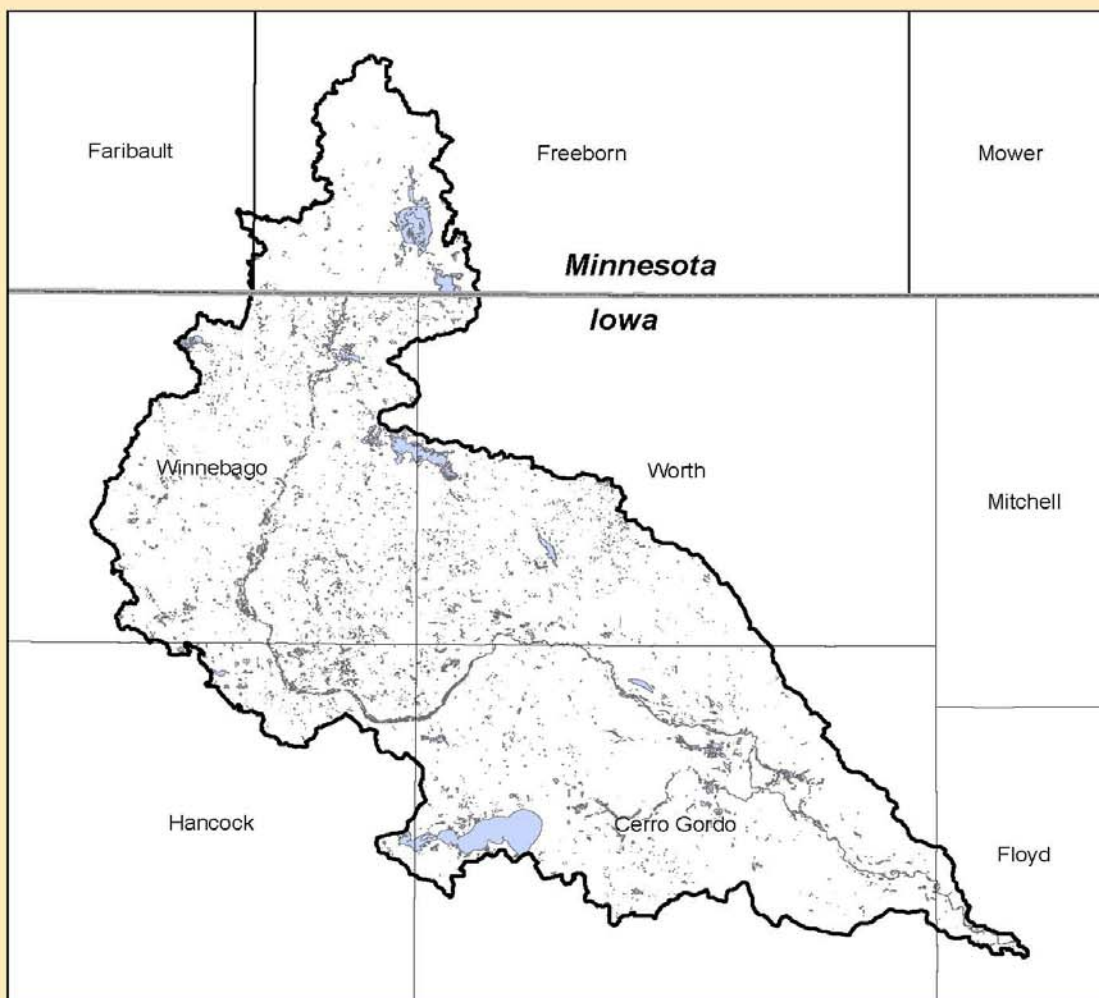
	State Boundary		Hydric Soils 26 - 50
	Watershed Basin		Hydric Soils 51 - 75
	County Boundary		Hydric Soils 76 - 100
			Hydric Soils 0
			Hydric Soils 1 - 25



Data Source: Iowa USDA-NRCS Soil Survey
 Des Moines, Iowa, July 2008. Summarized data
 from individual County SSURGO data sets.

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 Des Moines, IA October 2008





Iowa Rapid Watershed Assessment Winnebago - National Wetland Inventory



0 10 20 Miles

Wetland Type	No. of Areas	Total Acres
Freshwater Emergent Wetland	5,243	9,296
Freshwater Forested/Shrub Wetland	406	564
Freshwater Pond	654	1,170
Lake	25	5,658
Other	28	17
Riverine	16	1,181

Legend

-  State Boundary
-  County Boundary
-  Watershed Basin
-  Wetland Areas - Winnebago



U.S. Fish and Wildlife Service, 200605, ia_nwi: Classification of Wetlands and Deepwater Habitats of the

 United States, U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31.

 U.S. Fish and Wildlife Service, Branch of Habitat Assessment, Washington, D.C..

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 Des Moines, IA October 2008

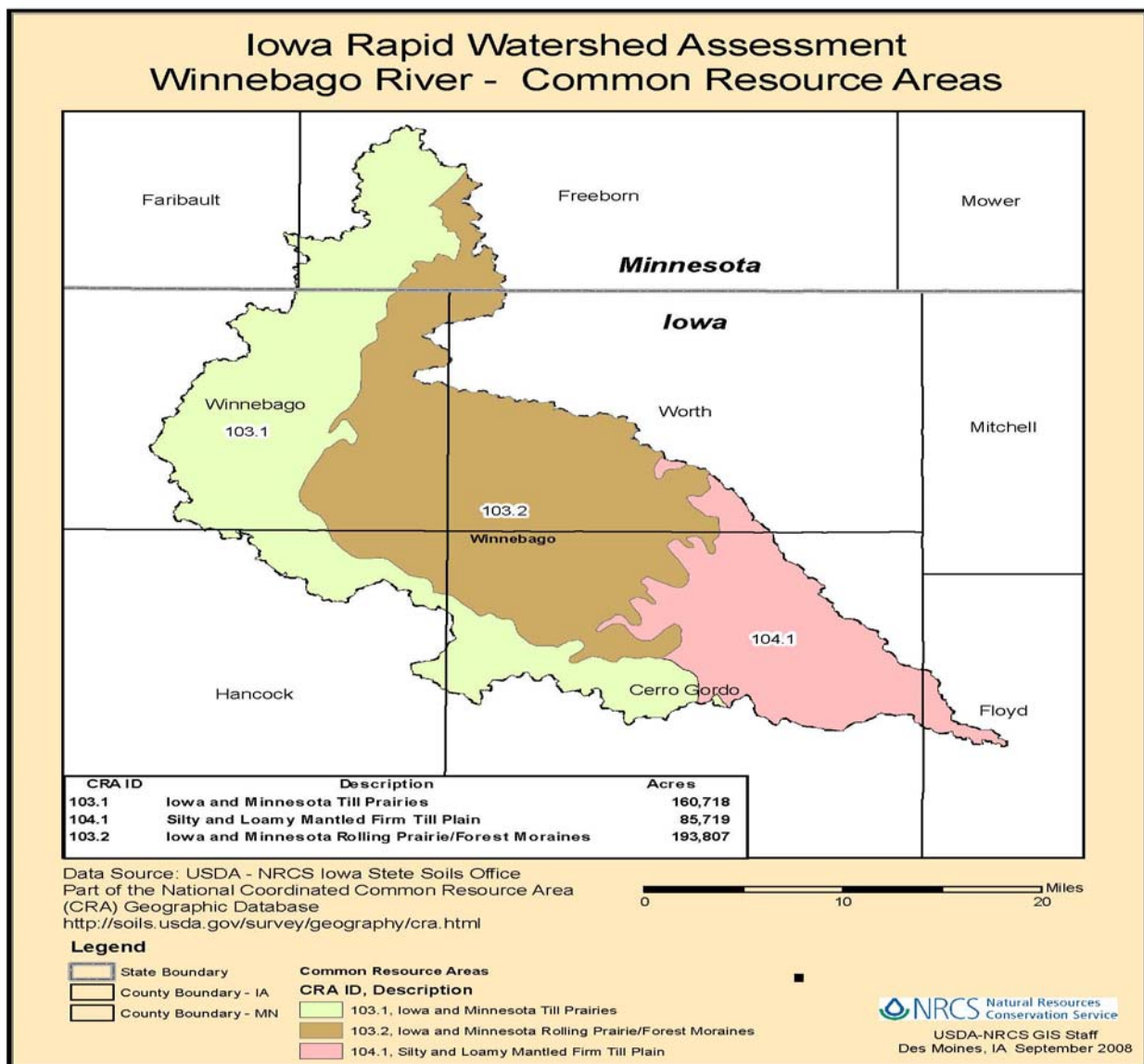
Special Considerations

Drainage laws in Iowa are contained in the Code of Iowa. Chapter 465 applies to individual drainage rights, including tile drainage. Chapter 455 applies to levee and drainage districts, and Chapter 465B applies to the Department of Natural Resources (11). Minnesota Drainage Law is contained in Minnesota Statute Chapter 103.

Legal drainage districts are formed according to state laws. Chapter 455 of the Code of Iowa applies to formation by County Board of Supervisors of legal drainage districts. Two or more landowners can petition for the formation of a drainage district, and single individuals can petition for sub-districts. Once established, installation and maintenance is under the direct control of the County Board of Supervisors or Drainage District Trustees (11).

The Winnebago River HUC includes portions of three National Common Resource Areas (CRA): 103.1; 103.2; and 104.1. Forty-four percent of the watershed is in CRA 103.2, 37 percent in 103.1, and 19 percent in 104.1 (12, 13).

The CRAs delineated below for the Winnebago River HUC are described in the next section (for additional information, see <http://soils.usda.gov/survey/geography/cra.html>). A CRA 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 CRA (General Manual Title 450, Subpart C, §401.21) (12, 13).



Common Resource Area Descriptions (12, 13)

The National Coordinated CRA Geographic Database provides:

- A consistent CRA geographic database;
- CRA geographic data compatible with other GIS data digitized from 1:250,000 scale maps, such as land use/land cover, political boundaries, Digital General Soil Map of the U.S. (updated STATSGO), and ecoregion boundaries;
- A consistent (correlated) geographic index for Conservation Management Guide Sheet information and the eFOTG;
- A geographic linkage with the national MLRA framework.

103.1 Iowa and Minnesota Till – Prairies

Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash, and floodplains. Nearly level to gently undulating with relatively short slopes. Most of the wet soils have been artificially drained to maximize crop production. Primary land use is cropland. Corn, soybeans, sugar beets, peas and sweet corn are the major crops. Native vegetation was dominantly tall grass prairie. Resource concerns are water and wind erosion, nutrient management, and water quality.

