



## Rapid Watershed Assessment Milwaukee River Watershed

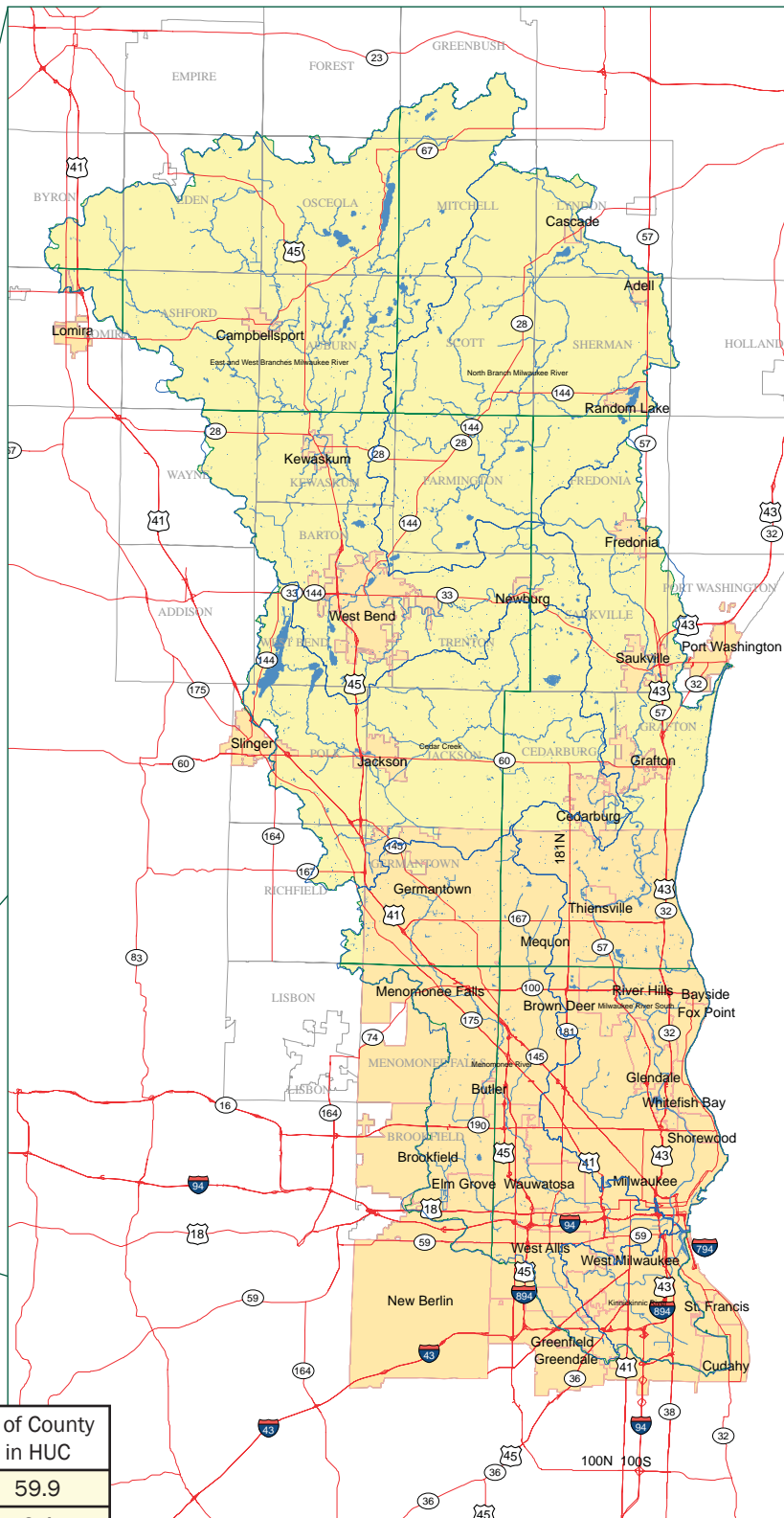
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

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### Introduction

The Milwaukee River Watershed is located in southeast Wisconsin and outlets directly to Lake Michigan. Agriculture is not as prevalent here as in other areas of southern Wisconsin but still accounts for 45.1% of the of the 553,547 acre watershed. There is a mix of cash grain and livestock farms. Corn, soybeans and alfalfa are the dominant crops while dairy cattle are the most common livestock. Approximately 1.3 million people reside in the watershed, the vast majority of those people in the southern portion of the watershed, in the city of Milwaukee and its suburbs. Development pressure is very high.



NAME	County Acres	Acres in HUC	% of HUC Area	% of County in HUC
Milwaukee	155277	93072	16.6	59.9
Waukesha	371380	23783	4.2	6.4
Ozaukee	150607	108534	19.3	72.1
Washington	278680	164588	29.3	59.1
Dodge	580383	2715	0.5	0.5
Sheboygan	331025	81485	14.5	24.6
Fond du Lac	489807	87783	15.6	17.9

## Common Resource Areas <sup>1</sup>

Common Resource Area delineations are defined as a geographical areas where resource concerns, problems and treatment needs are similar. Common Resource areas are a subdivision of an existing Major Land Resource Area (MLRA). Landscape conditions, soil, climate and human considerations are used to determine the boundary of Common Resource Areas.

