



## **CHAPTER 3**

# **INVENTORY OF AGRICULTURAL, NATURAL, AND CULTURAL RESOURCES**

## **INTRODUCTION**

The conservation and wise use of agricultural and natural resources and the preservation of cultural resources are fundamental to achieving strong and stable physical and economic development as well as maintaining community identity. The City of Kenosha Comprehensive Plan recognizes that agricultural, natural, and cultural resources are limited and very difficult or impossible to replace if damaged or destroyed. Information on the characteristics and location of agricultural, natural, and cultural resources in the City of Kenosha is needed to help properly locate future land uses. This information is necessary to avoid serious environmental problems and to ensure protection of natural resources.

This chapter provides inventory information on existing agricultural, natural, and cultural resources in the City of Kenosha. Information regarding soil types, existing farmland, farming operations, topography and geology, non-metallic mining resources, water resources, woodland resources, natural areas, and critical species habitats, environmental corridors, park and open space sites, climate, air quality, and cultural (historical and archeological) resources is included in this chapter. The planning recommendations set forth in the Agricultural, Natural, and Cultural Resources Element chapter of this report are directly related to the inventory of the resources listed above.

The base year for inventory data presented in this chapter ranges from 1982 to 2007. Much of the inventory data has been collected through regional land use and natural area planning activities conducted by SEWRPC. Additional inventory data has been collected from and by Kenosha County, the City of Kenosha, and State and Federal agencies including the Wisconsin Department of Natural Resources (DNR), Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), State Historical Society of Wisconsin, and the U.S. Department of Agriculture (USDA).

## **PART 1: SOILS AND AGRICULTURAL RESOURCES**

### **Soil Survey**

The USDA Soil Conservation Service, now the Natural Resources Conservation Service (NRCS), issued a soil survey for Kenosha County including the City of Kenosha, in 1970.<sup>1</sup> Soils were identified and mapped and organized by soil association, soil series, and soil type. The soil survey results, including the attributes of each soil type, are now available on the NRCS website as part of the Soil Survey Geographic (SSURGO) database. Unless otherwise noted, the soil information in this chapter was obtained from the SSURGO database.

The soil survey can play an important role in land use decisions. The information contained in the soil survey can help identify which areas of the City of Kenosha have limitations for development due to wet soils or bedrock near the surface.

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<sup>1</sup> Documented in the USDA Soil Conservation Service, Soil Survey of Kenosha and Racine Counties, Wisconsin, 1971.

### Soil Associations

A soil association is a landscape that has a distinctive pattern of soils. It normally consists of one (1) or more major soils and at least one (1) minor soil, and is named for the major soils. Map 3-1, page 3, shows soil associations in Kenosha County. The map provides a general idea of the soils in the County and is useful for comparing different parts of the County. Planning decisions should be based on the more detailed soils information, including soil mapping units and interpretations for various land uses, contained in the soil survey. The five (5) soil associations in the City of Kenosha are briefly described below:

The **Boyer-Granby Association** consists of well-drained to very poorly-drained soils that have a loam-to-sand subsoil, underlain by sandy glacial outwash. The soils are nearly level or gently sloping, occupying a low, long terrace adjoining Lake Michigan. This association encompasses about one (1) percent of the County.

The **Fox-Casco Association** consists of well-drained soils that have a clay loam and silty clay loam subsoil. The soils are nearly level to rolling and occur mainly on terraces and on hills. This association encompasses about 12 percent of the County and is located primarily in the western portions of the County and along the Pike River in the Town of Somers.

The **Hebron-Montgomery-Aztalan Association** consists of well-drained to poorly-drained soils that have a loamy to silty clay subsoil. The soils are nearly level to rolling and are located on lake plains close to Lake Michigan, along the Fox and Des Plaines Rivers, and along other streams. This association encompasses 24 percent of the County.

The **Morley-Beecher-Ashkum Association** consists of well-drained to poorly-drained soils that have a silty clay or silty clay-loam subsoil. These soils are nearly level or gently sloping and occupy low, broad ridges and knobs that are dissected by drainageways and depressions. This association occurs throughout much of the County and is the second largest soil association, encompassing about 25 percent of the County.

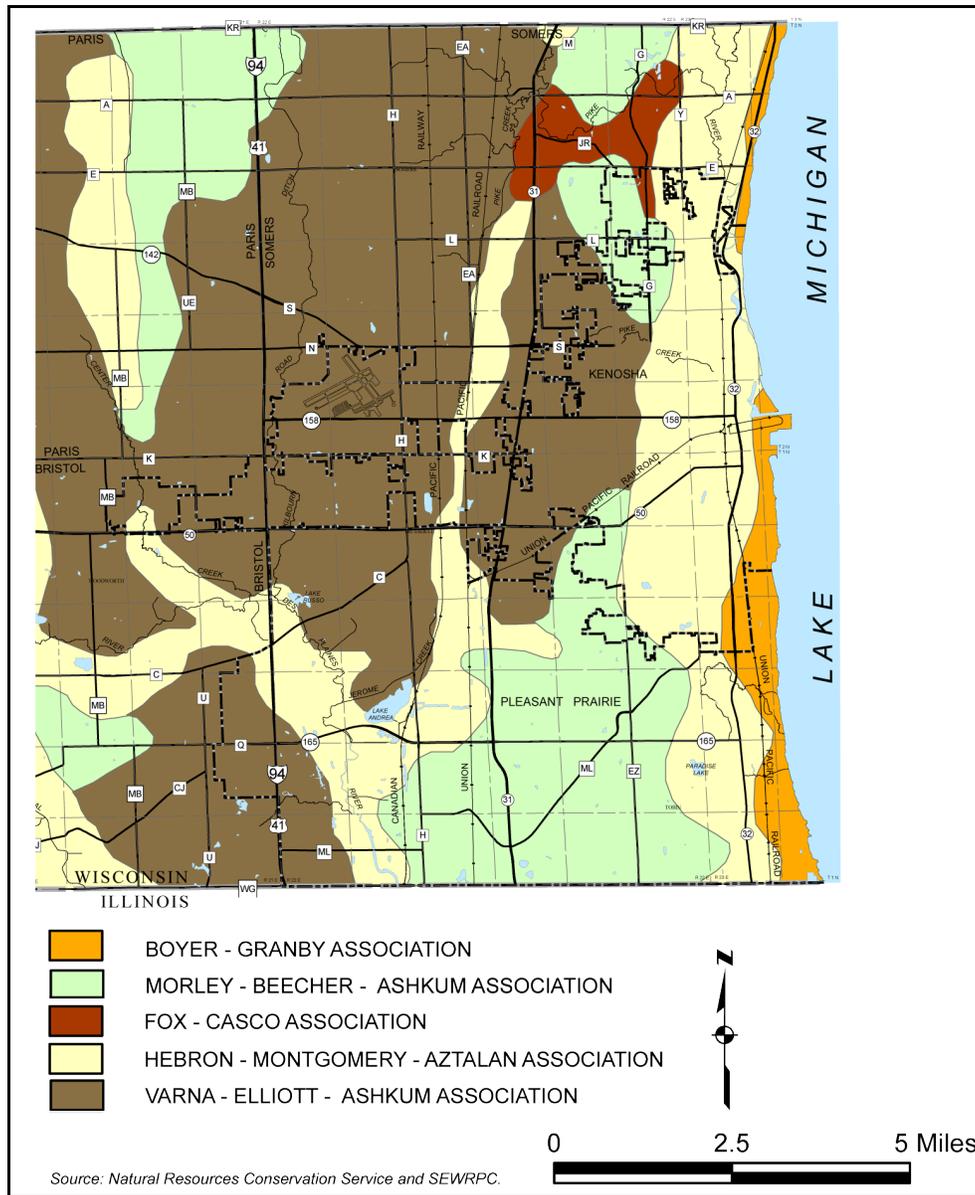
The **Varna-Elliott-Ashkum Association** consists of well-drained to poorly-drained soils that have a silty clay-loam-to-clay subsoil. These soils are nearly level or gently sloping and occur on low, broad ridges and knobs. This association is located throughout much of the northern and eastern areas of the County. This is the largest soil association within the County, encompassing over 32 percent of the total area.

### Soil Limitations for Development

A variety of soil characteristics can impact the suitability of land for development. Severe structural soils, as identified by the Kenosha County Land and Water Conservation Division using data from the NRCS, impose significant limitations on development of dwellings with or without basements and structures requiring private on-site waste treatment system (POWTS) absorption fields. Severe structural soils possess properties or site features that are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings and affect dwellings with or without basements. Likewise, a high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction and also influence the performance of POWTS absorption fields. These factors were all considered during the identification of severe structural soils.

Soils that are saturated with water or that have a water table at or near the surface, known as hydric soils or severe wet soils, also pose significant limitations for most types of development. High water tables often cause wet basements and poorly-functioning absorption fields for POWTS. The excess wetness may also restrict the growth of landscaping plants and trees. Wet soils also restrict or prevent the use of land for crops, unless the land is artificially drained. Map 3-2, page 4, depicts severe structural soils and severe wet soils in the City of Kenosha, as identified by the NRCS and the Kenosha County Land and Water Conservation Division. The number of acres of severe structural soils total 3,463 acres and severe wet soils total 3,409 acres in the City of Kenosha as shown

**MAP 3-1  
GENERAL SOIL ASSOCIATIONS IN THE CITY OF KENOSHA**



in Table 3-1, page 4. Although such areas are generally unsuitable for development, they may serve as important locations for restoration of wetlands, as wildlife habitat, and for stormwater detention.

Topographical features, particularly slopes, have a direct bearing on the potential for soil erosion and the sedimentation of surface waters. Slope steepness affects the velocity and, accordingly, the erosive potential of runoff. As a result, steep slopes place moderate to severe limitations on urban development, especially in areas with highly erodible soil types. Map 3-3, page 5, indicates portions of City of Kenosha that have slopes exceeding 12 percent. Poorly planned hillside development in areas of steep slopes can lead to high costs for public infrastructure development and maintenance, as well as construction and post-construction erosion problems. Information on Lake Michigan bluffs is provided in a separate section of this Chapter.

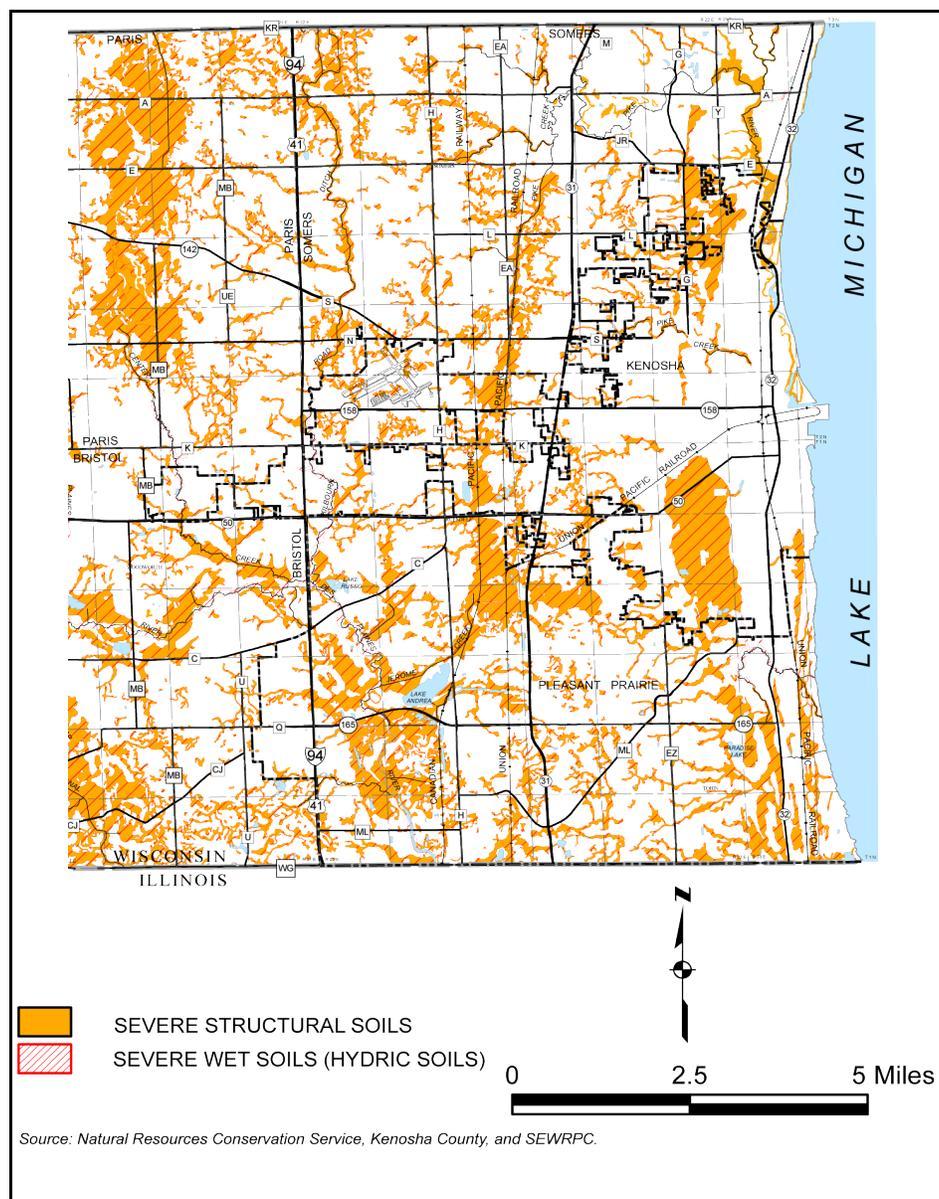
**TABLE 3-1**  
**SEVERE STRUCTURAL SOILS AND SEVERE WET SOILS IN THE**  
**CITY OF KENOSHA AND KENOSHA COUNTY: 2006<sup>a</sup>**

Local Government	Severe Structural Soils (acres)	Percent of Local Government	Severe Wet Soils (acres)	Percent of Local Government
City of Kenosha	3,463	20.9	3,409	20.5
Kenosha County Total	47,861	26.9	43,840	24.6

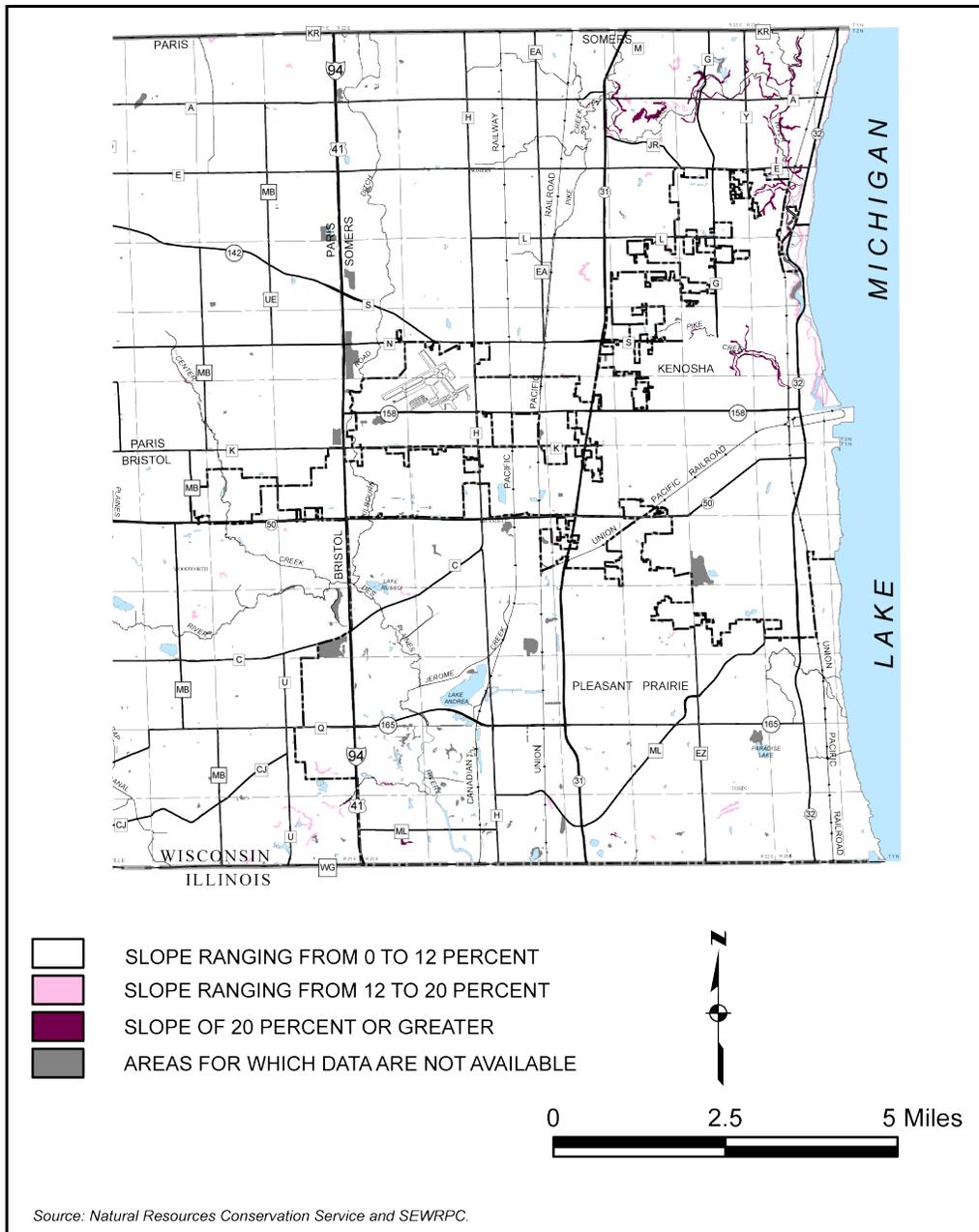
*a Severe structural soils and severe wet soils are not exclusive categories. As seen on Map 3-2, significant overlap exists between the severe structural soil and severe wet soil classifications.*

Source: Natural Resources Conservation Service, Kenosha County and SEWRPC.

**MAP 3-2**  
**SOIL LIMITATIONS FOR DEVELOPMENT IN KENOSHA COUNTY**



**MAP 3-3  
SLOPE ANALYSIS FOR KENOSHA COUNTY**



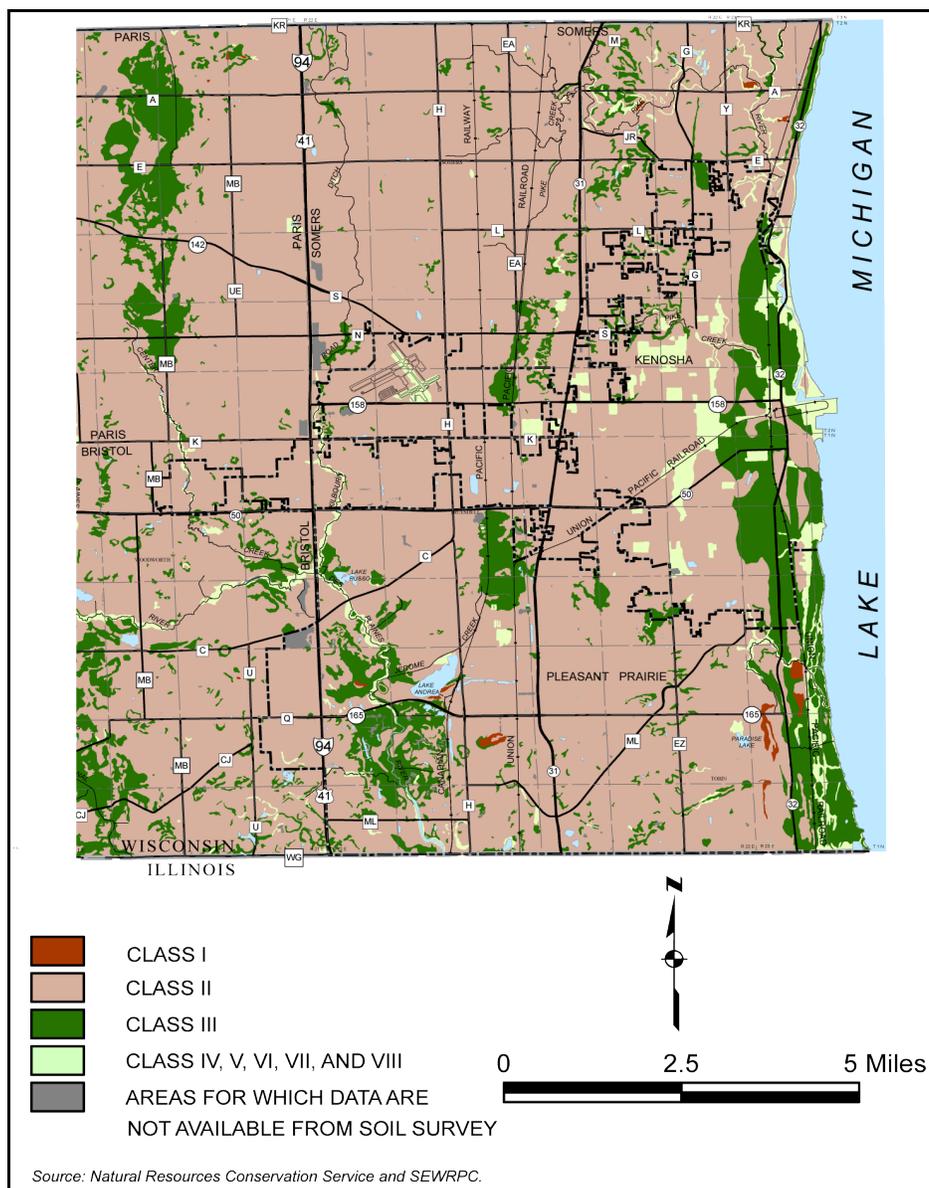
**Soil Suitability for Agricultural Production**

The NRCS has classified the agricultural capability of soils based on their general suitability for most kinds of farming. These groupings are based on the limitations of the soils, the risk of damage when used, and the way in which the soils respond to treatment. Generally, lands with Class I and II soils are considered “National Prime Farmlands.” Almost 73 percent of the City of Kenosha is covered by prime farmland soils. Lands with Class III soils are considered “Farmlands of Statewide Significance,” which cover about 16 percent of the City of Kenosha. The soils in the other classes have progressively greater natural limitations. Class II soils have some limitations that reduce the choice of plants that can be grown, or require moderate conservation practices to reduce the risk of damage when used. Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both, and Class IV soils have very severe limitations. Class V, VI, and VII soils are

considered suitable for pasture but not for crops, and Class VIII soils are so rough, shallow, or otherwise limited that they do not produce economically worthwhile yields of crops, forage, or wood products.