103.2 Iowa and Minnesota Rolling Prairie / Forest Moraines

Primarily loamy glacial till soils with some potholes, outwash, and floodplains. 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.

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.

Geology

This watershed is drained by the Winnebago River and its main tributaries, Lime Creek and Beaver Creek. Soils and landforms of the watershed formed in deposits laid down by ice and water during the Pleistocene and Holocene Epochs. Beneath the unconsolidated deposits is Paleozoic bedrock — predominantly Devonian dolomite and limestone, with Ordovician cherty limestone in the far west portion and Devonian shale in the south. Bedrock is rarely exposed except in quarries.

The landscape of the Winnebago RWA area in the upper (western) three-quarters is characterized mainly by wide bands of hummocky terrain, which mark the major glacial end moraines and are pocked by numerous kames and kettles (prairie potholes), glacial lake plains, and small areas of level till plain. The lower (eastern) quarter of the watershed in Cerro Gordo County is gently sloping till plain dissected by narrow and shallow stream valleys. Elevations range from about 1,100 to 1,350 feet in the watershed.

The glacial deposits in the watershed belong to two distinctly different glacial eras, separated temporally by nearly a half million years. The upper portion belongs to the Des Moines Lobe landform region, which geologically speaking is a very young landscape. It is the result of a surging ice lobe that extended southward from the last continental glacier some 12,000 to 14,000 years ago. This late-Wisconsinan ice left a range of deposits, including dense basal till, variable supraglacial till, and a complex suite of sorted sediments — silty lake deposits, sands interstratified with loamy till, and outwash sands and gravels. The lower quarter of the watershed is part of the Iowan Erosion Surface, which developed on much older Pre-Illinoian till as a result of the intense periglacial conditions and strong winds during the Wisconsinan glaciation. The erosion left behind a lag deposit called a “stone line,” which is covered by loamy sediments of variable thickness. Loess mantles the till on isolated topographic highs that survived the widespread erosion.

In the upper three-quarters of the watershed, soils are predominantly loams and clay loams formed in glacial till and glacial lacustrine sediments. The lower portion of the watershed consists mainly of loamy soils that formed in surficial sediments and the underlying till on uplands, and in loamy and sandy alluvium on stream benches in the Winnebago River valley. Drainage class of the soils ranges from poorly-drained to well-drained and is largely dependent on landscape position.

Resource Concerns

Resource Concerns by Land Use

Pasture (14)

Vegetation typically consists of introduced cool season forage. Predominant species are introduced cool season forage, including Kentucky Bluegrass and Smooth Brome grass, with lesser amounts of Tall Fescue and Orchardgrass. Some introduced legumes are present, with White (Ladino) Clover being the most predominant. Some Red Clover, Birdsfoot Trefoil, and Alfalfa included in lesser amounts. Continuous overgrazing is common.

Typically soil erosion as a result of sheet and rill will be less than 1 ton/acre/year. There is evidence of a small amount of gully erosion. Stream bank erosion may be significant because grazing animals typically have unlimited access to streams. In time, undesirable woody species may invade older pastures and decrease the productivity of the forage. Soil compaction on cattle paths and around watering sources can increase soil erosion and create a niche for undesirable plant species. Availability of a reliable watering source can be a hindrance to developing rotational grazing systems.

Hayland (14)

Hayland has been seeded to introduce species, including predominantly Smooth Brome grass and Alfalfa. There also exists Orchardgrass and Red Clover, to a lesser extent. Erosion is not typically a problem on hayland. Nutrient and pest management are often under-utilized. Typically three cuttings of hay are taken from May through early September.

Cropland (15, 16, 17)

Cropland is intensively used, primarily for corn and soybeans production, with a very small amount of oats and meadow as part of a rotation. Corn acres increased in recent years, compared to soybean acres, due to increased grain prices and ethanol plant development.

The average slope is 6.3 percent. Predominant resource concerns on cropland include soil erosion (sheet and rill, gully, and wind); soil compaction; soil eutrophication; weed infestation; and decrease in soil carbon. Over-application of nutrients (commercial and manure-based) and pesticides typically does not meet Iowa NRCS standards. In recent years, no-till systems on soybean acres have increased, although no-till on corn acres has decreased.

Natural Areas/Woodland (18)

Natural areas in Iowa consist mostly of poor quality woodlands, degraded meadow found mostly in odd areas along property corners, fence lines, or abandoned pasture. In many locations, these areas include steeper slopes than cropland and pasture. Vegetation includes a mix of native trees and shrubs with increasing undesirable populations of introduced and noxious species of woody or non-woody plants. Predominant resource concerns include invasive species, classic gully erosion, habitat fragmentation, increasing homogeneity, and land use conversion to cropland.

SWAPA + H stands for soils, water, air, plants, animals, and humans. SWAPA + H is used in watershed and ecosystem planning to identify natural systems and how they relate to social and economic conditions. The table below lists the resource concern priorities of stakeholders and landowners in the watershed.

SWAPA + H Concerns Table (25)

Resource Concerns/Issues by Land Use					
SWAPA*	Specific Resource Concerns / Issues	Cropland	Pasture	Natural Areas	Farmstead
Soil Erosion	Sheet and Rill	X			
	Ephemeral Gully	X			
	Classic Gully		X	X	
	Streambank		X		
	Wind	X			
Water Quality, Surface	Suspended Sediment & Turbidity	X			
	Pesticides	X			
	Excessive Nutrients & Organics		X		
Water Quality, Ground	Excessive Nutrients & Organics	X			X
Soil Condition	Animal Waste & Other Organics (N,P,K)	X			
Plant Condition	Productivity, Health, and Vigor		X		
	Palatability		X		
Domestic Animals	Inadequate Quantity & Quality Feed & Forage		X		
	Inadequate Stock Water		X		
Air Quality	Particulates, Ammonia, CO2				X
Wildlife	Inadequate cover & shelter			X	
	T & E Species			X	

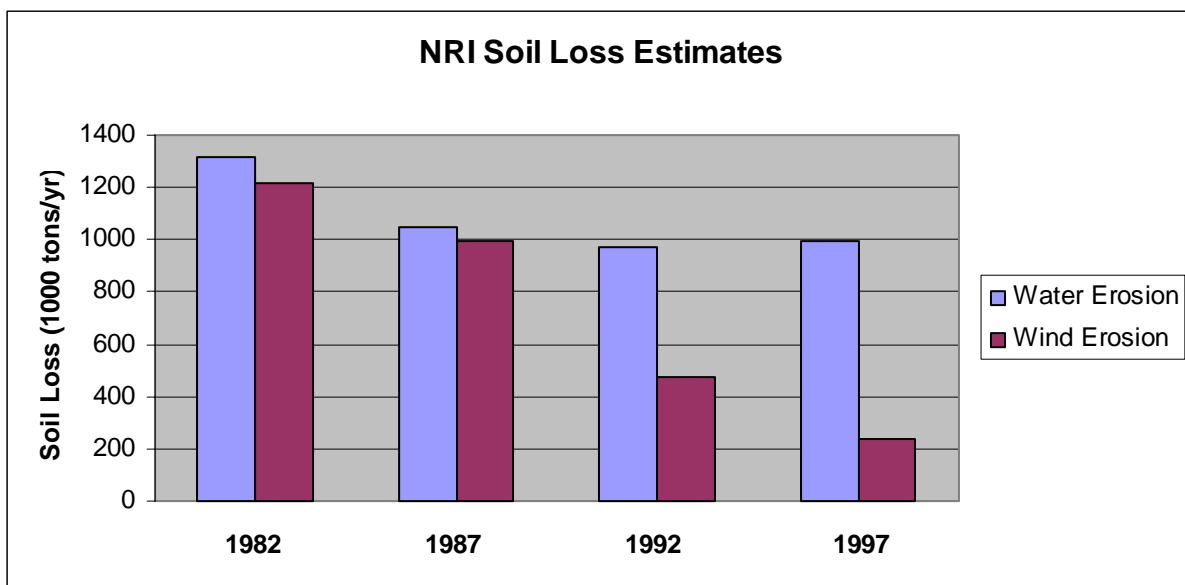
* SWAPA: - Soil, Water, Air, Plants, and Animals

Human Considerations: Implementation of conservation practices and enhancements has the potential for change in management and cost of production. Installation of practices will have an upfront cost and require maintenance. In the short run, increased management may be required as new techniques are learned. Land may be taken out of production for installation of practices or conversion to other uses, such as wildlife habitat. Long term benefits should result from increased soil health, benefits to water quality, improved domestic livestock, air quality, and wildlife habitat. Other considerations by humans in the watershed may include recreation, rural and urban perceptions, market trends and how they relate to conservation practice costs, profitability, and current high land values.