### 95A.WI1 Eastern Wisconsin Till Plain

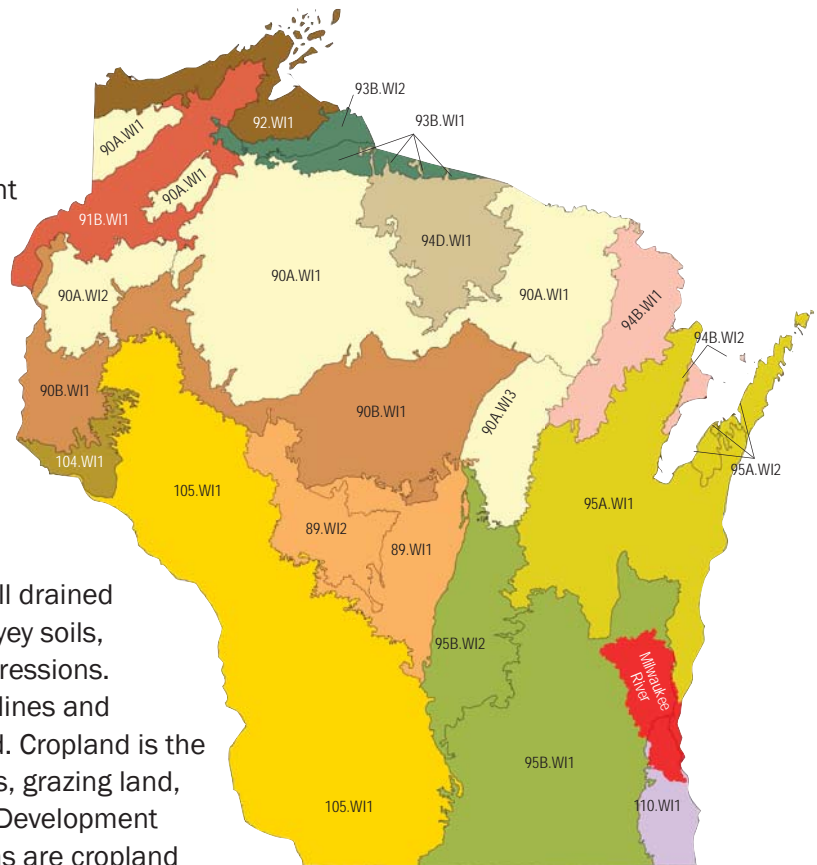
Gently sloping till plain with moderately well drained to somewhat poorly drained loamy and clayey soils, and poorly drained organic soils in the depressions. Lake Winnebago and Lake Michigan shorelines and significant wetland complexes are included. Cropland is the major land use with some large dairy farms, grazing land, and deciduous and coniferous forestland. Development pressure is high. Primary resource concerns are cropland and construction site erosion, stormwater management, nutrient management, surface water and ground water quality, and wetland habitat management and restoration.

### 95B.WI1 Southern Wisconsin and Northern Illinois Till Plain

Nearly level to strongly sloping till plain with prominent drumlins. Well drained silty and loamy soils with poorly drained organic soils in the depressions. Mostly cropland with a mix of livestock and cash grain enterprises. Grazing land and scattered deciduous forest, lakes, and marshes are also present. Primary resource concerns include cropland and construction site erosion, surface water quality, storm water management, and wetland habitat protection and restoration.