The location and amount of Class I, II, and III soils, as set forth in Map 3-4 and Table 3-2, page 7, were an important consideration when farmland preservation areas were identified in the existing County Farmland Preservation Plan (adopted in 1981). The County Farmland Preservation Plan<sup>2</sup> used the following criteria to designate Prime Farmlands: farms with at least 50 percent of soils classified as Class I, II, or III, located within a farming block of at least 100 acres, and having a minimum farm size of 35 acres. Farms less than 35 acres were included if used for the production of specialty crops or livestock, provided the soil criteria and minimum farming block criteria were met.

**MAP 3-4**  
**AGRICULTURAL SOIL CAPABILITY IN KENOSHA COUNTY**



<sup>2</sup> Documented in SEWRPC Community Assistance Planning Report No. 45, A Farmland Preservation Plan for Kenosha County, Wisconsin, June 1981.

**Agricultural Land Evaluation for Cropland**

Soils in Wisconsin have been rated by the NRCS based on soil type, slope, agricultural capability class (Map 3-4, page 6), and soil productivity for producing corn and soybeans. A relative value was then determined for each soil type. The best soils for crop production were assigned a value of 100. The NRCS provided these land evaluation (LE) values for soils in Kenosha County based on LE values for all soil types in Wisconsin. Soil LE values were “normalized” for Kenosha County as part of the LE analysis, meaning that each soil is rated in relative value to other soils in Kenosha County, rather than to soils in the State. Map 3-5, page 8, depicts the LE ratings for soils in Kenosha County, grouped by various ranges. Acres within each range are shown on Map 3-5, page 8, and listed in Table 3-3.

**TABLE 3-2**

**AGRICULTURAL SOIL CAPABILITY IN THE CITY OF KENOSHA AND KENOSHA COUNTY**

Area	Class I Soils (acres)	Class II Soils (acres)	Class III Soils (acres)	Class IV, V, VI, VII, and VIII Soils and Unclassified Areas (acres)	Surface Water (acres)	Total (acres) <sup>a</sup>
City of Kenosha	---	12,079	2,669	1,765	84	16,596
Percent of Total Lands (City of Kenosha)	---	72.8	16.1	10.6	0.5	100.0
Kenosha County	1,130	126,556	29,281	16,154	5,028	178,149
Percent of Total Lands	0.6	71.0	16.4	9.1	2.8	100.0

*a Total acreage was based on 2005 civil divisions.*

*Source: Natural Resources Conservation Service and SEWRPC.*

**TABLE 3-3**

**SOIL PRODUCTIVITY RATINGS FOR CROPLAND (LAND EVALUATION RATINGS) IN THE CITY OF KENOSHA AND KENOSHA COUNTY**

Local Government	95 to 100 (acres)	90 to 94.9 (acres)	85 to 89.9 (acres)	80 to 84.9 (acres)	70 to 79.9 (acres)	60 to 69.9 (acres)	Less than 60 or Soil Not Rated (acres)	Total (acres) <sup>a</sup>
City of Kenosha	---	22	5,375	4,366	2,354	2,267	2,366	16,750
Kenosha County	939	540	54,517	46,913	28,852	13,972	32,416	178,149
Percent of Total Lands	<1.0	<1.0	30.1	26.3	16.2	7.8	18.2	100.0

*a Total acreage was based on 2005 civil divisions.*

*Source: Natural Resources Conservation Service and SEWRPC.*

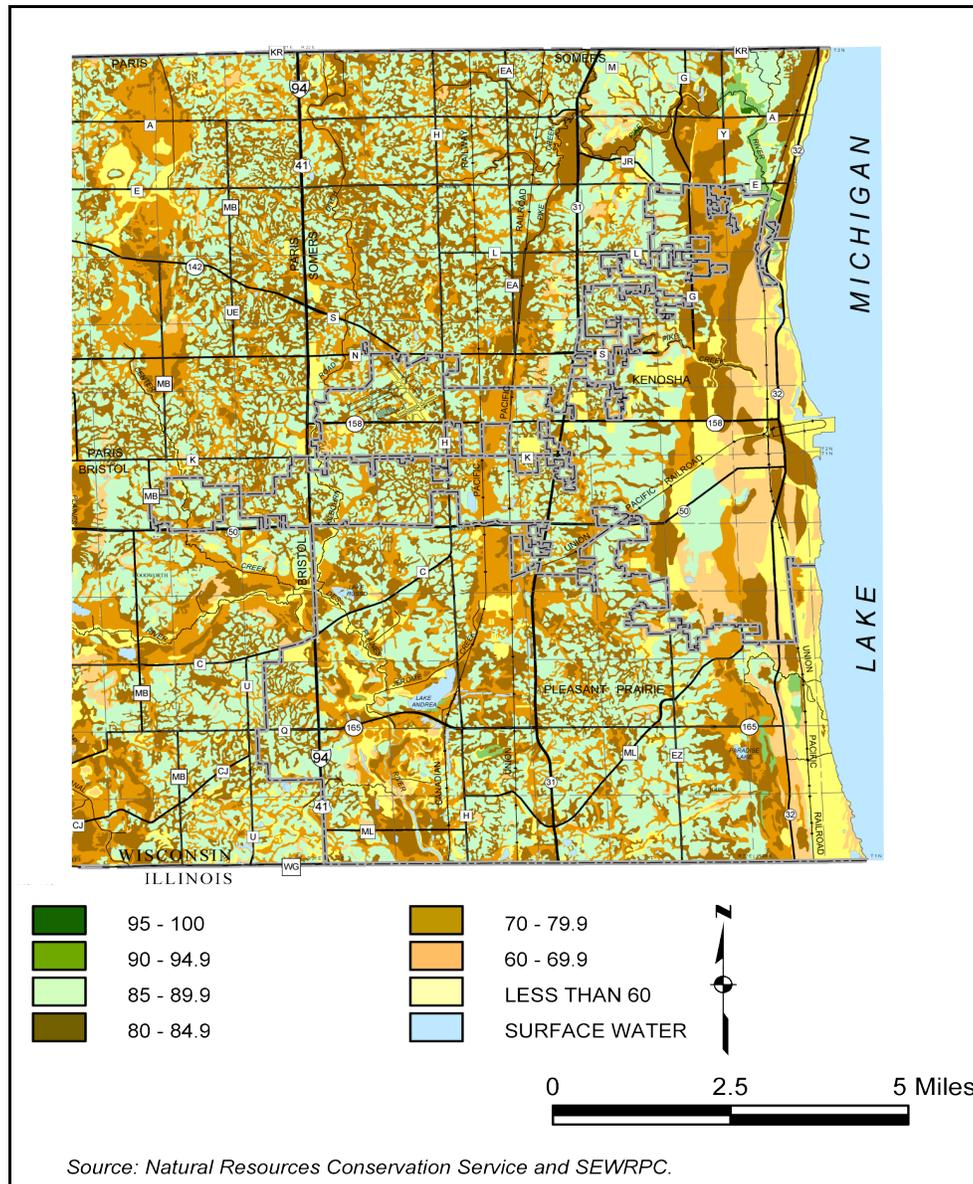
**Existing Farmland**

Agricultural lands in 2000 were identified by SEWRPC as part of the Regional Land Use Inventory conducted as part of the Regional Planning Program. The Land Use Inventory identified croplands, pasture lands, orchards, nurseries, specialized farming, and non-residential farm buildings. Farm residences, together with a 20,000 square foot dwelling site, are classified as single-family residential land uses.<sup>3</sup> Based on the land use inventory, about 1,633 acres, or about 2.6 square miles, representing almost 10 percent of the City of Kenosha, were in agricultural use in 2000. It should be noted that this figure includes lands actually used for agriculture – primarily cultivated lands and lands used for pasture – and excludes the wetland and woodland portions of farm fields.

<sup>3</sup> See Chapter 4 for more information about the SEWRPC 2000 land use inventory.

MAP 3-5

AGRICULTURAL LAND EVALUATIONS FOR SOIL IN KENOSHA COUNTY



Map 3-6, page 9, and Table 3-4, page 10, show the area devoted to farmland use in 2000, categorized as follows:

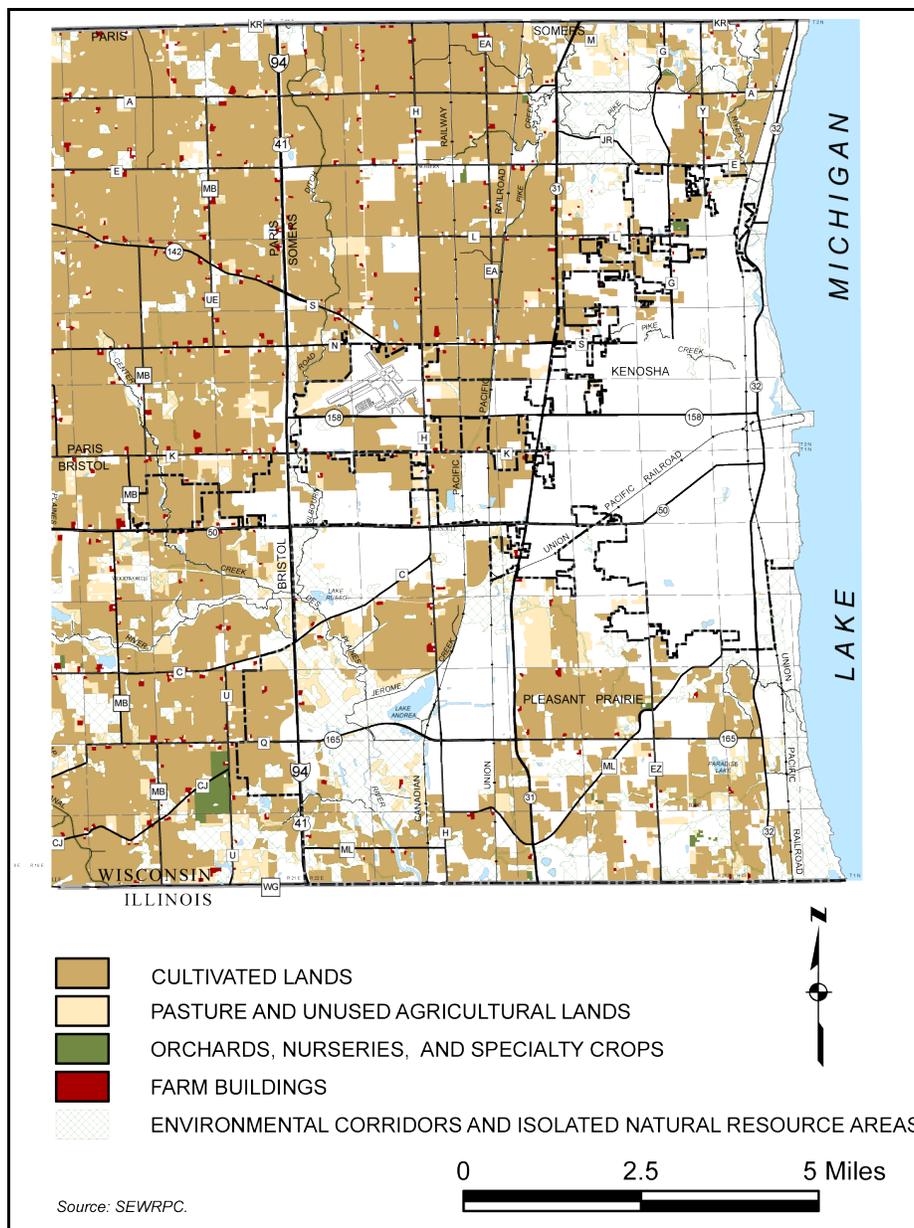
- **Cultivated Lands** – which includes lands used for the cultivation of crops including row crops, grain crops, vegetable crops, and hay.
- **Pasture Land and Unused Agricultural Lands** – which includes lands used as pasture, or lands which were formerly cultivated or used for pasture which have not yet succeeded to a wetland or woodland plant community.

- **Orchards, Nurseries, and Specialty Crops** – which includes lands used for orchards, nurseries, sod farms, and specialty crops such as mint, ginseng, and berry fields. Greenhouses are not included in this category, but are shown as commercial on the Land Use Map in Chapter 4.
- **Farm Buildings** – which includes barns, silos, and other buildings used to store farm equipment or supplies or house farm animals.

As shown on Map 3-6, page 9, and Table 3-4, page 10, cultivated lands were the predominant type of agricultural use in the City of Kenosha, accounting for about 86 percent of agricultural land in the City of Kenosha in 2000.

MAP 3-6

EXISTING AGRICULTURAL LANDS AND SIGNIFICANT NATURAL AREAS IN KENOSHA COUNTY: 2000



**TABLE 3-4**  
**AGRICULTURAL LANDS IN THE CITY OF KENOSHA AND KENOSHA COUNTY: 2000**

Area	Cultivated Lands (acres)	Percent of Ag Lands	Pasture Land and Unused Ag Land (acres)	Percent of Ag Lands	Orchards, Nurseries and Specialty Crops	Percent of Ag Lands	Farm Buildings (acres)	Percent of Ag Lands	Total Ag Lands (acres)
City of Kenosha	1,401	85.8	217	13.3	---	0.0	15	0.9	1,633
Kenosha County	82,202	100.0	9,981	100.0	956	100.0	1,576	100.0	94,715
Percent of Total Lands	86.8	---	10.5	---	1.0	---	1.7	---	100.0

Source: SEWRPC.

## PART 2: NATURAL RESOURCES

### Topography and Geology

The landforms and physical features of the City of Kenosha, such as topography and drainage patterns, are an important determinant of growth and development. The physiography of the area not only must be considered in sound land use and supporting transportation, utility, and community facility planning and development, but it also contributes directly to the natural beauty and overall quality of life in the City of Kenosha. The City of Kenosha varies from sand dunes and bluffs in the eastern half to gently rolling glacial plains in the western half. Additionally, the subcontinental divide, which separates the Mississippi River Basin and the Great Lakes-St. Lawrence River Basin, traverses the City of Kenosha. The City of Kenosha is adjacent to Lake Michigan, one of the five (5) Great Lakes.

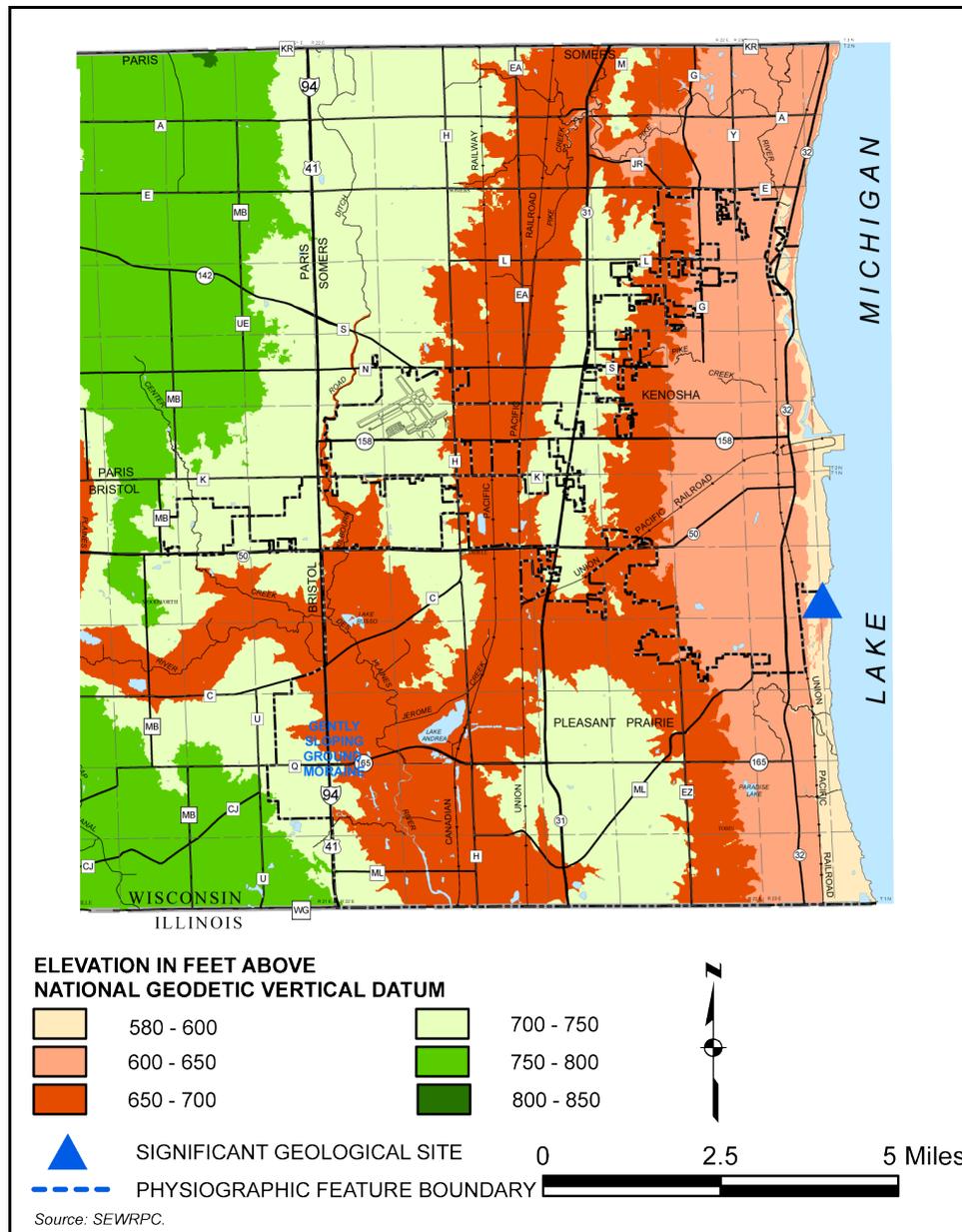
Glaciation has largely determined the physiography and topography, as well as the soil, within the City of Kenosha. Generalized landforms and topographic characteristics in about 50-foot interval contours are shown on Map 3-7, page 11. Topographic elevations range from 580 feet above sea level at the Lake Michigan shoreline to approximately 750 feet near the airport and the western growth areas. There is evidence of four (4) major stages of glaciation in the Southeastern Wisconsin Region. The last, and most influential in terms of present physiography and topography in the City of Kenosha, was the Wisconsin stage, which is believed to have ended in the State about 11,000 years ago.

The majority of the City of Kenosha is dominated by gently sloping ground moraines. Ground moraines were laid down directly by the glacier, and are typically made up of dense basal till, which contains a combination of silt and clay. The City of Kenosha also contains wetland areas made up of peat and organic materials. Glacial outwash deposits are common along the major rivers and streams. Outwash is alluvial in origin and was deposited by glacial meltwaters. A few places also contain lacustrine deposits which consist of sediments from glacial lakebeds. In addition, there are areas of steep bluffs along the Lake Michigan shoreline near Carthage College.

One site of geological importance, the Kenosha Dunes and Buried Forest shown on Map 3-7, page 11, was identified in 1994 as part of the Regional Natural Areas Plan. Geological sites included in the inventory were selected on the basis of scientific importance, significance in industrial history, natural aesthetics, ecological qualities, educational value, and public access potential. The Kenosha Dunes and Buried Forest, encompassing 36 acres, is a glacial geology site of countywide or regional significance that lies wholly within the established project boundary of the Chiwaukee Prairie-Carol Beach State Natural Area within the Village of Pleasant Prairie, adjacent to the City of Kenosha. There were no bedrock geology sites of local, countywide, regional, or statewide significance identified in the City of Kenosha.

MAP 3-7

PHYSIOGRAPHIC FEATURES, GENERALIZED TOPOGRAPHIC CHARACTERISTICS, AND SIGNIFICANT GEOLOGICAL SITE IN KENOSHA COUNTY



**Lake Michigan Bluff and Ravine Areas**

Shoreline erosion and bluff stability conditions are important considerations in planning for the protection and sound development and redevelopment of lands located along Lake Michigan. These conditions can change over time because they are related to changes in climate, water level, the geometry of the near shore areas, the extent and condition of shore protection measures, the type and extent of vegetation, and the type of land uses in shoreland areas. In 1995 SEWRPC completed a study of shoreline erosion and bluff stability conditions along Lake Michigan for its entire length in the Southeastern Wisconsin Region. The findings for the City of Kenosha are summarized in Table 3-5, page 12 and depicted on Map 3-8, page 12. The findings shown in Table 3-5, page 12, are from multiple research points along several shoreline “reaches” which begin at the Wisconsin-Illinois

State line and progress northward along the shoreline to the Village of Mt. Pleasant in Racine County. The linear expanse of each reach was determined by the presence of similar shoreline characteristics.