Soil Loss

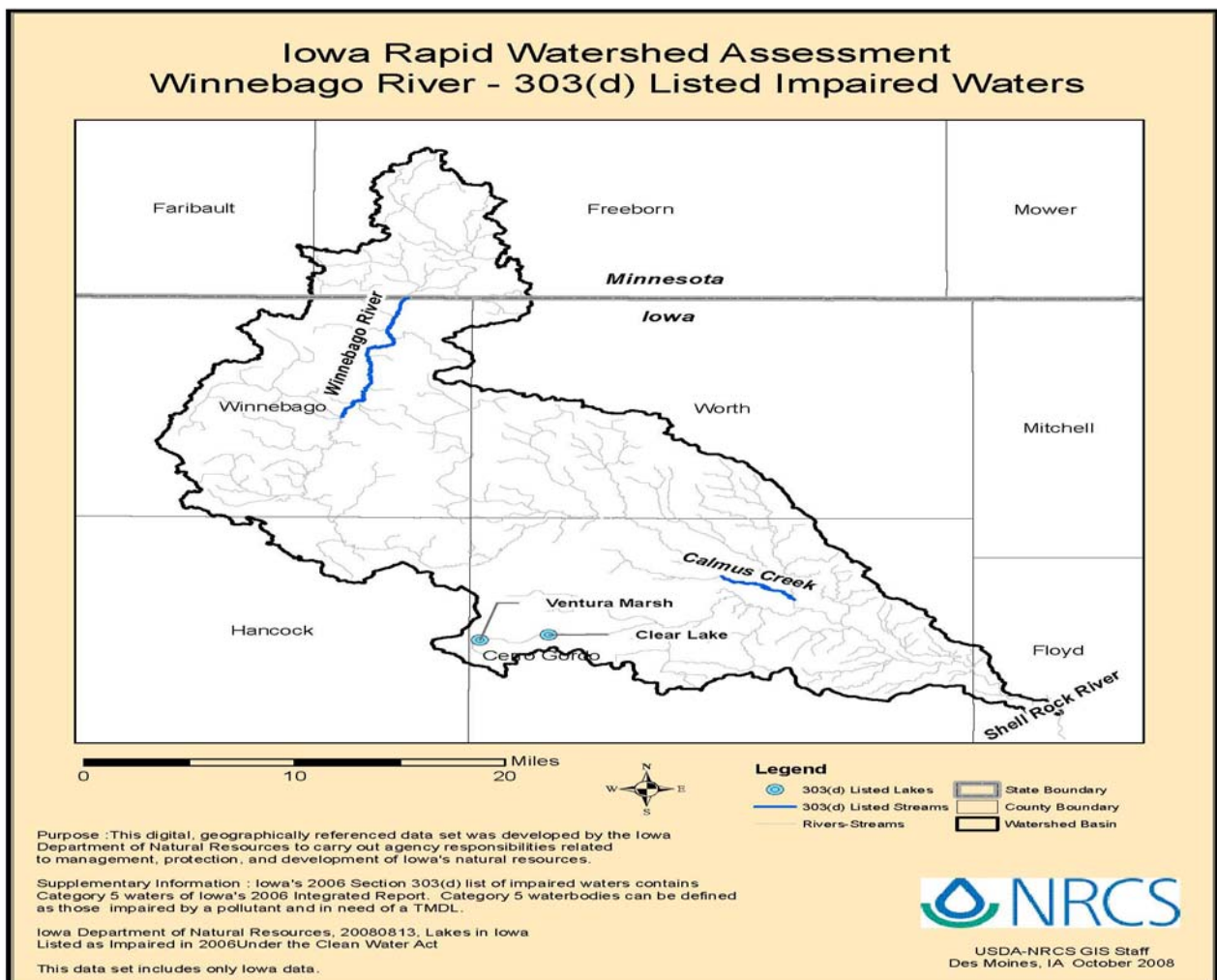
Water erosion (sheet and rill) from cropland accounts for nearly 90 percent of Iowa's soil erosion. In Iowa, there has been a steady decline in sheet and rill erosion from 1982 to 1997, but on average soil erosion remains above the sustainable levels. In order to maintain sustainable levels of soil stability, soil erosion should not exceed 5 tons/acre/year (21).

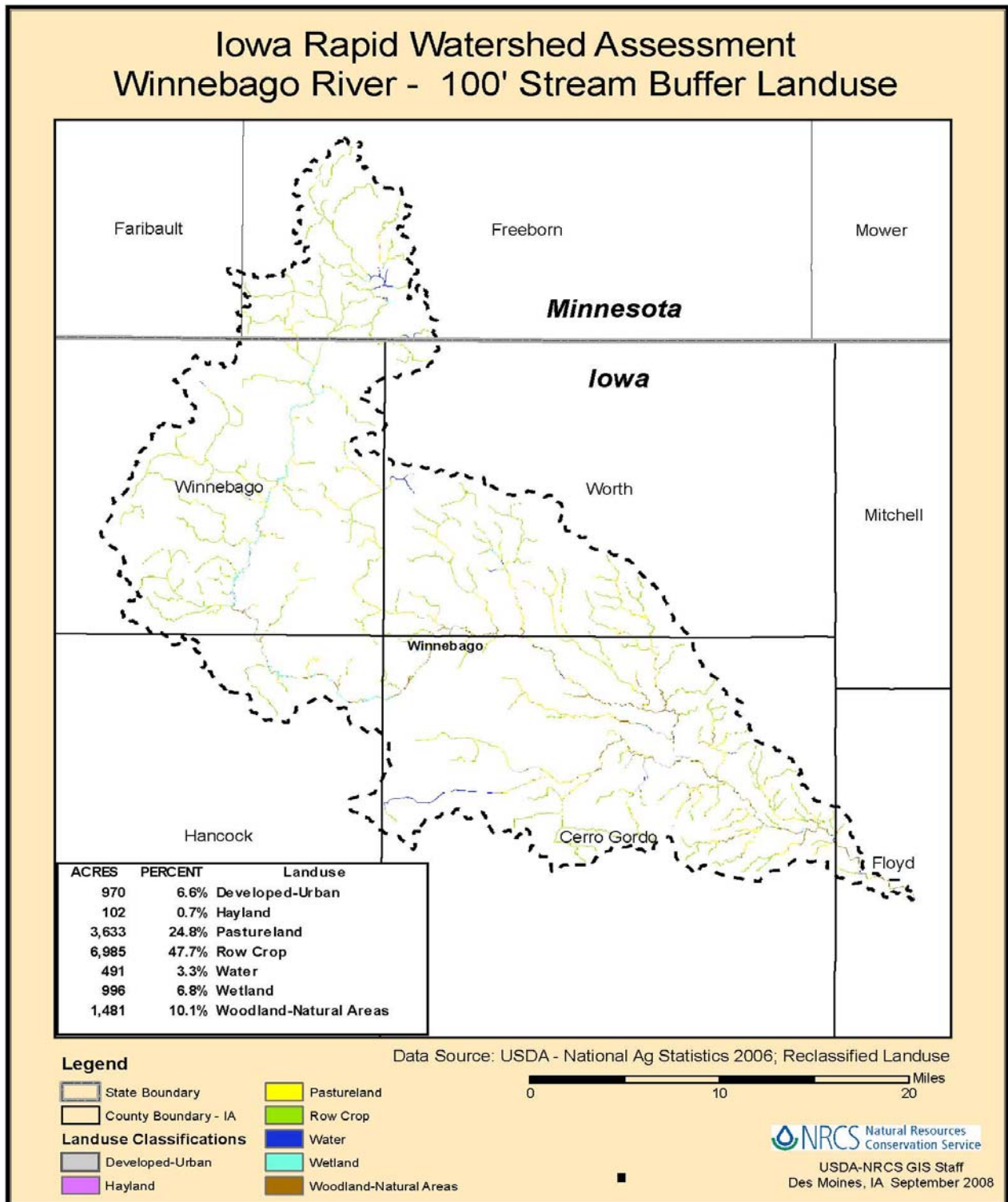
National Resource Inventory (NRI) estimates for sheet and rill erosion by water on cropland and pastureland decreased by approximately 322.1 tons (30 percent) of soil loss between 1982 and 1997. NRCS estimates indicate wind erosion rates decreased by approximately 983.8 tons (81 percent) between 1982 and 1997 (21).



Under Section 303(d) of the Clean Water Act, states are required from "time to time" to submit a list of waters for which effluent limits will not be sufficient to meet all state water quality standards. EPA has defined "time to time" to mean April 1 of even numbered years. The failure to meet water quality standards might be due to an individual pollutant, multiple pollutants, "pollution," or an unknown cause of impairment. The 303(d) listing process includes waters impaired by point sources and nonpoint sources of pollutants. States must also establish a priority ranking for the listed waters, taking into account the severity of pollution and uses. The EPA regulations that govern 303(d) listing can be found in the Code of Federal Regulations 40 CFR 130.7.

The Iowa Department of Natural Resources compiles this impaired water list, or 303(d) listing. The 303(d) listing is composed of those lakes, wetlands, streams, rivers, and portions of rivers that do not meet all state water quality standards. These are considered "impaired waterbodies" and states are required to calculate total maximum daily loads (TMDLs) for pollutants causing impairments (22).





Winnebago River – 07080203

8-Digit Hydrologic Unit Profile

November 2008

Water Quality Concerns Data Graph/Table (23)

Impaired Water Bodies	Stream Miles	Suspended Solids	Nutrients	Ammonia	Bacteria & Pathogens	Temperature	Turbidity	Flow Alteration	Algal Growth	Other or Unknown
Calmus Creek (WIN-0050_0)	5.0									X
Clear Lake (WIN-00450-L_0)	3684 acres		X		X		X		X	
Ventura Marsh (WIN-00456-L_0)	225 acres	X					X		X	
Winnebago River (WIN-0020_2)	85.4									X