### 110.WI1 Central Corn Belt Heavy Till Plain

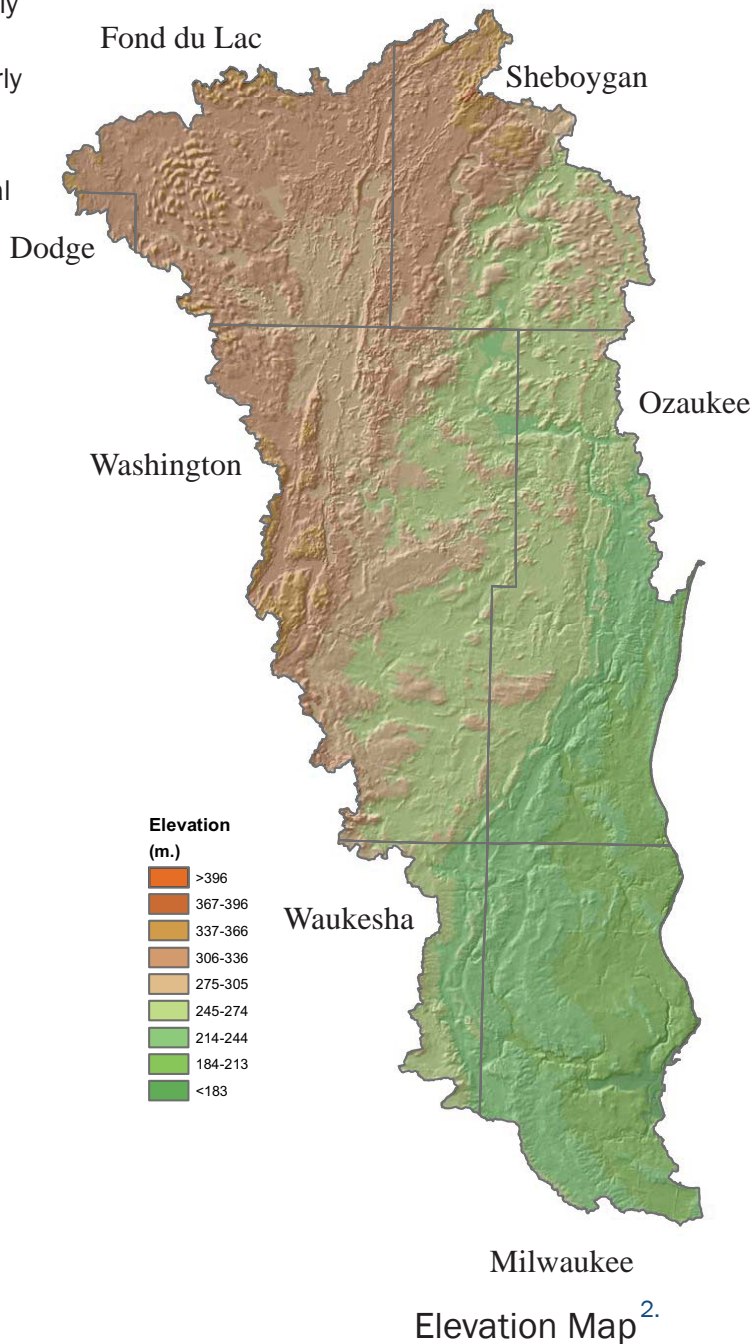
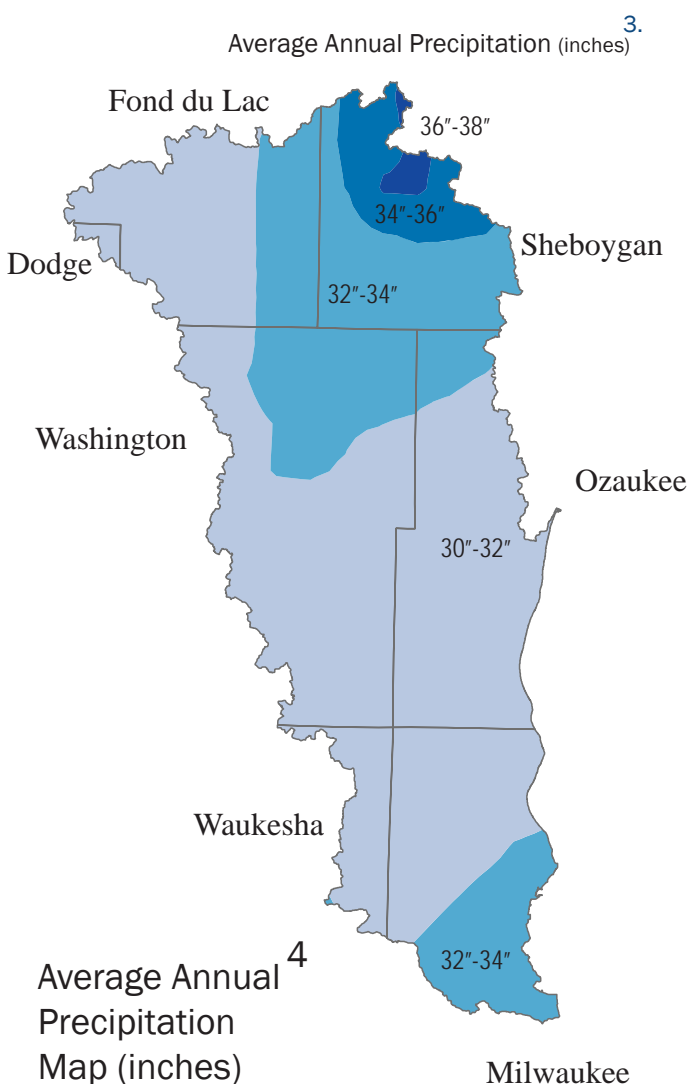
Nearly level to gently sloping, moderately well drained to somewhat poorly drained soils formed in clayey till overlain by silty or loamy material. Primarily cash grain with scattered livestock operations, deciduous forest, lakes and wetlands. Land use is influenced by extensive urban and suburban development. Primary resource concerns are cropland erosion, surface water quality, construction site erosion, storm water management, and wetland protection and restoration.



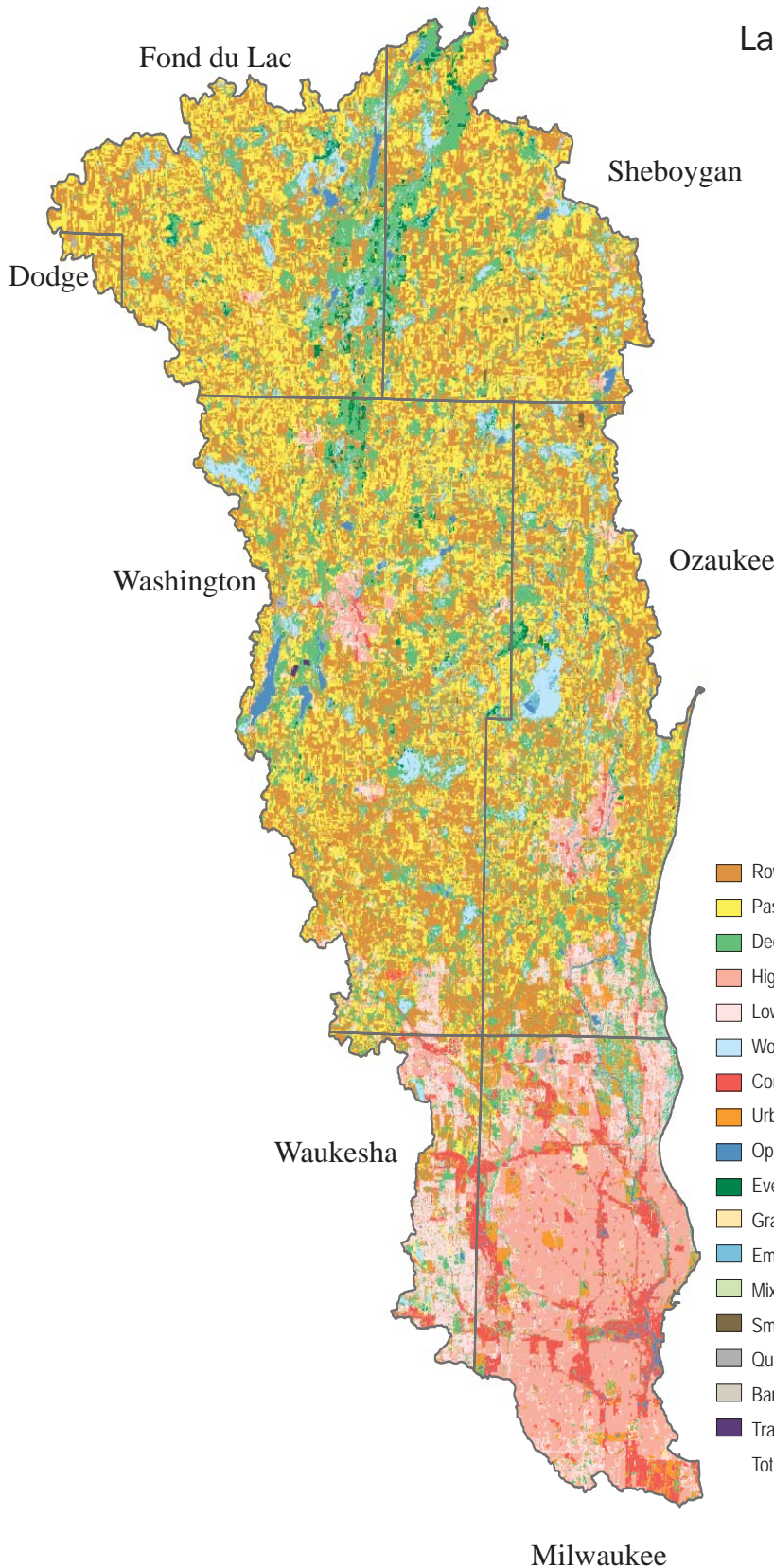
Wisconsin Major Land Resource Areas <sup>2</sup>