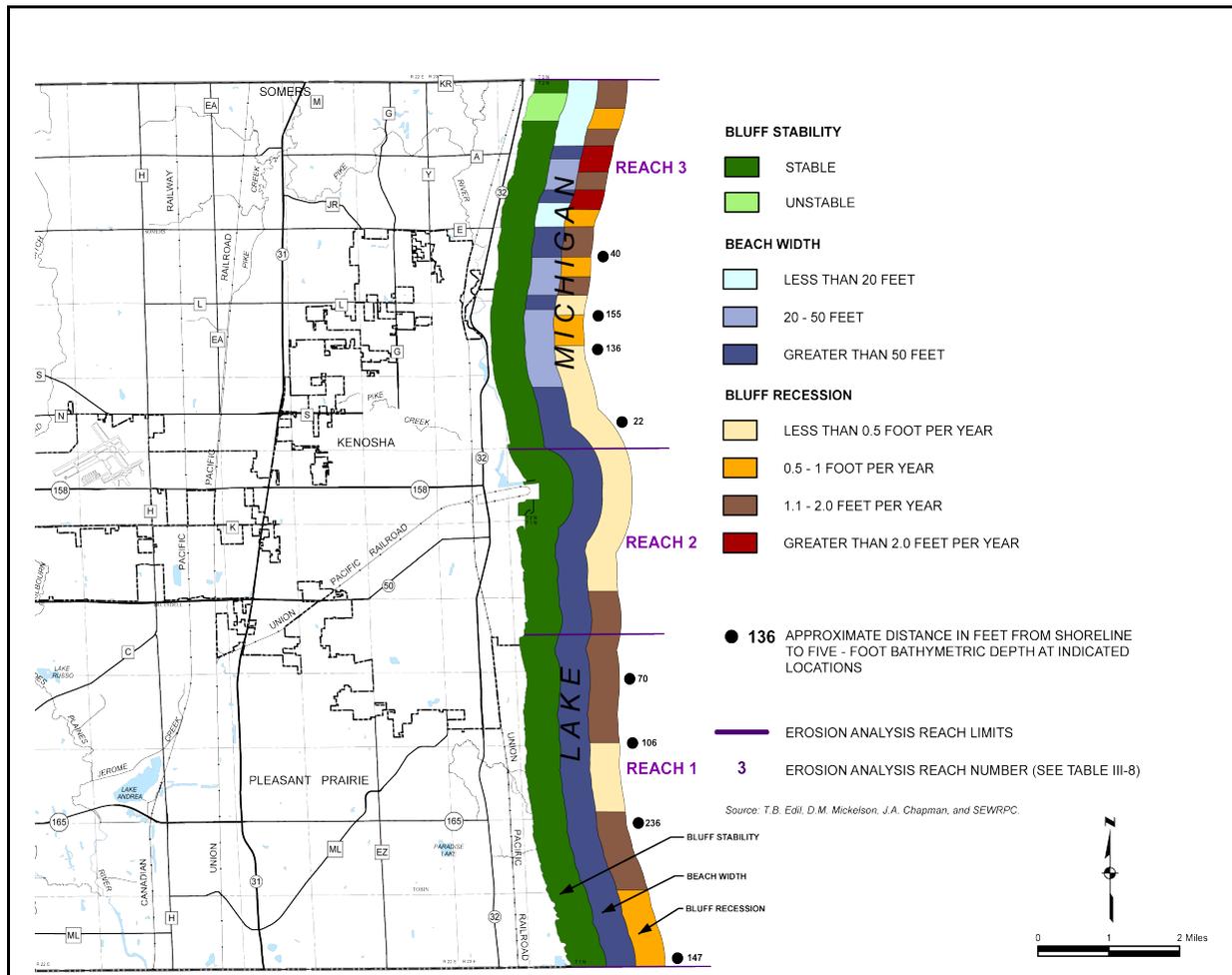
**TABLE 3-5  
BLUFF STABILITY AND SHORELAND RECESSION ALONG  
LAKE MICHIGAN IN THE CITY OF KENOSHA: 1995**

Shoreline Analysis Reach (see Map 3-7)	Bluff Heights (feet)	Deterministic Bluff Stability Safety Factor		Shoreline Recession Data 1963 - 1995		Estimated Beach Width (feet)	
		1995 Conditions	1977 Conditions	Total (feet)	Annual Average (feet per year)	1995 Conditions	1977 Conditions
Reach 1	0 – 20	N/A	N/A	20 – 190	0.6 – 5.9	0 – 150	0 – 100
Reach 2	0 – 20	N/A	N/A	10 – 50	0.3 – 1.5	0 – 200	0 – 100
Reach 3 <sup>a</sup>	0 – 40	0.72 – 5.55	0.21 – 1.25	0 – 140	0.0 – 4.4	0 – 300	0 – 275

<sup>a</sup> Includes a portion of Racine County.

Source: SEWRPC.

**MAP 3-8  
LAKE MICHIGAN SHORELINE EROSION AND BLUFF STABILITY  
ANALYSIS FOR KENOSHA COUNTY: 1995**



Information summarized in Table 3-5, page 12, includes bluff height, bluff stability, shoreline recession data, and beach width. The same information is documented in greater detail in the 1995 SEWRPC Lake Michigan Shoreline Recession and Bluff Stability Report. Bluff stability field research was conducted at 18 sites in Kenosha County, which are summarized in Table 3-5, page 12. A safety factor score was calculated for potential failure surfaces within the bluffs using shear strengths and stresses. The score is defined as the ratio of the forces resisting shear, such as soil cohesion and friction, to the forces promoting shear, such as soil mass, along a failure surface. A score of less than 1.0 is considered unstable, a score of 1.0 to 1.1 is considered marginally stable, and a score of greater than 1.1 is considered stable.

There are approximately five (5) linear miles of Lake Michigan shoreline in the City of Kenosha. The nature of the shoreline varies considerably within the City of Kenosha. The height of the bluff is about 20 feet high at the northern limits of the City of Kenosha and typically four (4) or five (5) feet along the southern shoreline reaches. Bluff stability safety factors ranged greatly, from 0.72 to 5.55, in Reach 3. Shoreline recession rates also ranged greatly from an average of 0 to 5.9 feet per year between 1963 and 1995. The beach width varies considerably ranging from complete absence of beach in some places to over 275 feet in others.

#### **Non-metallic Mineral Resources<sup>4</sup>**

Non-metallic minerals include sand, gravel, crushed stone, building (dimension) stone, peat, clay, and asbestos. Non-metallic mines (quarries and pits) in Southeastern Wisconsin provide sand, gravel and crushed limestone or dolomite for structural concrete and road building; peat for gardening and horticulture; and dimension stone for use in buildings, landscaping, and monuments. Non-metallic minerals are important economic resources that should be taken into careful consideration whenever land is being considered for development. If an adequate supply of stone and sand is desired for the future, wise management of non-metallic mineral resources and access to them is important.

#### **Existing Non-metallic Mining Sites**

Map 3-9, page 14, shows existing non-metallic mining sites in Kenosha County. There are currently no non-metallic mining sites in the City of Kenosha.

#### **Notification Requirements**

Section 66.1001(4) of the *Statutes* requires any unit of government that prepares and adopts a comprehensive plan to prepare and adopt written procedures to foster public participation. These written procedures must describe the methods the local government will use to distribute proposed elements of a comprehensive plan to owners or persons with a leasehold interest in property to extract non-metallic mineral resources in or on property in which the allowable use or intensity of use of the property is proposed to be changed by the comprehensive plan.

#### **Potential Sources of Sand, Gravel, Clay, and Peat**

Map 3-10, page 15, shows the location and Table 3-6, page 14, sets forth the acres of potential commercially workable sources of sand, gravel, clay, and peat in the City of Kenosha. The Wisconsin Geological and Natural History Survey (WGNHS) identified these resources using a variety of sources, including geologic studies,<sup>5</sup> data from Road Material Survey records collected by WGNHS for the Wisconsin Department of Transportation, information on existing extractive sites, and information on closed extractive sites that were recently active. The sand and gravel potential is categorized as high, medium, and low by the WGNHS based on the glacial geology.

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<sup>4</sup> There are no known marketable metallic mining resources in Kenosha County.

<sup>5</sup> *Bedrock geology from Preliminary Bedrock Maps of Kenosha County (WOFR 2004-13)* by R.M. Peters, WGNHS.

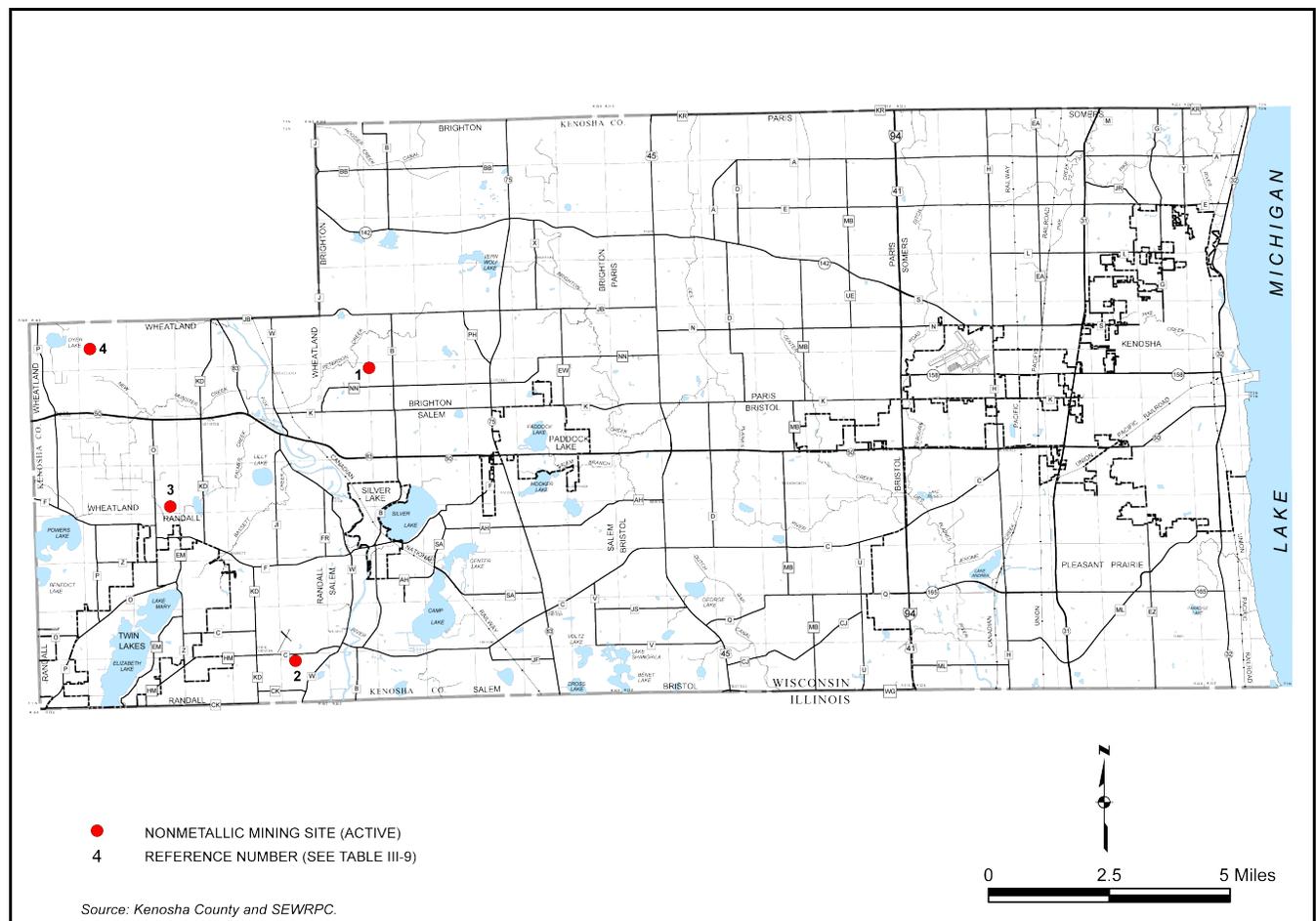
**TABLE 3-6**  
**POTENTIAL SOURCES OF SAND, GRAVEL, CLAY AND PEAT**  
**IN THE CITY OF KENOSHA AND KENOSHA COUNTY**

Community	High Sand & Gravel Potential (Outwash Deposits) (acres)	Medium to Low Sand & Gravel Potential (Glacial Till) (acres)	Peat (Peat & Organic Sediment) (acres)	Clay (Glacial Lake Deposits) (acres)	Lake Michigan Beach Sediments (acres)	Surface Water (acres)	Man-Made Features (acres)	Total <sup>a</sup> (acres)
City of Kenosha	---	9,814	45	---	6,697	44	70	16,596
Kenosha County	19,641	117,017	8,715	13,450	12,408	4,494	2,498	178,150

*a Total acres in this table differ from acreages reported in other tables because WGNHS uses the USGS survey control system, rather than the SEWRPC survey control system. The total area of the County using the more precise SEWRPC system is 178,202 acres.*

Source: Wisconsin Geological and Natural History Survey and SEWRPC.

**MAP 3-9**  
**NON-METALLIC MINING SITES IN KENOSHA COUNTY: 2006**

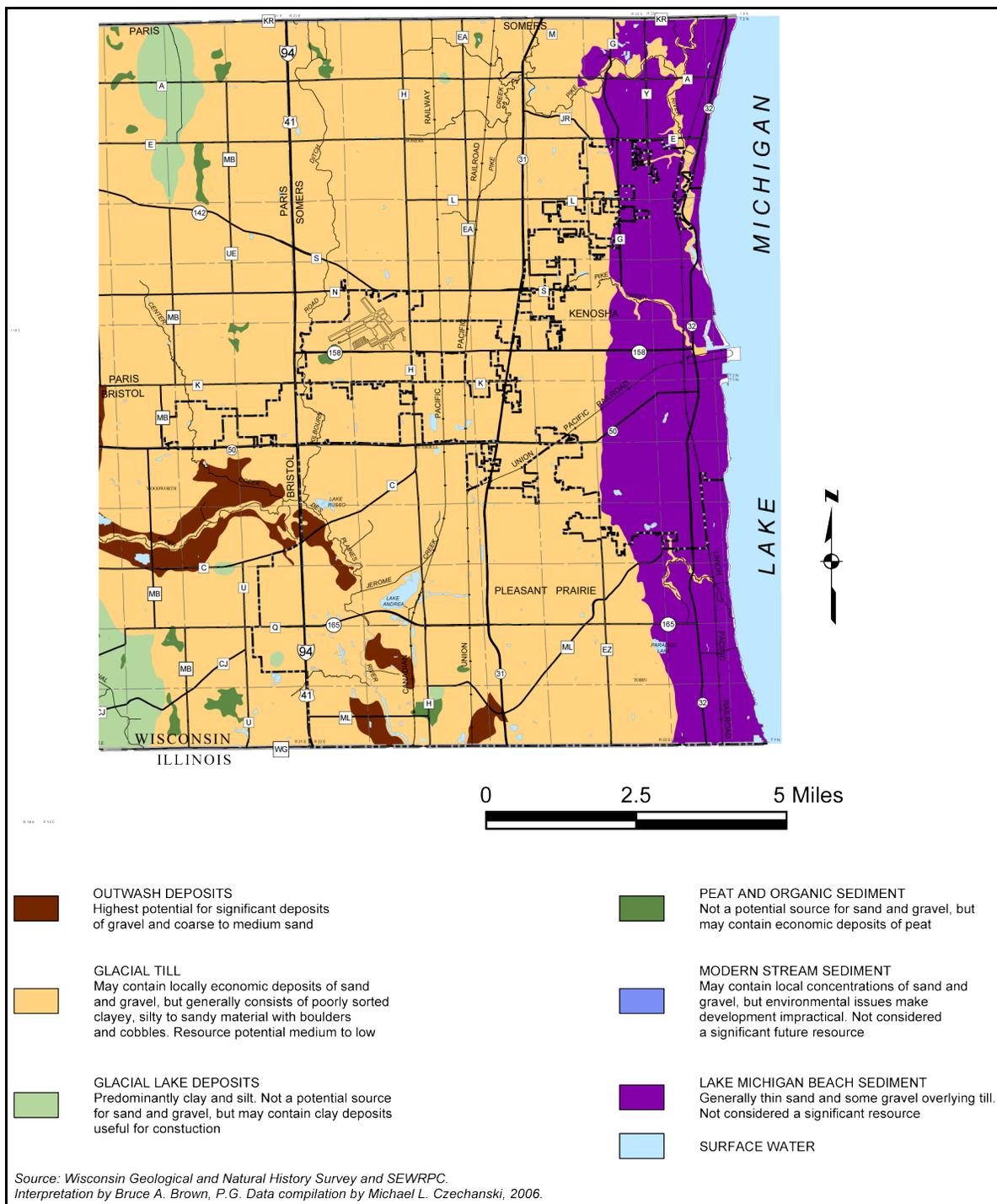


Source: Kenosha County and SEWRPC.

The City of Kenosha has a moderate supply of sand and gravel deposits as a result of its glacial history. The City of Kenosha doesn't have any areas categorized as "outwash deposits" which have the highest potential for significant deposits of sand and gravel. Areas categorized as "glacial till" have medium to low potential for yielding commercial workable sources of sand and gravel which totals 59% of the City of Kenosha's total. Areas categor-

ized as “peat and organic sediment” may contain economic deposits of peat. These areas are located near the Airport, generally in association with wetlands, which limits access to the peat due to regulatory constraints. The other major area of the City of Kenosha is classified as Lake Michigan Beach Sediment, a thin sand layer and gravel overlaying till, an insignificant resource.

**MAP 3-10**  
**POTENTIAL SOURCES OF SAND, GRAVEL, CLAY AND PEAT IN KENOSHA COUNTY**



**Depth to Bedrock and Potential Sources of Crushed or Building Stone**

Information on depth to bedrock is not only important in terms of indicating areas where bedrock at or near the surface may pose development limitations, but also is relevant for identifying areas for potential economically viable extraction of such resources. The advances of glacial ice sheets, and the landforms they created, resulted in a wide range of thickness of glacial deposits over the bedrock. This thickness, represented as depth to bedrock on Map 3-11, page 17, ranges from 25 feet up to 250 feet. Bedrock at or near the surface may be difficult and expensive for trenching, tunneling, and constructing basements and conventional Private Onsite Waste Treatment Systems (POWTS), which may also operate poorly. The NRCS rates the limitations as severe if the depth to bedrock is equal to or less than three (3) feet from the surface; no such areas have been identified in the City of Kenosha. Conversely, Map 3-11, page 17, shows the location of potential commercially workable sources of stone suitable for crushed or building (dimension) stone. An area near the City of Kenosha with bedrock near enough to the surface to economically quarry stone is limited to an approximately 134-acre area located northeast of the City of Kenosha. This area is underlain by Silurian dolomite/limestone, between 25 and 50 feet from the surface. The limestone is potentially high quality material for crushed or building (dimension) stone, but may not be economically viable in the short term.

**Water Resources**

Surface water resources consist of lakes, rivers, streams, and their associated wetlands, floodplains, and shorelands that form important elements of the natural resource base of the City of Kenosha. Their contribution to economic development, recreational activity, and scenic beauty is immeasurable. The number of acres of surface waters, wetlands, and floodplains in the City of Kenosha is listed in Table 3-7.

**TABLE 3-7  
SURFACE WATER, WETLANDS, AND FLOODPLAINS IN THE  
CITY OF KENOSHA AND KENOSHA COUNTY**

Area <sup>a</sup>	Surface Water (acres in 2000)	Floodplains <sup>b</sup> (acres)	Wetlands (acres in 2000)	Wetlands (acres in 2005)
City of Kenosha	84	877	298	372
Kenosha County	5,028	21,309	16,068	19,467

*a* 2006 civil divisions were used

*b* Acres based on SEWRPC detailed floodplain delineations and FEMA approximate floodplain delineations (see text description). These preliminary acreages will be revised, if necessary, when the Map Modernization Program for Kenosha County is complete.

Source: Federal Emergency Management Agency, Wisconsin Department of Natural Resources, and SEWRPC.

Surface water resources from Lake Michigan constitute the major source of supply for domestic, municipal, and industrial water users in the City of Kenosha.

Both surface water and groundwater are interrelated components of a single hydrologic system. The groundwater resources are hydraulically connected to the surface water resources inasmuch as the former provide the base flow of streams and contribute to inland lake levels.

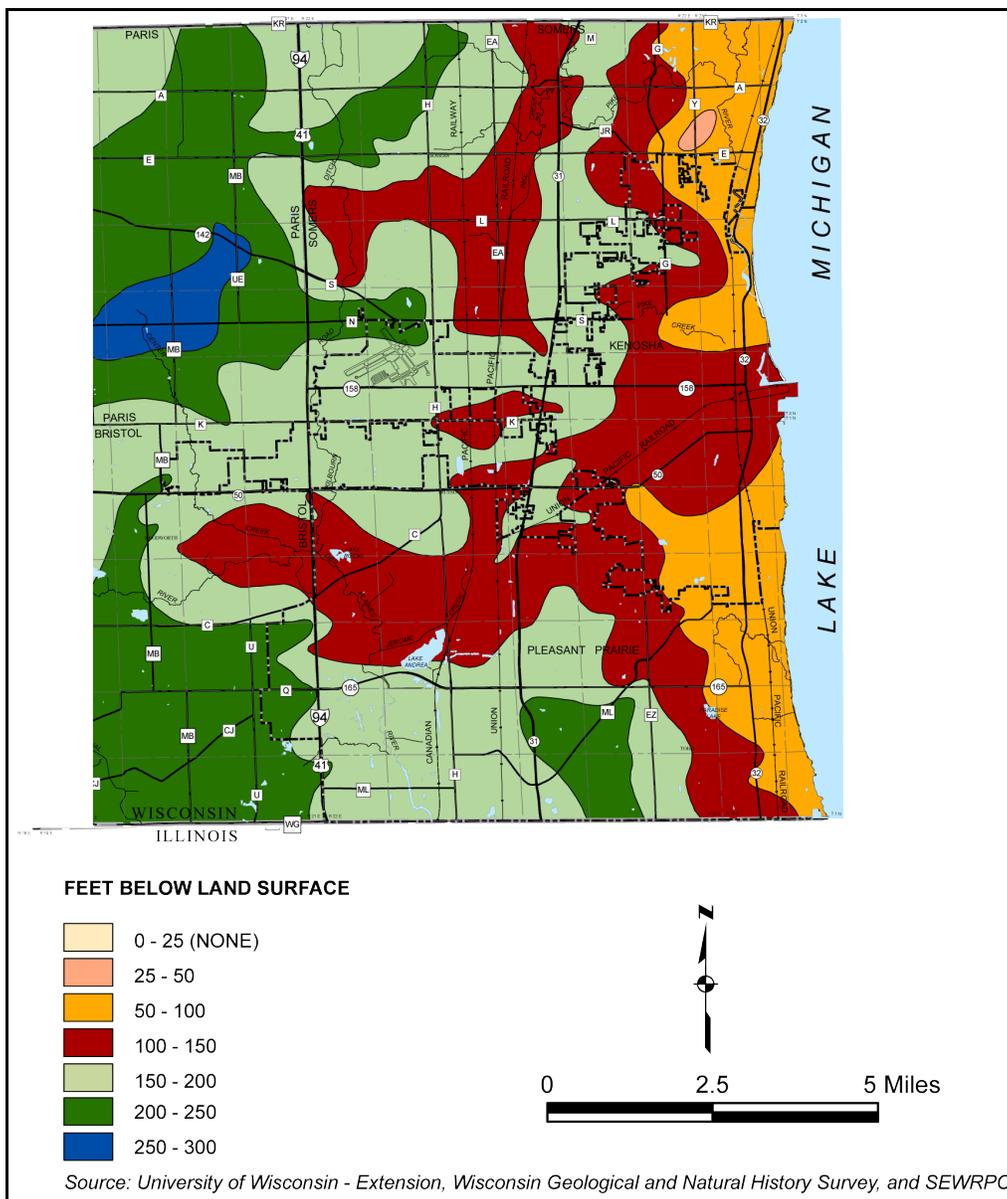
**Watersheds and Subwatersheds**

A subcontinental divide that separates the Mississippi River and the Great Lakes – St. Lawrence River drainage basins crosses the City of Kenosha from the Town of Somers on the north to the Village of Pleasant Prairie on the south, as shown on Map 3-12, page 18. The majority of the City of Kenosha drains to the Great Lakes-St. Lawrence River system; the remaining or far western portion of the City of Kenosha, drains south and west to the Mississippi River.