Impaired and TMDL Needed

Other Impairments, TMDL not needed

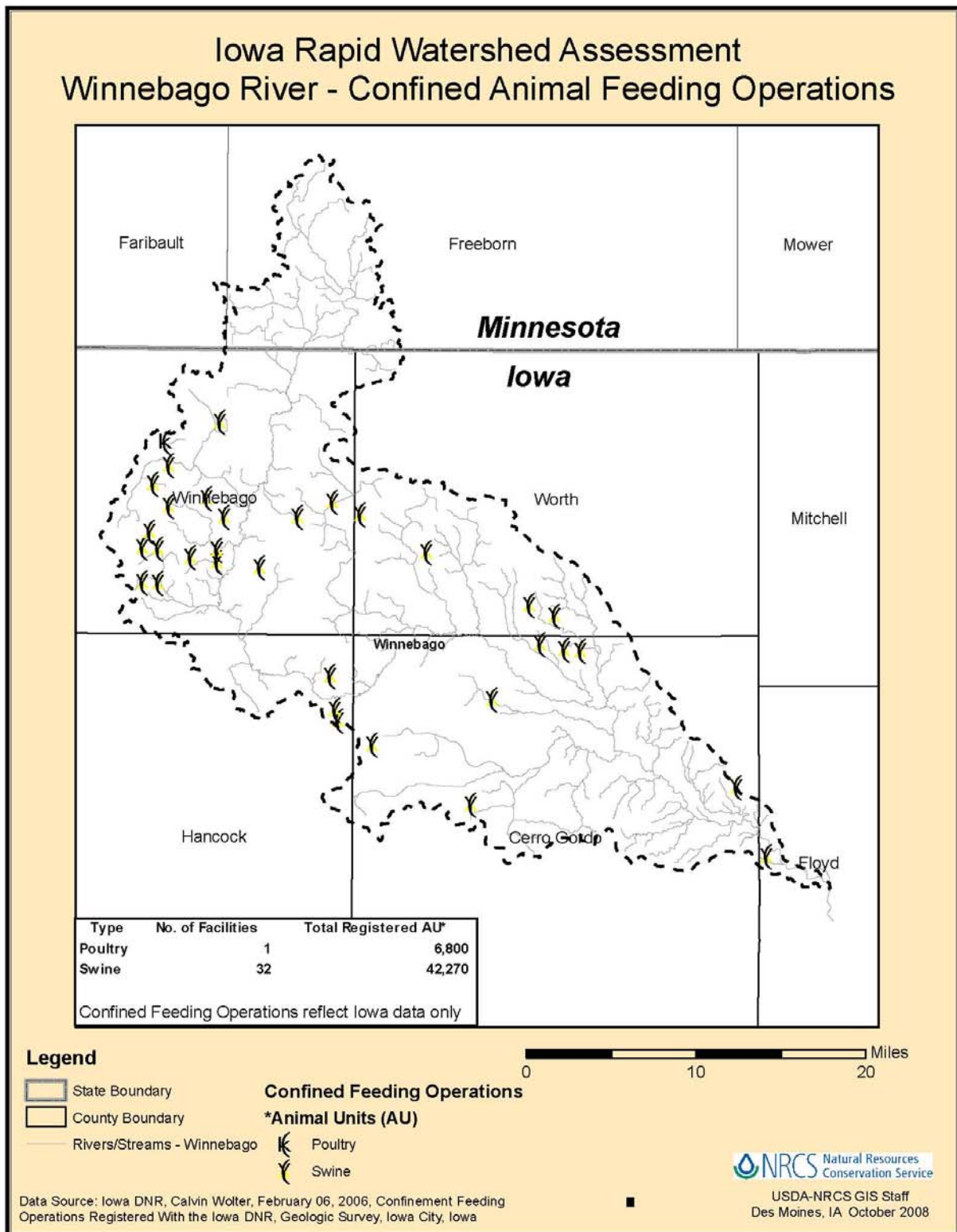
Impaired, TMDL Complete & Approved

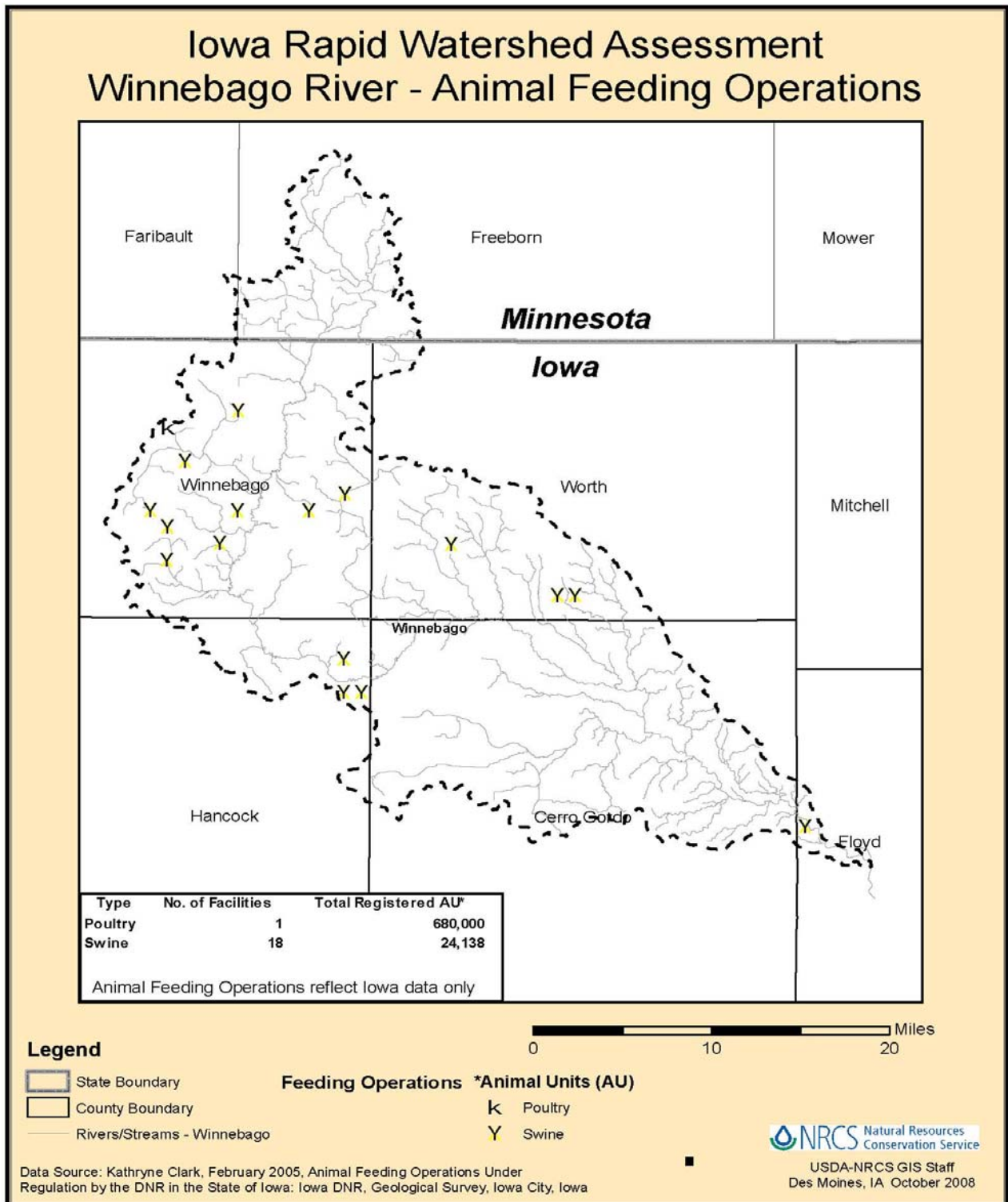
Watershed Projects, Plans, Studies, and Assessments *	
<i>Federal:</i>	<i>State:</i>
NRCS Watershed Plans/Studies/Assessments	IDNR TMDLs
Winnebago River Rapid Watershed Assessment (10/08)	Clear Lake (2005)
Upper Winnebago River Watershed Project - EPA (2007)	IDNR 319 Projects
	Clear Lake Enhancement and Restoration Project (ongoing)

* Listing includes past efforts in the watershed and ongoing studies and assessments.

Sediment, nutrients, pathogens, and their affects are the major pollutants impacting surface waters of the Winnebago River Watershed. Surface waters, especially lakes and ponds, have a repeated history of algal blooms. A variety of human activities contribute directly to pollutant loads in the water bodies, including intensive row crop agriculture; urban storm run off; failing septic systems; and Confined Animal Feeding Operations (CAFOs). The change in hydrology due to stream channel straightening, subsurface drainage systems, wetland destruction, and lack of perennial groundcover has resulted in flashy stream flows, thus contributing to stream down cutting and increased stream bank instability.

Conservation practices that can be used to address these water quality issues include erosion control structures, residue management, nutrient management, riparian buffers, drainage control structures, wetland restoration, urban Best Management Practices (BMPs), and improved septic systems (24).