### Physical Description

The eastern portion of the watershed is a gently sloping till plain with moderately well drained to somewhat poorly drained loamy and clayey soils, and poorly drained organic soils in the depressions. The Lake Michigan shoreline and significant wetland complexes are also noteworthy. The western portion of the watershed is a nearly level to strongly sloping till plain with prominent drumlins. Well drained silty and loamy soils are present with poorly drained organic soils in the depressions. Overall the watershed is 12% wetlands by area, contains 57 lakes and approximately 500 miles of perennial streams.



### Land Use/Land Cover Map

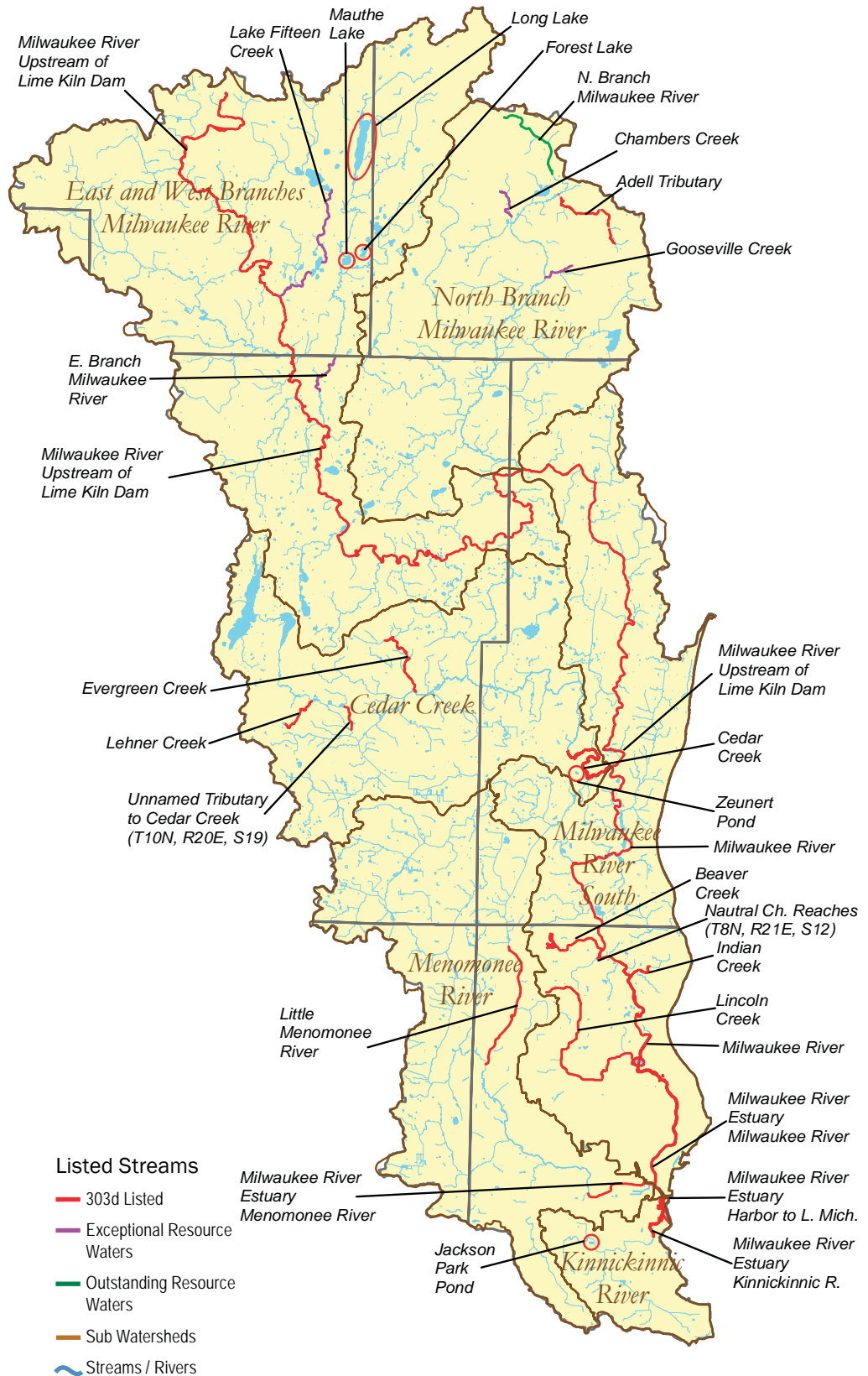


Land Use / Land Cover <sup>4</sup>.