The subcontinental divide not only exerts a major physical influence on the overall drainage pattern of the County, but also carries with it legal constraints that, in effect, would prohibit any new diversion of substantial

quantities of Lake Michigan water across the divide. Areas east of the divide can utilize Lake Michigan as a source of water supply, with the spent water typically returned to the lake via the sanitary sewerage system. Areas west of the divide must utilize groundwater as the water source. The Great Lakes Charter Annex, signed by the governors of the eight (8) States bordering the Great Lakes<sup>6</sup> and the premiers of the Canadian provinces of Ontario and Quebec in June 2001, would ban most diversions of Great Lakes water outside the drainage basin, but make limited exceptions for communities and counties that straddle the watershed boundary. The accord must be approved by each State Legislature and the U. S. Congress before taking effect. If approved, each State and Province would develop regulations to carry out the accord.

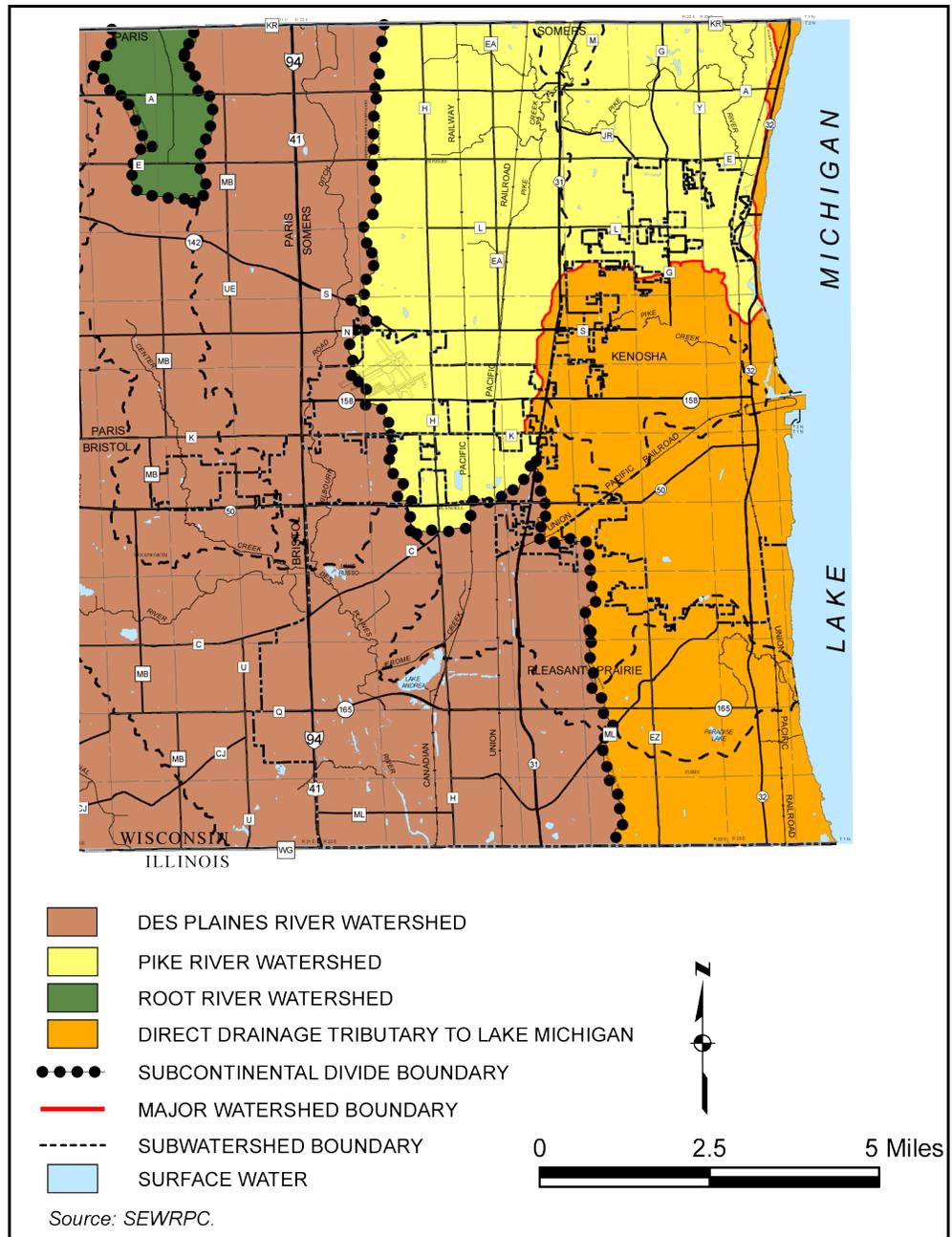
**MAP 3-11**  
**GENERALIZED DEPTH TO BEDROCK AREAS AS POTENTIAL SOURCES OF CRUSHED OR BUILDING STONE IN KENOSHA COUNTY**



<sup>6</sup> Includes the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin.

Watersheds and subwatersheds are shown on Map 3-12. The Great Lakes – St. Lawrence River drainage basin includes the Pike River watershed. A large portion of the City of Kenosha drains directly to Lake Michigan. The Mississippi River drainage basin includes the Des Plaines River watershed, which is primarily located west of the airport.

**MAP 3-12  
WATERSHEDS IN KENOSHA COUNTY**



**Lakes, Rivers, and Streams**

Rivers and streams are identified as either perennial or intermittent. Perennial streams are defined as those which maintain, at a minimum, a small continuous flow throughout the year except under unusual drought conditions. Intermittent streams are defined as watercourses which do not maintain a continuous flow throughout the year.

There are approximately 10 miles of named perennial rivers and streams in the City of Kenosha. As noted above, the City of Kenosha includes portions of the Des Plaines River and the Pike River watersheds. Major streams in the Des Plaines River watershed, which is located in the central portion of the County, are Center Creek and Kilbourn Road Ditch. Major streams in the Pike River watershed include the Pike River and Pike Creek located in the eastern portion of the City of Kenosha, which all drain to Lake Michigan. Pike Creek drains directly into Lake Michigan.

Of the 10.4 stream miles for which data were available in 1982<sup>7</sup>, about eight (8) miles, or about 79 percent, were reported to be of poor quality, and about 2 miles, or about 21 percent were reported to be of fair quality, based upon calculated biotic indices<sup>8,9</sup> and/or the best professional judgment of DNR staff conducting the assessments, as shown in Table 3-8. With the exception of Pike Creek and Pike River, where modifications were recently implemented to these channels, it is likely that the water quality conditions of the perennial streams have not significantly changed since 1982. Major streams are shown on Map 3-13, page 20.

The majority of the streams and lakes within Kenosha County are fully or partially meeting recommended water use objectives in accordance with the Land and Water Resource Management Plan for Kenosha County. The DNR, however, identified in 2006 portions of the Pike River and several Lake Michigan beaches (Eichelman, Pennoyer Park, and Simmons Island Lake Michigan beaches) in the City of Kenosha as being impaired or threatened by impairment.

**TABLE 3-8**

**PERENNIAL STREAM CHARACTERISTICS IN THE CITY OF KENOSHA: 1982**

River or Stream	Length (river miles)	Watershed	Water Quality <sup>a</sup>
Center Creek	0.4	Des Plaines	Poor <sup>b</sup>
Kilbourn Road Ditch	4.1	Des Plaines	Poor <sup>b</sup>
Pike Creek	3.7	Direct Drainage to Lake Michigan	Poor <sup>c</sup>
Pike River	2.2	Pike	Fair <sup>d</sup>
Total	10.4	----	-----

<sup>a</sup> Water quality status as determined by the Wisconsin Department of Natural Resources based upon a calculated biotic index and/or the best professional judgment of staff conducting assessment.

<sup>b</sup> The Des Plaines River and its tributary streams, excluding Brighton Creek, have had major physical modifications to their channels, are impacted by high rates of siltation, and generally have had reported water quality problems associated with low dissolved oxygen, high phosphorus, and high fecal coliform concentrations. The lower reaches of the Des Plaines River mainstem have had reported water quality problems associated with toxic contaminants (heavy metals, hydrocarbons, and the pesticide heptachlor epoxide).

<sup>c</sup> Pike Creek has had major modifications to its channel, is impacted by high rates of sedimentation, and has had reported water quality problems associated with high fecal coliform concentrations.

<sup>d</sup> The Pike River and its tributary streams have had moderate to major physical modifications to their channels, are impacted by high rates of sedimentation, and generally have had reported water quality problems associated with low dissolved oxygen and high fecal coliform concentrations.

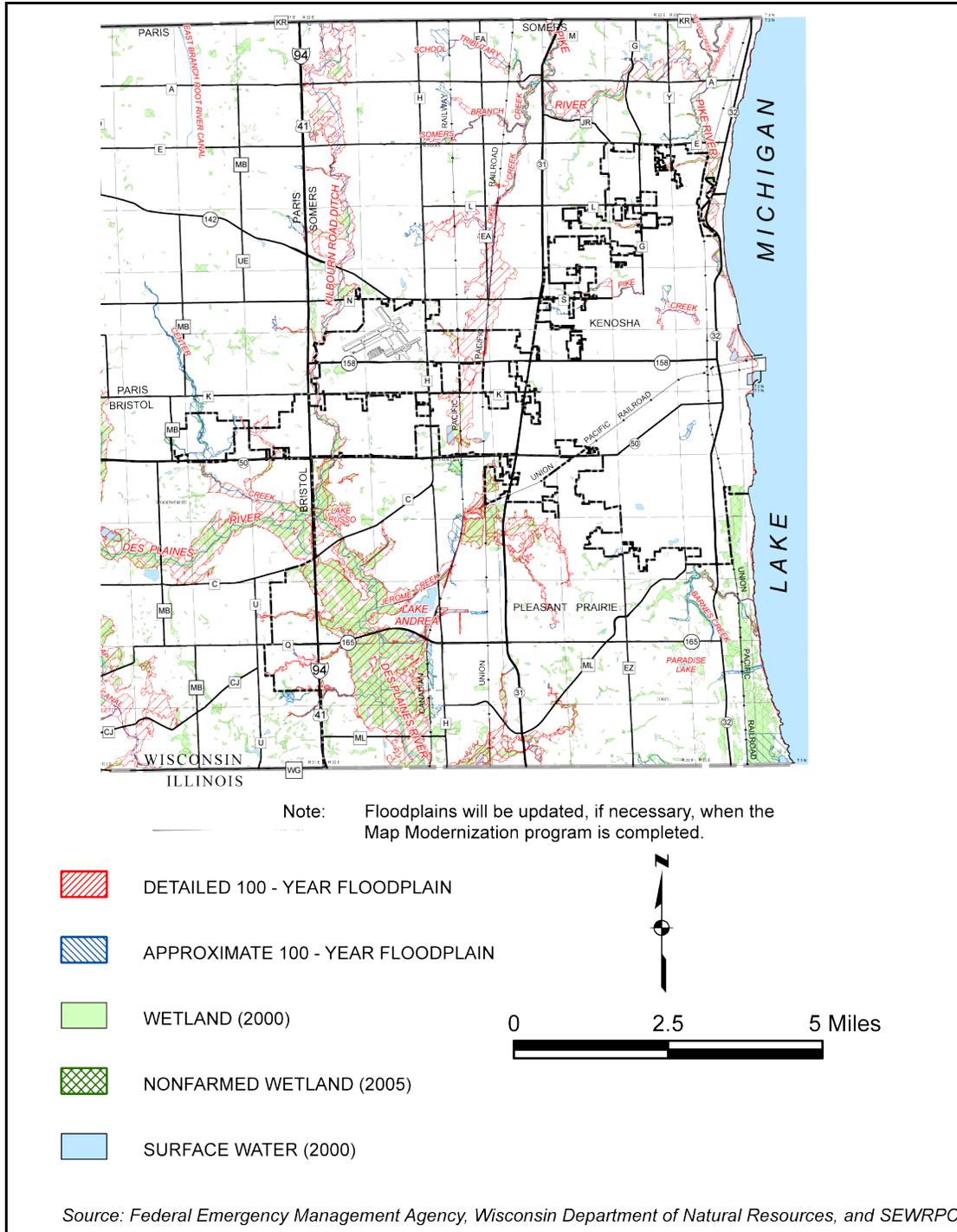
Source: Wisconsin Department of Natural Resources and SEWRPC.

<sup>7</sup> Does not include mileage for Karcher Creek, Nelson Creek, School Tributary, Somers Branch, and Sorenson Creek on Table 3-8, page ?. The five (5) streams were not part of the water quality analysis conducted in 1982, but were added to the table because they are perennial streams that are located wholly or partially in Kenosha County.

<sup>8</sup> Wisconsin Department of Natural Resources Technical Bulletin No. 132, Using a Biotic Index to Evaluate Water Quality in Streams, 1982.

<sup>9</sup> U.S. Department of Agriculture, Forest Service General Technical Report No. NC-149, Using The Index of Biotic Integrity (IBI) to Measure Environmental Quality in Warmwater Streams of Wisconsin, April 1992.

### MAP 3-13 SURFACE WATERS, WETLANDS, AND FLOODPLAINS IN KENOSHA COUNTY



Lakes and streams are readily susceptible to degradation through improper land use development and management. Water quality can be degraded by either point source<sup>10</sup> or nonpoint source<sup>11</sup> pollution sources including excessive pollutant loads, including nutrient loads, which enter from malfunctioning and improperly located onsite waste treatment systems, from sanitary sewer overflows, from construction and other urban runoff, and from careless agricultural practices. The water quality of lakes and streams may also be adversely affected by the excessive development of riparian areas and by the filling of peripheral wetlands, which remove valuable nutrient and sediment traps while adding nutrient and sediment sources. It is important that existing and future development in riparian areas be managed carefully to avoid further water quality degradation and to enhance the recreational and aesthetic values of surface water resources.

### **Wetlands**

Wetlands are generally defined as areas that have a predominance of hydric soils and that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of hydrophytic (water loving) vegetation.<sup>12</sup> Wetlands generally occur in depressions and near the bottom of slopes, particularly along lakeshores and stream banks, and on large land areas that are poorly drained. Wetlands may, however, under certain conditions, occur on slopes and even on hilltops. Wetlands perform an important set of natural functions which include support of a wide variety of desirable, and sometimes unique, forms of plant and animal life; water quality protection; stabilization of lake levels and streamflows; reduction in stormwater runoff by providing areas for floodwater impoundment and storage; and protection of shorelines from erosion.

The 2000 Land Use Inventory conducted by SEWRPC identified 298 acres of wetlands in the City of Kenosha, which are shown on Map 3-13, page 20. SEWRPC recently completed, under contract with the DNR, an updated Wetland Inventory Map for Kenosha County based on 2005 orthophotographs. The updated wetland inventory has been approved by DNR as the official Wisconsin Wetland Inventory maps, and includes wetlands of ¼ acre or larger in size. The new DNR wetland inventory includes a “farmed wetland” category, which has not been included in previous inventories. “Farmed wetlands” are defined by the Natural Resources Conservation Service (NRCS) as “land that is partially altered but because of wetness, cannot be farmed every year.”<sup>13</sup> The Wetland Conservation provisions of the 1985 Farm Bill, as amended, require agricultural producers to protect the wetlands on the farms they own or operate if they want to remain eligible for farm program benefits. Normal farming practices, including plowing, harrowing, planting, cropping, fertilizing, and grazing, can be conducted on farmed wetlands; however, there may be restrictions on drainage improvements in farmed wetlands. Farmers should consult with the NRCS before making any drainage improvements. Farmed wetlands are shown on Map 9-1 in Chapter 9. Because agriculture is the principal use of farmed wetlands, they are not shown on Map 3-13, page 20. Non-farmed wetlands identified as part of the 2005 update are shown as an overlay on Map 3-13, page 20. Nonfarmed

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<sup>10</sup> Point source pollution is defined as pollutants that are discharged to surface waters at discrete locations, such as a sanitary sewer overflow.

<sup>11</sup> Nonpoint source pollution, also referred to as diffuse source pollution, consists of various discharges of pollutants to the surface waters which cannot be readily identified as point sources. Nonpoint source pollution is transported from the urban or rural land areas of a watershed to the surface waters by means of direct runoff from the land via overland routes (i.e. runoff from parking lots or farmlands) and by flow during and shortly after rainfall or snowmelt events. Nonpoint source pollution also includes pollutants conveyed to surface waters via groundwater discharge, also known as base flow, which is a major source of stream flow between runoff events.

<sup>12</sup> The definition of “wetlands” used by SEWRPC is the same as that of the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (EPA). Under this definition, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. This definition differs somewhat from the definition used by the DNR. Under the DNR definition, wetlands are areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions. As a practical matter, application of either the DNR definition or the EPA-Army Corps of Engineers-SEWRPC definition has been found to produce relatively consistent wetland identification and delineations in the majority of the situations in southeastern Wisconsin.

<sup>13</sup> Definition taken from the “Wetland Restoration Handbook for Wisconsin Landowners, 2<sup>nd</sup> edition, written by Alice L. Thompson and Charles S. Luthin, DNR Publication No. PUB-SS-989, 2004.

wetlands encompassed about 372 acres, or 2 percent of the City of Kenosha in 2005. Wetland acreage within the City of Kenosha is provided in Table 3-7, page 16.

Wetlands and their boundaries are continuously changing in response to changes in drainage patterns and climatic conditions. While wetland inventory maps provide a basis for areawide planning, detailed field investigations are necessary to precisely identify wetland boundaries on individual parcels. Field investigations are generally conducted at the time a parcel is proposed to be developed or subdivided.

### ***Floodplains***

The natural floodplain of a river is a wide, flat-to-gently sloping area contiguous with, and usually lying on both sides of, the river channel and the channel itself. The floodplain, which is normally bounded on its outer edges by higher topography, is gradually formed over a long period of time by the river during flood stage as that river meanders in the floodplain, continuously eroding material from concave banks of meandering loops while depositing it on the convex banks. The flow of a river onto its floodplain is a normal phenomenon and, in the absence of flood control works, can be expected to occur periodically. For planning and regulatory purposes, floodplains are defined as those areas subject to inundation by the 100-year recurrence interval flood event. This event has a one (1) percent chance of being equaled or exceeded in any given year. Floodplains are generally not well suited for urban development because of the flood hazard, the presence of high water tables, and/or the presence of wet soils.

Floodplains in the City of Kenosha were identified as part of the Flood Insurance Study (FIS) and the accompanying Flood Insurance Rate Maps (FIRMS)<sup>14</sup> produced by the Federal Emergency Management Agency (FEMA). FEMA prepared FISs and FIRMs for the City of Kenosha in 1982. The FIRMs for the City of Kenosha were updated and revised in 1996.<sup>15</sup> Flood elevations and floodplain limits were identified through detailed studies along the Des Plaines River, Pike River, Root River,<sup>16</sup> and selected tributaries as part of the FIS. The FIS depicts “approximate” floodplains along streams and lakes where no detailed engineering studies were conducted. The Pike River Watershed Plan<sup>17</sup> delineates floodplains in the Pike River watershed. Floodplain delineations for the City of Kenosha are based on the FIS. Floodplain delineations developed as part of the FIS, the Des Plaines River and Pike River watershed studies, and Chiwaukee Prairie-Carol Beach Land Use Plan are shown on Map 3-13, page 20.<sup>18</sup> The SEWRPC floodplain shown on that map will be incorporated into Federal floodplain maps under the Map Modernization Program described below.

FEMA is currently conducting a Map Modernization Program for the City of Kenosha which will result in updated FEMA floodplain maps. Preliminary maps are currently available, and final maps are expected to be available in 2009. The City of Kenosha will be required to update its floodplain zoning maps and ordinances to reflect the new floodplain mapping and to be consistent with the State Model Floodplain Ordinance.