Winnebago River – 07080203 8-Digit Hydrologic Unit Profile

November 2008

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
Birds	Bald Eagle (<i>Haliaeetus leucocephalus</i>)	E								
	Black Tern (<i>Chilidonias niger</i>)	C	E							
	Northern Harrier (<i>Circus cyaneus</i>)	E								
	Common Moorhen (<i>Gallinula chloropus</i>)	C								
Mammals	Southern Red-backed Vole (<i>Clethrionomys gapperi</i>)	E								
	Spotted Skunk (<i>Spilogale putorius</i>)	E								
Reptile	Blandings Turtle (<i>Emydoidea blandingii</i>)	T								
	Ornate Box Turtle (<i>Terrapene ornata</i>)	T								
	Wood Turtle (<i>Clemmys insculpta</i>)	E								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Smooth Green Snake (<i>Liochlorophis vernalis</i>)	C								
Fish	Black Redhorse (<i>Moxostoma duquesnel</i>)	T								
	Pearl Dace (<i>Margariscus margarita</i>)	E								
	American Brook Lamprey (<i>Lampetra appendix</i>)	T								
	Topeka Shiner (<i>Notropis topeka</i>)	T	E							
Mussel	Creek Heelsplitter (<i>Lasmigona compressa</i>)	T								
	Yellow Sandshell (<i>Lampsilis teres</i>)	E								
	Ellipse (<i>Venustaconcha ellipsiformis</i>)	T								
	Mucket (<i>Actinonaias ligamentina</i>)	T								
	Slippershell Mussel (<i>Alasmidonta viridis</i>)	E								
	Round Pigtoe (<i>Pleurobema sintoxia</i>)	E								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
Insects	Cylindrical Papershell (<i>Anodontoides ferussacianus</i>)	T								
	Creeper (<i>Strophitus undulatus</i>)	T								
	Baltimore (<i>Euphydryas phaeton</i>)	T								
	Silvery Blue (<i>Glaucopsyche lygdamus</i>)	T								
	Powesheik Skipperling (<i>Oarisma powesheik</i>)	T								
	Acadian Hairstreak (<i>Satyrrium acadicum</i>)	C								
	Arogos Skipper (<i>Atrytone arogos</i>)	C								
	Broad-winged Skipper (<i>Poanes viator</i>)	C								
	Dion Skipper (<i>Euphyes dion</i>)	C								
	Regal Fritillary (<i>Speyeria idalia</i>)	C								
Plants (Dicot)	Bog Bedstraw (<i>Galium labradoricum</i>)	E								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Bog Willow (<i>Salix pedicellaris</i>)	T								
	Broadleaf Water-milfoil (<i>Myriophyllum heterophyllum</i>)	C								
	Buckbean (<i>Menyanthes trifoliata</i>)	T								
Plants (Dicots) (cont.)	Cutleaf Water-milfoil (<i>Myriophyllum pinnatum</i>)	C								
	Ragwort (<i>Senecio pseudareus</i>)	C								
	Rush Aster (<i>Symphyotrichum boreale</i>)	T								
	Sage Willow (<i>Salix candida</i>)	C								
	Showy Milkweed (<i>Asclepias speciosa</i>)	T								
	Swamp Thistle (<i>Cirsium muticum</i>)	C								
	Yellow Monkey Flower (<i>Mimulus glabratus</i>)	T								
	Purple Angelica (<i>Angelica atropurpurea</i>)	C								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Small Fringed Gentian (<i>Gentianopsis procera</i>)	C								
	Valerian (<i>Valeriana edulis</i>)	C								
	Water Shield (<i>Brasenia schreberi</i>)	C								
	Flat Top Aster (<i>Doellinger umbellata</i>)	C								
Plants (Dicots) (cont.)	Lesser Bladderwort (<i>Utricularia minor</i>)	C								
	Roundleaf Sundew (<i>Drosera rotundifolia</i>)	E								
	Brook Lobelia (<i>Lobelia kalmii</i>)	C								
	Common Mare's-tail (<i>Hippuris vulgaris</i>)	C								
	Earleaf Foxglove (<i>Tomanthera auriculata</i>)	C								
	Fragrant False Indigo (<i>Amorpha nan</i>)	T								
	Pale Corydalis (<i>Corydalis sempervirens</i>)	T								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Prairie Bush Clover (<i>Lespedeza leptostachya</i>)	T	T							
	Shining Willow (<i>Salix lucida</i>)	T								
	Water Marigold (<i>Megalodonta beckii</i>)	E								
	Glade Mallow (<i>Napaea dioica</i>)	C								
	Hill's Thistle (<i>Cirsium hillii</i>)	C								
Plants (Dicots) (cont.)	Kitten Tails (<i>Besseyia bullii</i>)	T								
	Muskroot (<i>Adoxa moschatellina</i>)	C								
	Pink Milkwort (<i>Polygala incarnata</i>)	T								
	Shrubby Cinquefoil (<i>Potentilla fruticosa</i>)	T								
	Sullivant's Milkweed (<i>Asclepias sullivantii</i>)	T								
	Tuberous Indian-plantain (<i>Arnoglossum plantagineum</i>)	C								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	White Wild Indigo (<i>Baptisia alba</i>)	T								
	Beaked Snakeroot (<i>Sanicula trifoliata</i>)	C								
Plants (Monocots)	Arrow Grass (<i>Triglochin maritimum</i>)	T								
	Nuttall Pondweed (<i>Potamogeton epihydrus</i>)	C								
Plants (monocots) (cont.)	Showy Lady's Slipper (<i>Cypripedium reginae</i>)	T								
	Small White Lady's Slipper (<i>Cypripedium candidum</i>)	C								
	Spiral Pondweed (<i>Potamogeton spirillis</i>)	C								
	Tall Cotton Grass (<i>Eriophorum angustifolium</i>)	C								
	Crawe Sedge (<i>Carex crawei</i>)	C								
	Leafy Northern Green Orchid (<i>Platanthera hyperborea</i>)	T								
	Richardson Sedge (<i>Carex richardsonii</i>)	C								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
Plants (Monocots) (cont.)	Vasey Pondweed (<i>Potamogeton vaseyi</i>)	C								
	Creeping Sedge (<i>Carex chordorrhiza</i>)	E								
	Green's Rush (<i>Juncus greenei</i>)	C								
	Large-leaf Pondweed (<i>Potamogeton amplifolius</i>)	C								
	Ovate Spikerush (<i>Eleocharis ovata</i>)	C								
	Philadelphia Panic Grass (<i>Panicum philadelphicum</i>)	T								
	Star Sedge (<i>Carex cephalantha</i>)	C								
	Shore Sedge (<i>Carex limosa</i>)	C								
	Slender Cotton Grass (<i>Eriophorum gracile</i>)	T								
	Western Prairie Fringed Orchid (<i>Platanthera praeclara</i>)	T	T							
	Beakrush (<i>Rhynchospora capillacea</i>)	T								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Lesser Panicked Sedge (<i>Carex diandra</i>)	C								
	Slender Arrow Grass (<i>Triglochin palustris</i>)	T								
	Slender Cotton Grass (<i>Eriophorum gracile</i>)	T								
	Smith Bulrush (<i>Scirpus smithii</i>)	C								
	Straight-leaf Pondweed (<i>Potamogeton strictifolius</i>)	C								
	Field Sedge (<i>Carex conoidea</i>)	C								
	Grass Pink (<i>Calopogon tuberosus</i>)	C								
	Rattlesnake Master (<i>Eryngium yuccaefolium</i>)	C								
Pteridophytes	Meadow Spikemoss (<i>Selaginella eclipses</i>)	E								
	Oak Fern (<i>Gymnocarpium dryopteris</i>)	T								
	Norther Adder's-tongue (<i>Ophioglossum pusillum</i>)	C								

Threatened and Endangered Species (19, 20)										
	SPECIES	Status		County						
		State	Federal	Faribault (MN)	Freeborn (MN)	Cerro Gordo	Floyd	Hancock	Winnebago	Worth
	Prairie Moonwort (<i>Botrychium capestre</i>)	C								
Amphibians	Mudpuppy (<i>Necturus maculosus</i>)	T								
Gymnosperms	Creeping Juniper (<i>Juniperus horizontalis</i>)	T								

E = Endangered Specie
 T = Threatened Specie
 C = Candidate/Species of Concern

Census and Social Data

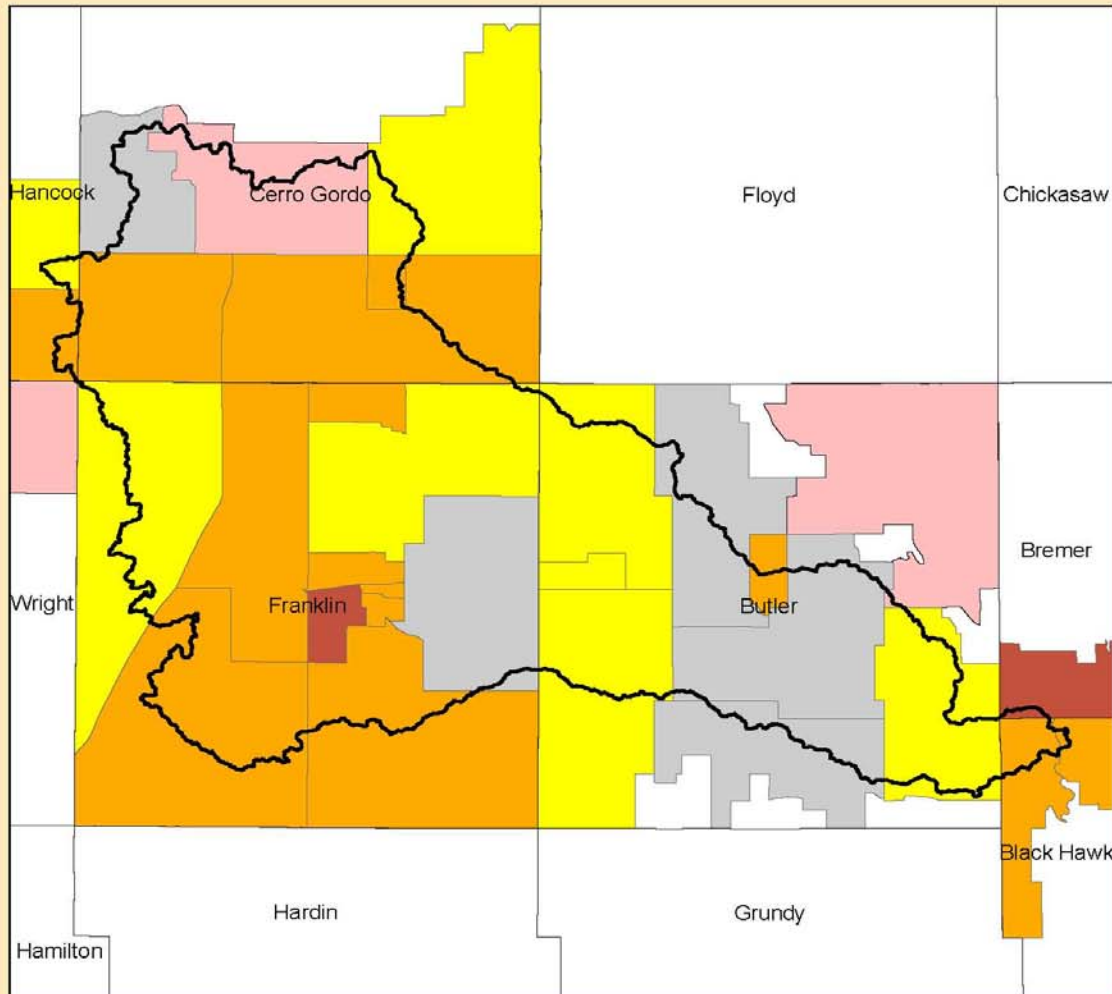
There are 1,021 total farm operators in the watershed. Of these, 971 are male and 50 are female. There are 602 principal operators, including 69 percent working full time on the farm (27).

There are 753 farms in the Winnebago River Watershed, with farm size ranging from one acre to over 1,000 acres. Size of farms: 8 percent are 1-9 acres; 22 percent are 10-49 acres; 20 percent are 50-179 acres; 23 percent are 180-499 acres; 15 percent are 500-999 acres; and 11 percent are over 1,000 acres.

The Census of Agriculture is authorized under PL 105-113 and uses the definition of a farm as any place from which \$1,000 or more of agricultural products are produced and sold, or normally would have been sold, during the census year (27).

Limiting factors to conservation practice application include such human issues as lack of knowledge, prohibitive costs, lack of management knowledge and skills, resistance to changes in crop yield and profitability (28).

Iowa Rapid Watershed Assessment West Fork of the Cedar - 2000 Census Population



0 10 20 Miles

Legend

	State Boundary		900 - 1100
	County Boundary		700 - 900
	Watershed Basin - WFC		1300 - 1600
			1100 - 1300
			500 - 700



USDA/NRCS - National Cartography & Geospatial Center
 Title: Processed US Census Bureau TIGER Line Files
 2000 & 2002 Data Summary and Feature Files

USDA-NRCS GIS Staff
 Des Moines, IA, October 2008

Total Farms By Size Per County Winnebago Watershed

COUNTY	Acres	Percent of Co.	1 -9 Acr	10 - 49 Ac	50 - 179 A	180 - 499 A	500 - 999 A	> 1000 Acres	Total Farms
Worth	73,157	16.62%	5	22	19	21	18	11	96
Winnebago	131,569	29.89%	16	41	38	46	26	22	189
Hancock	27,125	6.16%	4	9	10	14	9	5	51
Floyd	4,250	0.97%	1	2	2	2	1	1	9
Cerro Gordo	158,441	35.99%	24	66	55	61	45	36	287
Freeborn	45,252	10.28%	10	28	28	26	17	11	120
Faribault	451	0.10%	0	0	0	0	0	0	0
	440,245	100%	60	168	152	170	116	86	752

Data Source: 2002 National Ag Statistics

County numbers obtained by correlating the percent county which lies within the watershed to determine an estimated number (shown in table).

