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PLANNING REPORT NO. 77

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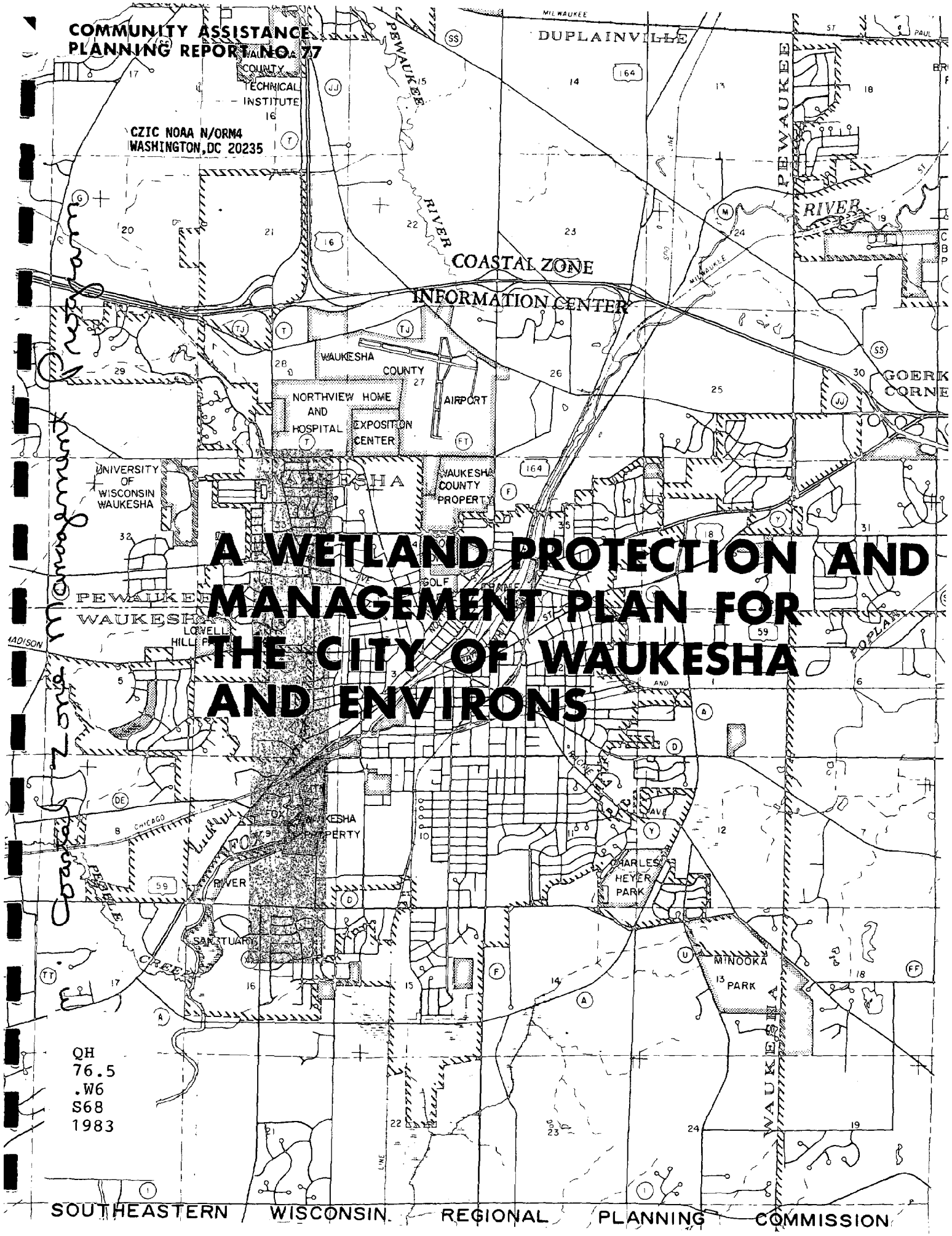

A WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

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Special acknowledgement is due Mr. Donald M. Reed, Principal Biologist, for his contributions to the preparation of this report.

COMMUNITY ASSISTANCE PLANNING REPORT
NUMBER 77

A WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

Prepared by the
Southeastern Wisconsin Regional Planning Commission
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916 N. East Avenue
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February 22, 1983

The Honorable Paul J. Keenan
Mayor, City of Waukesha
City Hall
201 Delafield Street
Waukesha, Wisconsin 53186

Dear Mayor Keenan:

On March 31, 1981, the City of Waukesha requested the Regional Planning Commission staff to assist the City's Ad Hoc Committee on Wetlands in their deliberations concerning the protection and proper management of the remaining wetlands in and adjacent to the City of Waukesha. The Regional Planning Commission staff and the Ad Hoc Committee on Wetlands have now completed their deliberations concerning this important issue and are pleased to hereby transmit their findings and recommendations as documented in this report.

This report presents information on wetland types, functions, and values; provides information on the historic rates of loss of wetlands in and adjacent to the City of Waukesha; delineates the wetlands remaining; and identifies those wetland areas regulated by the state and federal governments. Importantly, the report delineates the primary environmental corridors in the City and environs, that is, those areas encompassing the best remaining elements of the natural resource base. The report contains three major recommendations:

1. That all remaining wetlands located within primary environmental corridors in and adjacent to the City of Waukesha, as those corridors have been delineated in this report, be preserved in essentially natural, open uses.

2. That those isolated wetland areas having special wildlife and other natural values, as those areas have been delineated in this report, be preserved in essentially natural, open uses.

3. That those wetlands located outside environmental corridors which may serve as stormwater retention basins and which have been determined by the City Engineer to be important to the management of stormwater runoff within the urban and urbanizing portions of the study area, be preserved in essentially natural, open uses.

Finally, the report contains plan implementation recommendations, including model wetland zoning provisions.

Implementation of the plan presented in this report will, over time, contribute substantially to the more economical as well as ecologically and environmentally sound development of the City and environs.

The Regional Planning Commission is pleased to have been able to be of assistance to the City in this important planning program. The Commission stands ready, upon request, to assist the City in presenting the information and recommendations contained in this report to the public for its review and evaluation and in the adoption and implementation of the recommended plan.

Sincerely,

Kurt W. Bauer
Executive Director

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Chapter I

INTRODUCTION

Wetlands constitute an invaluable part of the natural resources of any area. The drainage and filling of wetlands not only destroys important wildlife and scenic assets, but may create serious environmental problems that are difficult and costly to resolve. In an effort to protect and properly manage the remaining wetlands in and adjacent to the City of Waukesha, the Mayor of the City of Waukesha, on the referral of Alderman Carmello Monfre, acted to create an ad hoc committee on wetlands on October 2, 1979. This committee was charged with the preparation of a recommended wetland protection ordinance for the City of Waukesha. To assist the committee in its deliberations, the City of Waukesha on March 31, 1981, requested assistance from the Southeastern Wisconsin Regional Planning Commission. The wetlands committee met nine times between September 23, 1980, and November 16, 1982, to meet its charge. The findings and recommendations of the committee are set forth in this report.

WETLAND DEFINITIONS AND TYPES

Wetlands are defined as those areas that are inundated or saturated by surface- or groundwater at a frequency and with a duration sufficient to support--and that under normal circumstances do support--a prevalence of vegetation typically adapted for life in saturated soil conditions.[1] In southeastern Wisconsin, such areas include 11 basic wetland types: deep marshes, shallow marshes, southern sedge meadows, shrub carrs, alder thickets, fresh (wet) meadows, low prairies, fens, bogs, lowland hardwoods, and conifer swamps (see Figures 1 through 11). These wetlands generally occur in depressions and near the bottom of slopes, particularly along lakeshores and stream banks, and on large level areas that are poorly drained. Wetlands may, however, under certain conditions occur on slopes and even on hilltops.

Wetlands form an important part of the landscape in and adjacent to the City of Waukesha in that they perform an important set of natural functions that make them ecologically and environmentally invaluable resources. These functions may be summarized as follows:

1. Wetlands affect the quality of water. The aquatic plants which grow in wetlands change inorganic nutrients, such as phosphorus and nitrogen, into organic material, storing it in their leaves and in peat (the plant remains). In addition, the stems, leaves, and roots of these plants slow the flow of water through the wetlands, allowing silt and other sediment with the attached nutrients and other water pollutants to settle out. Thereby, wetlands protect the downstream or off-shore resources from siltation and pollution.

2. Wetlands influence the quantity of water. Wetlands act to provide water during periods of drought and hold it back during periods of

---

[1] 33 CFS 323.2(c).

wet weather, thereby stabilizing streamflows and controlling downstream flooding. At a depth of 12 inches, one acre of marsh is capable of holding more than 300,000 gallons of water and thus helps protect downstream areas from flooding.

3. Wetlands which are located along the shoreline of lakes and streams help protect the shoreline from erosion.

4. Wetlands may serve as groundwater recharge and discharge areas.

5. Wetlands are important resources for overall ecological health and diversity. They provide essential breeding, nesting, resting, and feeding grounds and provide escape cover for many forms of fish and wildlife. The water present in a wetland is attractive to upland birds and other animals. These functions give wetlands recreational, research, and educational values; support activities such as hunting, trapping, and fishing; and add aesthetic value to the community.

Wetlands have severe limitations for residential, commercial, and industrial development. Generally, these limitations are due to the erosive character, high compressibility and instability, high water table, low bearing capacity, and high shrink-swell potential of wetland soils. In addition, the use of metal conduits in some wetland soil types is constrained because of high corrosion potential. These limitations may result in flooding, wet basements, unstable foundations, failing pavements, and broken sewer and water lines. In addition, there are significant onsite preparation and maintenance costs associated with the development of wetland soils, particularly as they relate to roads, foundations, and public utilities.

SCOPE OF THE REPORT

The findings and recommendations of the City of Waukesha Committee on Wetlands, as developed over a period of 26 months of careful deliberation, are set forth in this report. Chapter II of this report presents a general description of the City of Waukesha and environs, including an inventory of existing land use and natural resource base elements. Chapter III presents a set of wetland preservation objectives, principles, and standards as a basis for the development of a wetland protection plan. Chapter IV presents a recommended wetland protection plan. It also includes a discussion of wetland protection laws and regulations and identifies the actions required to implement the recommended plan. The fifth and final chapter summarizes the data presented and the conclusions reached in the other four chapters of the report.

Figure 1

DEEP MARSH

Deep marshes occur at the edges of lakes and streams or in depressions large enough to be considered lakes. Deep marshes are characterized by standing water between six inches and three feet deep and have vegetation which consists predominantly of cat-tails, bulrushes, burreed, and lake sedge.

Figure 2

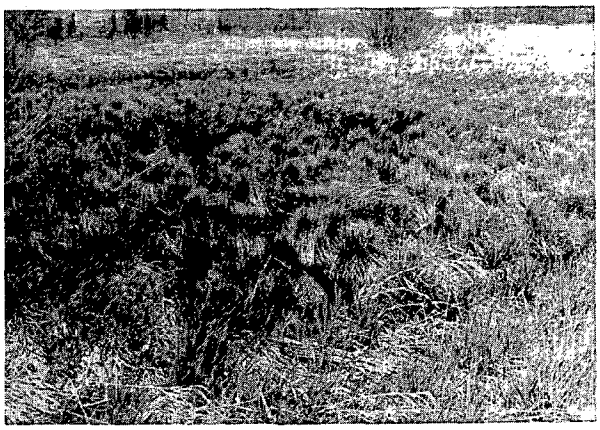
SHALLOW MARSH

Shallow marshes are similar to deep marshes in the composition of their plant communities, but are characterized by standing water less than six inches deep and are often dry in late summer.

Photos by Donald M. Reed.

Figure 3

SOUTHERN SEDGE MEADOW



Sedge meadows are characterized by plant communities dominated by sedges, particularly the tussock sedge, and occur on wet or water-logged soils. Sedge meadows may be seasonally wet in spring and dry in the fall.

Figure 4

SHRUB CARR

Shrub carrs are characterized by plants such as red osier dogwood and willows which have invaded sedge meadows and increased in density with time. Their occurrence is apparently the result of a disturbance such as water level changes.

Figure 5

ALDER THICKET

Alder thickets are similar to shrub carrs but are dominated by tag alders, as shown in this photograph.

Figure 6

FRESH MEADOW

Fresh (wet) meadows are characterized by grasses and forbs such as bluejoint grass, reed canary grass, giant goldenrod, and redstem aster. They are somewhat drier than sedge meadows or shrub carrs.

Figure 7

LOW PRAIRIE

Low prairies have become rare wetland plant communities in southeastern Wisconsin as a result of plowing, draining, and filling. Low prairies are dominated by grasses and forbs such as cord grass, big bluestem grass, gay-feather, Culver's root, and New England aster.

Figure 8

FEN

Fens are a very rare type of grassland growing on wet and springy sites that have an internal flow of groundwater rich in calcium and magnesium bicarbonates. Fens are characterized by shrubby cinquefoil, as shown here, and other calcium-tolerant plants known as calciphiles. Frequently, fens are located in hillsides overlooking existing or extinct glacial lake beds.

Photos by Donald M. Reed.

Figure 9

BOG

Bogs are a wetland community of characteristic plants such as spaghnum moss, leatherleaf, cranberry, and pitcher plants which grow on water-logged, acid peat soils. There are no known bogs in the City of Waukesha and environs planning area.

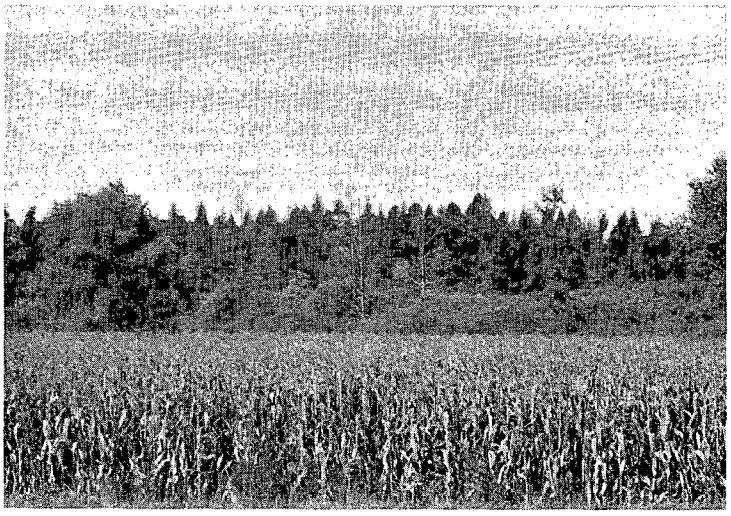
Figure 10

LOWLAND HARDWOOD

Lowland hardwoods are forested wetlands dominated by such trees as black willow, cottonwood, green ash, and elm. Lowland hardwood forests are located in river floodplains as shown here, or on ancient lake beds.

Figure 11

CONIFER SWAMP



Conifer swamps are forested wetlands dominated by such trees as tamarack and white cedar. The tamarack swamp shown here is located just south of the City of Waukesha planning area on The Nature Conservancy's Falk property.

Photos by Donald M. Reed.

Chapter II

DESCRIPTION OF THE CITY OF WAUKESHA AND ENVIRONS

INTRODUCTION

The primary purpose of the wetland protection study for the City of Waukesha and environs is the preparation of a plan to guide the preservation, acquisition, and management of wetlands and separate related adjacent upland areas as needed to satisfy the federal and state, as well as local, objectives concerning wetland areas and to protect and enhance the underlying and sustaining natural resource base.

The first section of this chapter presents a description of the City of Waukesha and environs, including geographic location and historic growth. The second section presents a description of the existing land use base, together with a description of current zoning districts and attendant regulations. The third and final section of the chapter presents a description of the existing natural resource base, including a description of the environmental corridors in and adjacent to the City of Waukesha.

GENERAL DESCRIPTION OF THE CITY OF WAUKESHA AND ENVIRONS

The City of Waukesha and environs is located in the central portion of Waukesha County and is bounded by the City of New Berlin and Town of Brookfield on the east, the Town of Waukesha on the south and west, and the Town of Pewaukee on the north. The City of Waukesha and environs wetland planning area encompasses 31.54 square miles (see Map 1). The City of Waukesha occupies 14.51 square miles, or 46 percent, of this planning area.

The City of Waukesha, which was incorporated in 1900, is a rapidly growing area of southeastern Wisconsin. In the 30-year period between 1950 and 1980, the population of the City of Waukesha increased from 21,233 to 50,365 persons, a 29,132-person, or 137 percent, increase. This rapid growth has coincided with a similar growth in the area encompassed by the corporate limits of the City. Between 1950 and 1980 the corporate area of the City of Waukesha increased from 4.26 to 14.51 square miles, a 10.25-square-mile, or 241 percent, increase. This rapid increase in population and corporate area growth has important implications for the management of the surface water resources and associated wetlands of the City of Waukesha and environs.