### ***Shorelands***

Shorelands are defined by the *Wisconsin Statutes* as lands within the following distances from the ordinary high water mark of navigable waters: one thousand feet from a lake, pond, or flowage; and three hundred feet from a

<sup>14</sup> *Flood Insurance Studies and the accompanying Flood Insurance Rate Maps usually generate the following flood hazard information: Base Flood Elevations (100-year flood elevations) presented as water-surface elevations; water-surface elevations for the 10-year, 50-year, 100-year, and 500-year floods; boundaries of the regulatory 100-year floodway; and boundaries of the 100- and 500-year floodplains.*

<sup>15</sup> *The 1996 Flood Insurance Rate Map revisions updated corporate limits and map format, added base flood elevations and special flood hazard areas, and changed special flood hazard areas and zone designations.*

<sup>16</sup> *There are no floodplains for the portion of the Root River watershed located in Kenosha County.*

<sup>17</sup> *Documented in SEWRPC Planning Report No. 35, A Comprehensive Plan for the Pike River Watershed, June 1983 and amended March 1996.*

<sup>18</sup> *A zoning map amendment was approved by Kenosha County in 2004 to incorporate the floodplains identified in the Des Plaines River watershed study.*

river or stream, or to the landward side of the floodplain, whichever distance is greater. In accordance with the requirements set forth in Chapters NR 115 (shoreland regulations) and NR 116 (floodplain regulations) of the *Wisconsin Administrative Code*, the Kenosha County Shoreland and Floodplain Zoning Ordinance restricts uses in wetlands located in the shorelands, and limits the uses allowed in the 100-year floodplain to prevent damage to structures and property and to protect floodwater conveyance areas and the storage capacity of floodplains. The ordinance also limits the removal of vegetation and other activities in shoreland areas and requires most structures to be set back a minimum of 75 feet from navigable waters. State law requires that counties administer shoreland and floodplain regulations in unincorporated areas.

Under Chapter NR 117 of the *Wisconsin Administrative Code*, cities and villages are required to restrict uses in wetlands located in the shoreland area. The provisions of NR 115, which regulate uses in unincorporated portions of the shoreland, apply in cities and villages in shoreland areas annexed to a city or village after May 7, 1982.<sup>19</sup> The same floodplain regulations set forth in NR 116 for unincorporated areas also apply within cities and villages. Each city and village administers the floodplain regulations within its corporate limits.

**Groundwater Resources**

Groundwater resources constitute another key element of the natural resource base of the City of Kenosha. Groundwater not only sustains inland lake levels and wetlands and provides the base flow of streams, but also serves as the water supply for domestic, municipal, and industrial water users, with the exception of the City of Kenosha, which obtains their water from Lake Michigan. Map 3-14, page 24, indicates depth to shallow groundwater.

Environmental corridors and isolated natural resource areas were overlaid on Map 3-15, page 25, to indicate the correlation between such areas and groundwater recharge potential.

**Forest Resources**

**Woodlands**

With sound management, woodlands can serve a variety of beneficial functions. In addition to contributing to clean air and water, and regulating surface water runoff, woodlands help maintain a diversity of plant and animal life. The destruction of woodlands, particularly on hillsides, can contribute to excessive stormwater runoff, siltation of lakes and streams, and loss of wildlife habitat. Woodlands identified in the SEWRPC Land Use Inventory are shown on Map 3-16, page 26. Woodlands are defined as upland areas of one (1) acre or more in area, having 17 or more trees per acre, each deciduous tree measuring at least four (4) inches in diameter, 4.5 feet above the ground, and having canopy coverage of 50 percent or greater. Coniferous tree plantations and reforestation projects are also classified as woodlands. Table 3-9 lists the number of acres of woodlands in the City of Kenosha. In 2000, woodlands encompassed over 138 acres, or about 1.5 percent of the City of Kenosha.<sup>20</sup>

**TABLE 3-9  
WOODLANDS AND MANAGED FOREST LANDS IN THE  
CITY OF KENOSHA AND KENOSHA COUNTY**

Local Government	Woodlands (acres in 2000)	Managed Forest Lands (acres in 2006)
City of Kenosha	138	0
Kenosha County	9,243	574

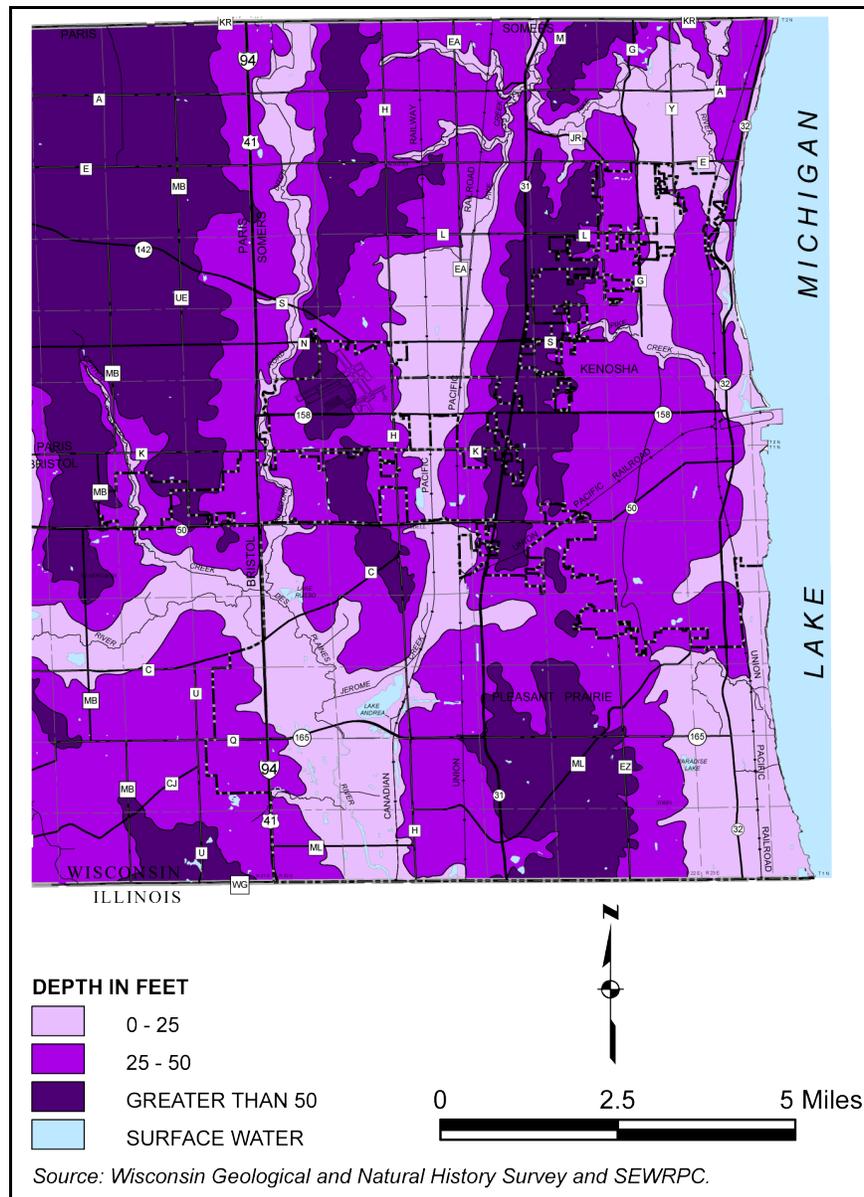
Source: Kenosha County, Wisconsin Department of Natural Resources, and SEWRPC.

<sup>19</sup> Following its incorporation in 1989, the Village of Pleasant Prairie included all Kenosha County shoreland zoning regulations in the Village zoning ordinance. The regulations apply to areas that were in the shoreland area at the time the Village incorporated.

<sup>20</sup> This data includes upland woods only, not lowland woods classified as wetlands, such as tamarack swamps. Lowland woods may be enrolled in the Managed Forest Law Program as discussed in the following section.

MAP 3-14

GENERALIZED DEPTH TO SEASONAL HIGH GROUNDWATER TABLE IN KENOSHA COUNTY



**Natural Areas and Critical Species Habitat Sites**

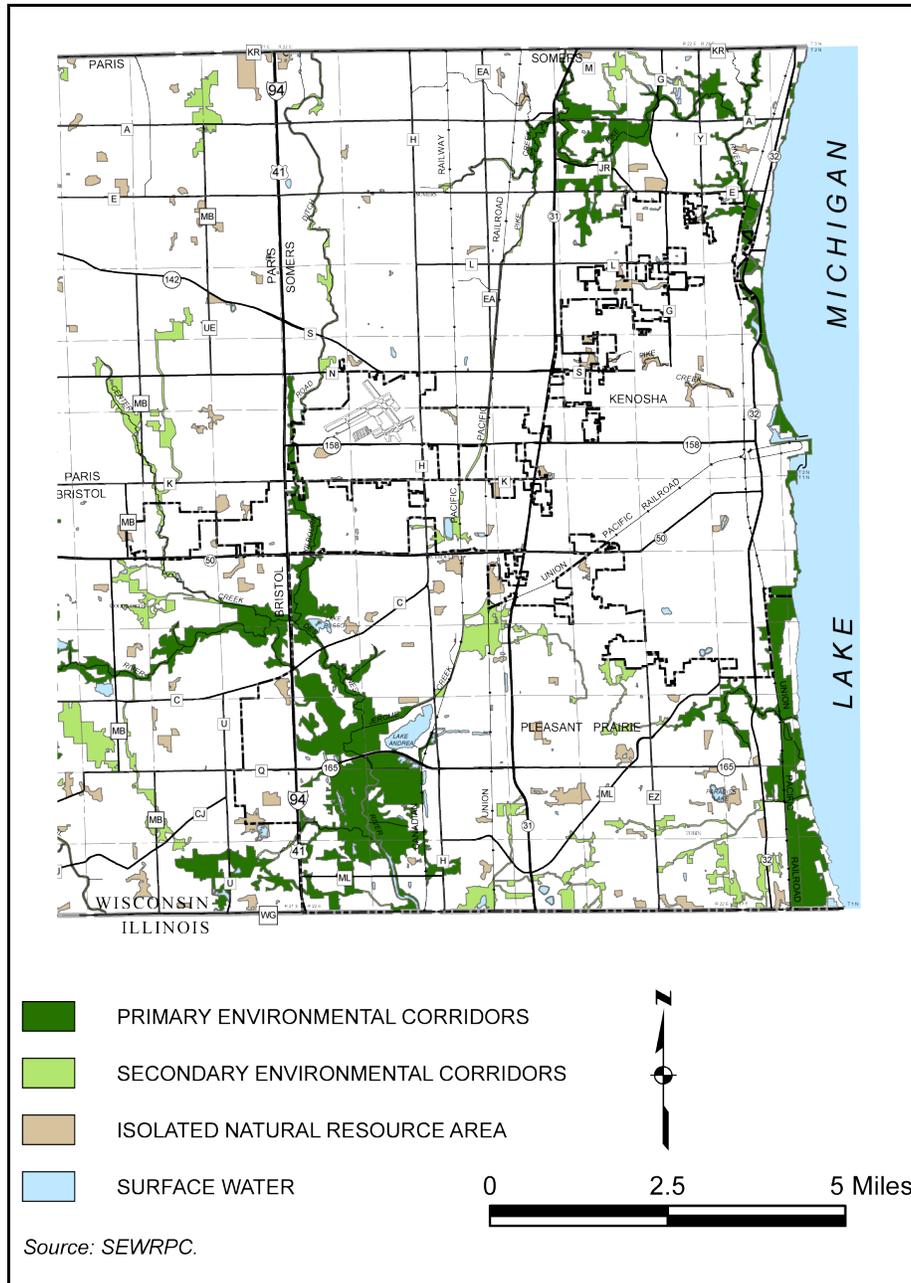
A comprehensive inventory of important plant and animal habitats was conducted by SEWRPC in 1994 as part of the Regional Natural areas and Critical Species Habitat Protection and Management Plan. The inventory systematically identified all remaining high-quality natural areas, critical species habitat, and sites having geological significance. Ownership of identified natural areas and critical species habitat sites and the size of each area in the City of Kenosha were reviewed and updated in 2006.

**Natural Areas**

Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Natural areas are classified into one (1) of three (3) categories:

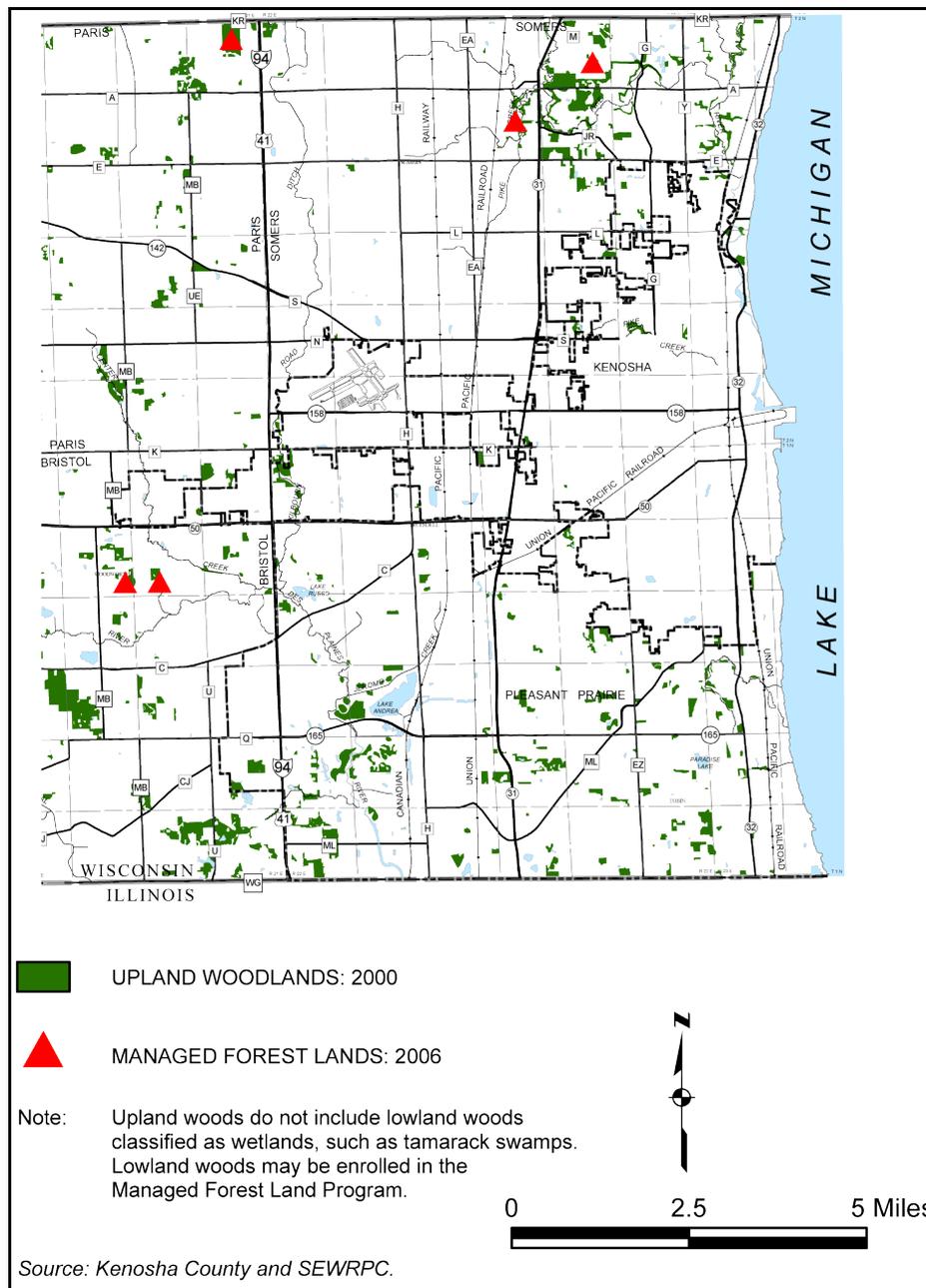
natural areas of statewide or greater significance (NA-1), natural areas of countywide or regional significance (NA-2), and natural areas of local significance (NA-3). Classification of an area into one (1) of these three (3) categories is based on consideration of the diversity of plant and animal species and community type present, the structure and integrity of the native plant or animal community, the uniqueness of natural features, the size of the site, and the educational value.

**MAP 3-15**  
**ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE**  
**AREAS IN KENOSHA COUNTY: 2000**



MAP 3-16

UPLAND WOODLANDS AND MANAGED FOREST LANDS IN KENOSHA COUNTY



One (1) natural area has been identified in the City of Kenosha in Table 3-10, page 27. This site, the Kenosha Sand Dunes and Low Prairie, is classified as a NA-1 site, and encompasses 99 acres. Natural areas are shown on Map 3-17, page 28.

**TABLE 3-10  
NATURAL AREAS IN KENOSHA COUNTY: 2006<sup>a</sup>**

Number on Map 3-12	Area Name	Classification Code <sup>b</sup>	Location	Ownership	Size (Acres)	Description and Comments
6	Kenosha Sand Dunes and Low Prairie	NA-1 (RSH)	T1N, R23E, Sections 7 and 8; City of Kenosha and Village of Pleasant Prairie	City of Kenosha, Department of Natural Resources, and private	99	One-half mile of Lake Michigan frontage containing well-developed dunes and dune succession patterns (fore dunes to swale to wet prairie). The dunes are disturbed by off-road vehicle use, and the shore has been ripped. An ancient hardwood forest lies beneath the dunes. This is one of the few dune systems in Southeastern Wisconsin. Several uncommon species are present, including sea rocket ( <i>Cakile edentula</i> ), sand reed ( <i>Calamovilfa longifolia</i> ), seaside spurge ( <i>Euphorbia polygonifolia</i> ), common bugseed ( <i>Corispermum hyssopifolium</i> ), smooth phlox ( <i>Phlox glaberrima</i> ), and marsh blazing-star ( <i>Liatris spicata</i> ).

*a* Inventory conducted in 1994; ownership and acreage information were updated in 2006.

*b* NA-1 identifies Natural Area sites of Statewide or greater significance.

NA-2 identifies Natural Area sites of countywide or regional significance.

NA-3 identifies Natural Area sites of local significance.

**SNA**, or State Natural Area, identifies those sites officially designated as State Natural Areas by the State of Wisconsin Natural Areas Preservation Council.

**RSH**, or Rare Species Habitat, identifies those sites which support rare, threatened, or endangered animal or plant species officially designated by the Wisconsin Department of Natural Resources.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC. Sites were identified as part of the Regional Natural Areas Plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997.

**Critical Species Habitat and Aquatic Sites**

Critical species habitat sites consist of areas outside natural areas that are important for their ability to support rare, threatened, or endangered plant or animal species. Such areas constitute “critical” habitat considered to be important to the survival of a particular species or group of species of special concern. These sites are shown on Map 3-17, page 28, and described in Table 3-11, page 29. Four (4) critical species habitat sites, each supporting an endangered, threatened, or rare plant species, have been identified in the City of Kenosha. These four (4) sites, together encompassing 54 acres, include the Martin Band Parcel, Nedweski Parcel, Thompson Woods, and Bradford School Woods. There is also one (1) aquatic site supporting a rare fish species, including portions of the Kilbourn Road Ditch, which contains about 2.2 stream-miles. Critical aquatic habitat sites are shown on Map 3-17, page 28, and described in Table 3-12, page 29.

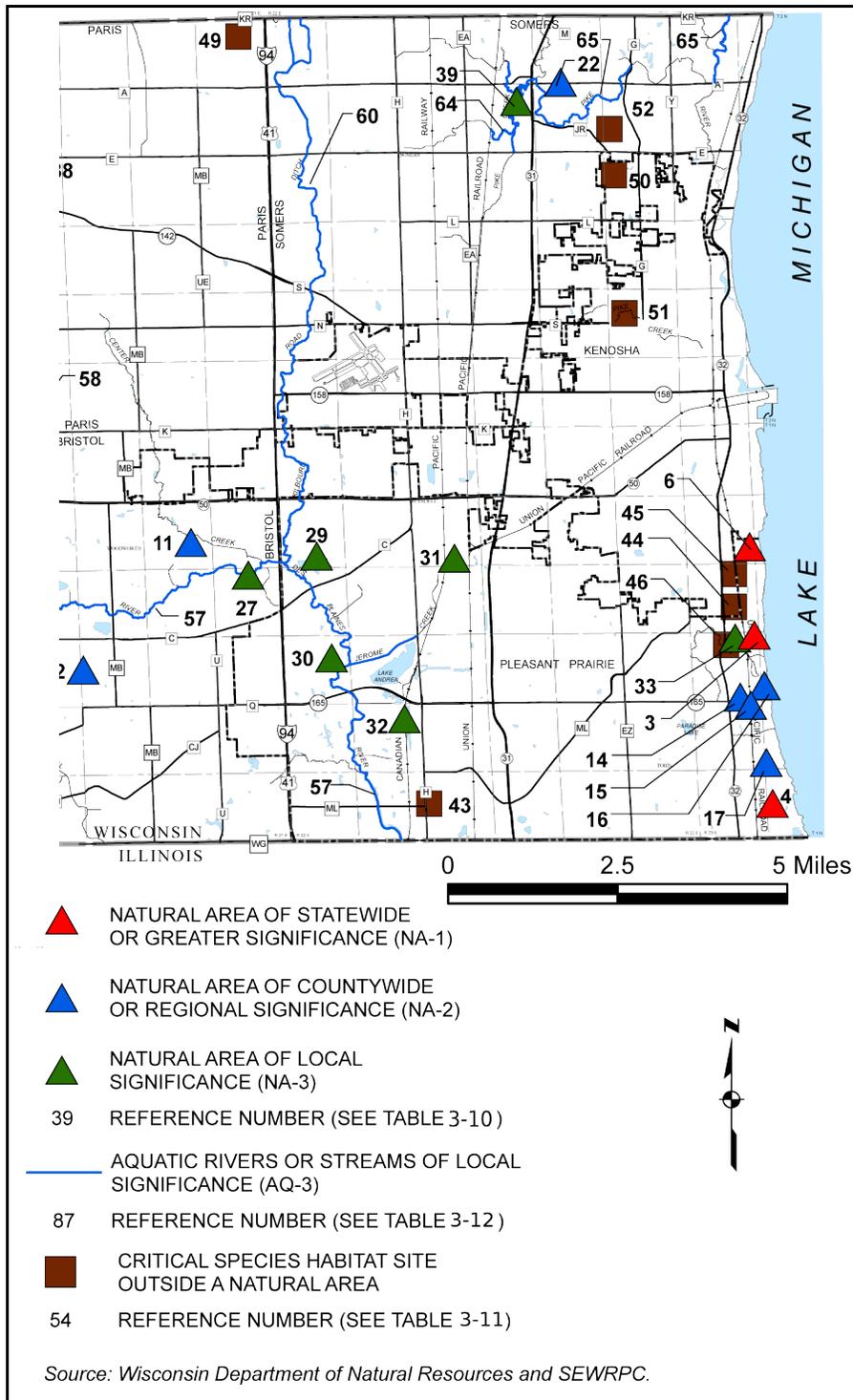
**Invasive Plants and Animals**

Invasive plant and animal species threaten the biodiversity of high-quality natural resources in Wisconsin. The DNR recognizes 148 species of plants and 24 species of animals as invasive to the State of Wisconsin as of 2007. Purple loosestrife and reed canary grass have been identified as significant invasive plant species present in Kenosha County. Additional invasive plant species that can be found in Kenosha County include garlic mustard and buckthorn. Certain invasive animals, such as the gypsy moth and forest tent caterpillar, pose threats to native plant species. Prevalent throughout the Midwest, although not yet discovered in Wisconsin, the emerald ash borer (a type of beetle) potentially poses a threat to ash tree populations in the State. Figures 3-1, page 31, and 3-2, page 32, list the invasive plant and animal species found in the State.<sup>21</sup>

<sup>21</sup> Several of the plants and animals listed in Figure 3-1, page 31, and Figure 3-2, page 32, may not be found in Kenosha County due to the statewide scope of the DNR invasive species listing.