NASS Farm Operators Winnebago Watershed

COUNTY	STATE	Ac. Co. In Wtshd	% Co. In Wtshd	All Operators	Female Op	Male Op	Principal Operators	Full Time Op	Part Time Op
Faribault	Minnesota	451	0.10%	1	0	1	0	0	0
Freeborn	Minnesota	45,252	10.28%	114	6	108	68	49	19
Worth	Iowa	73,157	16.62%	168	8	160	96	63	33
Winnebago	Iowa	131,569	29.89%	323	19	304	202	142	60
Hancock	Iowa	27,125	6.16%	61	2	59	32	19	13
Floyd	Iowa	4,250	0.97%	12	1	11	6	5	1
Cerro Gordo	Iowa	158,432	35.99%	342	14	328	198	137	61
		440,245	100%	1,021	50	971	602	415	187

Data Source: 2002 National Ag Statistics
 County numbers obtained by correlating the percent county which lies
 within the watershed to determine an estimated number (shown in table).

Principal Operators - Person considered to be primarily responsible for managing operations on a farm.
 Full Time - Works > 200 Days per year conducting farming activities
 Part Time - Works < 200 Days per year conducting farming activities

Resource Concern Trends

Focus of Past 7 Years of Progress

Efforts in the past seven years have included: promotion of conservation tillage and no-till; promotion of Conservation Reserve Program (CRP) and contract extensions to protect sensitive lands; applying comprehensive nutrient management plans; pest management plans; and water monitoring through IOWATER (Iowa's volunteer water monitoring program).

Increase in ethanol plant manufacturing utilizes crop residues which adversely affects soil quality and increases soil erosion. This creates more of a need for increased conservation efforts.

Resource Concerns that Require Ongoing Attention

Water quality concerns are increased by manure from livestock that is commonly spread on cropland as fertilizer. Using manure as a fertilizer creates potential water quality challenges from bacteria and nutrients delivered through runoff and subsurface drainage (29). Additional water quality concerns include cattle feedlots and pastures, especially with livestock grazing along streams. Grazing along streams also creates problems with stream bank stability and creates erosion, which is reduced when management restricts cattle access.

Water quality issues created a fish kill estimated at 31,000 fish valued at \$63,000 in May of 2008. The fish kill happened along about 16 miles of the river between the Iowa towns of Forest City and Fertile. The probable cause is silage that flowed into the Winnebago River from Silver Creek and caused reduced oxygen levels in the river (30).

Underground storage tanks create resource issues due to storage of substances, primarily petroleum products (31).

In the state of Iowa, as of November 2008, there were approximately 60 biofuel plants that are in operation or under construction. At this time, there are three ethanol plants and one biodiesel plant in operation in the Winnebago River Watershed. It is reported that 2 – 4 gallons of water is required for every gallon of biofuel produced, creating a concern about water quantity (32).

Soil erosion by water is an ongoing concern, especially on cropland. Ongoing efforts are needed to increase acres utilizing conservation tillage and no-till and contoured buffer strips.

Wildlife habitat and recreational area resource protection and improvement are ongoing concerns. This includes agricultural land and urban/rural lands that have a lack of recreation trails and greenbelts along river systems.

The primary natural resource concerns with animal feeding operations are water and air pollution. Concerns include over-application of manure and associated spills; odor; particulates; and ammonia. Potential air quality issues include: effects on human and animal health; impacts on property values; increased risk of nuisance litigation; and NO and NO² pollution (33). There are 33 Confined Animal Feeding Operations (CAFO) in the Iowa portion of the watershed, with a total of 49,070 animal units. Eighty-six percent of the CAFOs are swine and 14 percent are poultry. There are 19 Animal Feeding Operations (AFO) in the Iowa portion of the watershed, with a total of 704,138 animal units. There are 18 swine operations and only one poultry operation. The poultry operation includes 680,000 (97 percent) animal units (34, 35).

Educational activities are needed to promote extension of expiring CRP contracts.

Other resource concerns include flood damage to land, infrastructure and buildings along major rivers and streams, lack of adequate wastewater facilities and safe drinking water in small towns and unincorporated towns; and lack of infrastructure for renewable energy efforts. There is a need for development of alternative and renewable energy resources such as wind, geothermal, biomass, or methane from livestock facilities (28).

There is a lack of alternative crop production and agricultural diversity, thus decreasing opportunities for positive affects on water quality (28).

Footnotes and Bibliography

1. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Watershed Boundary Dataset (WBD). Projections from UTM Zone 15 NAD 83.
2. Iowa GAP Analysis Program (01/01/2002).
Iowa Department of Natural Resources (IDNR) and Iowa Department of Transportation (IDOT). INCORP Dataset (1997).
3. U. S. Department of Agriculture, National Agricultural Statistics Service (USDA-NASS). Reclassified Landuse.
4. U. S. Geological Survey (USGS). Digital Elevation Model (DEM). 7.5' (1:24,000) Quadrangle Topographic Base Maps.
5. U. S. Geological Survey (USGS). Digital Elevation Model (DEM).
6. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Soil Survey (July 2008). Summarized data from individual county SSURGO data sets. Des Moines, Iowa.
7. National Climatic Data Center (NCDC). Average Rainfall 1961 – 1990.
8. Iowa Department of Transportation (IDOT). Iowa Transportation Map (2008). Ames, Iowa. www.iowadotmaps.com. Last Accessed November 2008.
9. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Wetland Restoration Team. Des Moines, Iowa.
10. Iowa Department of Natural Resources (IDNR). Geological Survey Bureau, Iowa. Data from county based drainage maps (February 2005).
11. Iowa Drainage Guide, rev. (March 1987). Cooperative Extension Service, Iowa State University, Ames, Iowa.
12. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). State Soils Staff. Des Moines, Iowa.
13. National Coordinated Common Resource Area (CRA). Geographic Database. <http://soils.usda.gov/survey/geography/cra.html>. Last Accessed September 2008.

14. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). State Grassland Specialist. Des Moines, Iowa.
15. U. S. Department of Agriculture, National Agricultural Statistics Service (USDA-NASS).
16. Conservation Technology Information Center (CTIC). National Crop Residue Management Survey (2004).
17. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Field Office Technical Guide, Section III.
18. U. S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). Resource Conservationist. Des Moines, Iowa.
19. Iowa Department of Natural Resources (IDNR). Natural Areas Inventory. <https://programs.iowadnr.gov/naturalareasinventory/pages/Query.aspx> Last Accessed September 17, 2008
20. U. S. Department of Natural Resources Conservation Service (USDA-NRCS), Minnesota. 2008. Threatened and Endangered Species Database File. St. Paul, Minnesota.
21. 1997 Natural Resources Inventory (NRI). Estimates for sheet and rill erosion (WEQ and 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). <http://www.ia.nrcs.usda.gov/technical/nri/findings/erosion/htm>
22. Iowa Department of Natural Resources (IDNR). 20080813, Lakes in Iowa Listed as Impaired in 2006 under the Clean Water Act.
23. Iowa Department of Natural Resources (IDNR). North Central Iowa – Impaired Waters (2006). <http://wqm.igsb.iowa.edu/WQA/303d/2006/303dFO2.htm>. Last Accessed September 9, 2008.
24. Iowa Department of Natural Resources (IDNR). Iowa DNR Watershed Improvement. <http://www.iowadnr.gov/water/watershed/index.html>. Last Accessed September 4, 2008.
25. Soil and Water Conservation District (SWCD) Long Range Plans. Butler County, Iowa. Franklin County, Iowa.

26. 2008 Environmental Quality Incentive Program (EQIP) Work Group Plans. Butler County, Iowa. Franklin County, Iowa.
27. U. S. Department of Agriculture, National Agricultural Statistics Service (USDA-NASS).
28. Resource Conservation & Development (RC&D) Area Plan (2008-2012). Cedar Valley RC&D. Charles City, Iowa.
29. Soil and Water Conservation District (SWCD) Long Range Plan. Cerro Gordo County, Iowa.
30. Globe Gazette. Fish kill tally at 31,000. September 4, 2008.
31. George, Gale (2003). Underground Storage Tanks in Iowa. Iowa City, IA: Iowa Department of Natural Resources. <http://www.igsb.uiowa.edu/nrgislibx/gishome.htm>. *Last Accessed September 2008.*
32. Des Moines Register. Iowa Biofuels Database. Interactive Map. <http://data.desmoinesregister.com/ethanol2/index.php>. *Last Accessed October 22, 2008.*
33. Iowa Department of Natural Resources (IDNR) (2007). Animal Feeding Operations (03/23/07). Iowa City, IA: Iowa DNR, Geological Survey Bureau. Animal feeding operations are registered, permitted, or monitored by the Iowa DNR. <http://www.igsb.uiowa.edu/nrgislibx.gishome.htm>. *Last Accessed September 2008.*
34. Wolter, Calvin (February 6, 2006). Confinement Feeding Operations Registered With the Iowa Department of Natural Resources. Iowa Department of Natural Resources (IDNR), Geologic Survey Bureau. Iowa City, Iowa.
35. Clark, Kathrynne (February 2005). Animal Feeding Operations under Regulation by the Department of Natural Resources in the State of Iowa. Iowa Department of Natural Resources (IDNR), Geologic Survey Bureau. Iowa City, Iowa.