	Acres	Percent
Row Crops	179,730.84	31.98
Pasture/Hay	134,207.95	23.88
Deciduous Forest	82,408.85	14.66
High Intensity Residential	48,390.45	8.61
Low Intensity Residential	35,181.31	6.26
Woody Wetlands	22,920.01	4.08
Commercial/Industrial/Transportation	20,704.96	3.68
Urban/Recreational Grasses	14,612.90	2.60
Open Water	7,128.42	1.27
Evergreen Forest	5,871.00	1.04
Grasslands/Herbaceous	5,369.95	0.96
Emergent Herbaceous Wetlands	2,896.92	0.52
Mixed Forest	727.68	0.13
Small Grains	668.96	0.12
Quarries/Strip Mines, Gravel Pits	626.49	0.11
Bare Rock/Sand/Clay	475.70	0.08
Transitional	104.75	0.02
<b>Total</b>	<b>562027.13</b>	<b>100.00</b>

### Assessment of waters<sup>5</sup>

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.



For information on specific sub-watersheds, 303d, TMDL or Exceptional/Outstanding Resource Waters (ERW/ORW):  
<http://dnr.wi.gov/org/water/wm/wqs/303d/faqs.html>  
<http://dnr.wi.gov/org/gmu/gpsp/gpbasin/>  
<http://www.epa.gov/owow/tmdl/>

303-d Listed Waters Map

303(d) Waters	Sediment	Degraded Habitat	Dissolved Oxygen	Mercury	Phosphorous	PCBS
Adell Tributary	X	X				
Beaver Creek						
Cedar Creek						X
Evergreen Creek	X	X				
Forest Lake				X		
Indian Creek	X	X	X		X	
Jackson Park Pond						X
Lehner Creek	X	X				
Lincoln Creek	X	X	X		X	
Little Menomonee River						
Long Lake				X		
Mauthe Lake				X		
Milwaukee River Estuary (Harbor to L. Mich.)						X
Milwaukee River Estuary (Menomonee River)			X		X	X
Milwaukee River Estuary (Kinnickinnic River)			X		X	X
Milwaukee River Estuary (Milwaukee River)			X		X	X
Milwaukee River						X
Milwaukee River (Lime Kiln Dam Upstream)						X
Natural Channel Reaches (T8N R21E SW NW 12)	X	X				
Unnamed Tributary to Cedar Creek (Jackson Creek)	X	X				
Zeunert Pond				X		
<b>Exceptional Resource Waters</b>						
Chambers Creek						
E. Branch Milwaukee River						
Gooseville Creek						
Lake Fifteen Creek						
<b>Outstanding Resource Waters</b>						
N. Branch Milwaukee River						





## Soils<sup>6</sup>









The soils in this watershed formed in glacial till, outwash and or lake laid sediments called lacustrine material. Most of these parent materials have a thin silty or loess cover that was deposited over them. In the eastern portion of the watershed this thin cap of silty material may be absent. The glacial till in this watershed ranges from sandy loam in the western half and silty clay loam or silty clay in the eastern half. The western portion of the watershed is in the Kettle Moraine area so called because of the deep kettles or pits that were created between two glaciers. These pits often include soils with thick layers of organic material.

## 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.”



Drainage Classification

	<i>% Area</i>
 Excessively drained	0.3
 Somewhat excessively drained	0.0
 Well drained	55.7
 Moderately well drained	4.3
 Somewhat poorly drained	11.1
 Poorly drained	7.8
 Very poorly drained	9.9
 Water	10.9

Milwaukee
   
**Drainage Map**

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.