MAP 3-17

NATURAL AREAS, CRITICAL SPECIES SITES, AND AQUATIC HABITAT SITES IN KENOSHA COUNTY: 1994



**TABLE 3-11  
CRITICAL SPECIES HABITAT SITES LOCATED OUTSIDE  
NATURAL AREAS IN THE CITY OF KENOSHA: 2006<sup>a</sup>**

No. on Map 3-17	Site Name and Classification Code <sup>b</sup>	Location	Site Area (acres)	Ownership	Species of Concern <sup>c</sup>
44	Martin Band Parcel (CSH-P)	T1N, R23E, Section 18	9	Private	Phlox glaberrima (E)
45	Nedweski Parcel (CSH-P)	T1N, R23E, Section 18	16	Private	Calamovilfa longifolia (T)
50	Thompsons Woods (CSH-P)	T2N, R22E, Section 13	8	Private	Trillium recurvatum (R)
51	Bradford School Woods (CSH-P)	T2N, R22E, Section 25	21	Kenosha County, Kenosha Unified School District, Gateway Technical College and Private	Trillium recurvatum (R)

*a* Inventory conducted in 1994; ownership and acreage information were updated in 2006.

*b* **CSH-P** identifies a critical plant species habitat site.

**CSH-B** identifies a critical bird species habitat site.

*c* **R** refers to species designated as rare or special concern.

**T** refers to species designated as threatened.

**E** refers to species designated as endangered.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC. Sites were identified as part of the regional natural areas plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997.

**TABLE 3-12  
CRITICAL AQUATIC HABITAT AREAS IN THE CITY OF KENOSHA: 2006<sup>a</sup>**

No. on Map 3-17	River, Stream, or Lake	Size <sup>b</sup>	Rank <sup>c</sup>	Description <sup>d</sup> and Comments
60	Kilbourn Road Ditch	2.2 miles	AQ-3 (RSH)	Sedimentation and other water quality problems exist, but this reach is an important reservoir for the pirate perch, a “special concern” fish species

*a* Inventory conducted in 1994; ownership and acreage information were updated in 2006.

*b* Size is listed as stream miles for rivers and streams and lake surface area (in acres) for lakes.

*c* **AQ-3** identifies Aquatic Area sites of local significance.

**RSH**, or Rare Species Habitat, identifies those aquatic areas which support rare, endangered, threatened, or “special concern” species officially designated by the Wisconsin Department of Natural Resources.

*d* Lake or stream is located partially within Kenosha County. Number refers to stream miles or acreage located within the City of Kenosha only.

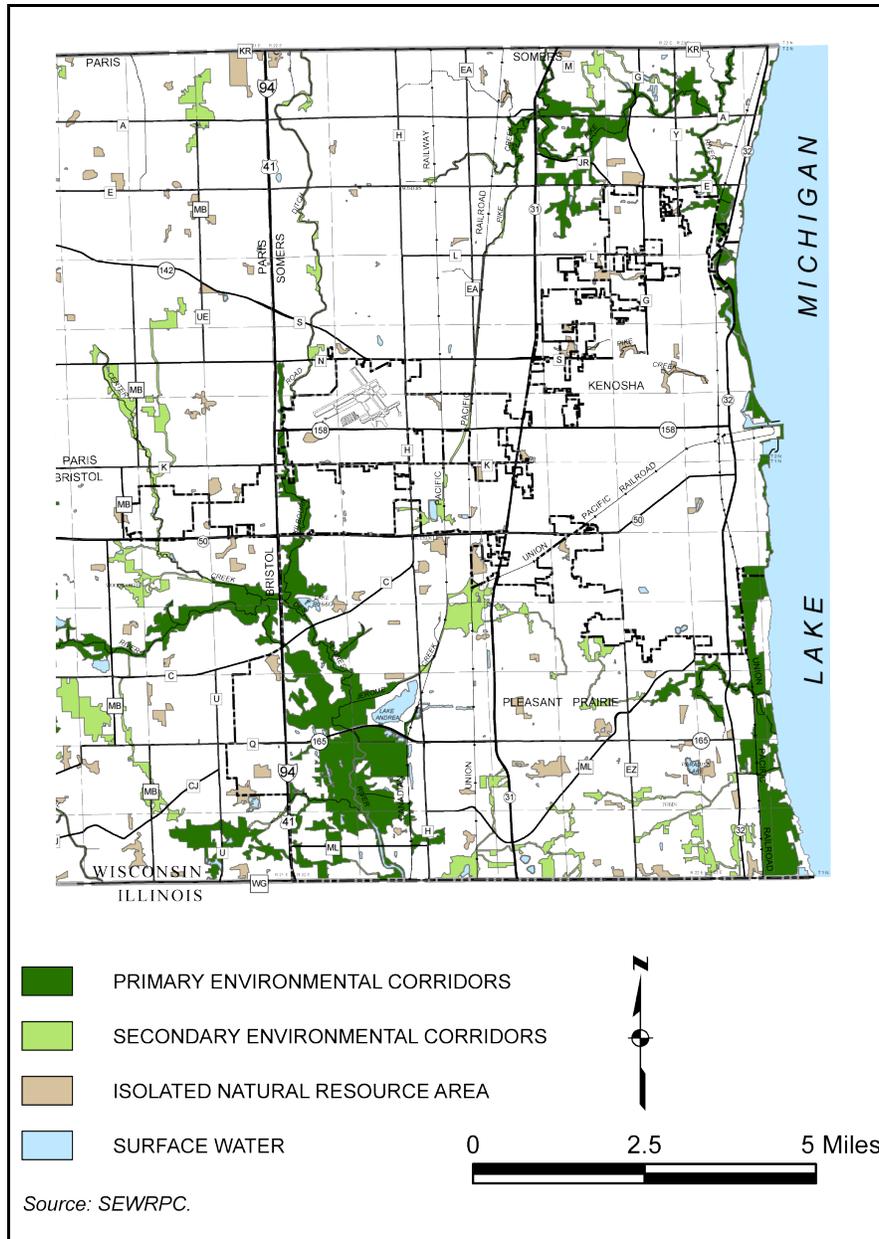
Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC. Sites were identified as part of the Regional Natural Areas Plan, documented in SEWRPC Planning Report No. 42, A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, September 1997.

### Wisconsin Legacy Places

In 2006, the DNR completed an inventory intended to identify the places believed to be most critical to meet the State’s conservation and recreation needs over the next fifty years. The resulting report provides background information for use by landowners, nonprofit conservation groups, local governments, State and Federal agencies, and other interests in decision-making about land protection and management in the vicinity of the identified legacy places. A total of 229 such legacy places were identified statewide. The study is documented in a report entitled *Wisconsin Land Legacy Report*, dated 2006.

The inventory identified five (5) legacy places in Kenosha County, one (1) of which is partially located in Kenosha's Pike River.

**MAP 3-18**  
**ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS**  
**IN KENOSHA COUNTY: 2000**



**Environmental Corridors and Isolated Natural Resource Areas**

One (1) of the most important tasks completed under the regional planning program for Southeastern Wisconsin has been the identification and delineation of those areas in which concentrations of the best remaining elements of the natural resource base occur. It has been recognized that preservation of these areas is essential to both the maintenance of the overall environmental quality of the Region and to the continued provision of the amenities required to maintain a high quality of life for residents.

**FIGURE 3-1**  
**INVASIVE PLANT SPECIES IN WISCONSIN: 2007**

Autumn Olive	European Barberry	Poison Hemlock
Amur Honeysuckle	European Frog-Bit	Poison Ivy
Amur Maple	European Highbush Cranberry	Porcelain Berry
Aquatic Forget-Me-Not	European Marsh Thistle	Plumeless Thistle
Baby's Breath	European Mountain-Ash	Prickly Ash
Bella Honeysuckle	Everlasting Pea	Purple Loosestrife
Big-Tooth Aspen	Field Bindweed	Quackgrass
Bird's-Foot Trefoil	Field Sorrel	Quaking Aspen
Bishop's Gout-Weed	Flowering Rush	Queen Anne's-Lace
Black (European) Alder	Garden Forget-Me-Not	Queen-of-the-Meadow
Blackberries & Raspberries	Garden-Heliotrope	Red Clover
Black Jet-Bead	Giant Hogweed	Red Osier Dogwood
Black Locust	Garlic Mustard	Reed Canary Grass
Black Swallow-Wort	Giant Knotweed	Round-Leaved Bittersweet
Bladder-Campion	Giant Ragweed	Russian Knapweed
Bouncing-Bet	Glossy Buckthorn	Russian Olive
Box Elder	Grapes	Scotch Pine
Bull Thistle	Grecian Foxglove	Siberian Elm
Burning Bush	Greenbriar	Siberian Pea Shrub
Canada Bluegrass	Grey Dogwood	Silky Bush-Clover
Canada Goldenrod	Ground Nut	Smooth Brome
Canadian Thistle	Hairy Willow-Herb	Smooth Sumac
Cattail Hybrid (Typha x Glauca)	Helleborine	Spotted Knapweed
Celandine	Horsetail	Spreading Hedge Parsley
Chicory	Hydrilla	St. John's-Wort
Chinese Elm	Japanese Barberry	Star-of-Bethlehem
Common Buckthorn	Japanese Hedge-Parsley	Staghorn Sumac
Common Burdock	Japanese Honeysuckle	Tall Fescue
Common Cattail	Japanese Hops	Tall Goldenrod
Common Mullein	Japanese Knotweed	Tartarian Honeysuckle
Common Privet	Japanese Stilt Grass	Tree-of-Heaven
Common Reed Grass	Johnson Grass	Viola
Common Tansy	Kentucky Bluegrass	Virginia Waterleaf
Common Teasel	Large-Toothed Aspen	Watercress
Creeping Bellflower	Leafy Spurge	Water Chestnut
Creeping Charlie	Lesser Celandine	Wayfaring Tree
Crown Vetch	Lily-of-the-Valley	White Clover
Curly Dock	Moneywort	White Sweet-Clover
Curly-Leaf Pondweed	Morrow's Honeysuckle	White Mulberry
Cut-Leaved Teasel	Multiflora Rose	White Snakeroot
Cypress Spurge	Musk Thistle	Wild Parsnip
Dame's Rocket	Narrow-Leaved Cattail	White Poplar
Deadly Nightshade	Nipplewort	Willows
Dodder	Norway Maple	Wineberry
Dog-Strangling Vine	Orange Daylily	Wintercreeper
Eastern Cottonwood	Orange Hawkweed	Wood Nettle
Eastern Red-Cedar	Ox-Eye Daisy	Yellow Sweet-Clover
English Ivy	Pale Swallow-Wort	Yellow Hawkweed
Eurasian Water Milfoil	Periwinkle	Yellow Water Flag

Source: Wisconsin Department of Natural Resources and SEWRPC.

**FIGURE 3-2  
INVASIVE ANIMAL SPECIES IN WISCONSIN: 2007**

Asian Lady Beetle	Forest Tent Caterpillar	Round Goby
Asian Longhorned Beetle	Giant Snakehead	Ruffe
Beech Bark Disease	Gypsy Moth	Rusty Crayfish
Bighead Carp	Hemlock Woolly Adelgid	Sea Lamprey
Common Carp	Mute Swan	Silver Carp
Emerald Ash Borer	Oak Wilt	Spiny Waterflea
Feral Pig	Quagga Mussels	White Perch
Fishhook Waterflea	Rainbow Smelt	Zebra Mussel

Source: Wisconsin Department of Natural Resources and SEWRPC.

Seven (7) elements of the natural resource base are considered essential to the maintenance of the ecological balance and the overall quality of life in the Region, and served as the basis for identifying the environmental corridor network. These seven elements are: 1) lakes, rivers, and streams and associated shorelands and floodplains; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) wet, poorly-drained, and organic soils; and 7) rugged terrain and high relief topography. In addition, there are certain other features which, although not a part of the natural resource base, are closely related to the natural resource base and were used to identify areas with recreational, aesthetic, ecological, and natural value. These features include existing park and open space sites, potential park and open space sites, historic sites, scenic areas and vistas, and natural areas.

The mapping of these 12 natural resource and resource-related elements results in a concentration of such elements in an essentially linear pattern of relatively narrow, elongated areas that have been termed “environmental corridors” by SEWRPC. Primary environmental corridors include a wide variety of the most important natural resources and are at least 400 acres in size, two (2) miles long, and 200 feet wide. Secondary environmental corridors serve to link primary environmental corridors, or encompass areas containing concentrations of natural resources between 100 and 400 acres in size. Where secondary environmental corridors serve to link primary corridors, no minimum area or length criteria apply. Secondary environmental corridors that do not connect primary corridors must be at least 100 acres in size and one (1) mile long. An isolated concentration of natural resource features at least five (5) acres in size and 200 feet wide, but not large enough to meet the size or length criteria for primary or secondary environmental corridors, is referred to as an isolated natural resource area. Environmental corridors and isolated natural resource areas in the City of Kenosha in 2000 are shown on Map 3-18, page 30.

The preservation of environmental corridors and isolated natural resource areas in essentially natural, open uses can help reduce flood flows, reduce noise pollution, and maintain air and water quality. Corridor preservation is important to the movement of wildlife and for the movement and dispersal of seeds for a variety of plant species. In addition, because of the many interacting relationships between living organisms and their environment, the destruction and deterioration of any one (1) element of the natural resource base may lead to a chain reaction of deterioration and destruction. For example, the destruction of woodland cover may result in soil erosion and stream siltation, more rapid stormwater runoff and attendant increased flood flows and stages, as well as destruction of wildlife habitat. Although the effects of any single environmental change may not be overwhelming, the combined effects will eventually create serious environmental and developmental problems. These problems include flooding, water pollution, deterioration and destruction of wildlife habitat, reduction in groundwater recharge, as well as a decline in the scenic beauty. The importance of maintaining the integrity of the remaining environmental corridors and isolated natural resource areas thus becomes apparent.

As shown on Map 3-18, page 30, and listed in Table 3-13, page 33, the primary environmental corridors in the City of Kenosha generally lie along rivers and streams and adjacent to lakes, or are associated with woodlands, wetlands, or park and open space sites. In 2000, about 479 acres were encompassed within primary environmental corridors. Secondary environmental corridors are located chiefly along the smaller perennial

streams and intermittent streams including wetlands associated with these streams. About 113 acres were encompassed within secondary environmental corridors in 2000. Isolated natural resource areas within the City of Kenosha include a geographically well-distributed variety of isolated wetlands, woodlands, and wildlife habitat. These areas encompassed about 256 acres in 2000.

**TABLE 3-13**  
**EXISTING ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL**  
**RESOURCE AREAS IN THE CITY OF KENOSHA: 2000<sup>a</sup>**

Local Government	Primary Environmental Corridors (acres)	Secondary Environmental Corridors (acres)	Isolated Natural Resource Areas (acres)
City of Kenosha	479	113	256
Kenosha County	27,960	6,373	3,874

*a Inventory conducted in 2000; based on 2006 civil divisions.*

Source: SEWRPC.

**Park and Open Space Sites**

A comprehensive region wide inventory of park and open space sites was conducted in 1973 under the initial Regional Park and Open Space Planning Program conducted by SEWRPC. The inventory is updated periodically, and was updated in 2006 as part of this planning process. The inventory identified all park and open space sites owned by a public agency, including Federal, State, County, and local units of government and school districts. The inventory also included privately owned outdoor recreation sites such as golf courses, campgrounds, boating access sites, hunting clubs, group camps, and special use outdoor recreation sites. Sites owned by nonprofit conservation organizations, such as The Nature Conservancy and the Conservancy Club of Kenosha, were also identified. As of 2006, there were 24 acres of park and open space land in fee simple ownership in the City of Kenosha. The sites in Table 3-14, page 33, and shown on Map 3-19, page 34, are located within the City of Kenosha:

**Park and Open Space Sites**

Park and open space sites are shown on Maps 3-20, page 35, and are listed in Table 3-15, page 36. As shown on Table 3-15, the City of Kenosha owns 74 sites encompassing 1,020 acres. There are 30 public schools in the City, providing 261 acres within park and open space sites. There are also 16 private sites located in the City encompassing 255 acres, for a total of 1,536 acres within park and open space sites.

**TABLE 3-14**  
**PARK AND OPEN SPACE SITES IN THE CITY OF KENOSHA: 2006**

No. on Map 3-19	Site Name	Location	Size (acres)
1	Kemper Center	T1N, R23E, Section 5	16
13	Kenosha County Bike Trail	T1N, R22E, Section 13 T1N, R23E, Sections 5, 7, 8, & 18 T2N, R22E, Sections 13, 24 & 25 T2N, R23E, Sections 18, 29, 30, 31 & 32	50

**Climate**

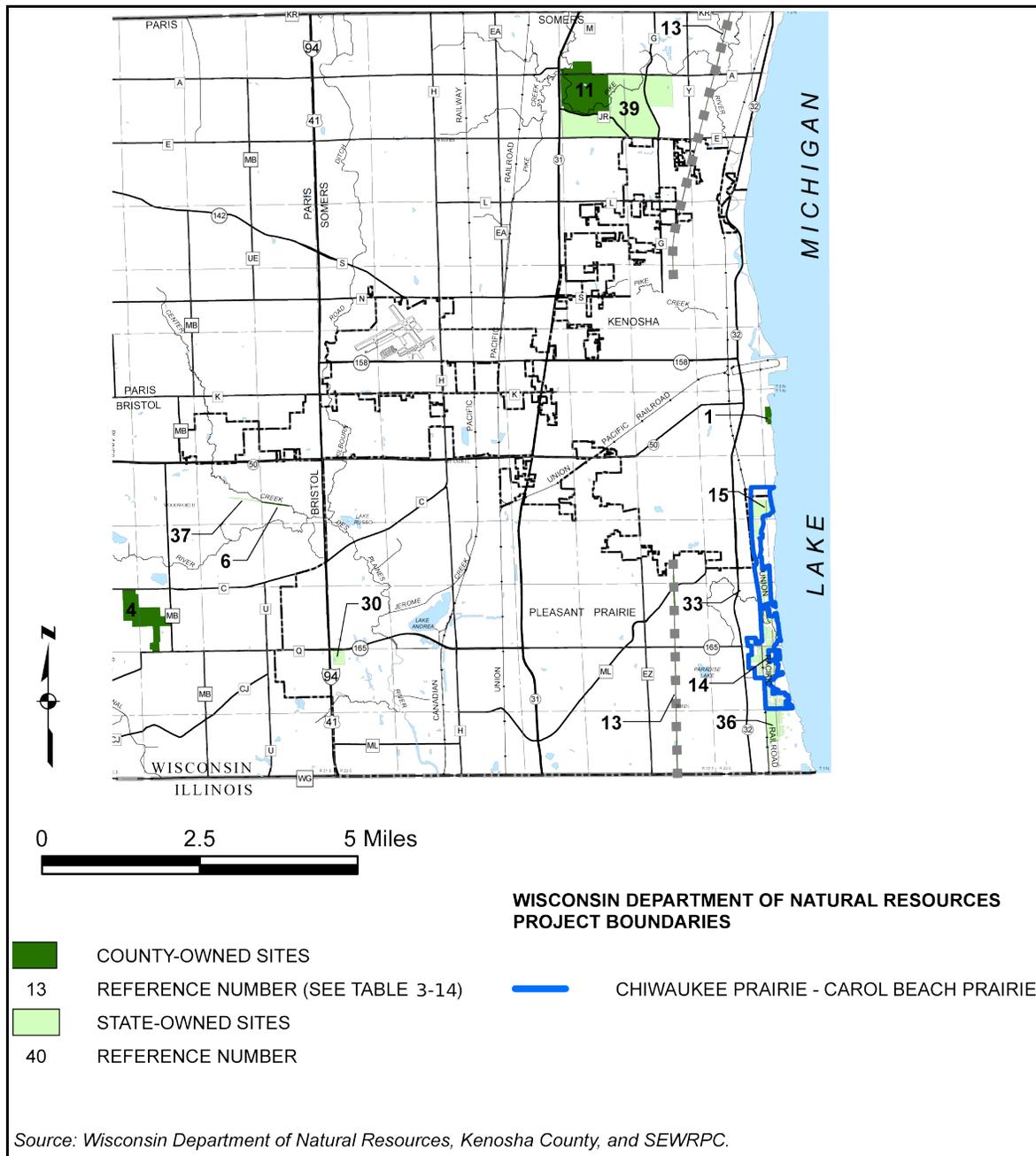
Its mid-continental location gives the City of Kenosha a continental climate that spans four (4) seasons. Summers generally occur during the months of June, July, and August. They are relatively warm, with occupation periods of hot, humid weather and sporadic periods of cool weather. Lake Michigan often has a cooling effect on the City of Kenosha during the summer. Winters are cold and generally occur during the months of December, January, and February. Winter weather conditions can also be experienced during the months of November and March in some years. Autumn and spring are transitional weather periods in the City of Kenosha when widely varying temperatures and long periods of precipitation are common. The median growing season, the number of days

between the last freeze in the spring and the first freeze in the fall, is 170 days and can range from 150 to 192 days.