LAND USE BASE

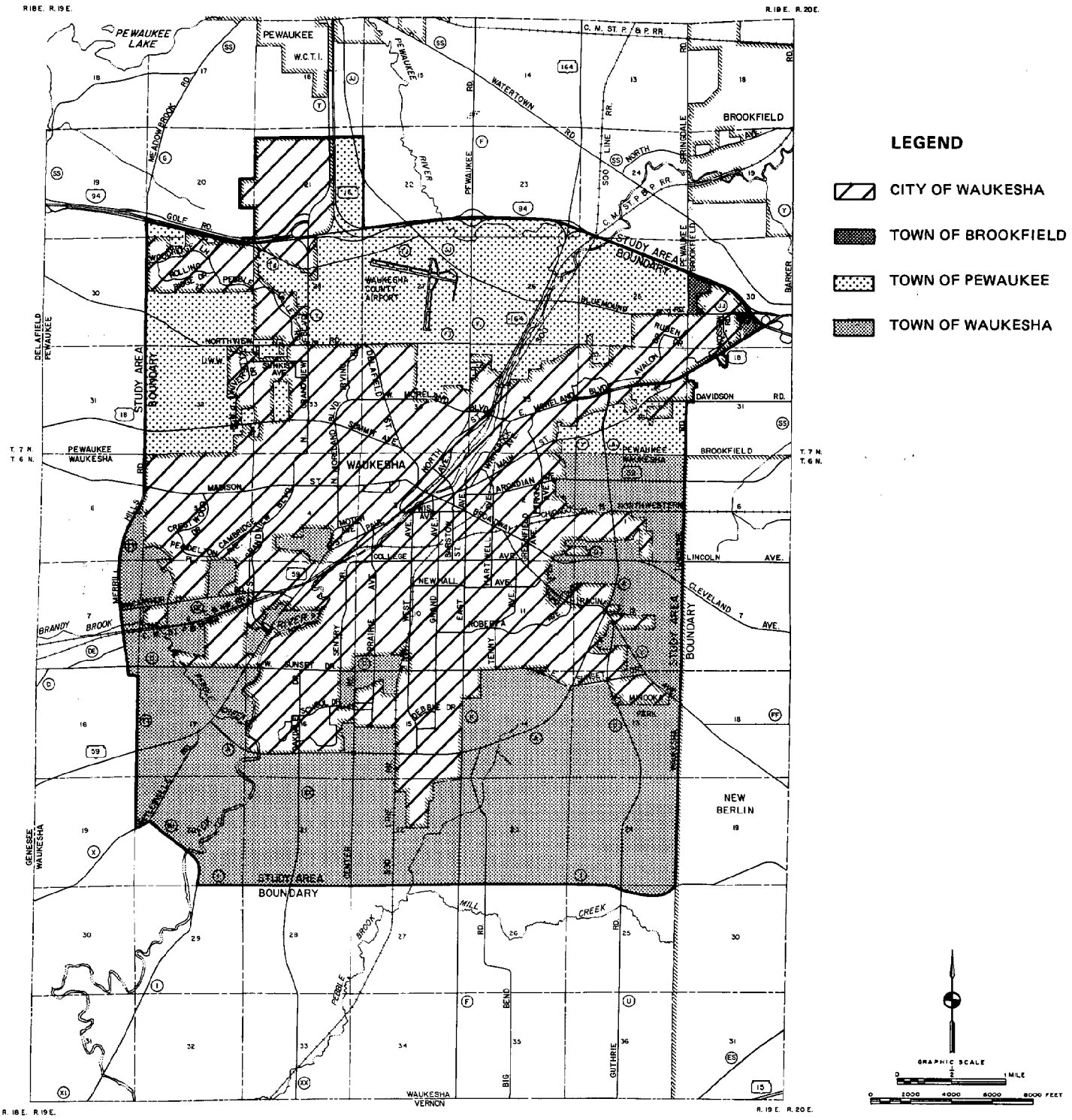
The existing land use pattern is an important consideration in the development of any wetland protection plan. This section presents a description of the existing (1980) land use base and of the existing zoning.

Existing Land Use Base

The amount of land devoted to urban uses has increased steadily in the City of Waukesha and environs since its settlement by Europeans in about 1836 (see

Map 1

CITY OF WAUKESHA AND ENVIRONS: 1980



LEGEND

- CITY OF WAUKESHA
- TOWN OF BROOKFIELD
- TOWN OF PEWAUKEE
- TOWN OF WAUKESHA

Source: SEWRPC.

Table 1

EXISTING LAND USE IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980

Land Use Category	Acreage	Percent of Study Area
Residential[a]	5,289	26.3
Commercial	348	1.7
Industrial[b]	631	3.1
Transportation[c]	3,070	15.3
Governmental and Institutional	541	2.7
Recreational[d]	369	1.8
Urban Land Subtotal	10,248	50.9
Agricultural	5,137	25.5
Other Open Space[e]	4,758	23.6
Rural Land Subtotal	9,895	49.1
Total	20,143	100.0

[a]Includes residential areas under development.

[b]Includes wholesale and storage.

[c]Includes off-street parking, airports, terminals, communication facilities, and utilities.

[d]Consists of intensively used recreation sites.

[e]Includes surface water, wetlands, woodlands, extractive uses, and landfills.

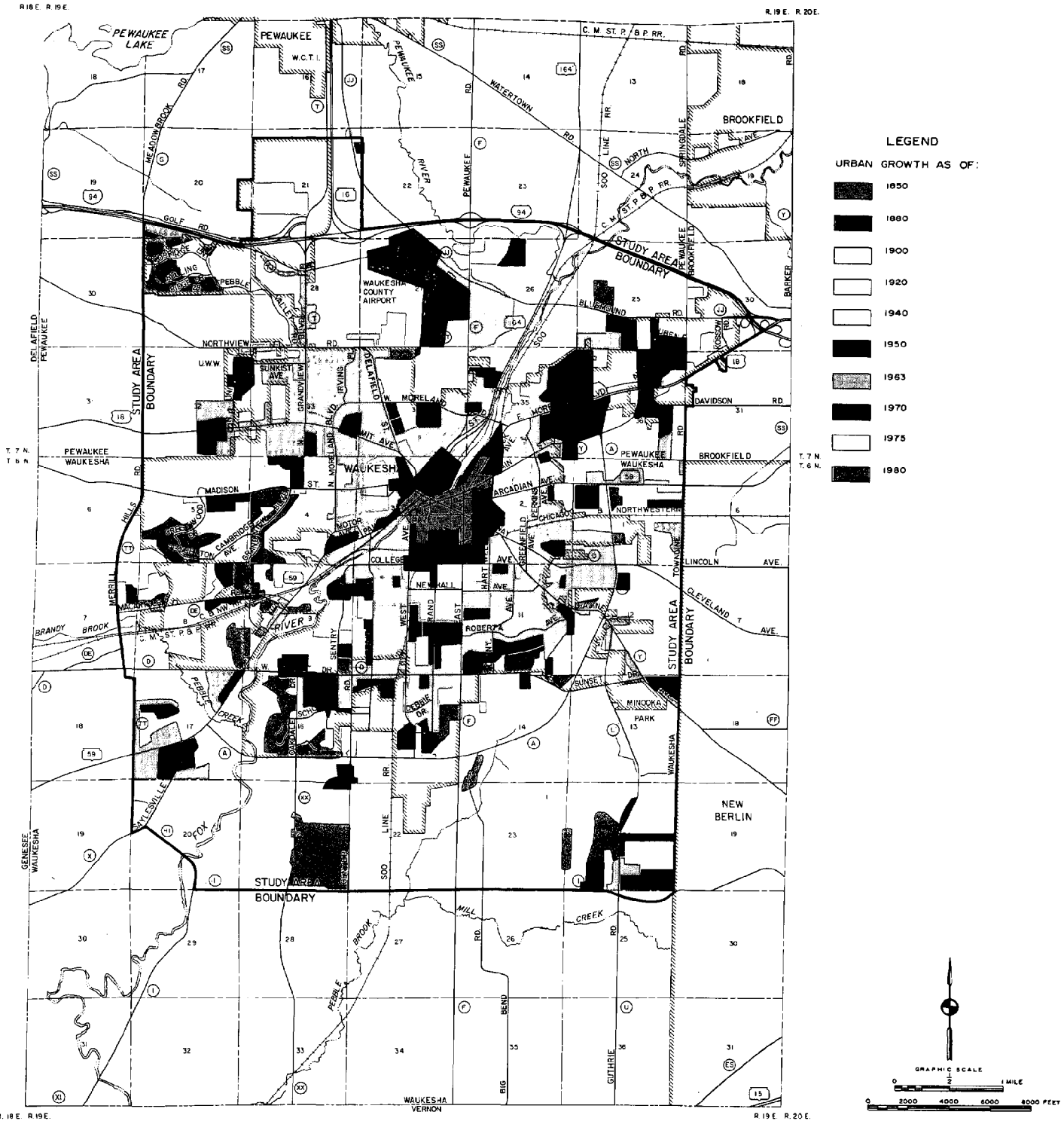
Source: SEWRPC.

Map 2). Over the approximately 110-year period from 1850 to 1963, urban development within the City of Waukesha and environs occurred in relatively tight, concentric rings outward from the central portion of the City. A dramatic change in the pattern of urban development within the area occurred in about 1963. As shown on Map 2, urban development after 1963 became discontinuous and diffused, with such development occurring in scattered enclaves throughout much of the remaining rural areas in the Towns of Pewaukee and Waukesha adjacent to the City of Waukesha. It is important to note that the extension of urban services and facilities to such scattered urban developments is both difficult and costly. This "urban sprawl" form of development reduces the viability of agriculture as a continued rural use and can create unnecessary and costly developmental and environmental problems.

As shown in Table 1, urban land uses accounted for 10,248 acres and represented about 51 percent of the total planning area in 1980. Of this total, residential uses comprised 5,289 acres, or 26 percent, while commercial, manufacturing, transportation, and governmental land uses combined comprised the remaining 4,959 acres, or 25 percent, of the developed area. Agricultural land uses accounted for 5,137 acres and represented about 26 percent of the total planning area. Other rural land uses in the planning area in 1980 included open water, wetlands, woodlands and other open lands. Combined, these uses totaled 9,895 acres, or about 49 percent of the total area of the City of Waukesha and environs. Wetlands comprised 2,186 acres, or 11 percent of the total planning area.

Map 2

HISTORIC URBAN GROWTH IN AND ADJACENT TO THE CITY OF WAUKESHA: 1850-1980



Source: SEWRPC.

Existing Zoning

A community zoning ordinance represents one of the most important and significant tools available to local units of government in directing the proper use of lands within their areas of jurisdiction. In the City of Waukesha and environs, the City of Waukesha and the Towns of Pewaukee and Waukesha each have enacted a zoning ordinance to direct the development of land within their jurisdictional limits. A description of the zoning ordinance currently in effect within the City of Waukesha is provided below.

All development and building activity in the City of Waukesha is regulated by zoning, building, and subdivision control ordinances. A total of 21 zoning districts are provided in the existing City of Waukesha zoning ordinance. A summary of the provisions applicable in each of these zoning districts is set forth in Table 2. As indicated in Table 2, all zoning districts in the existing city ordinance except the Conservancy District, Public Open Space District, Floodway District, and Flood Storage District--which have generally been applied along major rivers and streams--permit intensive urban uses.

Land use regulations should exclude from, or limit, urban development in areas having limitations for such development, or requiring protection from development in order to preserve and enhance the underlying and sustaining natural resource base. Seven residential districts--R-1, R-1S, R-2, R-2A, R-3, R-4, and R-4A--and six business and manufacturing districts--B-1, B-2, B-3, B-4, M-1, and M-2--account for approximately 60 percent and 30 percent of the zoned lands in the City, respectively. Of the 21 zoning districts applied in the City, eight do not permit residential uses. These are the C-1 Conservancy District, B-4 Limited Business Development District, M-1 Light Manufacturing and Warehousing District, M-2 General Manufacturing District, P-1 Public Open Space District, P-2 Cemeteries District, FW Floodway District, and FS Flood Storage District. Districts which have been applied to certain environmentally significant areas such as woodlands, wetlands, prairies, and wildlife habitat areas permit intensive urban uses and, thus, the existing zoning regulations may be expected to contribute little toward the protection of these areas.

EXISTING NATURAL RESOURCE BASE

The important natural resource features of the City of Waukesha and environs are generally associated with the surface water features of the area. Of particular significance are the areas adjacent to the Fox (Illinois) River, Pewaukee River, Pebble Creek, and Pebble Brook, which constitute the focus of scenic corridors in the planning area particularly suited to outdoor recreation and open space uses.

In order to provide a point of departure for the description of the existing natural resource base, it is useful to examine the important natural features of the City of Waukesha and environs as they existed just prior to settlement of the area by Europeans. As shown on Map 3, in 1836 about 3,610 acres, or 18 percent of the total planning area, was comprised of surface waters, marshes, swamp forests, and wet prairies; about 11,285 acres, or 56 percent of the planning area, was comprised of oak openings and prairies; and about 5,290 acres, or 28 percent of the planning area, was comprised of forests. The land use information presented in the previous section indicates that large areas

Table 2

SUMMARY OF EXISTING ZONING DISTRICTS UNDER THE ADOPTED CITY OF WAUKESHA ZONING ORDINANCE

Zoning District	Permitted Uses	Conditional Uses	Area Requirements	
			Minimum Lot Area (square feet)	Minimum Lot Width (square feet)
C-1 Conservancy	Grazing, wildcrop harvesting, hunting and fishing, forestry, dams, utility transmission lines, parks	None	--	--
A-1 Agricultural	Farms, truck gardens, orchards, nurseries, commercial landscape nurseries, commercial riding stables, grain storage structures, one-family dwellings, churches, country clubs, parks, golf courses	None	20 acres Residential uses: 20,000	-- Residential uses: 100
R-1 One-Family Residence	One-family dwellings, churches, schools, libraries, public buildings, cemeteries, parks, golf courses, nurseries, green houses, farms	Recreational uses not cited as permitted uses, utility stations, extraction of minerals	Residential uses: 20,000 Other uses: 40,000	Residential uses: 100 Other uses: 150
R-1S One-Family Suburban Residence	One-family dwellings	Churches, schools, libraries, public buildings, parks, golf courses, utility stations	12,000	90
R-2 One-Family Residence	All R-1 uses, and municipal administrative buildings	All R-1 uses, two-family dwellings, hospitals, sanitariums, professional offices, home occupations, accessory structures	One-family dwellings: 8,000 Two-family dwellings: 9,000 Other uses: 16,000	One-family dwellings: 65 Two-family dwellings: 70 Other uses: 100
R-2A Two-Family Residence	One- and two-family dwellings	All R-2 uses	One-family dwellings: 8,000 Two-family dwellings: 9,000	One-family dwellings: 65 Two-family dwellings: 70
R-3 One- to four-Family Residence	All R-2 uses, multiple-family structures not to exceed four units per structure, the conversion of a dwelling into a two-, three-, or four-family structure, hospitals	All R-2 uses, clubs, fraternities, rest homes, hospitals	One-family dwellings: 8,000 Two-family dwellings: 8,000 Three-family dwellings: 9,000 Four-family dwellings: 10,000	One-family dwellings: 65 Two-family dwellings: 65 Three-family dwellings: 70 Four-family dwellings: 80
R-4 Multiple-Family Residence	All R-3 uses, multiple-family dwellings, apartments, hotels, clinics	All R-3 uses, motels, trailer parks, funeral homes, high-rise apartments	One-family dwellings: 7,000 Two-family dwellings: 7,000 Three-family dwellings: 8,000 Multiple-family dwellings and other uses: 2,500 per unit Trailer parks: 2,000 per unit	One-family dwellings: 60 Two-family dwellings: 60 Three-family dwellings: 65 Multiple-family dwellings and other uses: 75 Trailer parks: 200
R-4A Residential Planned Development	All R-1 uses	As shown on the approved residential development plan	Minimum site area: 24,000 Minimum per unit area: same as R-4	-- --

Table 2 (continued)

Zoning District	Permitted Uses	Conditional Uses	Area Requirements	
			Minimum Lot Area (square feet)	Minimum Lot Width (square feet)
B-1 Neighborhood Business	Retail businesses or services serving day-to-day needs, offices, eating and drinking places, automotive services, outdoor advertising signs, any residential use permitted in an adjoining district	None	No minimum for business uses Residential uses: same as R-3	No minimum for business uses Residential uses: same as R-3
B-2 Central Business	Retail businesses, services, banks, eating and drinking places, night clubs, theaters, trade or business schools, art studios, broadcasting studios, hotels, newspapers, automotive services, pet shops, dwellings on a second-floor level	Conversion of second floors to residential use, high-rise apartments, residential use of first floors and sub-first floors	No minimum	No minimum
B-3 General Business	All B-2 uses, warehousing, drive-in eating and drinking places, animal hospitals, commercial recreation, building trades and shops, printing trades, bottling works, contractors' yards	None	No minimum	No minimum
B-4 Limited Business Development	Medical and dental clinics, professional offices	None	No minimum	50
M-1 Light Manufacturing and Warehousing	All B-3 uses; processing of food products; manufacturing of pharmaceuticals; fabrication of fabrics, plastics, and sheet metal products; manufacture of novelties, appliances, and sheet metal products; laboratories; broadcasting studios; warehousing If located 100 to 200 feet from a residential district: welding shops, foundries, rag cleaning, ice and cold storage plants If located more than 200 feet from a residential district: underground storage of fuels, building materials' storage	None	No minimum	No minimum

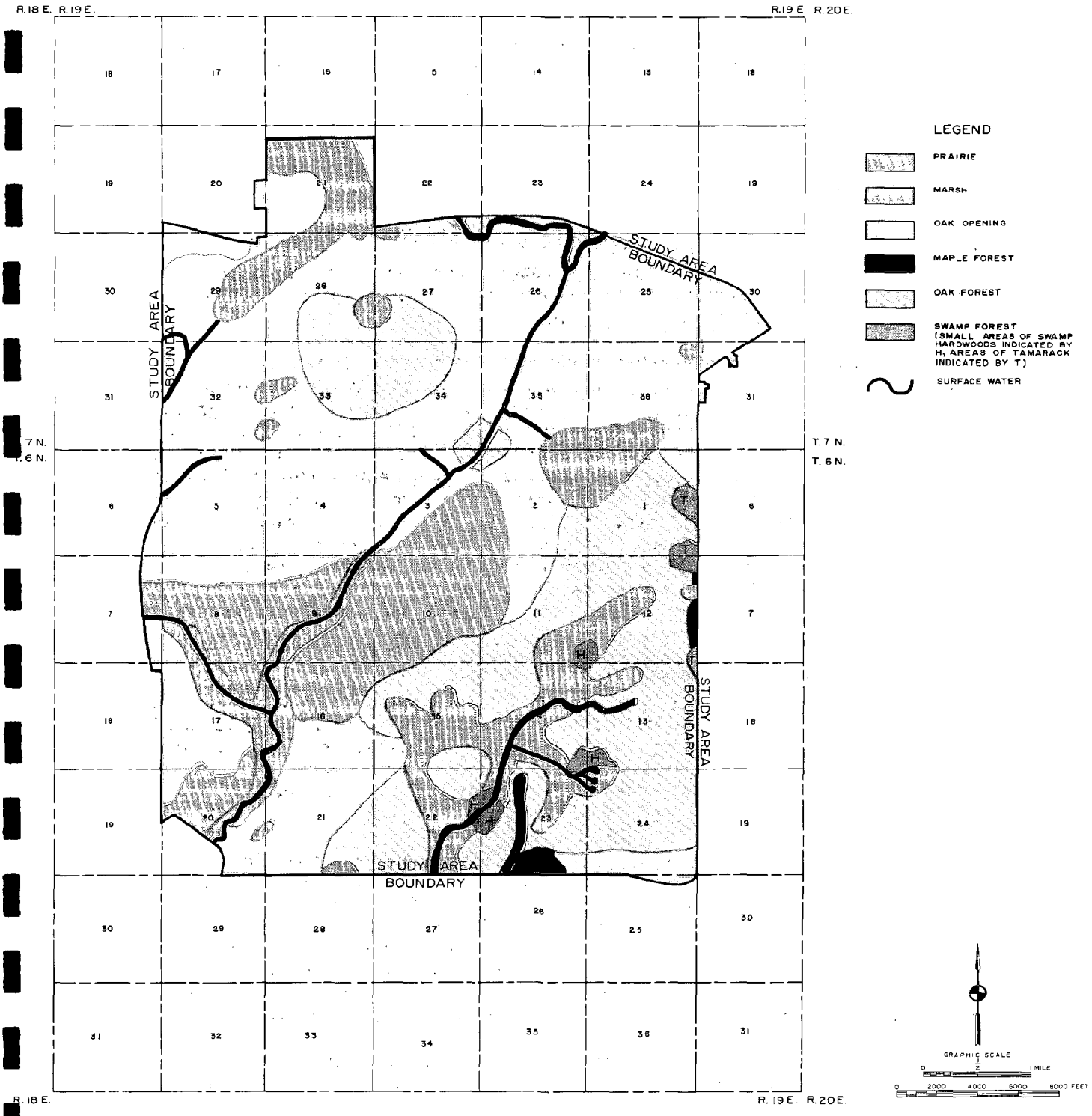
Table 2 (continued)

Zoning District	Permitted Uses	Conditional Uses	Area Requirements	
			Minimum Lot Area (square feet)	Minimum Lot Width (square feet)
M-2 General Manufacturing	All M-1 uses, auto salvage yards, crematories, railroad yards and stations	Offensive industries	No minimum	No minimum
P-1 Public Open Space	Dams, utility transmission lines, historic structures, sports fields, golf courses, park structures	None	No minimum	No minimum
P-2 Cemeteries	Parks, cemeteries, crematories	None	No minimum	No minimum
P-3 Public Lands and Institutions	All P-1 uses, public administration buildings, public and private schools, churches, hospitals, libraries, correctional institutions, zoos, museums, public housing projects over five acres	None	No minimum	No minimum
FW Floodway	Agricultural open space uses, industrial and commercial open space uses, residential open space uses, recreational open space uses	Utilities, bridges, marinas, recreation equipment, navigation aids, water measuring and control facilities, outdoor storage	Not applicable	Not applicable
FS Flood Storage	All FW uses	All FW uses, excavation and filling, accessory structures not for human habitation	Not applicable	Not applicable
UF Urban Flood	All FS uses, elevated structures permitted in underlying districts, storage when placed on fill	All FS uses, filling, floodproofed structures	Not applicable	Not applicable

Source: SEWRPC.