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## Farmland Classification

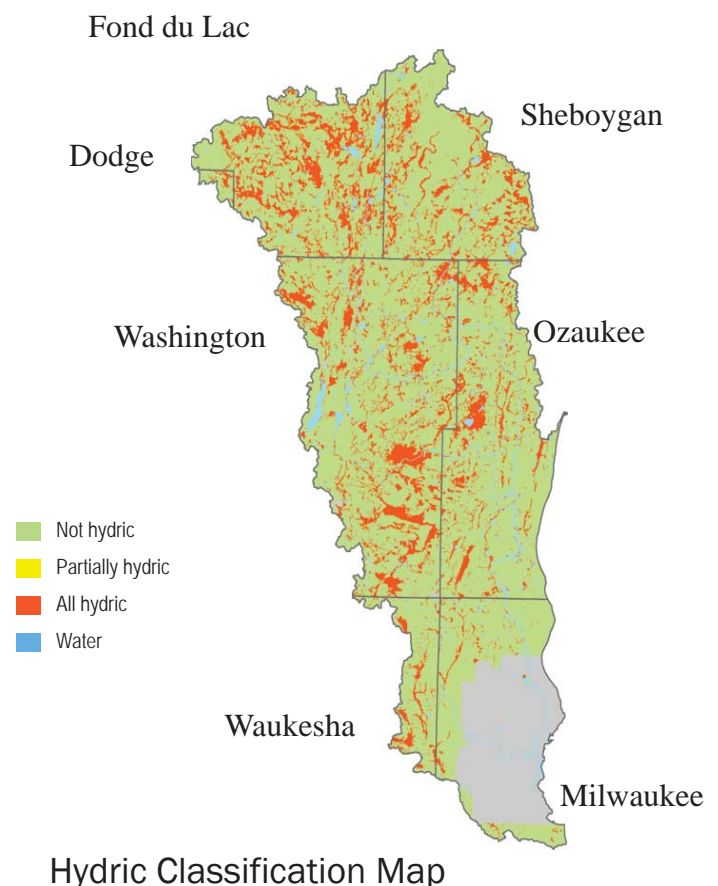
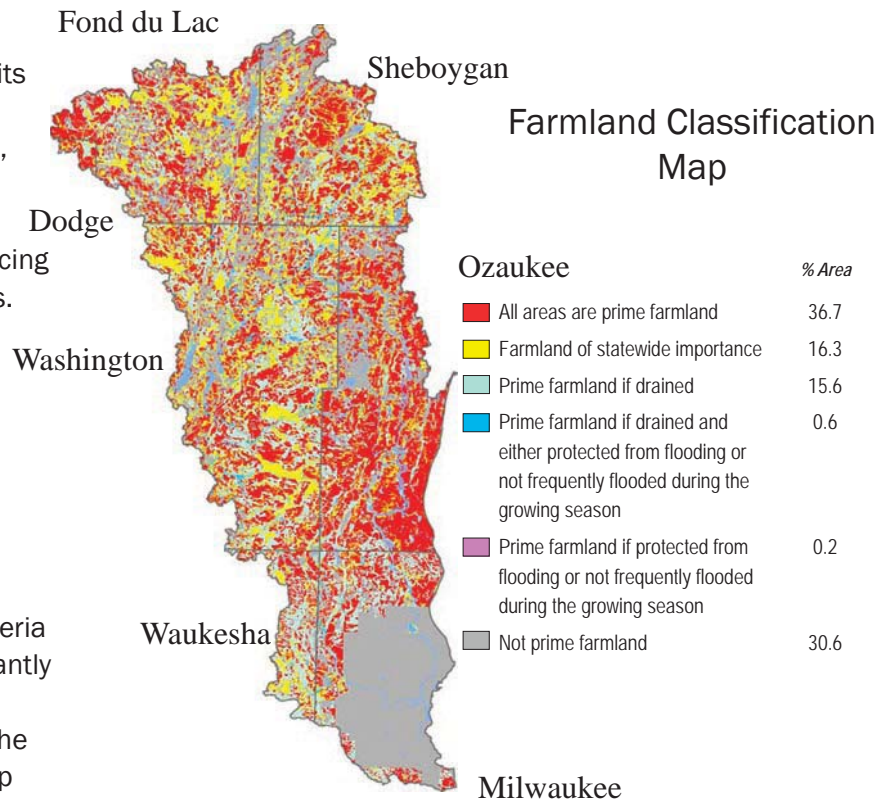
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.

## 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.

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).







## 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 Map

	<i>% Area</i>
 Well Suited	51.2
 Moderately well suited	26.6
 Poorly suited	10.9
 Unsited	11.3



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.



## Performance Results System and Other Data <sup>7</sup>

Based on reports from agricultural counties in the watershed, it is estimated that in 2004, new nutrient management plans were implemented on approximately 6000 acres and 8 acres of grassed waterways were installed. Other surveys indicate that 9.3% of cropland acres in the southeast region of Wisconsin have a nutrient management plan. On a 100 point scale developed at the national level, current conservation in this watershed scores 76.09.

PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	TOTAL
Total Conservation Systems Planned (acres)	2,040	9,463	12,339	9,592	20,900	N/A	3,726	58,060
Total Conservation Systems Applied (acres)	1,019	7,145	11,257	9,592	18,867	N/A	12,021	59,901
<b>C o n s e r v a t i o n P r a c t i c e s</b>								
Total Waste Management (313) (numbers)	1	9	7	1	1	0	1	20
Riparian Forest Buffers (391) (acres)	0	17	12	7	0	0	3	39
Erosion Control Total Soil Saved (tons/year)	201	12,395	17,549	8,712	20,628	N/A	N/A	59,485
Total Nutrient Management (590) (Acres)	0	1,339	2,183	1,580	3,630	6,490	8,784	24,006
Pest Management Systems Applied (595A) (Acres)	0	70	0	0	0	0	0	70
Prescribed Grazing 528a (acres)	0	0	120	343	442	211	41	1,157
Tree & Shrub Establishment (612) (acres)	0	434	317	95	208	0	53	1,107
Residue Management (329A-C) (acres)	0	3,869	2,915	2,955	9,007	3,498	3,219	25,463
Total Wildlife Habitat (644 - 645) (acres)	846	2,751	1,629	986	2,857	453	8	9,530
Total Wetlands Created, Restored, or Enhanced (acres)	9	98	2	35	62	0	0	206
<b>A c r e s e n r o l l e d i n F a r m b i l l P r o g r a m s</b>								
Conservation Reserve Program	1,019	2,414	1,401	704	1,247	N/A	121	6,906
Wetlands Reserve Program	0	0	10	0	10	N/A	0	20
Environmental Quality Incentives Program	0	0	1,068	2,001	1,305	N/A	10,776	15,150
Wildlife Habitat Incentive Program	0	0	16	0	0	N/A	0	16
Farmland Protection Program	0	0	0	0	0	N/A	0	0

## Census and Social Data (Relevant)<sup>8.</sup>

There are 1555 farms in the watershed that average 162 acres in size. The 2002 average gross farm income in the agricultural counties of the watershed was \$88,274, about 17.5% above the state average. It is estimated that less than 10% of farmers meet the limited resource producer criteria