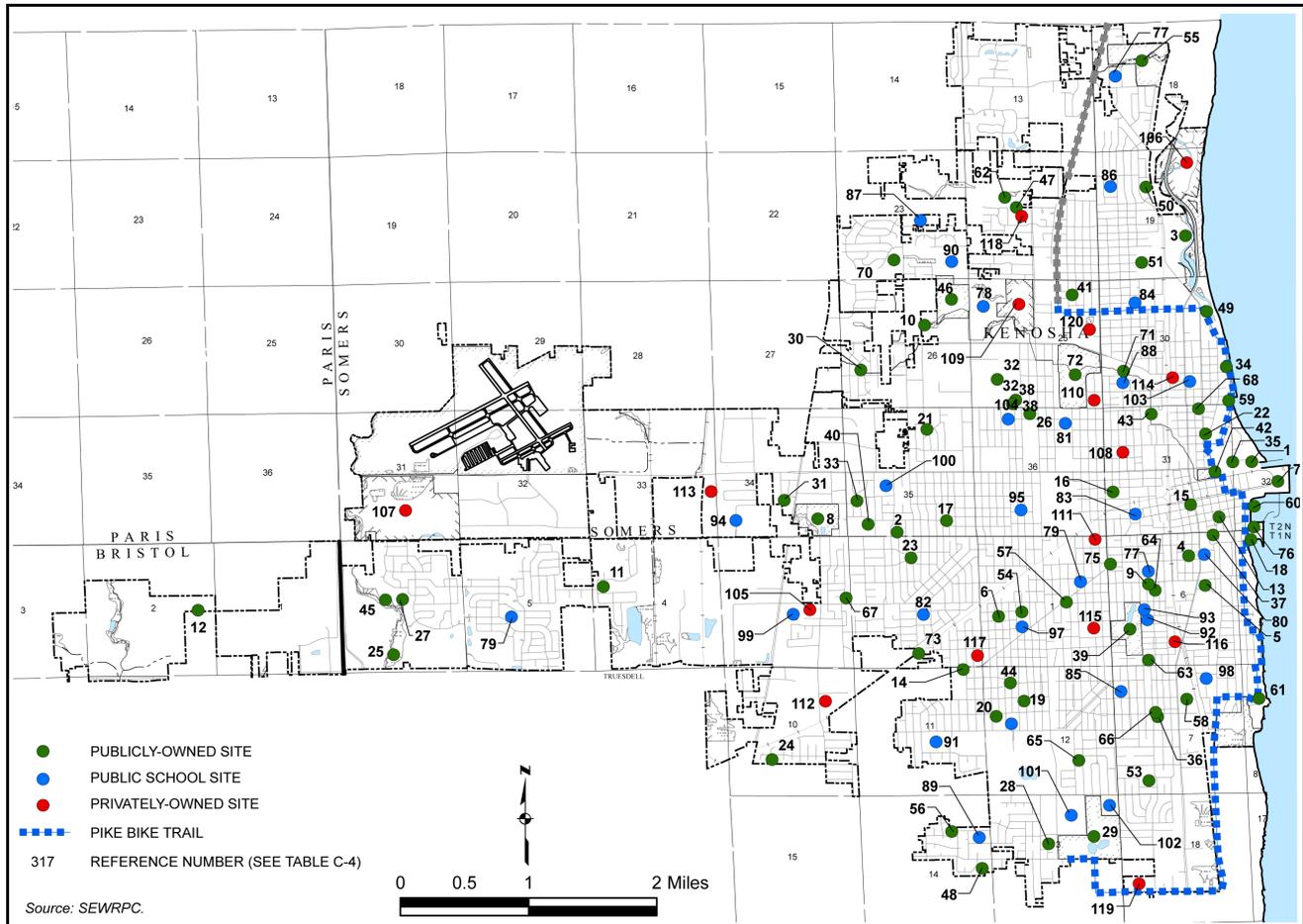
Precipitation can occur in the form of rain, sleet, hail, and snow and ranges from gentle showers to destructive thunderstorms. The more pronounced weather events, such as severe thunderstorms and tornadoes, can cause major property and crop damage, inundation of poorly drained areas, and lake and stream flooding.

MAP 3-19

COUNTY- AND STATE-OWNED PARK AND OPEN SPACE SITES IN KENOSHA COUNTY: 2006



**MAP 3-20**  
**LOCAL PUBLIC AND PRIVATELY-OWNED PARK AND OPEN SPACE SITES**  
**IN THE CITY OF KENOSHA: 2006**



**Air Quality**

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national ambient air quality standards (NAAQS) for six (6) criteria pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides) which are considered harmful to public health and the environment. Areas not meeting the NAAQS for one (1) or more of the criteria pollutants are designated as nonattainment areas by the EPA. In areas where observed pollutant levels exceed the established NAAQS and which are designated as “nonattainment” areas by the EPA, growth and development patterns may be constrained. For example, major sources of pollutants seeking to locate or expand in a designated nonattainment area, or close enough to impact upon it, must apply emission control technologies. In addition, new or expanding industries may be required to obtain a greater than one-for-one reduction in emissions from other sources in the nonattainment area so as to provide a net improvement in ambient air quality. Nonattainment area designation may therefore create an economic disincentive for industry with significant emission levels to locate or expand within or near the boundaries of such an area. In order to eliminate this disincentive and relieve the potential constraint on development, it is necessary to demonstrate compliance with the NAAQS and petition EPA for redesignation of the nonattainment areas.

The EPA has designated a single six-county ozone nonattainment area within the Region which is made up of Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties. Ozone is formed when precursor

pollutants, such as volatile organic compounds and nitrogen oxides, react in the presence of sunlight. The ozone air quality problem within the Region is a complex problem because ozone is meteorologically dependent. In addition, the ozone problem in the Region is believed to be attributable in large part to precursor emissions which are generated in the large urban areas located to the south and southeast and carried by prevailing winds into the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort.

TABLE 3-15

## PUBLIC AND PRIVATE PARK, RECREATION, AND OPEN SPACE SITES IN THE CITY OF KENOSHA: 2006

No. on Map 3-20	Public Sites	Size <sup>a</sup> (acres)	No. on Map 3-20	Public Sites	Size <sup>a</sup> (acres)
1	Sixth Avenue Park	1	2	60 <sup>th</sup> Street Tennis Courts	1
3	Alford Park	70	4	Bain Park	2
5	Baker Park	5	6	Bullamore Park	2
7	Celebration Place	15	8	Charles W. Nash Park	52
9	Cicchini Park	1	10	City-Owned Land	7
11	City-Owned Land	5	12	City-Owned Land	5
13	City-Owned Land	4	14	City-Owned Land	1
15	Civic Center Park	1	16	Columbus Park	7
17	Davis Park	1	18	Eichelman Park	9
19	Elmwood Park	1	20	Elmwood School Site	1
21	Endee Park	2	22	Fireman's Park	1
23	Forest Park	6	24	Gangler Park	5
25	Gateway Center Park	18	26	Hobbs Park	5
27	Horizons at White Caps	15	28	Isetts Park	6
29	Anderson Park	95	30	Jamestown Park	2
31	Johnson Highland Park	1	32	KAT Park	23
33	Kenfair Park	1	34	Kennedy Park	24
35	Kenosha Yacht Club	1	36	Kirchner Highlands	1
37	Library Park	5	38	Limpert Park and City Nursery	5
39	Lincoln Park	43	40	Little League Park	5
41	Matoska Park	3	42	Navy Memorial Park	1
43	Nedweski Park	10	44	Newman Park	2
45	Open Space Site	55	46	Open Space Site	49
47	Open Space Site	17	48	Open Space Site	9
49	Pennoyer Park	35	50	Petretti Park	8
51	Petzke Park	10	52	Pike Recreational Trail	--b
53	Red Arrow Park	7	54	Roosevelt Park	6
55	Sam Poerio Park	70	56	Schulte Park	3
57	Senior Citizen's Park	1	58	Simmons Athletic Field	8
59	Simmons Island Park	42	60	Southport Marina	11
61	Southport Park	29	62	St. Peter's Park	5
63	Strawberry Park	1	64	Streeter Park	1
65	Sunnyside Park	5	66	Sunrise Park	15
67	Tot Park	1	68	Towerline Park	3
69	Union Park	1	70	Washington Park	29
71	Washington Park Golf Course	71	72	Werve's Park	1
73	Wilson Triangle Park	1	74	Wolfenbuttel Park	15
---	<b>Subtotal (74 Sites)</b>	<b>1,020</b>			

No. on Map 3-20	Public Sites	Size <sup>a</sup> (acres)
<b>School District Sites</b>		
75	Bose Elementary School	15
77	Brass Elementary School <sup>c</sup>	6
79	Charles Nash Elementary School	16
81	Durkee Elementary School <sup>d</sup>	1
83	Forest Park Elementary School	5
85	Grant Elementary School	2
87	Harvey Elementary School	4
89	Jefferson Elementary School	1
91	John Bullen Middle School	27
93	Lincoln Elementary School	1
95	Mahone Middle School/Indian Trail Academy High School	55
97	Roosevelt Elementary School	1
99	Stocker Elementary School	4
101	Tremper High School	23
103	Washington Middle School	1
---	<b>Subtotal (30 Sites)</b>	<b>261</b>
<b>Private Sites</b>		
105	Boys and Girls Club of Kenosha/CYC Sports	8
107	Dairyland Greyhound Park	117
109	Gateway Technical College	15
111	Jockey International Walking Track	1
113	Kenosha Youth Foundation	19
115	St. Joseph's High School	4
117	St. Mary's School	1
119	St. Therese School	11
---	<b>Subtotal (16 Sites)</b>	<b>255</b>
---	<b>TOTAL – 120 SITES</b>	<b>1,536</b>

No. on Map 3-20	Public Sites	Size <sup>a</sup> (acres)
<b>School District Sites</b>		
76	Bradford High School	40
78	Brompton School	1
80	Columbus Elementary School	1
82	Ed Bain School of Language and Art	2
84	Frank Elementary School	1
86	Grewenow Elementary School	3
88	Hillcrest School	12
90	Jeffery Elementary School	4
92	Lance Middle School	15
94	Lincoln Middle School	1
96	McKinley Elementary and Middle Schools	1
98	Southport Elementary School	2
100	Strange Elementary School	7
102	Vernon Elementary School	4
104	Wilson Elementary School	5
<b>Private Sites</b>		
106	Carthage College	
108	Friedens Lutheran School	1
110	Holy Rosary School	4
112	Kenosha Ice Arena	6
114	St. Elizabeth School	1
116	St. Mark's School	1
118	St. Peter's School	7
120	Woodhaven Girl Scout Camp	9

*a Site area is rounded to the nearest whole number. Sites less than one (1) acre are rounded up to one (1) acre.*

*b The trail is located in the City of Kenosha and the Village of Pleasant Prairie. Within the City of Kenosha, the trail encompasses about six (6) linear miles.*

*c Brass Elementary School was constructed in 2008 and inhabits students from the closed Durkee Elementary School and Lincoln Elementary School.*

*d Durkee Elementary School closed at the end of the 2007-2008 school year. The school will be razed and the land will be used to construct a parking garage.*

*Source: SEWRPC Park and Open Space Site Inventory.*

The EPA has designated a single six-county ozone nonattainment area within the Region which is made up of Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties. Ozone is formed when precursor pollutants, such as volatile organic compounds and nitrogen oxides, react in the presence of sunlight. The ozone air quality problem within the Region is a complex problem because ozone is meteorologically dependent. In addition, the ozone problem in the Region is believed to be attributable in large part to precursor emissions which are generated in the large urban areas located to the south and southeast and carried by prevailing winds into the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort.

In March 2008, the EPA revised the eight-hour ozone standard from 85 parts per billion (ppb) to 75 ppb. Nonattainment designations based on 2007 through 2009 air quality data, and the new standard, are expected to take effect in 2010.

The State of Wisconsin is currently designated as an attainment area for particulate matter. In August 2008, the EPA proposed nonattainment designations in six (6) counties for the 24-hour fine particulate matter air quality standard. The proposed nonattainment counties are Milwaukee, Racine, and Waukesha Counties in southeastern Wisconsin, and Brown, Dane, and Columbia Counties outside the Region. EPA's final determination on the nonattainment designation for particulate matter is expected in December 2008. If the designation changes from attainment to nonattainment, the State of Wisconsin will develop measures to control particulate emissions, in accordance with EPA guidelines, so that the Region will be in attainment by 2010.

Over the past decade, the combination of local controls and offsets implemented within and outside the Region, along with national vehicle emissions control requirements, have resulted in a significant improvement in ambient air quality within the Region as well as nationally, and projections of future emissions indicate a continued decline in precursor emissions and a continued improvement in air quality.

### **PART 3: CULTURAL RESOURCES**

The term cultural resource encompasses historic buildings, structures and sites; archaeological sites; and museums. Cultural resources in the City of Kenosha have important recreational and educational value. Cultural resources help to provide the County and each of its distinct communities with a sense of heritage, identity, and civic pride. Resources such as historical and archaeological sites and historic districts can also provide economic opportunities through tourism.

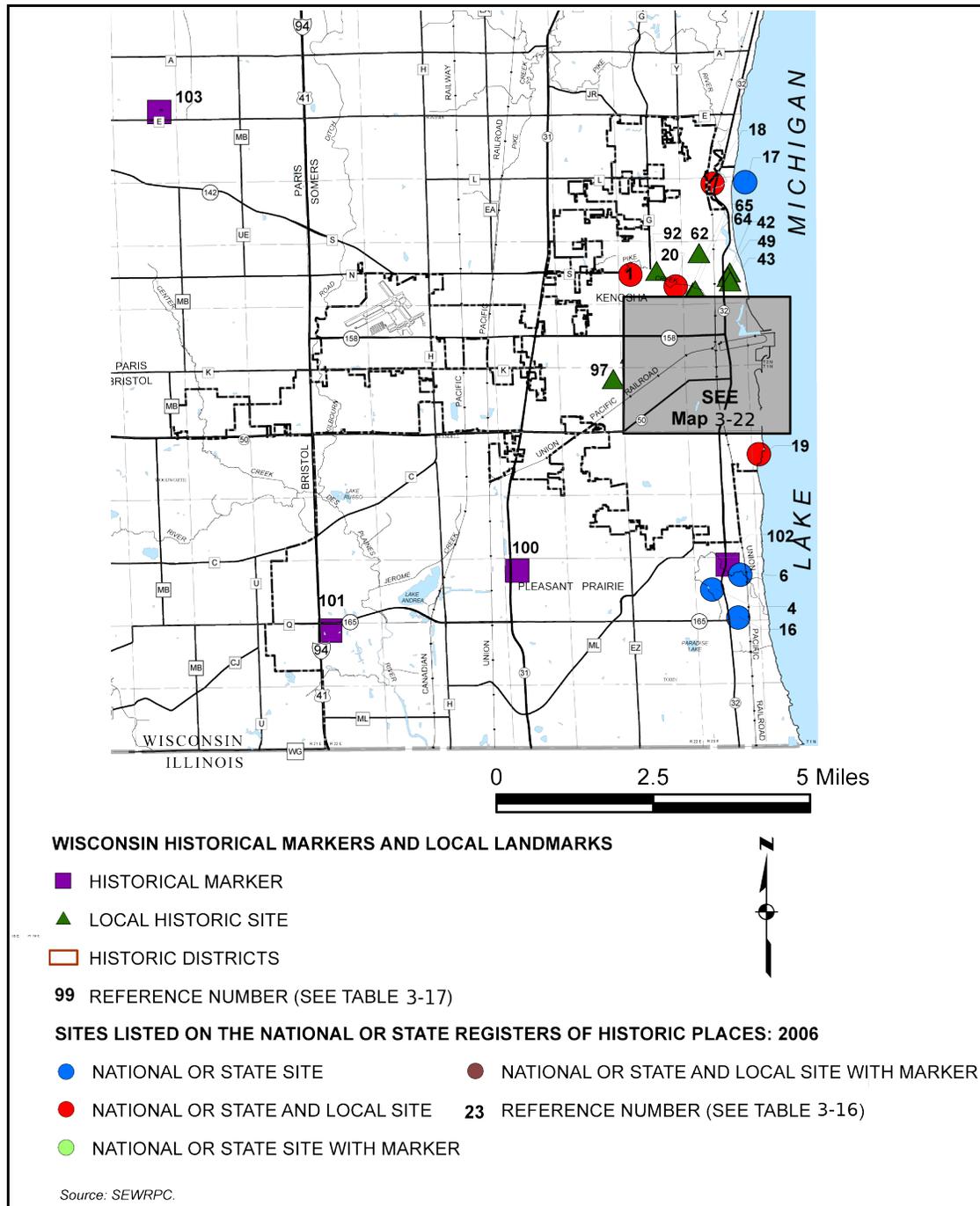
#### **Historical Resources**

In 2006, there were 20 historic places and districts in the City of Kenosha and one (1) shipwreck located 12 miles east of the City of Kenosha in Lake Michigan, listed on the National Register of Historic Places and/or the State Register of Historical Places, as displayed on Maps 3-21, page 39 and 3-22, page 40, and listed in Table 3-16, page 41. In most cases, historic places or districts listed on the National Register are also listed on the State Register. Since the State Register was created in 1991, all properties nominated for the National Register must first go through the State Register review process. Upon approval by the State review board, a site is listed on the State Register of Historic Places and recommended to the National Park Service for review and listing on the National Register of Historic Places. The only exceptions to this process are federally-owned properties, which may be nominated for the National Register directly by the National Park Service. Of the 21 historic places and districts listed on the National and/or State Registers, 16 are historic buildings or structures, three (3) are historic districts, and one (1) is a historic or prehistoric site and one (1) is a shipwreck. Sites and districts listed on the National and State Registers of Historic Places have an increased measure of protection against degradation and destruction. Listing on the National or State Register requires government agencies to consider the impact of their activities, such as the construction or reconstruction of a highway, or a permit which they issue, on the designated property. If the property would be adversely affected, the agency must work with the State Historic Preservation Officer to attempt to avoid or reduce adverse effects.

The City of Kenosha is also home to five (5) Wisconsin State Historical Markers through a program administered by the Wisconsin Historical Society's Division of Historic Preservation. These historical markers are intended to identify, commemorate, and honor the important people, places, and events that have contributed to the State's rich heritage. The program serves as a vital educational tool, informing people about the most significant aspects of Wisconsin's past. State Historical Markers in the City of Kenosha are identified on Map 3-22, page 40, and listed in Table 3-17, page 42. The Kemper Hall and Kenosha (Southport) Lighthouse markers are also associated with sites listed on the National and State Registers referenced above.

MAP 3-21

**HISTORIC SITES AND DISTRICTS LISTED ON THE NATIONAL OR STATE REGISTERS OF HISTORIC PLACES, WISCONSIN HISTORICAL MARKERS, AND LOCAL LANDMARKS IN KENOSHA COUNTY: 2006**

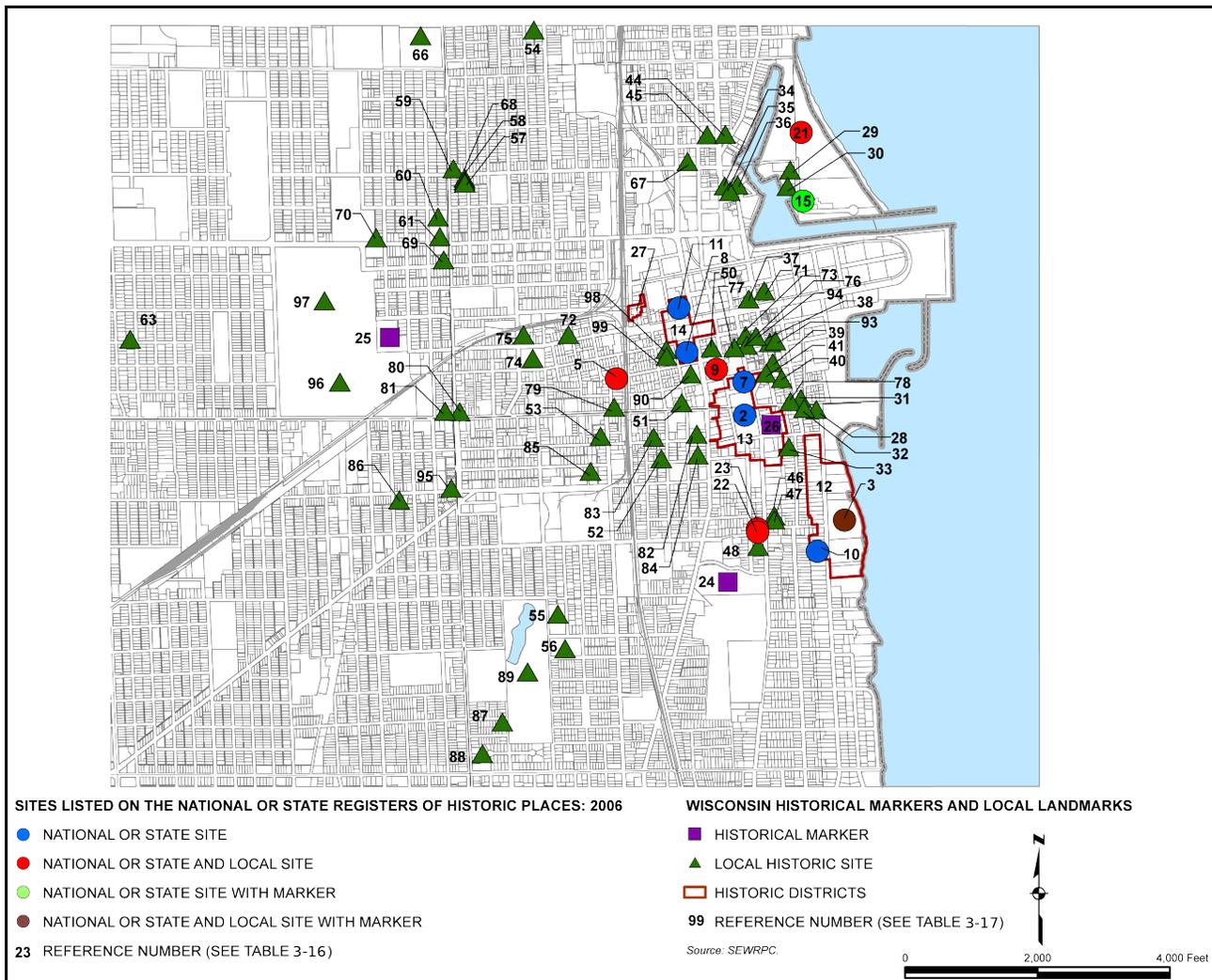


The 21 historic places and districts listed on the National and/or State registers of historic places are only a small fraction of the buildings, structures, and districts listed in the Wisconsin Architecture and History Inventory. The Wisconsin Architecture and History Inventory is a database administered by the State Historical Society of Wisconsin that contains historical and architectural information on approximately 120,000 properties statewide. The listed sites have architectural or historical characteristics that may make them eligible for listing on the

National and State registers of historic places. Currently, there are 684 properties in the City of Kenosha included in the Wisconsin Architecture and History Inventory. The inventory can be accessed through the State of Wisconsin Historical Society website at [www.wisconsinhistory.org/ahi](http://www.wisconsinhistory.org/ahi).