Map 3

GENERALIZED PRESETTLEMENT VEGETATION OF THE CITY OF WAUKESHA AND ENVIRONS: 1836



Source: Marlin Johnson, J. A. Schwarzmeier, U. S. Public Land Survey, and SEWRPC.

of the City of Waukesha and environs have been converted to urban land uses. However, there are certain important natural resource features remaining in the City of Waukesha and environs.

The important remaining elements of the existing natural resource base, including the surface water resources, wetlands, woodlands, prairies, wildlife habitat, and soils, are described below. Descriptions of the environmental corridors--an environmental corridor being a composite of the best remaining elements of the natural resource base--are provided in the final section of this chapter.

Surface Water Resources

Surface water resources consisting of lakes, streams, and associated floodlands form a particularly important element of the natural resource base of the City of Waukesha and environs. Surface water resources contribute to the economic development and enhance the aesthetic quality of the City of Waukesha, and provide recreational opportunities in the City.

Lakes and streams constitute a focal point for water-related recreational activities; provide an attractive setting for properly planned residential development; and, when viewed in the context of open space areas, greatly enhance the aesthetic quality of the environment. It is important to note that small lakes and streams are extremely susceptible to deterioration through improper urban land use development and management. Water quality can degenerate as a result of excessive pollutant loads--including nutrient loads--from improperly placed and malfunctioning onsite sewage disposal systems, sewer overflows, and careless urban land management practices. Small lakes, ponds, and streams are also adversely affected by the excessive development of lakeshore and riverine areas in combination with the filling of peripheral wetlands, which removes valuable nutrient and sediment traps while adding nutrient and sediment sources.

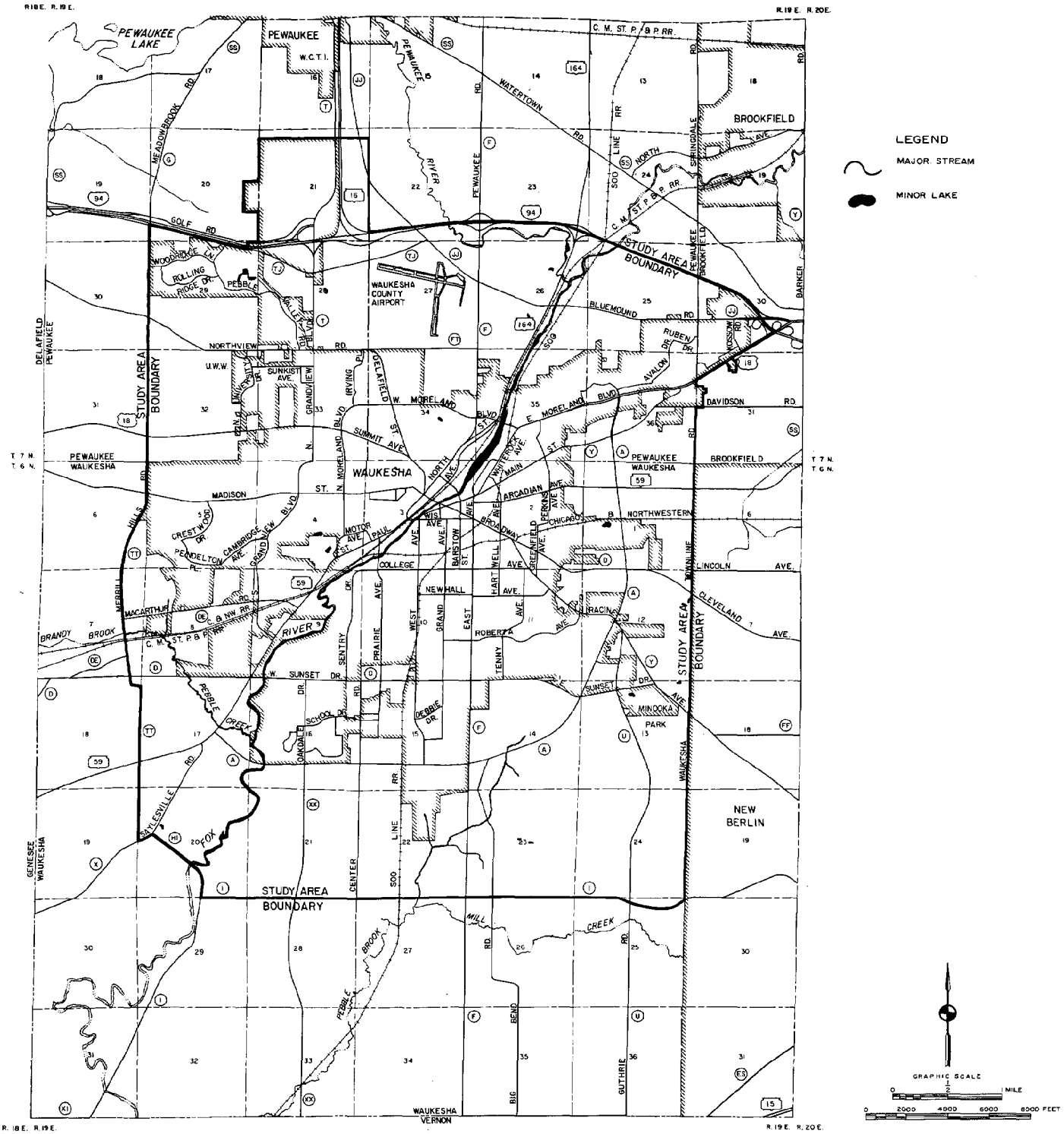
In the City of Waukesha and environs there are 19 minor lakes--that is, lakes having 50 acres or less of surface water area--with a combined area of 37 acres (see Map 4). It is important to note that minor lakes and ponds generally have few riparian owners and only marginal fisheries. In most cases, the primary value of the minor lakes are ecological and aesthetic. The small lakes are particularly fragile and easily degraded by improper shoreline development and management.

The surface drainage system of the City of Waukesha and environs is included entirely within the Fox (Illinois) River watershed, which lies west of the subcontinental divide and is, therefore, a part of the Mississippi River drainage system. The main system of the Fox (Illinois) River flows through the central portion of the City of Waukesha. The Pewaukee River, Pebble Creek, and Pebble Brook are important perennial streams within the City of Waukesha and environs planning area. All of the minor perennial and intermittent streams within the planning area are directly tributary to these three streams.

Major streams are defined herein as perennial streams which maintain, at a minimum, a small, continuous flow throughout the year except under unusual

Map 4

SURFACE WATER RESOURCES IN AND ADJACENT TO THE CITY OF WAUKESHA



Source: SEWRPC.

drought conditions. Within the City of Waukesha and environs, there are approximately 14 miles of such major streams. The location of these major rivers and streams is shown on Map 4.

The floodlands of the river or stream are the wide, gently sloping areas contiguous to and usually lying on both sides of a river or stream channel. Rivers and streams occupy their channels most of the time; however, during minor flood events stream discharges increase markedly and the channel may not be able to convey all the flow. As a result, stages increase and the river or stream spreads laterally over the floodland. The periodic flow of river onto this floodland is a normal phenomenon and, in the absence of costly structural flood control works, will occur regardless of whether urban development occurs on the floodland.

For planning and regulatory purposes floodlands are normally defined as the areas, excluding the channel, subject to inundation by the 100-year recurrence interval flood event. This is an event that would be reached or exceeded in severity once on the average of every 100 years. Stated another way, there is a 1 percent chance that this event will be reached or exceeded in severity in any given year. Floodland areas are generally not well suited to urban development, not only because of the flood hazard but because of the high water tables and the presence of soils poorly suited to urban use. In addition, the floodland areas generally contain important elements of the natural resource base, such as high-value woodlands, wetlands, and wildlife habitat, and therefore constitute prime locations for needed park and open space areas. Therefore, every effort should be made to discourage indiscriminate and incompatible urban development on floodlands, while encouraging compatible park and open space uses.

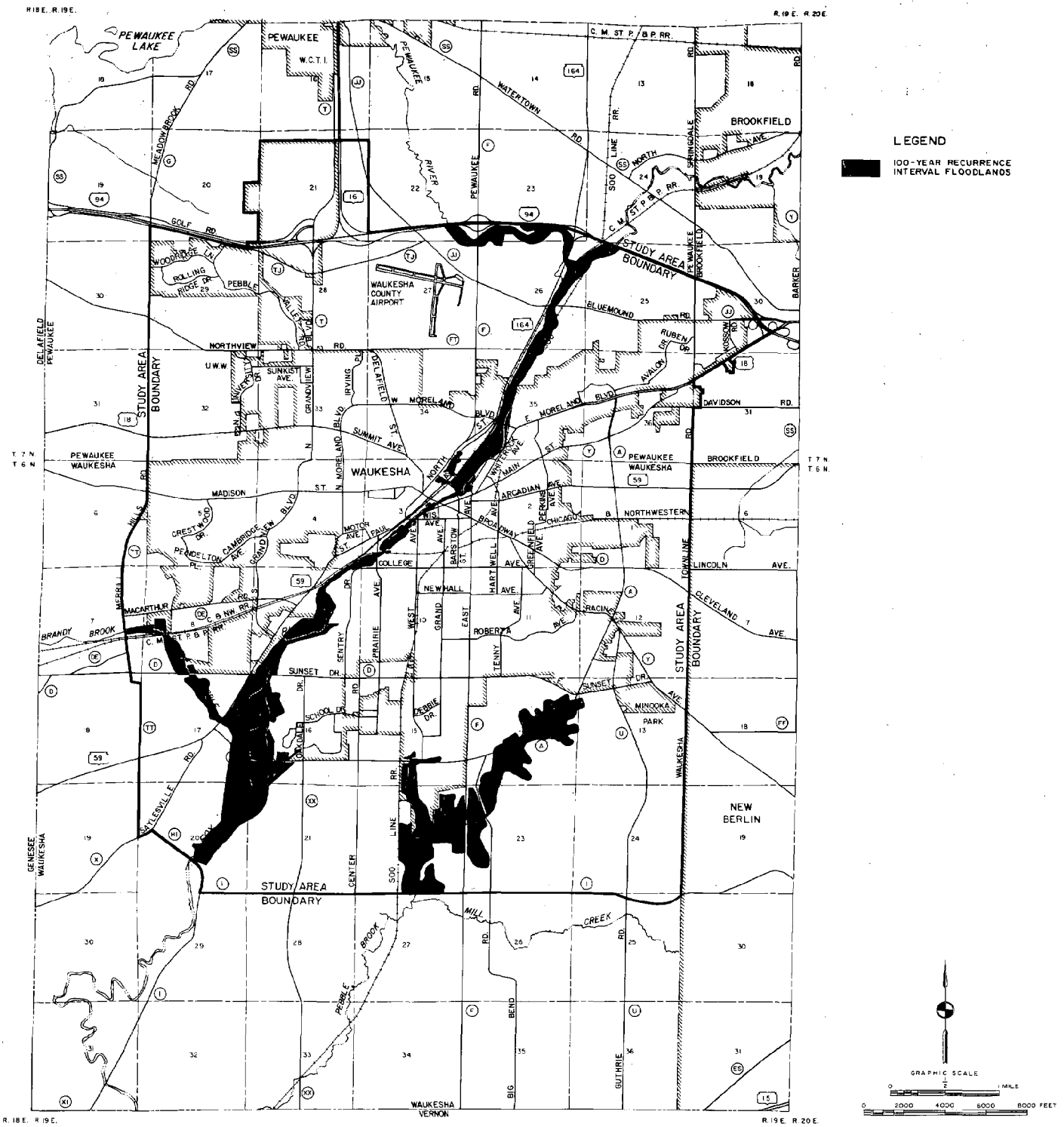
Because of the importance of floodland data to sound land use and management decisions, the Regional Planning Commission, as an integral part of its comprehensive watershed studies, provides definitive data on floodlands, including calculated flood discharges and stages and the attendant delineation of the limits of the 10- and 100-year recurrence interval flood hazard areas. In the City of Waukesha and environs, floodland delineations for selected perennial stream reaches were prepared by the Commission as part of the Fox River watershed planning program. In addition, the Waukesha County Park and Planning Commission has prepared floodland delineations for additional selected stream reaches within the Towns of Pewaukee and Waukesha. Those areas of the floodland delineated by the Regional Planning Commission and by the Waukesha County Park and Planning Commission are shown on Map 5. These floodlands total approximately 1,424 acres, or 7 percent of the City of Waukesha and environs planning area.

Wetlands

As noted in Chapter 1, wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and with a duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include deep and shallow marshes, sedge meadows, fresh (wet) meadows, shrub carrs, alder thickets, low prairies, fens, bogs, lowland hardwoods, and conifer swamps.

Map 5

FLOODLANDS IN AND ADJACENT TO THE CITY OF WAUKESHA



Source: SEWRPC.

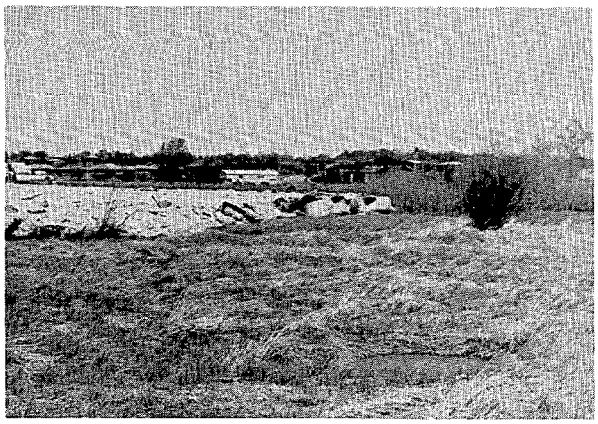


Photo by Donald M. Reed.

Figure 12

EXAMPLE OF WETLAND LOSS IN THE CITY OF WAUKESHA BETWEEN 1960 AND 1980

Between 1963 and 1980, approximately 271 of the original 2,900 acres of wetlands located in and adjacent to the City of Waukesha, were lost, or 38 percent of the total wetland loss. These wetland losses are largely the result of draining, filling, and urbanization.

Of the original estimated 2,900 acres of wetland located within the planning area, an estimated 714 acres, or 25 percent, were lost during the 144-year period between 1836 and 1980. Approximately 38 percent of this total wetland loss--accounting for 271 acres--has occurred between 1963 and 1980 (see Figure 12). Map 6 shows the areal extent of wetland loss between 1963 and 1980.

As shown on Map 7, wetlands within the City of Waukesha and environs in 1980 covered about 2,186 acres, or about 11 percent of the area. As further shown on Map 7, large areas of wetlands are located along the main stem of the Fox (Illinois) River, Pebble Creek, and Pebble Brook located to the south of the City of Waukesha. In addition, small areas of wetlands are scattered throughout the City of Waukesha and environs.