2002 Ag Census Data		Dodge	Fond Du Lac	Milwaukee	Ozaukee	Sheboygan	Washington	Waukesha	Total
	Farms (number)	10	292	47	384	275	499	49	1555
	Land in farms (acres)	2020	61627	3342	54412	48031	76716	6298	252446
	Total cropland (acres)	1703	52314	2674	45491	40982	62086	5165	210415
	Irrigated land (acres)	2	140	32	190	8	450	49	870
	Principal operator by primary occupation - Farming (number)	7	196	27	218	169	326	25	967
Farms by Size	Farms by size - 1 to 10 acres	1	19	17	43	29	40	7	155
	Farms by size - 11 to 49 acres	2	61	13	118	84	158	21	456
	Farms by size - 50 to 179 acres	4	107	12	122	79	186	13	521
	Farms by size - 180 to 499 acres	3	80	5	85	61	85	5	322
	Farms by size - 500 to 999 acres	1	17	1	12	16	20	2	68
	Farms by size - 1,000 acres or more	0	9	0	4	6	11	1	32
Livestock and Poultry	Livestock and poultry - Cattle and calves inventory (farms)	5	135	6	124	125	212	12	619
	Livestock and poultry - Cattle and calves inventory - Beef cows (farms)	1	19	2	28	29	45	6	130
	Livestock and poultry - Cattle and calves inventory - Milk cows (farms)	2	80	1	69	59	103	3	317
	Livestock and poultry - Hogs and pigs inventory (farms)	1	10	1	7	13	21	2	54
	Livestock and poultry - Sheep and lambs inventory (farms)	0	7	1	14	9	13	3	48
	Livestock and poultry - Layers 20 weeks old and older inventory (farms)	0	9	3	12	13	29	2	70
	Livestock and poultry - Broilers and other meat-type chickens sold (farms)	0	2	0	6	6	8	1	24
Selected Crops Harvested	Selected crops harvested - Corn for grain (acres)	642	15541	386	8217	8983	16464	1697	51929
	Selected crops harvested - Corn for silage or greenchop (acres)	118	3894	41	3377	4155	5115	146	16846
	Selected crops harvested - Wheat for grain, all (acres)	48	2222	101	3056	2646	2612	118	10804
	Selected crops harvested - Wheat for grain, all - Winter wheat for grain (acres)	48	0	101	3056	0	0	116	3321
	Selected crops harvested - Wheat for grain, all - Spring wheat for grain (acres)	1	0	0	0	0	0	2	2
	Selected crops harvested - Oats for grain (acres)	30	1110	85	1448	1352	2394	86	6506
	Selected crops harvested - Barley for grain (acres)	3	145	0	226	202	445	2	1024
	Selected crops harvested - Soybeans for beans (acres)	332	8560	910	6503	6568	12223	1464	36560
	Selected crops harvested - Forage - land used for all hay and all haylage, grass silage, and greenchop (see text) (acres)	346	12670	0	11938	12479	16888	923	55244
	Selected crops harvested - Vegetables harvested for sale (see text) (acres)	56	3058	135	2346	1462	1279	69	8405
	Selected crops harvested - Land in orchards (acres)	1	18	8	248	30	44	7	357

Urban Population<sup>10</sup>

Population Ethnicity<sup>9</sup>

Total Population = 95,398  
 Urban Population = 23,600  
 Rural Population = 71,797  
 White Alone = 93,603  
 Hispanic or Latino = 1,212  
 Two or more Races - 586  
 Black or African American = 294  
 Some other race alone = 346  
 American Indian and Alaskan Native alone = 268  
 Asian alone = 290  
 Native Hawaiian and other Pacific Islanders alone = 5

	1990	2000	2004	Median Income*
River Hills	1,612	1,631	1,630	161,292
Mequon	18,885	21,823	23,820	90,733
Bayside	4,789	4,518	4,215	88,982
Elm Grove	6,261	6,249	6,182	86,212
Whitefish Bay	14,272	14,163	13,508	80,755
Fox Point	7,238	7,012	6,741	80,572
Brookfield	35,184	38,649	39,656	76,225
New Berlin	33,592	38,220	38,547	67,576
Germantown	13,658	18,260	19,245	60,742
Menomonee Falls	26,840	32,647	34,125	57,952
Newburg	875	1,119	1,206	56,726
Cedarburg	9,895	10,908	11,298	56,431
Thiensville	3,301	3,254	3,123	55,962
Greendale	15,128	14,405	13,860	55,553
Glendale	14,088	13,367	12,880	55,306
Wauwatosa	49,366	47,271	45,014	54,519
Jackson	2,486	4,938	6,036	53,990
Port Washington	9,338	10,467	10,892	53,827
Fredonia	1,558	1,934	2,192	53,173
Saukville	3,695	4,068	4,184	53,159
Adell	510	517	498	51,000
Brown Deer	12,236	12,170	11,611	50,847
Kewaskum	2,515	3,274	3,607	49,861
West Bend	23,916	28,152	29,549	48,315
Cascade	620	666	696	47,232
Shorewood	14,116	13,763	13,192	47,224
Slinger	2,340	3,901	4,358	47,125
Lomira	1,542	2,233	2,410	46,522
Random Lake	1,439	1,551	1,585	45,938
Campbellsport	1,732	1,913	1,930	44,740
Greenfield	33,403	35,476	35,753	44,230
Cudahy	18,659	18,429	18,316	40,157
West Allis	63,221	61,254	58,798	39,394
Butler	2,079	1,881	1,822	38,333
St. Francis	9,245	8,662	9,382	36,721
West Milwaukee	3,973	4,201	4,012	35,250
Milwaukee	628,088	596,974	578,887	32,216
Grafton	379	406	402	30,288



## Management Opportunities

The Wisconsin DNR has created a list of management opportunities for use in the ecological landscape units. View these and the entire ecological landscape description at: <http://dnr.wi.gov/landscapes>