MAP 3-22

**HISTORIC SITES AND DISTRICTS LISTED ON THE NATIONAL OR STATE REGISTERS OF HISTORIC PLACES, WISCONSIN HISTORICAL MARKERS, AND LOCAL LANDMARKS IN THE CITY OF KENOSHA: 2006**



In addition to historic sites and districts listed on the National and State Registers of Historic Places, four (4) historic districts, 75 historic structures, and seven (7) historic sites have been designated as local landmarks by the City of Kenosha Historic Preservation Commission. Local landmarks are shown on Maps 3-21 and 3-22, pages 39 and 40, and listed on Table 3-17, beginning on page 42, (note that some of the landmarks are also on the National or State Register of Historic Places). County and local governments may designate landmarks once a Landmarks Commission or Historic Preservation Commission has been established by ordinance and certified by the State Historical Society. Landmark Commissions and Historic Preservation Commissions are typically seven (7) to nine (9) member boards that review applications for local landmark status and may also review proposed alterations to historic properties or properties located in historic districts. Landmark and historic preservation

commissions may also designate local historic districts; however, designation of districts typically requires approval from the local governing body. Properties identified as local landmarks must be protected in accordance with the requirements of the historic preservation ordinance. Generally, such ordinances require review by the local landmarks or historic preservation commission before a historic property can be altered or demolished.

TABLE 3-16

**HISTORIC SITES AND DISTRICTS IN THE CITY OF KENOSHA LISTED ON THE NATIONAL OR STATE REGISTERS OF HISTORIC PLACES: 2006**

No. on Maps 3-21 & 3-22	Site Name	Location	Year Listed
1	Justin Weed House	3509 Washington Road	1974
2	Gilbert M. Simmons Memorial Library	711 59 <sup>th</sup> Place	1974
3	Kemper Hall	6501 Third Avenue	1976
5	John McCaffary House	5732 13 <sup>th</sup> Court	1978
7	St. Matthew's Episcopal Church	5900 Seventh Avenue	1979
8	Kenosha High School	913 57 <sup>th</sup> Street	1980
9	Boys and Girls Library	5810 Eighth Avenue	1980
10	Manor House	6536 Third Avenue	1980
11	Kenosha County Courthouse and Jail	912 56 <sup>th</sup> Street	1982
12	Third Avenue Historic District	T1N, R23E, Section 5	1988
13	Library Park Historic District	T1N, R23E, Section 5 and T2N, R23E, Section 31	1988
14	Civic Center Historic District <sup>a</sup>	T2N, R23E, Section 31	1989
15	Kenosha Light Station	5117 Fourth Avenue	1990
2	Library Park	711 59 <sup>th</sup> Place	2000
17	Rosinco (shipwreck)	12 miles east of the City of Kenosha in Lake Michigan	2001
18	Alford Park Warehouse	1885 Sheridan Road	2002
19	Southport Beach House	7825 First Avenue	2003
20	Washington Park Clubhouse	2205 Washington Road	2003
21	Simmons Island Beach House	5001 Simmons Island	2003
22	Anthony and Caroline Isermann House	6416 Seventh Avenue	2004
23	Frank and Jane Isermann House	6500 Seventh Avenue	2004

<sup>a</sup> Civic Center Historic District is only listed on the National Register of Historic Places. All other sites are listed on both the National and State Registers of Historic Places.

Source: The State Historical Society of Wisconsin and SEWRPC.

Procedures for designating local landmarks can and do vary depending on the local government. The City of Kenosha Historic Preservation Commission has developed a straightforward set of landmark designation procedures. The City Historic Preservation Commission – composed of seven (7) individuals appointed by the Mayor and subject to confirmation by the Common Council – may, after notice and public hearing, nominate districts, structures, and sites for historic designation to the Common Council. Nominations and recommendations made by the Historic Preservation Commission are not final until approved by the Common Council. Criteria used by the Commission to make decisions on local landmarks aim to regulate and preserve historic districts, structures, and sites with a special character, historic interest, aesthetic interest or other significant value.

TABLE 3-17

## WISCONSIN HISTORICAL MARKERS AND LOCAL LANDMARKS IN THE CITY OF KENOSHA: 2006

No. on Maps 3-21 and 3-22	Designation	Site Address	Historic Name
3	Wisconsin Historical Marker and City of Kenosha Historical Structure	6501 Third Avenue	Kemper Hall
15	Wisconsin Historical Marker and City of Kenosha Historical Structure	5117 Fourth Avenue	Kenosha (Southport) Lighthouse
24	Wisconsin Historical Marker	6604 Seventh Avenue	John McCaffary Burial Site
25	Wisconsin Historical Marker	24 <sup>th</sup> Avenue and 56 <sup>th</sup> Street	Auto Production in Kenosha
26	Wisconsin Historical Marker	6027 Seventh Avenue	Reuben Deming
12	City of Kenosha Historical District	T1N, R23E, Section 5	Third Avenue Historic District
13	City of Kenosha Historical District	T1N, R23E, Section 5 and T2N, R23E, Section 3	Library Park Historic District
14	City of Kenosha Historical District	T2N, R23E, Section 3	Civic Center Historic District
27	City of Kenosha Historical District	T2N, R23E, Section 31	Pearl Street Historic District
28	City of Kenosha Historical Structure	6004 Third Avenue	Patrick and Elizabeth English House
29	City of Kenosha Historical Structure	5012 Fourth Avenue	Bullen House
30	City of Kenosha Historical Structure	5036 Fourth Avenue	United States Coast Guard Station
31	City of Kenosha Historical Structure	5935 Fifth Avenue	William Donley House
32	City of Kenosha Historical Structure	6005 Fifth Avenue	Benjamin Stahl House
33	City of Kenosha Historical Structure	6114 Fifth Avenue	Albert Buckmaster House
34	City of Kenosha Historical Structure	5002 Sixth Avenue	Bindt Block
35	City of Kenosha Historical Structure	5036-38 Sixth Avenue	Graham Block
36	City of Kenosha Historical Structure	5041 Sixth Avenue	Mathias Zievers House
37	City of Kenosha Historical Structure	5522 Sixth Avenue	Old First National Bank
38	City of Kenosha Historical Structure	5725-27 Sixth Avenue	Schwartz Building
39	City of Kenosha Historical Structure	5819-31 Sixth Avenue	Orpheum Theater
40	City of Kenosha Historical Structure	5919 Sixth Avenue	Kenosha Theater
41	City of Kenosha Historical Structure	5910 Sixth Avenue "A"	Flat Iron Building
42	City of Kenosha Historical Structure	3802 Seventh Avenue	Joseph and Victoria Palt House
43	City of Kenosha Historical Structure	4010 Seventh Avenue	Francis Myers House
44	City of Kenosha Historical Structure	4815 Seventh Avenue	Fire Station No. 4
45	City of Kenosha Historical Structure	4816 Seventh Avenue	St. George's Church Complex
46	City of Kenosha Historical Structure	6349 Seventh Avenue	John and Anne Dale House
47	City of Kenosha Historical Structure	6403 Seventh Avenue	Frank and Emma Wells House
22	City of Kenosha Historical Structure	6416 Seventh Avenue	Anthony and Caroline Isermann House
23	City of Kenosha Historical Structure	6500 Seventh Avenue	Frank and Jane Isermann House
48	City of Kenosha Historical Structure	6522 Seventh Avenue	Crangle-Fisher House
49	City of Kenosha Historical Structure	3833 Eighth Avenue	St. John's Lutheran Church
50	City of Kenosha Historical Structure	5706 Eighth Avenue	Elk's Club
9	City of Kenosha Historical Structure	5810 Eighth Avenue	Simmons Memorial Church
51	City of Kenosha Historical Structure	5922 Tenth Avenue	Shirley Apartments
52	City of Kenosha Historical Structure	6122 11 <sup>th</sup> Avenue	Van Arsdale-Van Wie House
5	City of Kenosha Historical Structure	5732 13 <sup>th</sup> Court	McCaffary House
53	City of Kenosha Historical Structure	6030 14 <sup>th</sup> Avenue	George and Mary Washburn House
54	City of Kenosha Historical Structure	4313 18 <sup>th</sup> Avenue	St. Nicholas' Church
55	City of Kenosha Historical Structure	6729 18 <sup>th</sup> Avenue	Lincoln Middle School
56	City of Kenosha Historical Structure	6811 18 <sup>th</sup> Avenue	Lincoln Elementary School

No. on Maps 3-21 and 3-22	Designation	Site Address	Historic Name
57	City of Kenosha Historical Structure	5004 21 <sup>st</sup> Avenue	Ritacca Triplex (Unit 2)
58	City of Kenosha Historical Structure	5008 21 <sup>st</sup> Avenue	Ritacca Triplex (Unit 3)
59	City of Kenosha Historical Structure	4923 22 <sup>nd</sup> Avenue	Ritacca Brothers Service Station
60	City of Kenosha Historical Structure	5100 22 <sup>nd</sup> Avenue	St. Anthony's Church
61	City of Kenosha Historical Structure	5116 22 <sup>nd</sup> Avenue	Old St. Anthony's Church
62	City of Kenosha Historical Structure	1716 35 <sup>th</sup> Street	Grant Elementary School
63	City of Kenosha Historical Structure	5540 37 <sup>th</sup> Avenue	George Moskopf House
64	City of Kenosha Historical Structure	1808 41 <sup>st</sup> Place	Orthopedic and Open Air School
65	City of Kenosha Historical Structure	1832 43 <sup>rd</sup> Street	Jefferson Elementary School
66	City of Kenosha Historical Structure	2224 45 <sup>th</sup> Street	Holy Rosary Church
67	City of Kenosha Historical Structure	812 50 <sup>th</sup> Street	Weiskopf School
68	City of Kenosha Historical Structure	2103 50 <sup>th</sup> Street	Ritacca Triplex (Unit 1)
69	City of Kenosha Historical Structure	2217 52 <sup>nd</sup> Street	Italian American Club
70	City of Kenosha Historical Structure	2508 52 <sup>nd</sup> Street	Grand Avenue Fire Station No. 4
71	City of Kenosha Historical Structure	514 56 <sup>th</sup> Street	Rhode Opera House
72	City of Kenosha Historical Structure	1602 56 <sup>th</sup> Street	B'nai Zedek Synagogue
73	City of Kenosha Historical Structure	625 57 <sup>th</sup> Street	Kenosha National Bank
74	City of Kenosha Historical Structure	1816 57 <sup>th</sup> Street	Frank School
75	City of Kenosha Historical Structure	302 58 <sup>th</sup> Street	Eagle's Club
76	City of Kenosha Historical Structure	622 58 <sup>th</sup> Street	Barden's Building
77	City of Kenosha Historical Structure	702-714 58 <sup>th</sup> Street	Alford Building
78	City of Kenosha Historical Structure	510 60 <sup>th</sup> Street	Bernard and Julia Eichelman House
79	City of Kenosha Historical Structure	1320 60 <sup>th</sup> Street	Alexander M. Kent Home
80	City of Kenosha Historical Structure	2122 60 <sup>th</sup> Street	Gregario Gallo Gas Station
81	City of Kenosha Historical Structure	2200-14 60 <sup>th</sup> Street	Parmentier Block
82	City of Kenosha Historical Structure	920 61 <sup>st</sup> Street	St. Joseph's Home of the Sacred Heart
83	City of Kenosha Historical Structure	1116-18 61 <sup>st</sup> Street	Reverend Ruben H. Deming House
84	City of Kenosha Historical Structure	910 62 <sup>nd</sup> Street	David and Louisa Thiers House
85	City of Kenosha Historical Structure	1420 63 <sup>rd</sup> Street	American Brass Company Office Building
86	City of Kenosha Historical Structure	2419 63 <sup>rd</sup> Street	West Branch Library
87	City of Kenosha Historical Structure	2005 73 <sup>rd</sup> Street	Charles and Hilda Greening
88	City of Kenosha Historical Structure	2032 74 <sup>th</sup> Place	Harold Jensen House
89	City of Kenosha Historical Structure	Lincoln Park	Lincoln Park Bridge
90	City of Kenosha Historical Structure	5804 Sheridan Road	St. James Catholic Church
91	City of Kenosha Historical Structure	3901 Taft Road	Kermit Caves House
20	City of Kenosha Historical Structure	2205 Washington Road	Washington Road Park Golf Course Clubhouse
21	City of Kenosha Historical Structure	5001 Simmons Island Drive	Simmons Island Beach House
19	City of Kenosha Historical Structure	7825 First Avenue	Southport Beach House
1	City of Kenosha Historical Structure	3509 Washington Road	Justin Weed House
18	City of Kenosha Historical Structure	1885 Sheridan Road	Alford Park Warehouse
92	City of Kenosha Historical Structure	2814 Washington Road	Weed-Runals House
93	City of Kenosha Historical Structure	508 58 <sup>th</sup> Street	Frank's Diner
2	City of Kenosha Historical Structure	711 59 <sup>th</sup> Place	Library Park
94	City of Kenosha Historical Structure	5708 Sixth Avenue	Gottfredsen and Nicoll Store
95	City of Kenosha Historical Structure	6222 22 <sup>nd</sup> Avenue	Danish Brotherhood Hall
96	City of Kenosha Historical Structure	5700 24 <sup>th</sup> Avenue	Sterling Building
97	City of Kenosha Historical Structure	5626 25 <sup>th</sup> Avenue	Nash Office Building

No. on Maps 3-21 and 3-22	Designation	Site Address	Historic Name
98	City of Kenosha Historical Structure	1015 57 <sup>th</sup> Street	Landmark Bench
99	City of Kenosha Historical Structure	58 <sup>th</sup> Street between 10 <sup>th</sup> and 11 <sup>th</sup> Avenues	Kenosha High School Boulder

Source: Wisconsin Historical Society, City of Kenosha, and SEWRPC.

### Archaeological Resources

Preservation of archaeological resources is also important in preserving the cultural heritage of the City of Kenosha. Like historical sites and districts, significant prehistoric and historic archaeological sites provide the City of Kenosha with a sense of heritage and identity, which can provide for economic opportunities through tourism if properly identified and preserved. Archaeological sites fall under two (2) categories: prehistoric sites and historic sites. Prehistoric sites are defined as those sites which date from before written history. Historic sites are sites established after history began to be recorded in written form (the State Historical Society of Wisconsin defines this date as A.D. 1650).

### Local Historical Societies and Museums

There is one (1) local historical society affiliated with the State Historical Society of Wisconsin in the City of Kenosha, the Kenosha County Historical Society. The historical society maintains facilities that contain items of historical or archaeological significance as well as historical records. The Kenosha County Historical Society also maintains the Southport Lighthouse and the adjacent Kenosha Water Utility Pumping Station, which together form the campus of the Kenosha History Center on Historic Simmons Island in the City of Kenosha. The Kenosha History Center is the headquarters of the Kenosha County Historical Society. Kenosha County operates the Durkee Mansion and Anderson Arts Center, both located on the grounds of the Kemper Center. The City of Kenosha owns and operates the Kenosha Public Museum, a natural history and fine and decorative arts museum located on HarborPark; and the Dinosaur Museum located in Civic Center. A third facility, the Civil War Museum, is located on HarborPark, adjacent to the Public Museum.

### SUMMARY

This chapter provides inventory information on existing agricultural, natural, and cultural resources in the City of Kenosha. Information regarding soil types, existing farmland, farming operations, non-metallic mining resources, topography and geology, water resources, forest resources, natural areas and critical species habitat sites, environmental corridors, park and open space sites, historical resources, and archeological resources is included in this chapter. The planning recommendations set forth in the Agricultural, Natural, and Cultural Resources Element chapter are directly related to the inventory information presented in this chapter. Inventory findings include:

- There are five (5) soil associations in the City of Kenosha: the Boyer-Granby Association, Fox-Casco Association, Hebron-Montgomery-Aztalan Association, Morley-Beecher-Ashkum Association, and the Varna-Elliott-Ashkum Association.
- Lands used for agriculture were identified in the SEWRPC 2000 Land Use Inventory and include all croplands, pasture lands, orchards, nurseries, and non-residential farm buildings. In 2000, agricultural lands occupied 1,633 acres, or about 2.5 square miles.
- Surface elevations in the County range from a low of 580 feet above sea level along the Lake Michigan shoreline to a high of 750 feet near the airport and western City of Kenosha growth areas.

- One (1) site of geological importance was identified in the County in 1994 as part of the regional natural areas study. The Kenosha Dunes and Buried Forest, a glacial geology site, encompasses 36 acres along the Lake Michigan shoreline in the Village of Pleasant Prairie, adjacent to the City of Kenosha.
- There are approximately five (5) linear miles of Lake Michigan shoreline in the City of Kenosha. The shoreline contains areas of clay bluffs with heights of up to 35 feet in the northern reaches of the County and only four (4) or five (5) feet in the southern reaches. Beach width varies from a complete absence of beach in some areas and over 275 feet in others. Shoreline recession rates varied greatly along different segments of the lakeshore.
- About 16 percent of the City of Kenosha is located west of the subcontinental divide and drains to the Mississippi River. The remaining 84 percent of the City of Kenosha is east of the divide and drains to the Great Lakes-St. Lawrence River. The subcontinental divide not only exerts a major physical influence on the overall drainage pattern of the City of Kenosha, but also carries with it legal constraints that, in effect, prohibit any new diversions of substantial quantities of Lake Michigan water across the divide.
- There are no major inland lakes located in the City of Kenosha. There were approximately 10.4 miles of perennial streams and approximately 372 acres of non-farmed wetlands in the City of Kenosha in 2005.
- Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. One (1) natural area has been identified in the City of Kenosha. This site encompasses 99 acres.
- Critical species habitat sites consist of areas outside natural areas which are important for their ability to support rare, threatened, or endangered plant or animal species. Four (4) sites supporting rare or threatened plant and animal species have been identified in the City of Kenosha. These sites encompass an area of 54 acres. There is also one (1) aquatic site supporting threatened or rare fish, herptile, or mussel species in the City of Kenosha, including 2.2 stream miles.
- Environmental corridors and isolated natural resource areas include the best remaining woodlands, wetlands, plant and wildlife habitat areas, and other natural resources and have truly immeasurable environmental and recreational value. Environmental corridors and isolated natural resource areas are identified by SEWRPC and classified depending on their size. Primary environmental corridors are at least 400 acres in area, two (2) miles in length, and 200 feet in width. Secondary environmental corridors are between 100 and 400 acres in size and at least one (1) mile in length except where secondary corridors serve to link primary environmental corridors, in which case no minimum area or length criteria apply. Isolated natural resource areas are between five (5) and 100 acres in size and at least 200 feet in width.
- Primary environmental corridors in the City of Kenosha are located along major stream valleys, around major lakes, and in large wetland areas. In 2000, about 479 acres were encompassed within primary environmental corridors. Secondary environmental corridors are located chiefly along the smaller perennial streams and intermittent streams. About 113 acres were within secondary environmental corridors in 2000. Isolated natural resource areas include a geographically well-distributed variety of isolated wetlands, woodlands, and wildlife habitat. These areas encompassed about 256 acres of the City of Kenosha in 2000.
- In 2006, Kenosha County owned two (2) park and open space sites, including the Kenosha County Bike Trail and Kemper Center totaling 66 acres in the City of Kenosha.
- In 2006, there were not any State-owned park and open space sites located in the City of Kenosha.

- In addition to County and State owned park and open space sites, there were 120 park and open space sites owned by the City of Kenosha, public schools, or other public agencies in the City of Kenosha in 2006. Those sites encompassed about 1,536 acres of the City of Kenosha. The City of Kenosha owned 74 of the park and open space sites, public schools owned 30 of the sites, and another 16 sites were privately owned.
- In 2005, there were 16 privately owned park and open space sites encompassing about 1,020 acres. These sites include privately-owned golf courses, schools, subdivision parks, hunting clubs, campgrounds, boat access sites, horse stables, and soccer parks. This total does not include sites owned by private organizations for resource-protection purposes, which are described in the following paragraph.
- There were 20 historic places and districts and one (1) shipwreck located 12 miles east of the City of Kenosha in the planning area listed on the National Register of Historic Places and/or the State Register of Historical Places in 2006. Of the 21 historic places and districts listed on the National and State Registers, 16 are historic buildings or structures, three (3) are historic districts, one (1) is a historic site and one (1) is a shipwreck. In addition to those historic structures, sites, and districts nominated to the National and State Registers of Historic Places, 75 structures, four (4) districts, and seven (7) sites have been designated as landmarks by the City of Kenosha. There are also five (5) Wisconsin State Historical Markers located in the City of Kenosha.
- There is one (1) local historical society in the City of Kenosha affiliated with the State Historical Society of Wisconsin, the Kenosha County Historical Society.

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