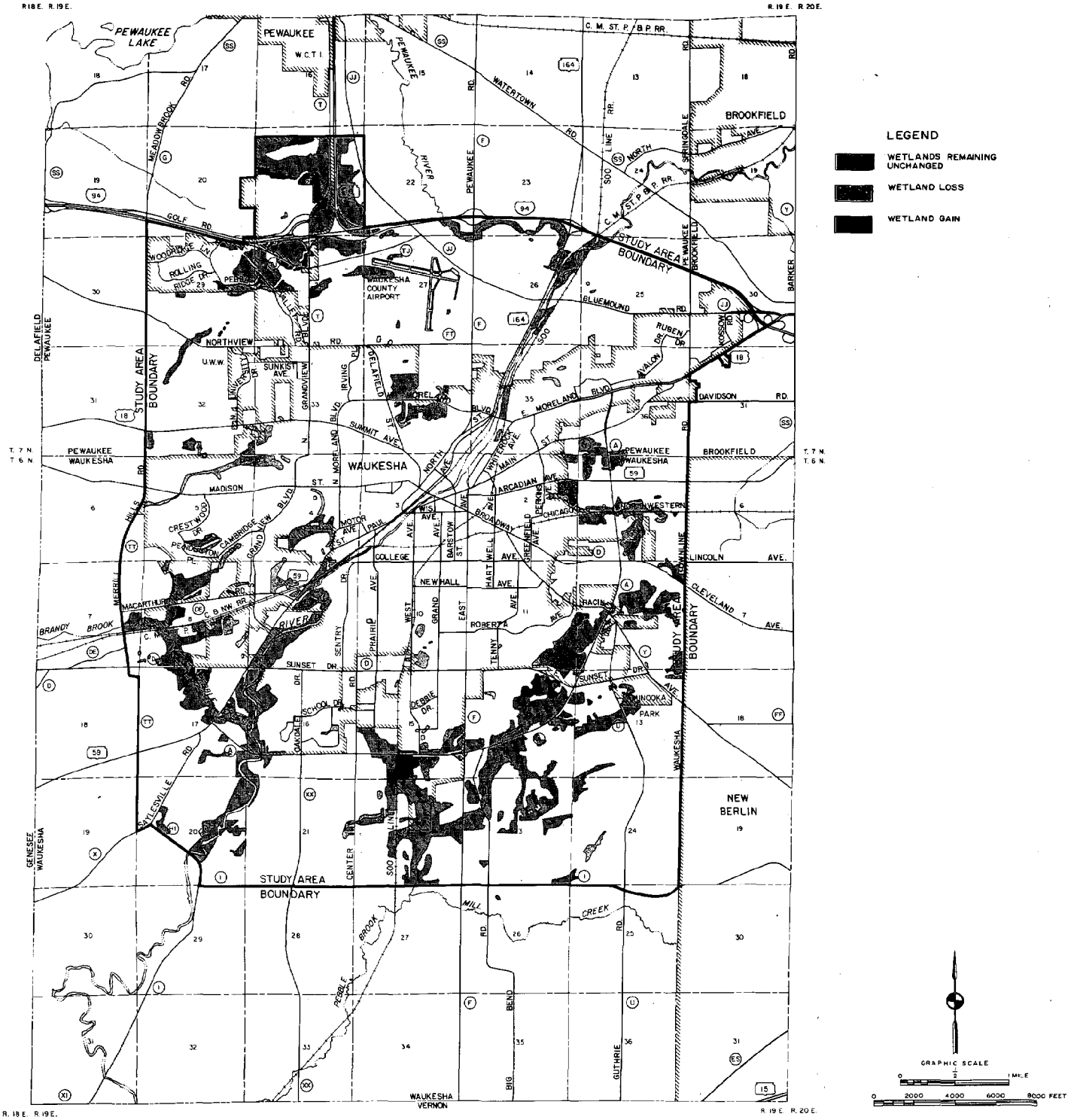
Woodlands

Woodlands have both economic and ecologic value and under good management can serve a variety of uses. Located primarily on ridges and slopes and along streams and lakeshores, woodlands provide an attractive natural resource of immeasurable value. In addition to contributing to clean air and water, woodlands can contribute to the maintenance of a diversity of plant and animal life in association with human life and can thereby provide important recreational opportunities and open space. It is important to note that existing woodlands can be destroyed through mismanagement in a short time, thereby contributing to the siltation of lakes and streams and the destruction of wildlife habitat areas. Thus, woodlands should be maintained for their total values--scenic, wildlife habitat, educational, recreational, and watershed protection--as well as for their commercial value in producing forest products and in lending value to residential and other types of urban development.

Woodlands are defined as those areas one acre or more in size having 17 or more deciduous trees per acre, each measuring at least four inches in diameter at breast height and having 50 percent or more tree canopy coverage. In addition, coniferous tree plantations and reforestation projects are identified as woodlands by the Commission. It should be noted that all lowland wooded areas, such as tamarack swamps, have also been classified as wetlands. As indicated on Map 8, woodland areas cover about 1,232 acres, or 6.1 percent of the City

Map 6

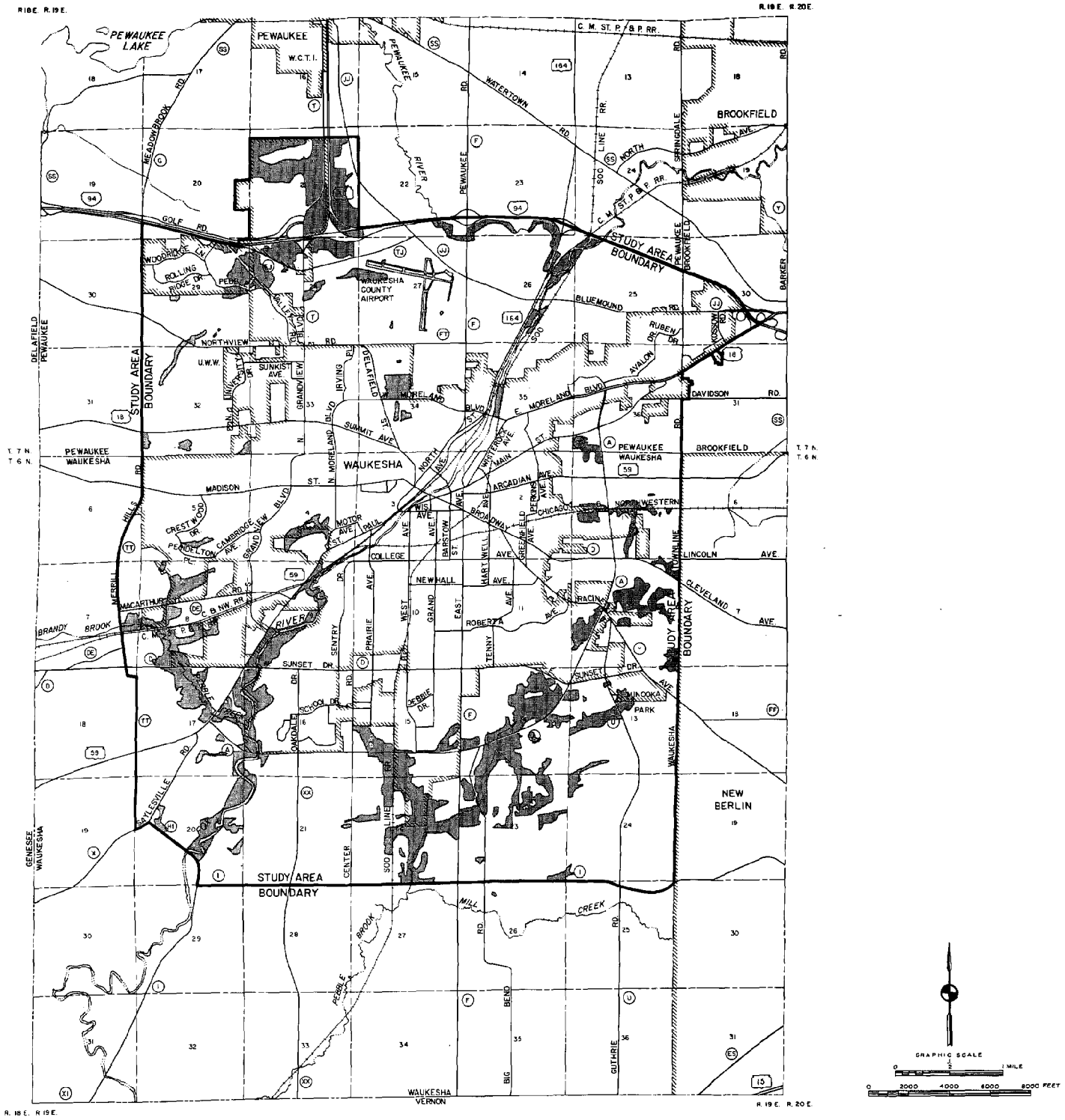
WETLAND CHANGES IN AND ADJACENT TO THE CITY OF WAUKESHA: 1963-1980



Source: SEWRPC.

Map 7

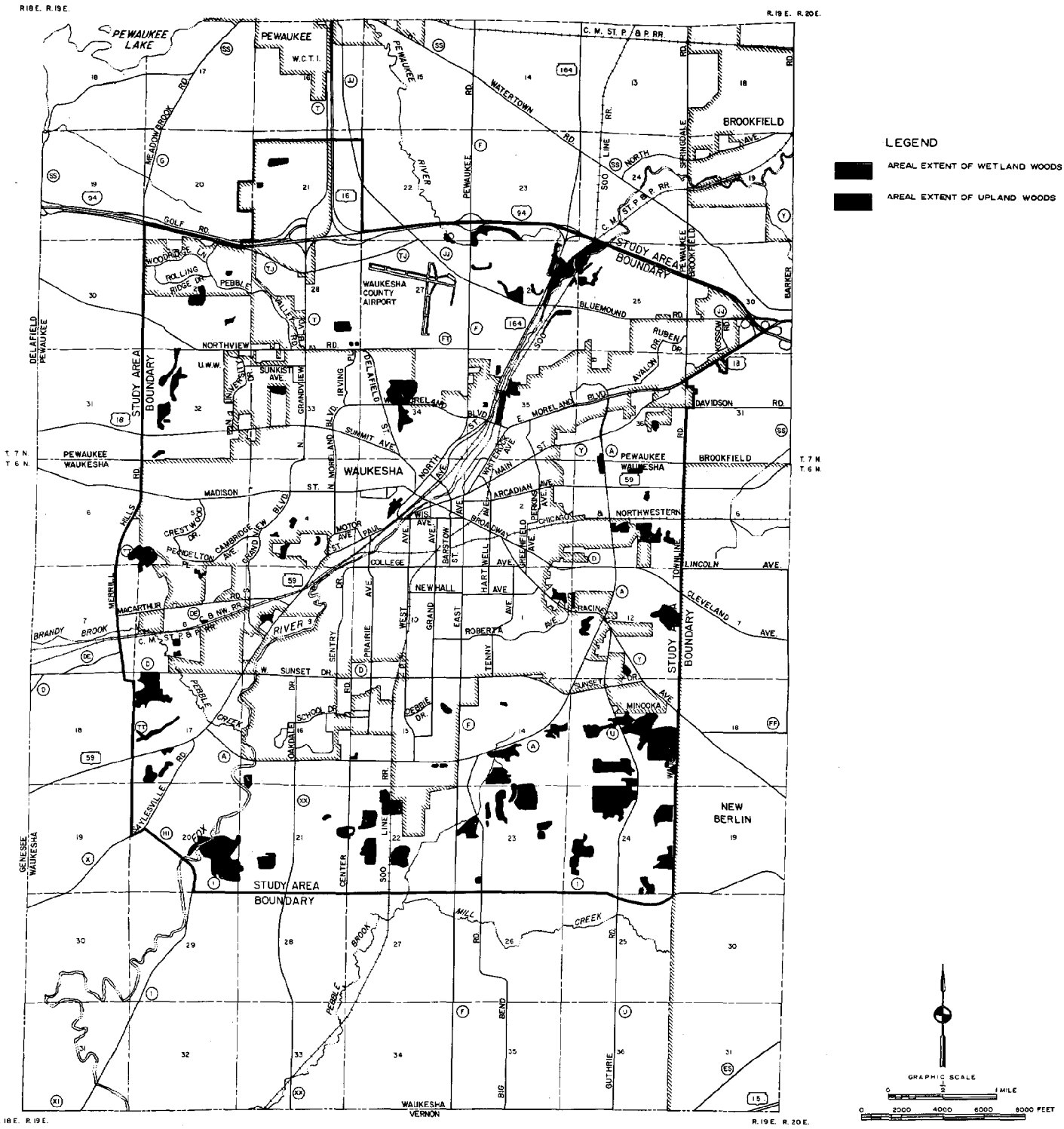
WETLANDS IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980



Source: SEWRPC.

Map 8

WOODLANDS IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980



Source: SEWRPC.

of Waukesha and environs. About 969 acres, or 79 percent of the total woodland acreage, are classified as upland woods. The remaining 263 acres, or 21 percent, are classifed as wetlands.

Prairies

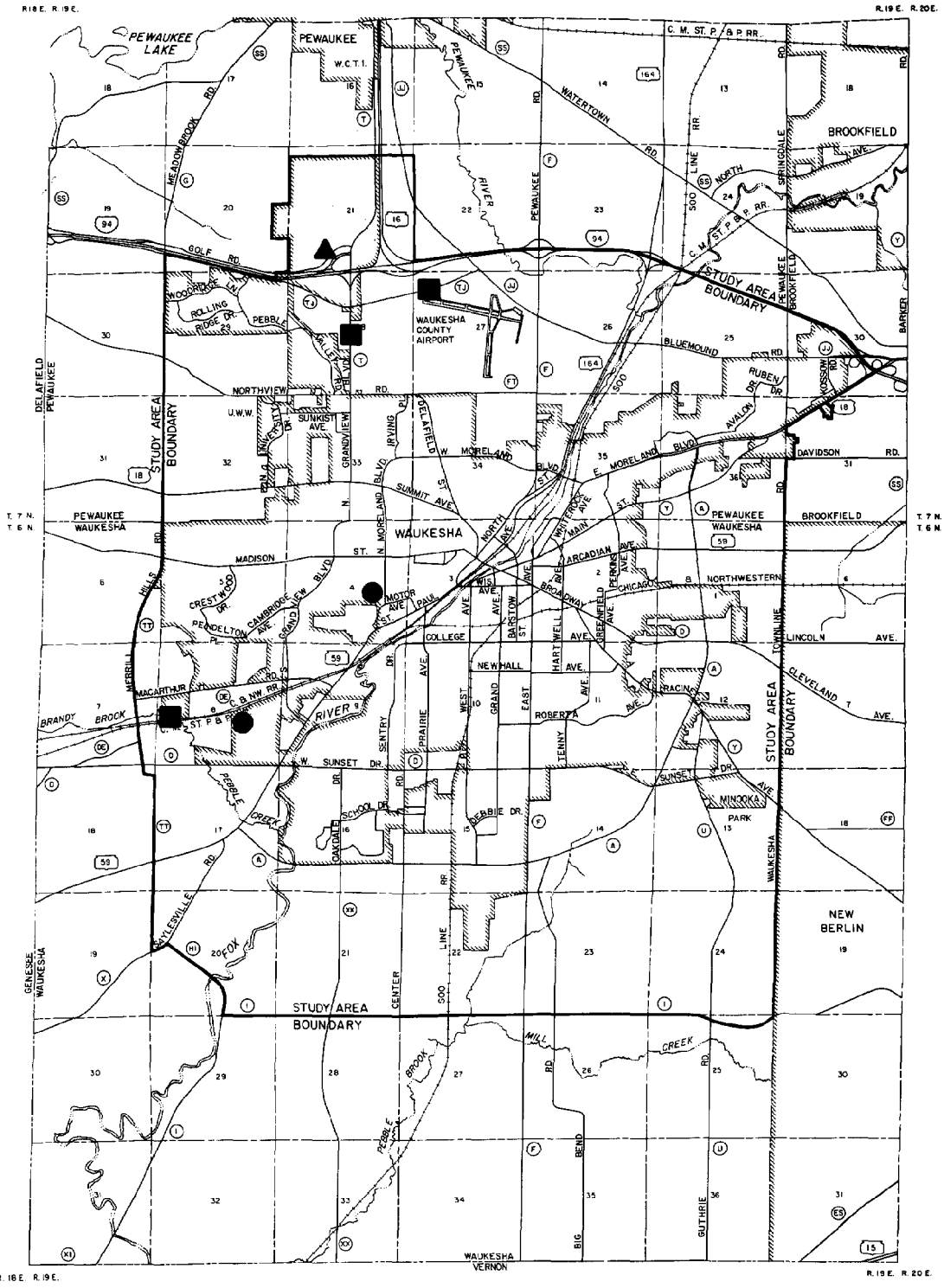
Prairies are open, treeless, or generally treeless areas dominated by native grasses. Such areas have important ecological and scientific value and consist of four basic types: low prairie, mesic or moderately moist prairie, dry prairie, and oak openings. The low prairies typically occupy ancient, glacial lake beds and are dominated by cord, bluejoint, muhly, and big bluestem grasses. In addition, they contain forbs such as New England aster, gayfeather, prairie dock, Culver's root, and golden alexander. Mesic prairies tend to occur on glacial outwash plains, the glacial till of recessional moraines, and the loessial, or residual, soils which cover the dolomitic bedrock. These prairies are dominated by Indian grass, switch grass, and big bluestem grass. Typical mesic prairie forbs include smooth aster, wild indigo, rattlesnake master, and compass plant. Dry prairies occur on well-drained soils, usually on steep hillsides. The dominant grasses include prairie dropseed, little bluestem, side oats grama, panic, and needle grasses. Forbs characteristic of dry prairies include pasque flower, silky aster, lead plant, paccoon, and purple prairie clover. Oak openings are savannahs dominated by the dry prairie grasses, with between one and 17 oak trees--usually burr oak--per acre. The characteristic forbs of the oak opening are also the dry prairie forbs, but may include some of the prairie shrubs such as New Jersey tea. For the purposes of this report, oak openings are considered to be similar to prairies because of the dominance of prairie grass and forb species.

A comparison of the existing remnant prairie areas (see Map 8) with those prairie areas of presettlement vegetation shown on Map 3 shows that only a small portion of the original prairies present in the City of Waukesha and environs in presettlement times remains in 1980. The loss of native prairie and oak openings was primarily a result of agricultural practices and the suppression of wild fires which had served to constrain the advancing shrubs and trees which shade out the prairie plants. As shown on Map 9, only five small remnant prairies remain in the City of Waukesha and environs planning area. These prairie remnants cover a total area of 18.5 acres, or less than 0.1 percent of the area.[1] Of the total remaining prairie, 2.6 acres, or 14 percent, are also classified as wetlands. In order to protect the aesthetic, cultural, historic, educational, ecological, and scientific values of the prairies, the remaining prairies identified in this report should be considered for protection and preservation.

[1]An additional approximately 40 acres on the General Electric Company-Medical Systems Division site is presently being planted to prairie.

Map 9

PRAIRIES IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980



LEGEND

- ● LOW PRAIRIE
- ■ MESIC OR MODERATELY MOIST PRAIRIE
- ▲ GENERAL ELECTRIC COMPANY PRAIRIE PLANTING AND MANAGEMENT AREA

GRAPHIC SCALE
0 1/2 1 MILE
0 2000 4000 6000 8000 FEET

Source: SEWRPC.

Photo by Donald M. Reed.