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES				320,830		
LANDUSE TYPE		ROW CROP				TYPICAL UNIT SIZE ACRES				136		
POSSIBLE SOURCES OF FUNDING						ESTIMATED PARTICIPATION				45%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT						OTHERS			NOTES/COMMENTS	
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State	Local		
Progressive System Acres Treated												
Conservation Crop Rotation (ac.) 328	111,264	0	X	X			X					
Grassed Waterway (ac.) 412	0	X	X				X					IFIP
Nutrient Management (ac.) 590	101,250	X	X			X						
Pasture & Hayland Planting (ac.) 512	1,113	X	X						X			REAP, IFIP
Pest Management (ac.) 595	101,250	X	X			X						
Residue and Tillage Management, Mulch Till (ac.) 345	0	X	X			X						
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	20,027	X	X			X			X			IFIP
Residue Management, Seasonal (ac.) 344	0	X	X									
Resource Management System (RMS) Acres Treated												
Conservation Crop Rotation (ac.) 328	23,613	0	X	X			X					
Field Border (ft.) 386	395,693	X	X				X		X			REAP
Filter Strip (ac.) 393	708	X	X				X		X			REAP
Forage Harvest Management (ac.) 511	236	X	X									
Grassed Waterway (ac.) 412	0	X	X				X		X			IFIP
Nutrient Management (ac.) 590	11,059	X	X			X						
Pasture & Hayland Planting (ac.) 512	98	X	X						X			REAP, IFIP
Pest Management (ac.) 595	11,059	X	X			X						
Residue and Tillage Management, Mulch Till (ac.) 345	0	X	X			X						
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	13,338	X	X			X			X			IFIP
Tree/Shrub Establishment (ac.) 612	472	X	X		X		X		X			REAP
Upland Wildlife Habitat Management (ac.) 645	236	X	X	X	X		X					
Use Exclusion (ac.) 472	12,987	X	X				X		X			REAP
Water & Sediment Control Basin (no.) 638	174	X	X				X		X			IFIP
Wetland Restoration (ac.) 657	945	X	X	X	X		X		X			REAP

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES		320,830	
LANDUSE TYPE		ROW CROP				TYPICAL UNIT SIZE ACRES		136	
ASSESSMENT INFORMATION						ESTIMATED PARTICIPATION		45%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS				
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Sheet and Rill	Soil Erosion – Ephemeral Gully	Water Quality – Excessive Nutrients and Organics in Surface Water	Water Quality – Excessive Suspended Sediment and Turbidity in Surface Water	
	Baseline System					2	3	1	2
	Total Acreage at Baseline Level					163,623	42,542	0	42,542
	Conservation Crop Rotation (ac.) 328					161,987	42,117	0	42,117
	Grassed Waterway (ac.) 412					1,636	425	0	425
	Residue and Tillage Management, Mulch Till (ac.) 345					112,900	29,354	0	29,354
	Residue Management, Seasonal (ac.) 344					49,087	12,763	0	12,763
	Progressive System					4	4	4	3
	Total Acreage at Progressive Level					137,957	124,161	111,264	235,425
Conservation Crop Rotation (ac.) 328					132,439	226,008	0	226,008	
Grassed Waterway (ac.) 412					1,380	2,354	0	2,354	
Nutrient Management (ac.) 590					125,541	112,987	101,250	214,237	
Pasture & Hayland Planting (ac.) 512					1,380	1,242	1,113	2,354	
Pest Management (ac.) 595					125,541	112,987	101,250	214,237	
Residue and Tillage Management, Mulch Till (ac.) 345					70,358	120,067	0	120,067	
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329					24,832	22,349	20,027	42,377	
Residue Management, Seasonal (ac.) 344					37,248	63,565	0	63,565	
Resource Management System (RMS)					5	5	5	5	
Total Acreage at RMS Level					19,250	19,250	23,613	42,863	
Conservation Crop Rotation (ac.) 328					16,555	36,862	0	36,862	
Field Border (ft.) 386					322,576	322,576	395,693	718,269	
Filter Strip (ac.) 393					577	577	708	1,286	
Forage Harvest Management (ac.) 511					192	192	236	429	
Grassed Waterway (ac.) 412					192	429	0	429	
Nutrient Management (ac.) 590					19,250	31,804	11,059	42,863	
Pasture & Hayland Planting (ac.) 512					192	330	98	429	
Pest Management (ac.) 595					19,250	31,804	11,059	42,863	
Residue and Tillage Management, Mulch Till (ac.) 345					3,657	8,144	0	8,144	
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329					12,897	15,381	13,338	28,718	
Tree/Shrub Establishment (ac.) 612					385	385	472	857	
Upland Wildlife Habitat Management (ac.) 645					192	192	236	429	

Use Exclusion (ac.) 472	10,587	10,587	12,987	23,575	2	2	2	2
Water & Sediment Control Basin (no.) 638	142	142	174	315	0	2	2	4
Wetland Restoration (ac.) 657	770	770	945	1,715	0	0	3	3
CONSERVATION INVESTMENT INFORMATION								
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	111263.844							
Conservation Crop Rotation (ac.) 328	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Grassed Waterway (ac.) 412	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nutrient Management (ac.) 590	101,250	\$0	\$3,948,754	\$789,751	\$4,308,106	\$0	\$1,316,251	\$2,026,174
Pasture & Hayland Planting (ac.) 512	1,113	\$75,103	\$0	\$15,021	\$90,124	\$75,103	\$1,502	\$81,430
Pest Management (ac.) 595	101,250	\$0	\$1,215,001	\$243,000	\$1,325,571	\$0	\$405,000	\$623,438
Residue and Tillage Management, Mulch Till (ac.) 345	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	20,027	\$0	\$600,825	\$120,165	\$655,502	\$0	\$200,275	\$308,294
Residue Management, Seasonal (ac.) 344	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$75,103	\$5,764,580	\$1,167,937	\$6,379,303	\$75,103	\$1,923,029	\$3,039,336
Resource Management System (RMS) Acres Treated	23613.088							
Conservation Crop Rotation (ac.) 328	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Field Border (ft.) 386	395,693	\$69,246	\$0	\$13,849	\$83,095	\$69,246	\$1,385	\$75,080
Filter Strip (ac.) 393	708	\$1,416,785	\$0	\$283,357	\$1,700,142	\$1,416,785	\$56,671	\$1,655,506
Forage Harvest Management (ac.) 511	236	\$0	\$70,839	\$14,168	\$77,286	\$0	\$23,613	\$36,349
Grassed Waterway (ac.) 412	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Nutrient Management (ac.) 590	11,059	\$0	\$431,301	\$86,260	\$470,552	\$0	\$143,767	\$221,308
Pasture & Hayland Planting (ac.) 512	98	\$6,627	\$0	\$1,325	\$7,952	\$6,627	\$133	\$7,185
Pest Management (ac.) 595	11,059	\$0	\$132,708	\$26,542	\$144,785	\$0	\$44,236	\$68,095
Residue and Tillage Management, Mulch Till (ac.) 345	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	13,338	\$0	\$400,126	\$80,025	\$436,539	\$0	\$133,375	\$205,312
Tree/Shrub Establishment (ac.) 612	472	\$134,595	\$0	\$26,919	\$161,514	\$134,595	\$2,692	\$145,934
Upland Wildlife Habitat Management (ac.) 645	236	\$0	\$7,084	\$1,417	\$7,729	\$0	\$2,361	\$3,635
Use Exclusion (ac.) 472	12,987	\$259,744	\$0	\$51,949	\$311,693	\$259,744	\$15,585	\$325,392
Water & Sediment Control Basin (no.) 638	174	\$347,251	\$0	\$69,450	\$416,702	\$347,251	\$20,835	\$435,016
Wetland Restoration (ac.) 657	945	\$637,553	\$0	\$127,511	\$765,064	\$637,553	\$12,751	\$691,266
	Subtotal	\$2,871,802	\$1,042,059	\$782,772	\$4,583,052	\$2,871,802	\$457,405	\$3,870,077
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	134876.932	\$2,946,905	\$6,806,639	\$1,950,709	\$10,962,356	\$2,946,905	\$2,380,433	\$6,909,413

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203					LANDUSE ACRES			3,402		
LANDUSE TYPE		FARMSTEAD					TYPICAL UNIT SIZE ACRES			4		
POSSIBLE SOURCES OF FUNDING							ESTIMATED PARTICIPATION			45%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS		FUTURE	USDA INVESTMENT					OTHERS			NOTES/COMMENTS	
		New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State		Local
Progressive System Acres Treated		1,180										
Windbreak/Shelterbreak Establishment (ft.) 380		0	X	X		X		X		X		REAP
Resource Management System (RMS) Acres Treated		250										
Waste Storage Facility (no.) 313		58	X	X								
Windbreak/Shelterbreak Establishment (ft.) 380		0	X	X		X		X		X		REAP

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES		3,402		
LANDUSE TYPE		FARMSTEAD				TYPICAL UNIT SIZE ACRES		4		
ASSESSMENT INFORMATION						ESTIMATED PARTICIPATION		45%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS					
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Water Quality – Excessive Nutrients and Organics in Groundwater	Air Quality – Particulate matter less than 10 micrometers in diameter (PM 10)	Air Quality – Excessive Greenhouse Gas: CO2 (carbon dioxide)	Air Quality – Ammonia (NH3)		
	Baseline System				System Rating ->		0	1	1	1
	Total Acreage at Baseline Level		1,735	451	0	451				
	Windbreak/Shelterbreak Establishment (ft.) 380		159,129	41,374	0	41,374	1	2	2	2
	Progressive System				System Rating ->		0	1	1	1
	Total Acreage at Progressive Level		1,463	1,316	1,180	2,496				
	Windbreak/Shelterbreak Establishment (ft.) 380		134,168	228,959	0	228,959	1	2	2	2
Resource Management System (RMS)				System Rating ->		1	1	1	1	
Total Acreage at RMS Level		204	204	250	454					
Waste Storage Facility (no.) 313		47	47	58	104	2	0	0	2	
Windbreak/Shelterbreak Establishment (ft.) 380		18,721	41,686	0	41,686	1	2	2	2	
Progressive System Acres Treated		1179.70956								
Windbreak/Shelterbreak Establishment (ft.) 380		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
		Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Resource Management System (RMS) Acres Treated		250.36512								
Waste Storage Facility (no.) 313		58	\$4,460,528	\$0	\$892,106	\$5,352,634	\$4,460,528	\$178,421	\$5,212,103	
Windbreak/Shelterbreak Establishment (ft.) 380		0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
		Subtotal	\$4,460,528	\$0	\$892,106	\$5,352,634	\$4,460,528	\$178,421	\$5,212,103	
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS		1430.07468	\$4,460,528	\$0	\$892,106	\$5,352,634	\$4,460,528	\$178,421	\$5,212,103	

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES				13,268	
LANDUSE TYPE		NATURAL AREAS				TYPICAL UNIT SIZE ACRES				7	
POSSIBLE SOURCES OF FUNDING						ESTIMATED PARTICIPATION				45%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT						OTHERS			NOTES/COMMENTS
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State	Local	
Progressive System Acres Treated	4,601										
Upland Wildlife Habitat Management (ac.) 645	3,175	X			X						
Use Exclusion (ac.) 472	3,175	X	X				X		X		REAP
Resource Management System (RMS) Acres Treated	977										
Brush Management (ac.) 314	127	X	X				X				
Forest Stand Improvement (ac.) 666	977	X	X		X		X		X		REAP
Grade Stabilization Structure (no.) 410	279	X	X						X		IFIP
Pest Management (ac.) 595	977	X	X		X	X					
Riparian Forest Buffer (ac.) 391	244	X					X		X		REAP
Stream Crossing 578	31,946	X	X				X				
Streambank & Shoreline Protection (ft.) 580	75,890	X	X		X						
Upland Wildlife Habitat Management (ac.) 645	427	X			X						
Use Exclusion (ac.) 472	223	X	X		X		X		X		REAP