## Ecological Landscapes

### General Description - Southeast Glacial Plains

The Southeast Glacial Plains Ecological Landscape makes up the bulk of the non-coastal land area in southeast Wisconsin. This Ecological Landscape is made up of glacial till plains and moraines. Most of this Ecological Landscape is composed of glacial materials deposited during the Wisconsin Ice Age, but the southwest portion consists of older, pre-Wisconsin till with a more dissected topography. Soils are lime-rich tills overlain in most areas by a silt-loam loess cap. Agricultural and residential interests throughout the landscape have significantly altered the historical vegetation. Most of the rare natural communities that remain are associated with large moraines or in areas where the Niagara Escarpment occurs close to the surface

### General Description - Southern Lake Michigan Coastal

The Southern Lake Michigan Coastal Ecological Landscape is located in the southeastern corner of Wisconsin along Lake Michigan. The landforms in this Ecological Landscape are characteristic of glacial lake influence, with ridge and swale topography, clay bluffs, and lake plain along Lake Michigan. Further inland, ground moraine is the dominant landform. Soils typically have a silt-loam surface overlying loamy and clayey tills.

### General description - Central Lake Michigan Coastal

The Central Lake Michigan Coastal Ecological Landscape stretches from southern Door County west across Green Bay to the Wolf River drainage, then southward in a narrowing strip along the Lake Michigan shore to central Milwaukee County. Owing to the influence of Lake Michigan in the eastern part of this landscape, summers there are cooler, winters warmer, and precipitation levels greater than at locations farther inland.

Dolomites and shales underlie the glacial deposits that blanket virtually all of the Central Lake Michigan Coastal Ecological Landscape. The dolomite Niagara Escarpment is the major bedrock feature, running across the entire landscape from northeast to southwest. Series of dolomite cliffs provide critical habitat for rare terrestrial snails, bats, and specialized plants. The primary glacial landforms are ground moraine, outwash, and lakeplain. The topography is generally rolling where the surface is underlain by ground moraine, variable over areas of outwash, and nearly level where lacustrine deposits are present. Important soils include clays, loams, sands, and gravels. Certain landforms, such as sand spits, clay bluffs, beach and dune complexes, and ridge and swale systems, are associated only with the shorelines of Lake Michigan and Green Bay.

## Resource Concerns

Primary resource concerns are cropland and construction site erosion, stormwater management, nutrient management, surface water and ground water quality, and wetland habitat management and restoration. Ten percent of the watershed's stream miles are on the Environmental Protection Agency's 303(d) impaired waters list. The most common impairments are nonpoint and point source pollution impacts as well as contaminated sediment. Over 900,000 people get their drinking water from Lake Michigan. A 1993 outbreak of cryptosporidium in the public water system sickened over 400,000 people. The proposed additional Tier II resource concern for the Milwaukee River Watershed is wildlife habitat.

## Watershed Projects, Studies, Monitoring, Etc

Numerous Wisconsin Priority Watershed projects were carried out over the past two decades in the watershed to provide cost-sharing for the implementation of best-management practices. The projects included the Kinnickinnic River, Cedar Creek, the Menomonee River, and the North, South, East and West Branches of the Milwaukee River.

The Wisconsin Department of Natural Resources (WDNR) conducts ongoing water quality monitoring in the watershed each year. In addition, the Milwaukee River Basin Partnership is a large contingent of organizations working to educate stakeholders and improve many aspects of the watershed, including nonpoint source pollution from agriculture.

The North Branch Milwaukee River Wildlife and Farming Heritage Area is a WDNR designated project area targeted for restoring wetlands and preserving farmland. Partnership efforts are underway with landowners and NRCS through the Wetlands Reserve Program (WRP) and Farm and Ranch Lands Protection Program.

## 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 Milwaukee River Watershed is 4.8.



## Partner Groups

- County Land Conservation Departments (Directory Link)  
[http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/pdf/ar-pub-119web\\_dec2005.pdf](http://www.datcp.state.wi.us/arm/agriculture/land-water/conservation/pdf/ar-pub-119web_dec2005.pdf) )
- River Alliance <http://www.wisconsinrivers.org/>
- USDA Farm Service Agency <http://www.fsa.usda.gov/wi/news/default.asp>
- US Fish and Wildlife Service <http://www.fws.gov/midwest/maps/wisconsin.htm>
- UW Cooperative Extension <http://www.uwex.edu/ces/> and <http://basineducation.uwex.edu/rockriver/>
- Wisconsin Department of Agriculture, Trade, and Consumer Protection <http://www.datcp.state.wi.us>
- Wisconsin Department of Natural Resources <http://dnr.wi.gov/>
- 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 CRA. For more information about a CRA visit <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. For more information about NED visit <http://ned.usgs.gov/>. The data was downloaded from the NRCS Geospatial Data Gateway <http://datagateway.nrcs.usda.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](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 2004 Section 303(d) of the U.S. Environment Protection Agency website: [http://oaspub.epa.gov/tmdl/huc\\_rept.control?p\\_huc=07070005&p\\_huc\\_desc=LOWER%20WISCONSIN](http://oaspub.epa.gov/tmdl/huc_rept.control?p_huc=07070005&p_huc_desc=LOWER%20WISCONSIN). Preliminary level 5, 10- digit watersheds were obtained from USGS, NRCS, EPA and Forest Service that will eventually become the official certified 24k WBD

dataset. For a list and explanation of Outstanding and Exceptional 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:

- Dodge Co., WI (WI027) Published 20060303
- Fond du Lac Co., WI (W120) Published 20060120
- Ozaukee Co., WI (WI089) Published 20060120
- Sheboygan Co., WI (WI117) Published 20060120
- Washington Co., WI (WI131) Published 20060120
- MilwaukeeCo., WI (W079) Published 20060120
- Waukesha Co., WI (W602) Published 20060120

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](http://factfinder.census.gov/home/saff/main.html?_lan)