Figure 13

WETLAND AREA ADJACENT TO THE CITY OF WAUKESHA

The remaining wetland areas in and adjacent to the City of Waukesha provide essential breeding, nesting, resting, and feeding grounds, and provide escape cover for many forms of fish and wildlife. A typical muskrat den is shown in this photograph, taken in the wetland adjacent to the Fox (Illinois) River near its confluence with Pebble Creek.

Wildlife Habitat

Wildlife in and adjacent to the City of Waukesha includes upland game such as rabbit and squirrel, predators such as fox and racoons, game birds including pheasant, and marsh furbearers such as mink and muskrat (see Figure 13). In addition, water fowl are present, and deer are found in scattered areas. The remaining wildlife habitat areas provide valuable recreational opportunities and constitute an immeasurable aesthetic asset to the City of Waukesha and environs. The complete spectrum of wildlife species originally native to the City of Waukesha and environs has, along with its habitat, undergone tremendous alterations since the settlement of the area. The change is a direct result of conversion of the environment by the European settlers, beginning with the clearing of the forest and prairies and the drainage of wetlands, and ending with the development of extensive urban land uses. This process, which began early in the nineteenth century, is still operative today. Successive cultural uses and attendant management practices, both rural and urban, have been superimposed on the overall land use changes and have also affected the wildlife and wildlife habitat. In agricultural areas, these cultural management practices include land drainage by ditching and tiling and the expanding use of fertilizers and pesticides. In urban areas, cultural management practices that affect wildlife and their habitat include the use of fertilizers and pesticides, road salting, heavy traffic which produces disruptive noise levels and damaging air pollution, and the introduction of domestic animals. The protection and preservation of the remaining wildlife habitat areas in and adjacent to the City of Waukesha is warranted by the environmental, recreational, and aesthetic value of these areas.

Table 3

SUMMARY OF WILDLIFE HABITAT IN AND ADJACENT TO THE CITY OF WAUKESHA

	Wildlife Habitat							
	High Value		Medium Value		Low Value		Total	
Civil Division	Acres	Percent of Area	Acres	Percent of Area	Acres	Percent of Area	Acres	Percent of Area
City of Waukesha....	73	0.4	348	1.7	341	1.7	762	3.8
Town of Waukesha....	979	4.8	773	3.8	331	1.6	2,083	10.3
Town of Pewaukee....	--	--	201	1.0	244	1.2	445	2.2
Study Area	1,052	5.2	1,322	6.5	916	4.5	3,290	16.3

Source: SEWRPC.

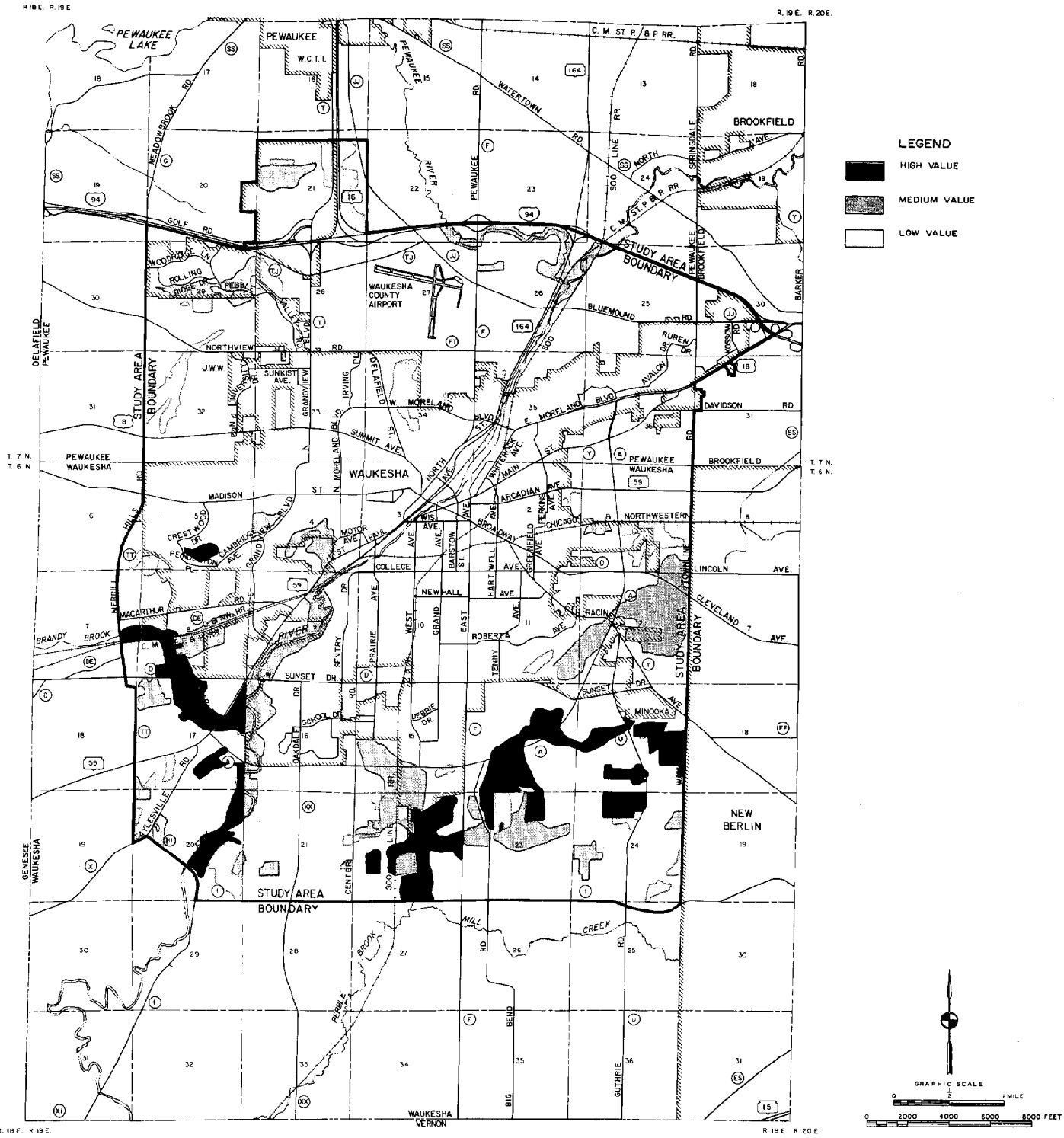
Wildlife habitat areas remaining in the City of Waukesha and environs were identified by the Regional Planning Commission in 1970, and were categorized as either high-, medium-, or low-value habitat areas. High-value habitat areas contain a good diversity of wildlife, are adequate in size to meet all of the habitat requirements for the species concerned, and are generally located in proximity to other wildlife habitat areas. Medium-value wildlife habitat areas generally lack one of the three aforementioned criteria for a high-value wildlife habitat; however, they do retain a good plant and animal diversity. Low-value habitat areas are remnant in nature in that they generally lack two or more of the three aforementioned criteria for a high-value wildlife habitat, but may, nevertheless, be important if located in proximity to other high- or medium-value wildlife habitat areas, if they provide corridors linking higher value wildlife habitat areas, or if they provide the only available range in the area. The major factors considered in assigning value ratings to wildlife habitat areas are diversity, territorial requirements, vegetative composition and structure, proximity to other wildlife habitat areas, and disturbance.

The wildlife habitat areas are further classified by the Commission as deer, pheasant, waterfowl, muskrat-mink, songbird, squirrel, or mixed habitat. These designations are applied to help characterize a particular wildlife habitat area as meeting the specific requirements of the indicated species. However, this classification does not imply that the name species is the most important or dominant species in that particular habitat. For example, an area designated as a pheasant habitat may also provide deer and songbird habitat.

As shown on Map 10, wildlife habitat areas in and adjacent to the City of Waukesha generally occur in association with existing surface water, wetland, and woodland resources. As indicated in Table 3, wildlife habitat areas cover

Map 10

WILDLIFE HABITAT IN AND ADJACENT TO THE CITY OF WAUKESHA



Source: SEWRPC.

about 3,290 acres, or about 16 percent of the planning area. Of this total habitat acreage, 1,052 acres, or about 32 percent, were classified as high-value habitat areas; 1,322 acres, or 40 percent, were classified as medium-value habitat areas; and 916 acres, or about 28 percent, were classified as low-value habitat areas. Of the total remaining wildlife habitat area, about 1,546 acres, or 47 percent, are also classified as wetlands.

Soils

Soil properties exert a strong influence on the manner in which land is used. Soils are an irreplaceable resource, and development pressures upon land continue to make this resource more and more valuable. A need exists, therefore, in any planning program to examine not only how land and soils are presently used, but how they can best be used and managed. This requires a detailed soil survey which maps the geographic location of various types of soils; identifies the physical, chemical, and biological properties; and interprets these properties for land use and public facilities planning. Such a soil survey of the entire Southeastern Wisconsin Region was completed in 1965 by the U. S. Department of Agriculture, Soil Conservation Service, under contract to the Regional Planning Commission.

Through the use of the data provided by soil surveys, the Commission staff has prepared interpretive maps showing the suitability of certain soil types for residential, commercial, industrial, and agricultural land use. As indicated on Map 11, about 5,607 acres, or 28 percent of the area in and adjacent to the City of Waukesha, are covered by soils which have been identified as wet soils with high water tables and poor drainage. Map 12 shows those areas in and adjacent to the City of Waukesha which are covered by soils poorly suited for residential development with public sanitary sewer service. Approximately 4,390 acres, or 22 percent of the area in and adjacent to the City of Waukesha, are covered by soils of this type.

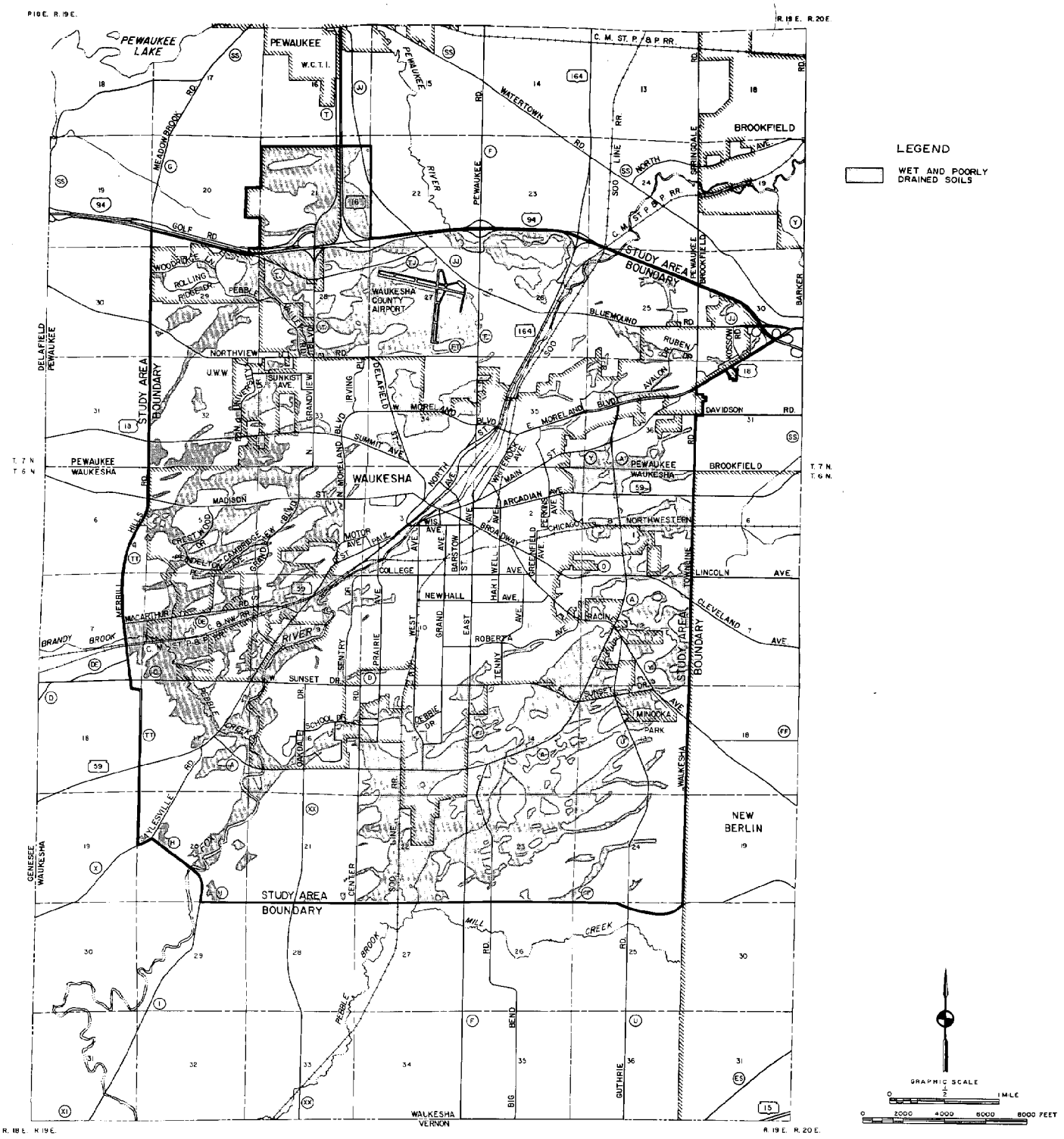
Natural and Scientific Areas

Natural areas, as defined by the Wisconsin Scientific Areas Preservation Council, are tracts of land or water so little modified by man's 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 presettlement landscape. As shown on Map 13, a total of five natural areas encompassing 170 acres were identified in and near the City of Waukesha. Based on the current condition of each natural area, the natural area sites were classified into one of the following four categories: state scientific area, natural area of statewide or greater significance, natural area of countywide or regional significance, and natural area of local significance.

Classification of an area into one of the four categories is based upon consideration of the diversity of plant and animal species and community types present; the structure and integrity of the native plant or animal community; the extent of disturbance from man's activities such as logging, grazing,

Map 11

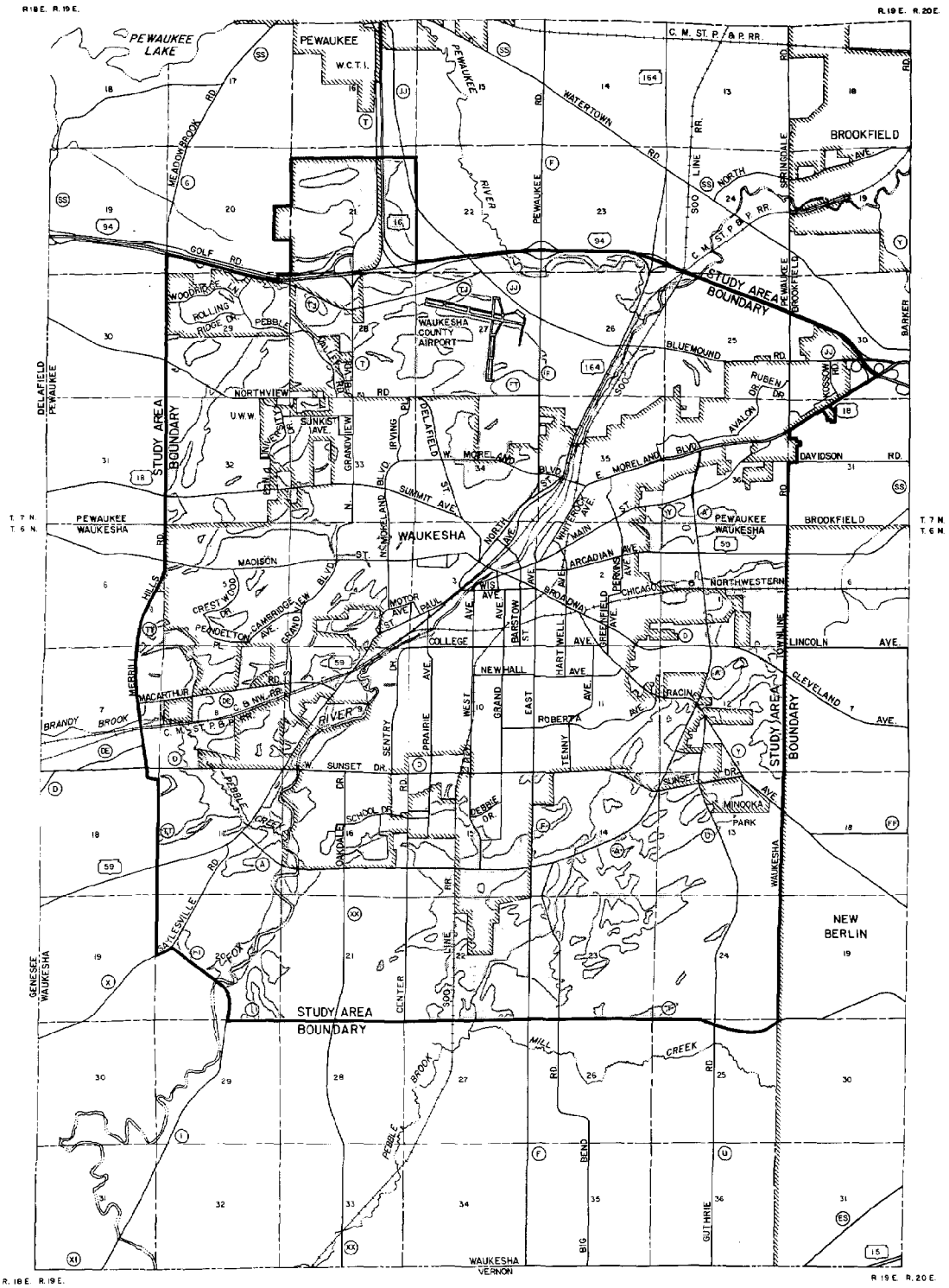
WET AND POORLY DRAINED SOILS IN AND ADJACENT TO THE CITY OF WAUKESHA



Source: SEWRPC.