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES		13,268	
LANDUSE TYPE		NATURAL AREAS				TYPICAL UNIT SIZE ACRES		7	
ASSESSMENT INFORMATION						ESTIMATED PARTICIPATION		45%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS				
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Classic Gully	Soil Erosion – Streambank	Fish and Wildlife – Inadequate Cover/Shelter	Fish and Wildlife – T & E Species: Declining Species, Species of Concern	
Baseline System		System Rating ->				0	0	0	0
Total Acreage at Baseline Level		6,767	1,759	0	1,759				
No Conservation Practices being applied at this level		0	0	0	0	0	0	0	0
Progressive System		System Rating ->				1	2	4	2
Total Acreage at Progressive Level		5,705	5,135	4,601	9,736				
Upland Wildlife Habitat Management (ac.) 645		3,937	3,543	3,175	6,718	0	1	5	4
Use Exclusion (ac.) 472		3,937	3,543	3,175	6,718	2	4	3	2
Resource Management System (RMS)		System Rating ->				4	4	5	3
Total Acreage at RMS Level		796	796	977	1,773				
Brush Management (ac.) 314		103	103	127	230	3	1	3	2
Forest Stand Improvement (ac.) 666		796	796	977	1,773	0	0	3	1
Grade Stabilization Structure (no.) 410		227	227	279	506	5	3	0	0
Pest Management (ac.) 595		796	796	977	1,773	0	0	3	0
Riparian Forest Buffer (ac.) 391		199	199	244	443	0	3	5	1
Stream Crossing 578		26,043	26,043	31,946	57,989	0	3	0	0
Streambank & Shoreline Protection (ft.) 580		61,867	61,867	75,890	137,757	0	4	2	1
Upland Wildlife Habitat Management (ac.) 645		669	1,062	427	1,489	0	1	5	4
Use Exclusion (ac.) 472		438	752	223	975	2	4	3	2

CONSERVATION INVESTMENT INFORMATION								
	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	4601.3424							
Upland Wildlife Habitat Management (ac.) 645	3,175	\$0	\$95,248	\$19,050	\$103,916	\$0	\$31,749	\$48,873
Use Exclusion (ac.) 472	3,175	\$63,499	\$0	\$12,700	\$76,198	\$63,499	\$3,810	\$79,547
	Subtotal	\$63,499	\$95,248	\$31,749	\$180,114	\$63,499	\$35,559	\$128,421
Resource Management System (RMS) Acres Treated	976.5248							
Brush Management (ac.) 314	127	\$12,314	\$0	\$2,463	\$14,777	\$12,314	\$246	\$13,351
Forest Stand Improvement (ac.) 666	977	\$59,568	\$0	\$11,914	\$71,482	\$59,568	\$3,574	\$74,623
Grade Stabilization Structure (no.) 410	279	\$2,106,503	\$0	\$421,301	\$2,527,804	\$2,106,503	\$42,130	\$2,283,971
Pest Management (ac.) 595	977	\$0	\$11,718	\$2,344	\$12,785	\$0	\$3,906	\$6,013
Riparian Forest Buffer (ac.) 391	244	\$77,390	\$0	\$15,478	\$92,868	\$77,390	\$4,643	\$96,949
Stream Crossing 578	31,946	\$4,184,967	\$0	\$836,993	\$5,021,960	\$4,184,967	\$83,699	\$4,537,539
Streambank & Shoreline Protection (ft.) 580	75,890	\$1,707,523	\$0	\$341,505	\$2,049,028	\$1,707,523	\$68,301	\$1,995,232
Upland Wildlife Habitat Management (ac.) 645	427	\$0	\$12,799	\$2,560	\$13,963	\$0	\$4,266	\$6,567
Use Exclusion (ac.) 472	223	\$4,466	\$0	\$893	\$5,359	\$4,466	\$268	\$5,595
	Subtotal	\$8,152,731	\$24,517	\$1,635,450	\$9,810,025	\$8,152,731	\$211,034	\$9,019,840
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	5577.8672	\$8,216,230	\$119,765	\$1,667,199	\$9,990,139	\$8,216,230	\$246,594	\$9,148,261

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203				LANDUSE ACRES				49,964			
LANDUSE TYPE		PASTURE/HAYLAND				TYPICAL UNIT SIZE ACRES				53			
POSSIBLE SOURCES OF FUNDING						ESTIMATED PARTICIPATION				45%			
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT						OTHERS			NOTES/COMMENTS		
	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State	Local			
Progressive System Acres Treated		17,328											
Nutrient Management (ac.) 590		6,584		X	X			X					
Pasture & Hayland Planting (ac.) 512		0		X	X			X			X		REAP, IFIP
Pest Management (ac.) 595		6,584		X	X			X					
Resource Management System (RMS) Acres Treated		3,677											
Brush Management (ac.) 314		1,066		X	X				X				
Fence (ft.) 382		108,031		X	X		X		X		X		REAP
Forage Harvest Management (ac.) 511		110		X	X								
Nutrient Management (ac.) 590		2,861		X	X			X					
Pasture & Hayland Planting (ac.) 512		1,839		X	X			X			X		REAP, IFIP
Pest Management (ac.) 595		2,861		X	X			X					
Pipeline (ft.) 516		27,962		X	X				X				
Prescribed Grazing (ac.) 528		3,677		X	X			X			X		REAP
Riparian Forest Buffer (ac.) 391		368		X		X			X		X		REAP, IFIP
Upland Wildlife Habitat Management (ac.) 645		147		X	X		X		X				
Watering Facility (no.) 614		208		X	X				X				

WATERSHED NAME & CODE		WINNEBAGO RIVER - 07080203			LANDUSE ACRES		49,964		
LANDUSE TYPE		PASTURE/HAYLAND			TYPICAL UNIT SIZE ACRES		53		
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		45%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS				
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Streambank	Water Quality – Excessive Nutrients and Organics in Surface Water	Domestic Animals – Inadequate Quantities and Quality of Feed and Forage	Domestic Animals – Inadequate Stock Water	
Baseline System		System Rating ->			0	1	3	0	
Total Acreage at Baseline Level		25,482	6,625	0	6,625				
Pasture & Hayland Planting (ac.) 512		12,741	3,313	0	3,313	0	2	5	0
Progressive System		System Rating ->			0	3	4	0	
Total Acreage at Progressive Level		21,485	19,336	17,328	36,664				
Nutrient Management (ac.) 590		8,164	7,348	6,584	13,932	0	5	4	0
Pasture & Hayland Planting (ac.) 512		10,742	18,332	0	18,332	0	2	5	0
Pest Management (ac.) 595		8,164	7,348	6,584	13,932	0	0	4	0
Resource Management System (RMS)		System Rating ->			3	4	5	4	
Total Acreage at RMS Level		2,998	2,998	3,677	6,675				
Brush Management (ac.) 314		869	869	1,066	1,936	1	0	2	0
Fence (ft.) 382		88,069	88,069	108,031	196,099	0	0	4	0
Forage Harvest Management (ac.) 511		90	90	110	200	0	2	4	0
Nutrient Management (ac.) 590		2,998	3,814	2,861	6,675	0	5	4	0
Pasture & Hayland Planting (ac.) 512		2,998	4,837	1,839	6,675	0	2	5	0
Pest Management (ac.) 595		2,998	3,814	2,861	6,675	0	0	4	0
Pipeline (ft.) 516		22,795	22,795	27,962	50,757	2	0	0	5
Prescribed Grazing (ac.) 528		2,998	2,998	3,677	6,675	3	1	5	0
Riparian Forest Buffer (ac.) 391		300	300	368	668	3	3	1	0
Upland Wildlife Habitat Management (ac.) 645		120	120	147	267	1	0	2	0
Watering Facility (no.) 614		170	170	208	378	0	0	4	5

CONSERVATION INVESTMENT INFORMATION								
	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	17327.5152							
Nutrient Management (ac.) 590	6,584	\$0	\$256,794	\$51,359	\$280,163	\$0	\$85,598	\$131,765
Pasture & Hayland Planting (ac.) 512	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pest Management (ac.) 595	6,584	\$0	\$79,013	\$15,803	\$86,204	\$0	\$26,338	\$40,543
	Subtotal	\$0	\$335,807	\$67,161	\$366,367	\$0	\$111,936	\$172,308
Resource Management System (RMS) Acres Treated	3677.3504							
Brush Management (ac.) 314	1,066	\$103,444	\$0	\$20,689	\$124,133	\$103,444	\$2,069	\$112,159
Fence (ft.) 382	108,031	\$100,469	\$0	\$20,094	\$120,562	\$100,469	\$4,019	\$117,397
Forage Harvest Management (ac.) 511	110	\$0	\$33,096	\$6,619	\$36,108	\$0	\$11,032	\$16,982
Nutrient Management (ac.) 590	2,861	\$0	\$111,577	\$22,315	\$121,731	\$0	\$37,192	\$57,252
Pasture & Hayland Planting (ac.) 512	1,839	\$124,111	\$0	\$24,822	\$148,933	\$124,111	\$2,482	\$134,567
Pest Management (ac.) 595	2,861	\$0	\$34,331	\$6,866	\$37,456	\$0	\$11,444	\$17,616
Pipeline (ft.) 516	27,962	\$22,369	\$0	\$4,474	\$26,843	\$22,369	\$895	\$26,139
Prescribed Grazing (ac.) 528	3,677	\$104,804	\$0	\$20,961	\$125,765	\$104,804	\$0	\$104,804
Riparian Forest Buffer (ac.) 391	368	\$116,572	\$0	\$23,314	\$139,886	\$116,572	\$6,994	\$146,035
Upland Wildlife Habitat Management (ac.) 645	147	\$0	\$4,413	\$883	\$4,814	\$0	\$1,471	\$2,264
Watering Facility (no.) 614	208	\$104,076	\$0	\$20,815	\$124,891	\$104,076	\$6,245	\$130,380
	Subtotal	\$675,845	\$183,417	\$171,852	\$1,011,122	\$675,845	\$83,842	\$865,595
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	21004.8656	\$675,845	\$519,224	\$239,014	\$1,377,490	\$675,845	\$195,778	\$1,037,903