Map 12

SUITABILITY OF SOILS IN AND ADJACENT TO THE CITY OF WAUKESHA FOR SMALL LOT RESIDENTIAL DEVELOPMENT WITH PUBLIC SANITARY SEWER SERVICE



LEGEND

SOILS WITH SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT WITH PUBLIC SANITARY SEWER SERVICE ON LOTS LESS THAN ONE ACRE IN SIZE

GRAPHIC SCALE

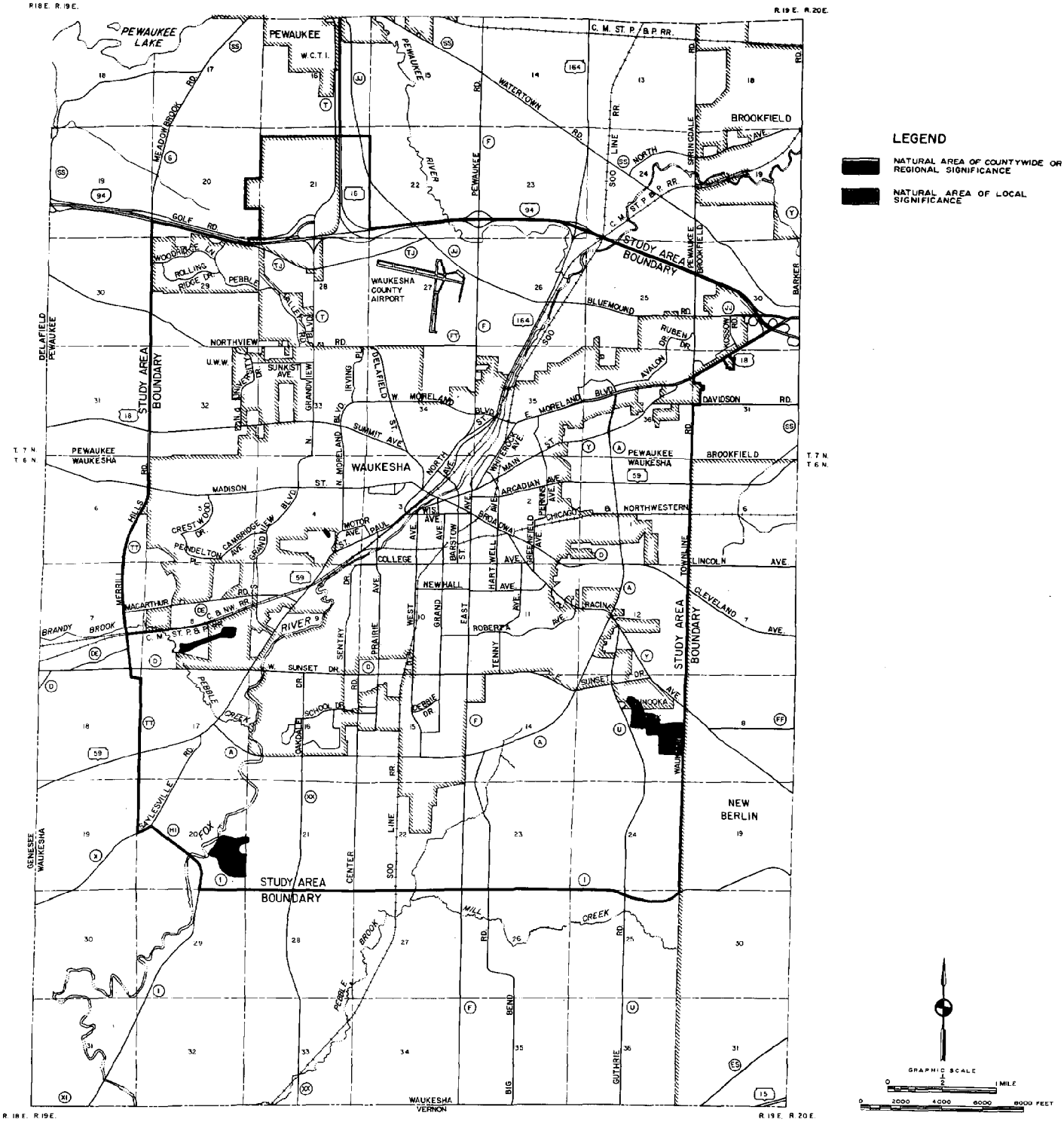
0 1/2 1 MILE

0 2000 4000 6000 8000 FEET

Source: SEWRPC.

Map 13

NATURAL AREAS IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980



Source: SEWRPC.

water level changes, and pollution; the commonness of the plant and animal communities present; any unique natural features within the area; the size of the area; and the educational value.[2]

Environmental Corridors

One of the most important tasks completed under the regional planning effort has been the identification and delineation of those areas in southeastern Wisconsin in which concentrations of recreational, aesthetic, ecological, and cultural resources occur and which, therefore, should be preserved and protected. Such areas normally include one or more of the following seven elements of the natural resource base which are essential to the maintenance of both the ecological balance and natural beauty of the Southeastern Wisconsin Region: 1) lakes, rivers, and streams and their associated shorelands and floodlands; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) wet, poorly-drained, or organic soils; and 7) rugged terrain and high-relief topography. While the foregoing elements comprise the integral

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[2]The four types of natural areas are defined as follows: 1) State scientific areas are those natural areas, geological sites, or archeological sites identified as being of at least statewide significance and which have been so designated by the Wisconsin Department of Natural Resources, Scientific Areas Preservation Council. 2) Natural areas of statewide or greater significance are those natural areas which have not been significantly modified by man's activity and have sufficiently recovered from the effects of such activity so as to contain nearly intact native plant and animal communities which are believed to be representative of the presettlement landscape, but which have not as yet been classified as state scientific areas. 3) Natural areas of countywide or regional significance are those natural areas which have been slightly modified by man's activities or which have insufficiently recovered from the effects of such activities, but still contain good examples of native plant and animal communities representative of the presettlement landscape. These natural areas are of lesser significance because their quality is less than what would be defined as ecologically ideal and there is evidence of past or present disturbance such as logging, grazing, water level changes as a result of ditching or filling, or pollution; the area may contain very common plant or animal community types in the Region, in which case only the best examples would qualify for state scientific area recognition; or the area may be of insufficient size. These natural areas may serve local communities as educational sites, or as passive recreation areas and ecological zones which lend a degree of naturalness to their surroundings. In addition, these natural areas, if protected in an undisturbed condition, may be expected to increase in value over time. Therefore, some of these areas may in the future become natural or scientific areas of statewide significance. 4) Natural areas of local significance are those natural areas which have been significantly modified by man's activities but have nevertheless retained a modest amount of natural cover. Such natural areas are suitable for local educational use, and their exclusion from natural inventory survey would be considered an oversight. Natural areas of local signlificance may reflect the patterns of former vegetation or serve as examples of the influenc of human settlement on vegetation. These natural areas may also be expected to increase in value if protected in an undisturbed condition.

parts of the natural resource base, there are five additional elements which, although not part of the natural resource base per se, are closely related to or centered on that base and are a determining factor in identifying and delineating areas with recreational, aesthetic, ecological, and cultural value. These five additional elements are: 1) existing park and open space sites, 2) potential park and open space sites, 3) historic archeological and other cultural sites, 4) significant scenic areas and vistas, and 5) natural and scientific areas.

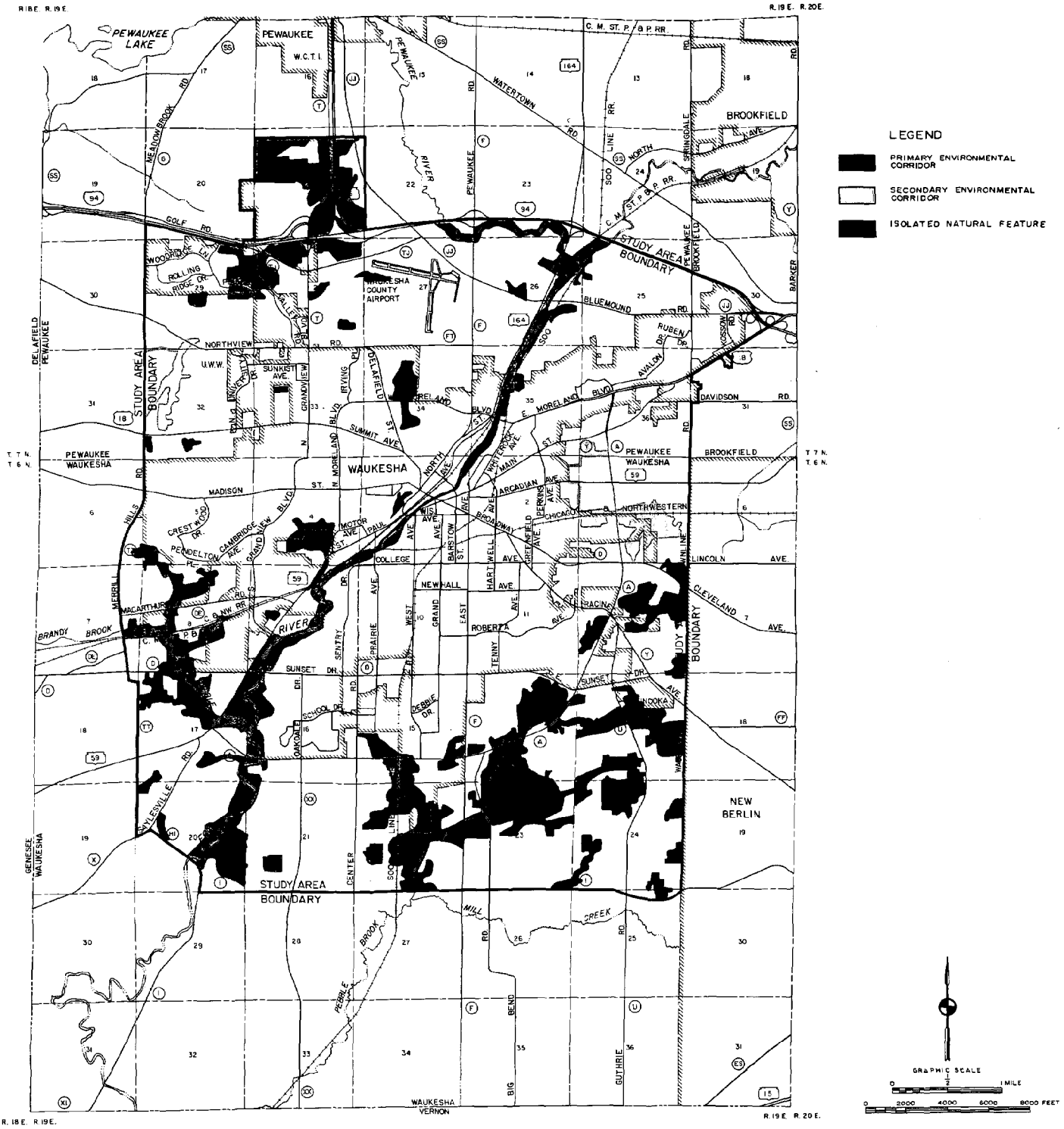
The delineation of these 12 natural resource and natural resource-related elements on a map results in an essentially linear pattern of relatively narrow elongated areas which have been termed "environmental corridors" by the Regional Planning Commission. Primary environmental corridors include a wide variety of the above-mentioned important resource and resource-related elements and are at least 400 acres in size, two miles in length, and 200 feet in width. Secondary environmental corridors connect the primary environmental corridors and are at least 100 acres in size and one mile in length.

In any discussion of environmental corridors and important natural features, it is important to point out that there are many interacting relationships between living organisms and their environment. The destruction of any important element of the total environment may lead to a chain reaction of deterioration and destruction. The drainage of wetlands, for example, may have far-reaching effects since such drainage may destroy fish spawning grounds, wildlife habitat, groundwater recharge areas, and the natural filtration and floodwater storage area of interconnecting stream systems. The resulting deterioration of surface water quality may, in turn, lead to a deterioration of the quality of groundwater which serves as a source of domestic, municipal, and industrial water supply, and upon which low flows of rivers and streams may depend. Similarly, the destruction of woodland cover may result in soil erosion, stream siltation, more rapid runoff, and increased flooding, as well as the destruction of wildlife habitat. Although the effects of any one of the environmental changes may not in and of itself be overwhelming, the combined effects must eventually lead to serious deterioration of the underlying supporting natural resource base and of the overall quality of the environment for life. The need to maintain the integrity of the remaining environmental corridors and important resource features in and near the City of Waukesha should thus be apparent.

Primary Environmental Corridors: The primary environmental corridors in and near the City of Waukesha are located generally along the major perennial streams in association with the Fox (Illinois) River, Pebble Creek, and Pebble Brook, and in association with large wetland complexes on other perennial and intermittent streams. These primary environmental corridors contain almost all of the remaining high-value woodlands, wetlands, prairies, and wildlife habitat areas in the study area and all of the major bodies of surface water and related undeveloped floodlands and shorelands; are in effect a composite of the best individual elements of the natural resource base; and have truly immeasurable environmental, recreational, and aesthetic value. The protection of the primary environmental corridors from intrusion by incompatible urban uses and, thereby, from degradation and destruction should be one of the principal objectives of any planning effort. Their preservation in an essentially natural state--including park and open space uses, limited agricultural uses, and country estate-type residential uses--will serve to maintain a high level of environmental quality, protect their natural beauty, and provide valuable recreational opportunities. As indicated on Map 14, about 2,899 acres, or 14 percent of the study area, are encompassed within the primary environmental corridors. Of the total area of primary environmental corridors, 627 acres, or 3.1 percent, are located within the incorporated boundaries of

Map 14

ENVIRONMENTAL CORRIDORS AND IMPORTANT ISOLATED NATURAL FEATURES IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980



Source: SEWRPC.

Table 4

NATURAL FEATURES IN AND ADJACENT TO THE CITY OF WAUKESHA: 1980

	City of Waukesha		Towns of Pewaukee and Waukesha		Total Study Area[a]	
	Size (acres)	Percent of Study Area	Size (acres)	Percent of Study Area	Size (acres)	Percent of Study Area
Primary Environmental Corridor.....	627	3.1	2,272	11.3	2,899	14.4
Secondary Environmental Corridor....	49	0.2	165	0.8	214	1.0
Isolated Natural Features.....	151	0.7	293	1.5	444	2.2

[a]20,186 acres in the study area, including 58 acres in the Town of Brookfield.

Source: SEWRPC.

the City of Waukesha, and 2,272 acres, or 11.3 percent, are located in the unincorporated portions of the Towns of Pewaukee and Waukesha adjacent to the City (see Table 4).

Secondary Environmental Corridors: The secondary environmental corridors in and adjacent to the City of Waukesha are generally located along intermittent streams or serve as links between segments of primary environmental corridors. These secondary environmental corridors contain a variety of resource elements, often remnant resources from former primary environmental corridors which have been developed for intensive agricultural purposes or urban land uses. Secondary environmental corridors facilitate surface water drainage, maintain pockets of natural resource features, and provide for the movement of wildlife, as well as for the movement and dispersal of seeds for a variety of plant species. Such corridors should also be preserved in essentially open natural uses as urban development proceeds within the study area, particularly when the opportunity is presented to incorporate the corridors into urban storm water detention areas, associated drainageways, and neighborhood parks. As indicated on Map 14, about 214 acres, or 1 percent of the study area, are encompassed within the secondary environmental corridors. Of this total, about 49 acres, or 0.2 percent, are located within the City of Waukesha, while the remaining 165 acres, or 0.8 percent, are located within the unincorporated Towns of Pewaukee and Waukesha adjacent to the City (see Table 4).

Isolated Natural Features: In addition to the primary and secondary environmental corridors, other, small concentrations of natural resource base elements exist within the study area. These resource base elements are isolated from the environmental corridors by urban development or agricultural uses and, although separated from the environmental corridors, also have important natural values. Isolated natural features may provide the only available wildlife habitat in an area, provide good locations for local parks and study areas, and lend an aesthetic character or natural diversity to an area. Important isolated natural features in and adjacent to the City of Waukesha include a geographically well-distributed variety of isolated woodlands, wetlands, prairies, and wildlife habitat. These isolated natural features should also be protected and preserved in a natural state whenever possible. Such isolated areas five acres or greater in size are shown on Map 14, and total 23 sites encompassing 444 acres, or 2.2 percent of the total study area. Of this total, 151 acres, or 0.7 percent, are located in the City of Waukesha, and 293 acres, or 1.5 percent, are located within the unincorporated portions of the Towns of Pewaukee and Waukesha adjacent to the City (see Table 4).

Chapter III

OBJECTIVES, PRINCIPLES, AND STANDARDS

INTRODUCTION

Planning is a rational process for formulating objectives and, through the preparation and implementation of plans, meeting those objectives. The formation of objectives therefore is an essential task which must be undertaken before a wetland protection plan can be prepared. This chapter sets forth wetland management objectives and supporting standards for the City of Waukesha and environs which are consistent with regional objectives and standards relating to environmental protection and natural resource conservation.

BASIC CONCEPTS AND DEFINITIONS

The term "objective" is subject to a wide range of interpretation and application and is closely linked to other terms often used in planning work which also are subject to a wide range of interpretation and application. The following definitions will be employed accordingly:

1. Objective: a goal or end toward the attainment of which plans and policies are directed.

2. Principle: a fundamental primary or generally accepted tenet used to assert the validity of objectives and to prepare standards and plans.

3. Standard: a criterion used as a basis of comparison to determine the adequacy of alternative and recommended plan proposals to obtain objectives.

4. Policy: a rule or course of action used to ensure plan implementation.

5. Regulation: a prescribed guide for action enforced by a constituted controlling authority.

6. Plan: a design which seeks to achieve the agreed-upon objectives.

Although this chapter deals with only four of these terms, an understanding of the interrelationship of the foregoing definitions and of the basic concepts which they represent is essential to a full understanding of the wetland management and protection objective, principle, and standard presented herein.

OBJECTIVES

The overall objective of a wetland management and protection plan is the preservation and protection of the underlying and sustaining natural resource base. In this regard, a specific wetland management objective is proposed as a basis for the development of a wetland management plan for the City of

Waukesha and environs. This objective states that a spatial distribution of the various land uses should be encouraged which will result in the protection and wise use of wetlands in and adjacent to the City of Waukesha.

The foregoing general wetland management objective is complemented by the planning principle and standard set forth in Table 5. This principle and standard serve to facilitate the quantitative application of the objective in plan design, test, and evaluation.

APPLICATION OF WETLAND MANAGEMENT STANDARDS

Since the application of wetland management standards is an important step in the design of a wetland protection plan, a brief discussion of the application of the standards is presented here. First, it should be recognized that the standards used in the analysis of wetland management and protection needs are of two basic types--namely, functional standards and habitat standards. The application of functional standards is intended to protect wetland areas adjacent to surface water bodies from sedimentation and other nonpoint sources of pollution, as well as to stabilize and control streamflows and storm water runoff as they relate to flooding and the erosion of stream banks and lakeshores. Also, the application of functional standards is intended to protect certain wetland areas which serve as groundwater recharge areas and, as such, may affect the quality and quantity of domestic, commercial, and industrial water supplies in areas not presently served by centralized municipal water supply systems. In this regard, however, it should be noted that because of the lack of engineering and groundwater hydrology data concerning the amount and location of groundwater recharge in the City of Waukesha and environs, as well as the high cost of obtaining such data, the application of this standard could not be fully realized in the initial preparation of this wetland management plan. The application of habitat standards is intended to protect fish and wildlife habitat and provide a suitable environment, as well as a desirable quality of life, for citizens of the City of Waukesha and environs.

Second, it should be recognized that increasing population levels and associated residential, commercial, and industrial development may be expected to generate an increasing demand for land for urban uses in and adjacent to the City of Waukesha. In order to provide the desirable open space, as well as to provide for the environmentally and ecologically sound development of the study area, the management and protection of the wetlands within the environmental corridors and selected isolated natural areas of the area is required.

Third, in order to comply with federal and state policies and regulations concerning the management and protection of surface waters, wetlands adjacent to navigable lakes and streams and those wetlands having special or unique natural resource features need to be properly managed and protected. It should be emphasized that the preservation and protection of the underlying and sustaining natural resource base is, in effect, independent of any residential population levels and associated land development, and that such preservation and protection can be achieved only through the preservation of wetlands and their associated environmental corridors in an essentially open, natural state.

Table 5

WETLAND MANAGEMENT OBJECTIVE, PRINCIPLE, AND STANDARD FOR THE CITY OF WAUKESHA AND ENVIRONS

OBJECTIVE

A spatial distribution of the various land uses which will result in the protection and wise use of wetlands in and adjacent to the City of Waukesha.

PRINCIPLE

Wetlands support a wide variety of desirable and sometimes unique plant and animal life; assist in the stabilization of lake levels and streamflows; trap and store plant nutrients in runoff, thus reducing the rate of enrichment of surface waters and obnoxious weed and algae growth; contribute to the atmospheric oxygen supply; contribute to the atmospheric water supply; reduce storm water runoff by providing areas for floodwater impoundment and storage; protect shorelines from erosion; trap soil particles suspended in runoff and thus reduce stream sedimentation; serve as groundwater recharge and discharge areas; and provide the population with opportunities for certain scientific, educational, and recreational pursuits.

STANDARD

Wetland areas adjacent to streams or lakes, wetlands serving as important groundwater recharge or discharge areas, wetlands having special wildlife and other natural values, and wetlands having an area in excess of 50 acres should not be allocated to any urban development except limited recreation, and should not be drained or filled. To the extent practicable, areas immediately adjacent to and surrounding wetlands should be kept in open space uses, such as agriculture or limited recreation.

Source: SEWRPC.

Chapter IV

RECOMMENDED WETLAND PROTECTION AND MANAGEMENT PLAN

INTRODUCTION

The primary purpose of the City of Waukesha and environs wetland protection planning program is the preparation of a sound and workable plan to guide the protection and management of wetlands in and adjacent to the City of Waukesha. This chapter presents a recommended wetland protection and management plan which meets, to the extent practicable, the objectives, principles, and standards set forth in Chapter III of this report. In addition, this chapter outlines the steps required to implement the recommended plan.

The first section of this chapter describes the recommended wetland protection and management plan for the City of Waukesha and environs. It includes recommendations intended to protect and preserve the important ecological functions served by wetlands; to provide desired open space; to accommodate the environmentally and ecologically sound development of the area; and to comply with federal and state policies and regulations concerning wetlands. The second section of this chapter outlines the actions which must be taken to assure that the recommended wetland protection and management plan is carried out over time. It includes a discussion of existing federal and state policies and regulations; the identification of specific implementation actions by the City of Waukesha; and an estimate of the costs likely to be incurred in plan implementation.

AREAWIDE CONSIDERATIONS

Previously prepared areawide plan elements, including the Fox River watershed plan, the regional land use plan, the regional park and open space plan, and the regional water quality managment plan provide a sound, general framework within which a more specific wetland protection and management plan can be prepared for the City of Waukesha and environs. The recommendations of the aforenoted regional plan elements that relate to wetlands in and adjacent to the City of Waukesha are intended to achieve certain objectives; to resolve certain costly environmental and developmental problems; and to avoid the creation of new environmental and developmental problems.

For example, the Fox River watershed plan seeks to abate the flood and water pollution problems within the Fox River watershed and to avoid the creation of new flood and water pollution problems. The Fox River is presently a naturally well-regulated stream system, and through the maintenance of its floodland and wetland areas for floodwater storage, this desirable characteristic of the river system can be preserved as urbanization proceeds within the watershed. Similarly, the maintenance of wetlands adjacent to the streams of the Fox River watershed can help to enhance water quality conditions, while providing desirable open space and opportunities for the residents of the area to participate in a wide range of resource-oriented intensive and passive outdoor recreational activities. In this respect, it should be noted that the City of Waukesha acted formally to adopt the Fox River watershed plan on May 15, 1973, and an amendment thereto on December 4, 1973. Similar examples could be provided

with respect to the regional land use, park and open space, and water quality management plans.

URBAN AREA CONSIDERATION

All of the adopted regional plan elements recommend that the primary environmental corridors, including the component wetlands and other environmentally sensitive areas should be maintained in essentially natural, open uses. Specifically, wetlands within the primary environmental corridors, as well as all isolated wetlands having special wildlife or other natural values, and all isolated wetlands 50 acres in size or larger should be protected from conversion to urban use and should not be planned to be served by public sanitary sewers.

In addition, the adopted regional plan elements all recommend that secondary environmental corridors and isolated natural areas, including the associated wetlands, be considered for public acquisition, as may be found necessary, to provide for urban stormwater retention areas, associated drainageways, and neighborhood parks.

RECOMMENDED WETLAND MANAGEMENT AND PROTECTION PLAN

An important responsibility of local government is the protection of the natural resource base within its area of jurisdiction in order to maintain a high level of environmental quality, to protect the public health and safety, to protect the natural scenic beauty, and to provide invaluable recreational opportunities. To help meet these responsibilities, the wetland protection and management plan for the City of Waukesha and environs consists of the following three major recommendations:

1. The preservation of wetlands located within the primary environmental corridor lands in and adjacent to the City of Waukesha, as those corridor lands have been delineated in this report.

2. The preservation of those isolated wetland areas having special wildlife and other natural values, as those areas have been delineated in this report.

3. The protection of those wetlands which serve as stormwater retention basins and which have been determined by the City to be important to the management of stormwater runoff within the urban and urbanizing portions of the study area, as those areas have been delineated in this report.

Each of these recommendations is discussed below.

Preservation of Wetlands Within the Primary Environmental Corridors

The wetlands located within the primary environmental corridors of the City of Waukesha and environs fall into two categories: 1) those that the use and management of which are regulated by federal and state governments, and 2) all

others. The wetlands regulated by federal and state governments are shown on Map 15. These wetlands all lie within the primary environmental corridors along the Fox and Pewaukee Rivers and along Pebble Brook and Pebble Creek. These wetlands encompass a total area of 539 acres and are regulated by the U.S. Army Corps of Engineers under the Federal Clean Water Act (Section 404 permit program). Approximately 15 stream miles of shoreline, also shown on Map 15, are regulated by the Wisconsin Department of Natural Resources under Chapter 30 of the Wisconsin Statutes.

It is recommended that all 539 acres of these regulated wetlands, shown on Map 15, be preserved through public ownership, including 142 acres already in public ownership, 183 acres proposed for acquisition by the County as identified in the Waukesha County park and parkway plan, and 214 acres proposed for acquisition by the City. In the interval pending public acquisition, these wetlands should be protected by appropriate public land use controls, including floodland and lowland conservancy zoning. These local actions would serve to support federal and state regulations and ensure the long-term protection of these wetlands; to clarify jurisdictional questions; and to provide local property owners with full notice of the public limitations on the use of their lands.

It is further recommended that the remaining wetlands within all other primary environmental corridor lands located in the City of Waukesha and environs--a total of 1,328 acres--be preserved in essentially natural open uses. A total of 820 acres, or 62 percent, of these wetlands are recommended to be preserved through public ownership, including the 44 acres, or 3 percent, and an additional 44 acres, or 3 percent already in city and county ownership, respectively; and 340 acres, or 41 percent, and 392 acres, or 48 percent, proposed for acquisition by the City and County, respectively. The remaining 508 acres, or 38 percent, would be preserved by the City through appropriate land use controls including, floodland and lowland conservancy zoning.

Special Wetland Areas

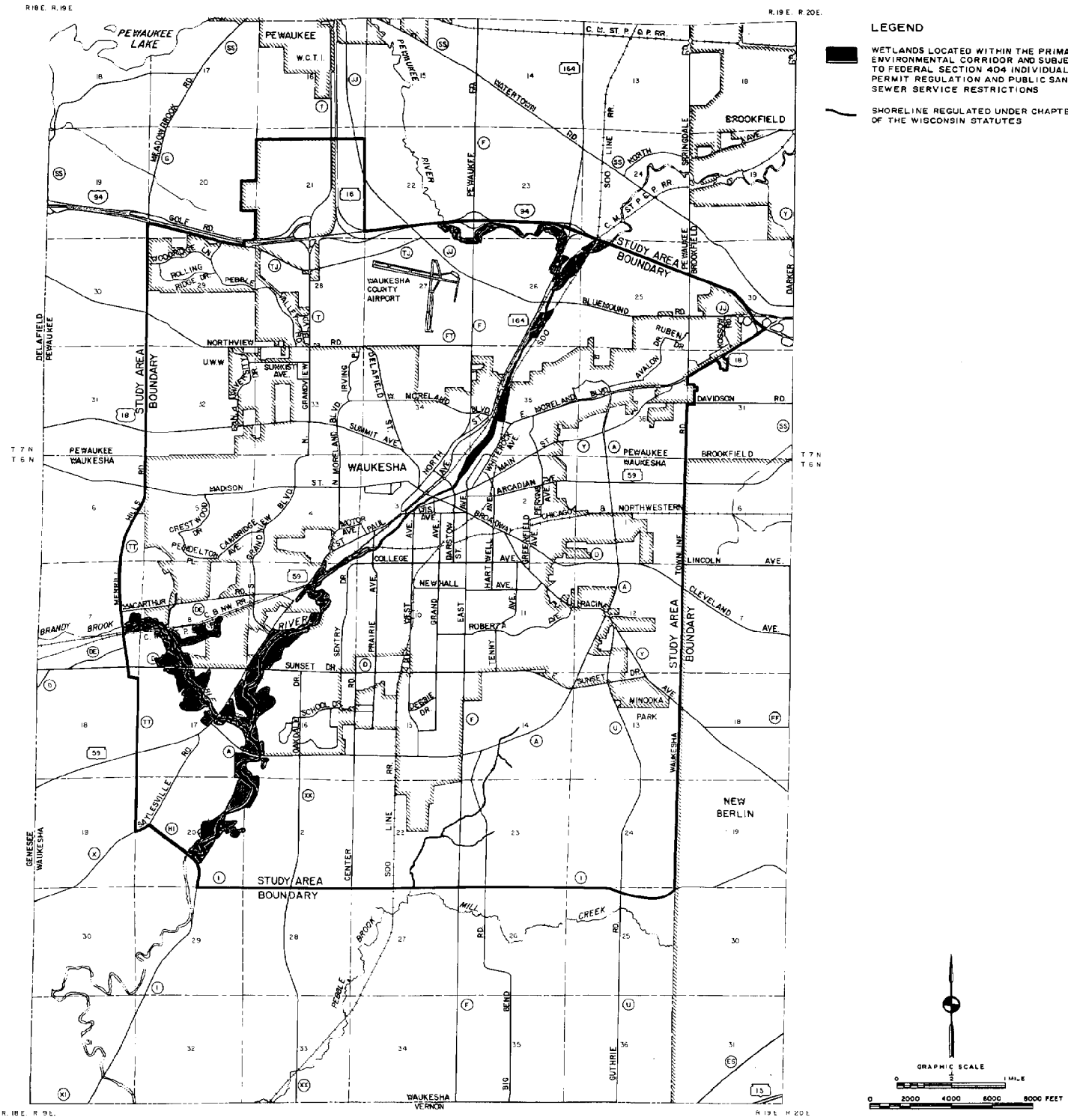
It is recommended that all of the wetland areas having special wildlife and other natural resource values in and adjacent to the City of Waukesha--a total of 48 acres--be preserved in essentially natural open space uses. All 48 acres of these wetlands are recommended to be preserved through public ownership, including the 23 acres, or 48 percent, already in city ownership and 18 acres, or 38 percent, and 7 acres, or 14 percent, proposed for acquisition by the City and County, respectively.

Stormwater Management Areas

It is recommended that all wetland areas which lie outside the delineated primary environmental corridors, and are determined by the City to have significant stormwater management potential also be preserved in open use. Potential stormwater detention basin locations are shown on Map 16. A total of up to 63 acres of wetlands could be protected through appropriate land use controls for stormwater management purposes. At such time as the City determines that all or portions of these 63 acres of wetlands are necessary for stormwater management purposes, it is recommended that the appropriate wetland acreage be permanently preserved through public ownership.

Map 15

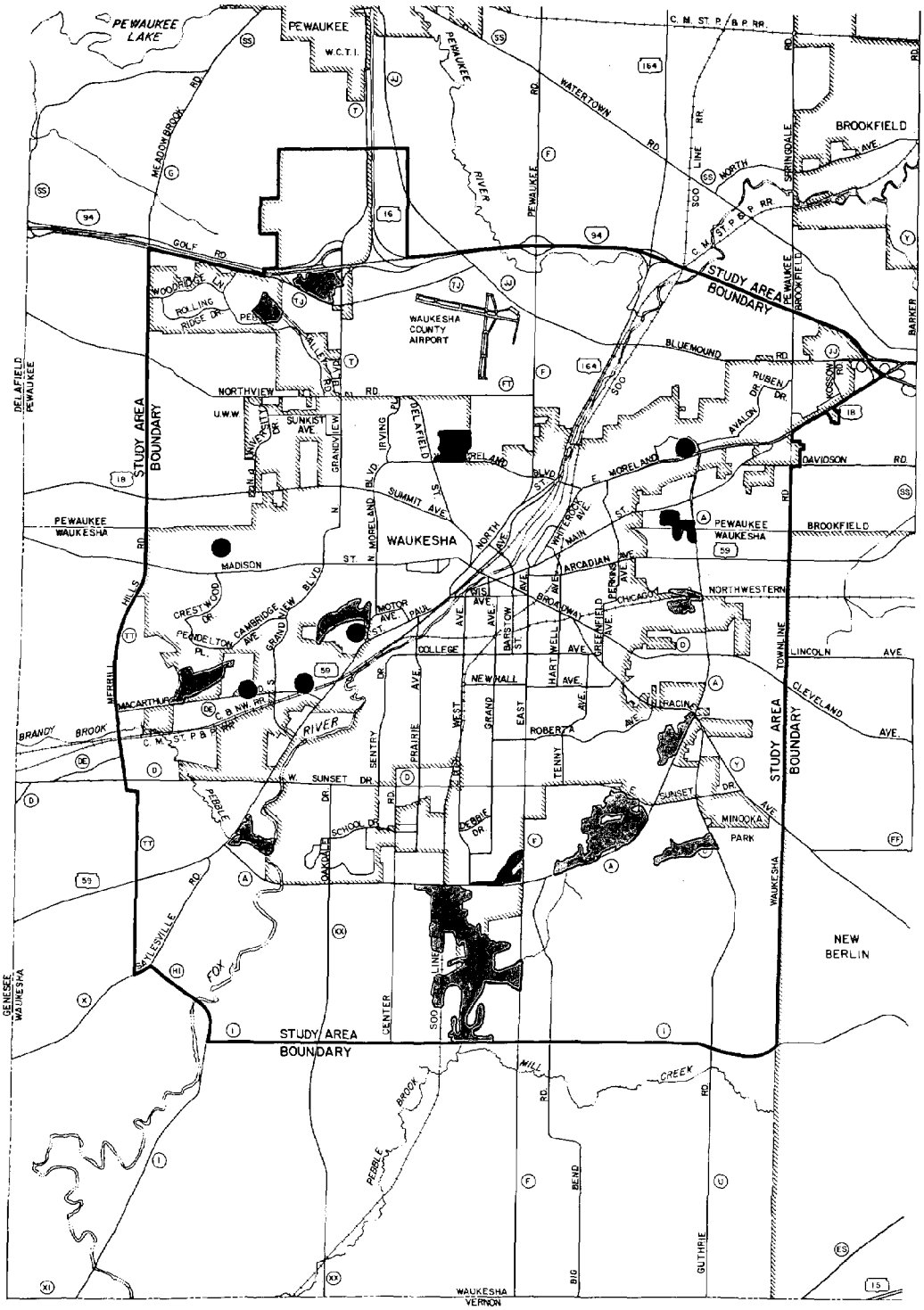
FEDERAL AND STATE REGULATED WETLANDS IN THE CITY OF WAUKESHA AND ENVIRONS: 1980



Source: SEWRPC.

Map 16

POTENTIAL STORMWATER DETENTION BASIN LOCATIONS IN THE CITY OF WAUKESHA AND ENVIRONS



LEGEND

- AREAL EXTENT OF WETLANDS IDENTIFIED AS POTENTIAL STORMWATER DETENTION AREAS BY THE CITY OF WAUKESHA AND LOCATED IN SPECIAL WETLAND AREAS OR IN THE PRIMARY ENVIRONMENTAL CORRIDOR
- AREAL EXTENT OF ISOLATED WETLANDS IDENTIFIED AS POTENTIAL STORMWATER DETENTION AREAS BY THE CITY OF WAUKESHA
- POTENTIAL STORMWATER DETENTION AREAS IDENTIFIED BY THE CITY OF WAUKESHA BUT NOT ASSOCIATED WITH THE WETLAND AREA

GRAPHIC SCALE

0 1/2 1 MILE

0 2000 4000 6000 8000 FEET

Source: City of Waukesha and SEWRPC.

Other Wetland Areas

The remaining 180 acres of wetland are not located within the primary environmental corridors, do not have special wildlife or other natural values, and have not been determined by the City Engineer to be important for the management of stormwater runoff within the urban and urbanizing portions of the study area. Therefore, no specific preservation actions concerning these wetlands are made herein.

The recommended wetland protection and management plan for the City of Waukesha is graphically summarized on Map 17 and is quantitatively summarized in Table 6.

PLAN IMPLEMENTATION

The recommended wetland management and protection plan for the City of Waukesha and environs described above provides a design for the attainment of the wetland management and protection objectives presented in Chapter III of this report. The plan consists of three recommendations. The implementation of these recommendations can be carried out by the cooperative actions of the existing units of government operating within the area under existing state enabling legislation. This section, accordingly, is intended to serve as a guide for use in implementation of the recommended wetland management and protection plan for the City of Waukesha and environs, and includes a summary presentation of those federal, state, county, and local actions necessary for implementation.

Existing Laws and Regulations

The implementation of the recommended wetlands management and protection plan for the City of Waukesha and environs is dependent on cooperative and coordinated action by the County and City of Waukesha, as well as by certain federal and state agencies of government. Identification of the various agencies that are concerned with wetland management and protection in the City of Waukesha and environs under existing enabling legislation follows.

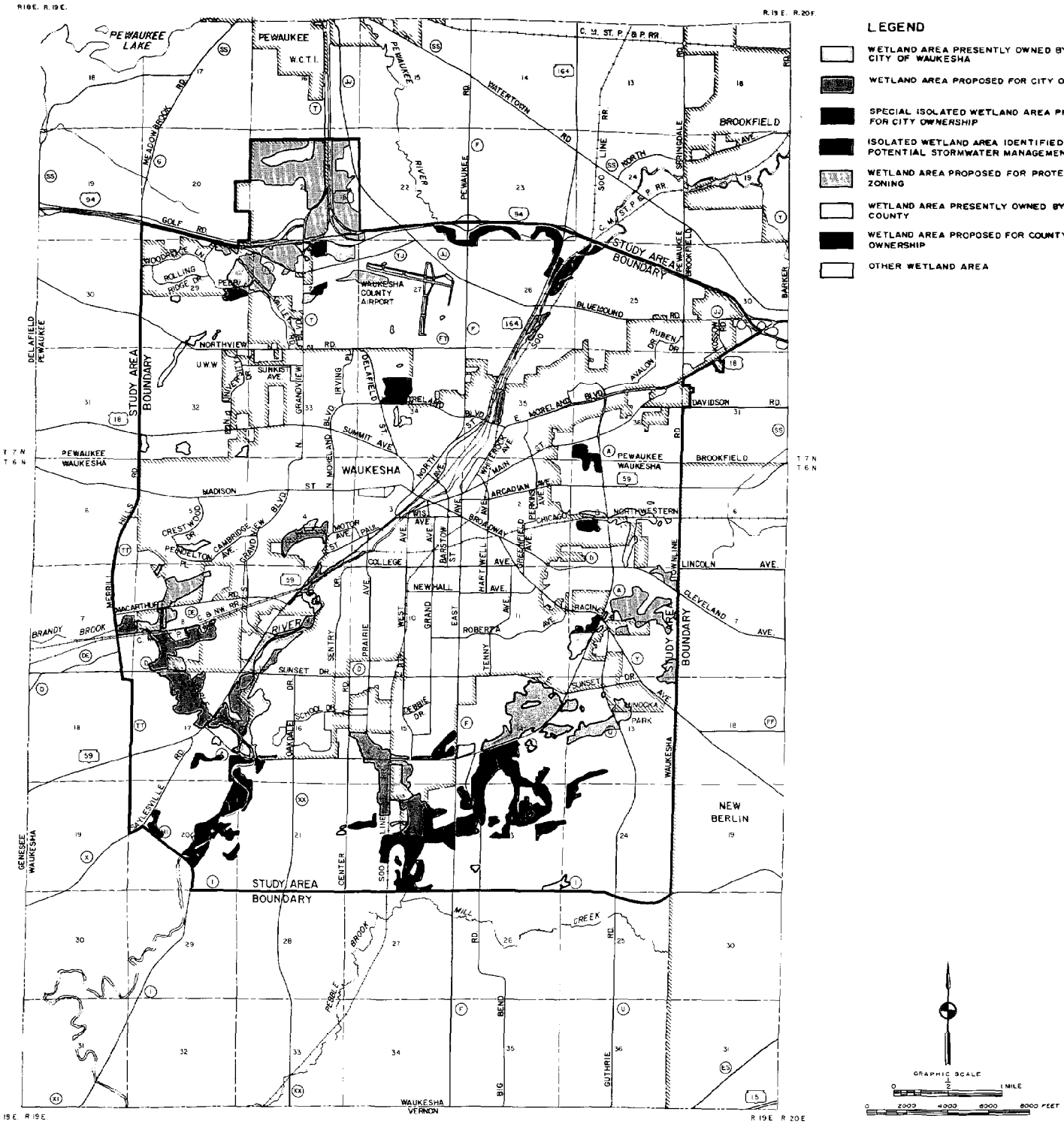
Federal Wetland Regulatory Programs

The U. S. Congress has provided for the regulation of certain wetlands of the nation. Two major programs have been created by acts of the Congress which specifically relate to the management and protection of wetlands in the City of Waukesha and environs. These two regulatory programs are provided for in Section 404 of the Federal Water Pollution Control Act of 1972, as revised by the Clean Water Act of 1977, and Section 10 of the River and Harbor Act of 1899.

Section 404, Federal Water Pollution Control Act of 1972, As Amended: Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires the U. S. Army Corps of Engineers to regulate, in accordance with guidelines developed by the U. S. Environmental Protection Agency, the discharge of dredge and fill materials into waters of the United States, which

Map 17

RECOMMENDED WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS



Source: SEWRPC.

Table 6

SUMMARY OF WETLAND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

Plan Element	Protection Through Public Land Use Regulation (acres)	City of Waukesha Ownership (acres)		Waukesha County Ownership (acres)		Wetland Areas Not Presently Recommended for Ownership or Land Use Regulation	Total
		Existing	Proposed	Existing	Proposed		
Primary Environmental Corridor							
Wetland Area Preservation Regulated by the U. S. Army, Corps of Engineers	--	142	214	--	183	--	539
Other Primary Environmental Corridor Wetland Area Preservation	508	44	340	44	392	--	1,328
Total Primary Environmental Corridor Wetland Preservation	508	186	554	44	575	--	1,867
Special Wetland Area Preservation	--	23	18	--	7	--	48
Stormwater Management Area Preservation	--	--	63	--	--	--	63
Other Wetland Areas	--	--	--	28	--	180	208
Total Wetland Area	508	209	635	72	582	180	2,186

Source: SEWRPC.

waters by definition include adjacent wetlands. In general, the Corps of Engineers uses an average annual discharge of five cubic feet per second (cfs) or more to determine those stream reaches to be directly regulated under Section 404 and to identify adjacent wetlands subject to direct regulations. In addition, those isolated wetlands 10 acres in size or larger and associated with a lake which is included in the 10 acres, are also subject to direct regulation. Headwater stream reaches--those reaches with an average annual discharge of less than five cfs--and their associated wetlands, as well as isolated wetlands less than 10 acres in size, or isolated wetlands larger than 10 acres in size and not associated with a lake, are subject to regulation under a nationwide permit which was issued by the Corps of Engineers in 1977 and is reviewed every five years. In effect, this means that these wetlands are not regulated at the federal level. However, the State of Wisconsin may review dredge and fill activities within all wetlands as set forth in Section 401 of the Clean Water Act of 1977. Federal permits, including a nationwide permit, for dredge and fill activities may be issued or denied on the basis of a state water quality certification as provided under Section 401.[1] In addition, the Corps of Engineers does retain a discretionary authority to require individual permits in those situations where the authorization by nationwide permit may be inappropriate.

The areal extent of wetlands regulated under the federal Section 404 program in the City of Waukesha and environs are shown on Map 15. As noted above, wetlands regulated under Section 404 include wetlands adjacent to those stream reaches which have an average annual discharge of five cfs or more. There are no wetlands 10 acres in size or larger which are associated with a lake within the City of Waukesha and environs planning area. Accordingly, Map 15 shows only those wetlands adjacent to the Fox (Illinois) River, Pewaukee River, and Pebble Creek as being directly regulated under the Section 404 program.

Section 10, River and Harbor Act of 1899: Section 10 of the River and Harbor Act of 1899 requires the U. S. Army Corps of Engineers to regulate all structures or work in or affecting the navigable waters of the United States Activities requiring permits under this regulation include, but are not limited to,

[1]Under Section 401 of the Federal Clean Water Act of 1977, permits for the construction or operation of facilities which may result in any discharge into navigable waters must receive a water quality certification from the state concerned. In June 1982, the State of Wisconsin formally denied such water quality certification for certain waters included in the nationwide permit described above. The Wisconsin Department of Natural Resources has prepared a list of the types of surface waters and associated wetlands which are to be excluded from the nationwide permit. The additional waters recommended to be excluded from the nationwide permit include trout streams, trout lakes, water within primary environmental corridors identified under Section 208 water quality management plans, water within identified scientific and natural areas, wild and scenic rivers, and certain isolated water bodies. Officially, the nationwide permit is not valid in these areas; however, specific criteria have yet to be developed for some of the foregoing areas to indicate more precisely which waters are, as a practical matter, to be excluded from the nationwide permit.

construction of launching or mooring facilities, dredging, shoreland protection, and the discharge of dredged or fill materials. Navigable waters of the United States, as defined by the Corps of Engineers, include freshwater lakes, rivers, streams, and their associated wetlands that are used, were used in the past, or are susceptible to use in the future for the transport of interstate commerce.

State Policies and Regulatory Programs

Within the past several years, State legislative enactments profoundly changed the substance of the law relating to wetlands. Under Chapter 614, Laws of 1965, the Wisconsin Department of Natural Resources was vested with the primary authority to protect and manage the surface waters of the State and the associated wetlands. Almost invariably the statutes and programs, which are commented on below, rely heavily on strong and direct participation by local units of government. Moreover, it is at the local level of government that the legislation's ultimate success or failure will probably be determined.

NR 1.95, Wetlands Preservation, Protection, and Management: The State of Wisconsin wetland preservation, protection, and management policies are set forth in NR 1.95 of the Wisconsin Administrative Code pursuant to Chapter 23.32 of the Wisconsin Statutes. Specifically, NR 1.95 establishes the rules by which the Wisconsin Department of Natural Resources (DNR) conducts its regulatory and management authorities regarding wetlands. Such rules require the DNR to evaluate all reasonable alternatives, including the alternative of no action, in making regulatory decisions concerning the issuance of permits for sanitary sewer extensions, dredging and filling, dams, bridges, and stream course alteration, where adverse impacts to wetlands may occur as a result of such activities. In addition, land acquisition programs shall emphasize wetlands; enforcement activities regarding unlawfully altered wetlands shall, to the extent practicable, include restoration; the avoidance or minimal use of wetlands will be advocated in the absence of appropriate regulatory authorities in liaison activities with federal, state, and local units and agencies of government; and in the evaluation of proposed actions having adverse impacts on wetlands, the conveyance of land as offsetting such adverse impacts shall not be considered. Administrative rules and legislation are to be promulgated by the DNR regarding the protection and enhancement of, and education relating to, wetland values and ecology.

Shoreland and Floodplain Zoning in Wisconsin: The Water Resources Act of 1966, Chapter 614, Laws of 1965, was adopted by the State Legislature in recognition of the adverse effects that water pollution had on the public health and general welfare of the citizens of the State. It set in motion a comprehensive program to protect human life and health; fish and aquatic life; scenic and ecological values; and domestic, municipal, recreational, industrial, agricultural, and other uses of water. The Act attempts to achieve those objectives by mobilizing efforts and resources at all levels of government to enhance the quality of all the waters of the State. Towards that end, the State Legislature authorized and required the zoning of floodplains and shorelands.

Shoreland Regulation--Section 59.971 of the Wisconsin Statutes requires each county of the State to enact ordinances to regulate all shoreland areas within the unincorporated areas of the county. The regulations apply to strips of land 1,000 feet from a lake, pond, or flowage, and 300 feet from a river or stream or to the landward side of the floodplain, whichever distance is greater. The standards and criteria for the ordinances are set forth in NR 115 of the Wisconsin Administrative Code. They include restrictions on lot sizes, building setbacks, filling, grading, dredging, and sanitary regulations. Counties are required to keep their regulations current and effective in order to remain in compliance with the Statutes and the minimum standards established by the DNR. In the event that a county fails to meet the established standards, the DNR will adopt and administer the required zoning ordinance.

In accordance with NR 115, all counties in the State must place wetlands five acres or larger in size and located within the statutory shoreland zoning jurisdiction area in a shoreland-wetland zoning district to ensure their preservation.[2] A wetlands mapping program currently being conducted by the DNR will result in the preparation of wetland maps covering the entire State and will be utilized in the identification of wetlands to be regulated under NR 115. Counties will have six months after the completion of final wetland inventory maps to amend shoreland zoning ordinances to protect the mapped wetlands. Only those wetlands in the shoreland areas will have to be regulated under NR 115. A description of the Wisconsin wetlands mapping program is presented later in this section. Those wetland areas in the City of Waukesha and environs planning area five acres or larger in size are shown in Appendix B.

Floodland Protection--The Water Resources Act of 1966 also provided for the regulation of floodlands. The delineation of the floodlands and the minimum criteria that the regulations must meet are set forth in NR 116.03 of the Wisconsin Administrative Code. The Statutes mandate that the floodland zoning ordinances be adopted by the appropriate jurisdiction--county, city, or village. If a county, city, or village fails to adopt such an ordinance, the Wisconsin Department of Natural Resources (DNR) may, upon its own motion or upon the petition of a municipality or of another state agency, hold a public hearing and fix the limits and regulate the use of any floodlands, an action that will have the same effect as if adopted by the local jurisdiction. Modification of any local ordinance, once adopted, requires written approval of the DNR.

When a violation of any ordinance occurs through the construction of a structure, fill, or development in the floodplain, it is deemed to constitute a public nuisance and, as such, may be enjoined through an action by a municipality, State, or any of its citizens.

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[2]Chapter 330, Laws of 1981, enacted on April 29, 1982, requires that cities and villages also place wetlands located in the statutory shoreland zoning jurisdictional area in a shoreland-wetland zoning district. The Wisconsin Department of Natural Resources is currently preparing administrative regulations to implement this law.

Chapter 30, Navigable Waters, Harbors, and Navigation: Under Chapter 30 of the Wisconsin Statutes, the DNR has the authority to regulate, among other activities, the deposition of materials upon the bed of any navigable body of water, the straightening or altering of a stream course, the dredging of material from the bed of a lake or river, the enlargement of any navigable waterway, and diversions from any body of water. Navigable waters include those wetland areas below the ordinary high-water mark[3] of a navigable lake or stream. The stream reaches considered to be navigable by the DNR in the City of Waukesha and environs are also shown on Map 15. Generally, this would include both the deep and shallow marsh portions of the Fox (Illinois) River, Pewaukee River, and Pebble Creek, and the navigable reaches of Pebble Brook in the City of Waukesha and environs. The issuance of a Chapter 30 permit for any of the aforementioned activities in these wetlands would be subject to the policies described above under NR 1.95 of the Wisconsin Administrative Code, as well as the Wisconsin Environmental Policy Act of 1972--which established a state policy to encourage harmony between human activity and the environment, to promote efforts to reduce damage to the environment, and to stimulate an understanding of important ecological systems including wetlands.

Chapter 31, Regulation of Dams and Bridges Affecting Navigable Waters: Under Chapter 31 of the Wisconsin Statutes, the DNR has the authority to regulate the location, construction, and operation of dams and bridges affecting a navigable body of water. As noted above, this would include dams and bridges crossing the Fox (Illinois) River, Pewaukee River, Pebble Creek, and the navigable reaches of Pebble Brook in the City of Waukesha and environs. The issuance of a Chapter 31 permit would also be subject to the policies described in NR 1.95 of the Wisconsin Administrative Code and the Wisconsin Environmental Policy Act of 1972.

Chapter 23.32, Wetland Mapping Program: In response to public concern that many acres of wetland throughout the State were being lost each year, the Wisconsin Legislature, in Chapter 23.32, directed the conduct of a statewide wetlands inventory. Responsibility for this inventory and the attendant mapping program was assigned by the Legislature to the Wisconsin Department of Natural Resources (DNR).

The objective of the wetland inventory and mapping program is to systematically identify, delineate, and classify all wetlands of five acres or more in size in accordance with statewide standards. For the purposes of this mapping program, the Legislature defined a wetland as "an area 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.4 In accordance with this definition, wetlands ranging from cat-tail marshes, bogs, and tamarack swamps to areas covered by poorly drained soils and supporting wetland types of vegetation such as sedge meadows and shrub carrs are to be delineated in the inventory and mapping program.

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[3]The ordinary high-water mark is defined as that point on a "bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristics." [Diana Shooting Club vs. Hasting, 156 Wisc. 261(1914)].

The Legislature has directed the DNR to complete the wetland mapping on or before July 1, 1983. The DNR has contracted with the Commission to conduct this program in southeastern Wisconsin. Historically, the Commission has identified and delineated wetlands in the Region as necessary for its planning programs. However, the Commission has now refined this past work in accordance with the state standards using aerial photographic interpretation. The wetland areas for the City of Waukesha and environs are delineated on 1" = 2,000' scale ratioed and rectified aerial photographs covering the 36-square mile government survey township of the Towns of Pewaukee and Waukesha. The mapped areas have been checked for consistency against U. S. Soil Conservation Service soil survey maps, the best available topographic maps, and the Commission's own historic wetland delineations. Field checks were conducted to verify the wetland boundaries. It should be noted that these wetland delineations are consistent with and have been incorporated into the wetland protection and management plan for the City of Waukesha and environs.

Primary Environmental Corridors: Wetland areas located within the primary environmental corridors are recommended to be maintained in essentially natural, open uses under the adopted areawide water quality management plans prepared pursuant to Section 208 of the Federal Water Pollution Control Act of 1977, as amended. Subsequently, the delineation of public sanitary sewer service areas within urban and urbanizing areas such as the City of Waukesha and environs must provide for the protection of primary environmental corridors, including their associated wetlands. The granting of sanitary sewer extension permits by the DNR is based on conformance with the adopted areawide water quality management plans which include the protection of wetlands within the primary environmental corridors. The primary environmental corridors within the City of Waukesha as refined and delineated by the Regional Planning Commission staff, but not yet officially adopted by the Commission, are shown on Map 18. These corridors are those used in this study. Further refinement of the corridors and formal adoption of the location and extent of the corridors will occur in a sanitary sewer service study to be undertaken by the City and the Regional Planning Commission in the future.

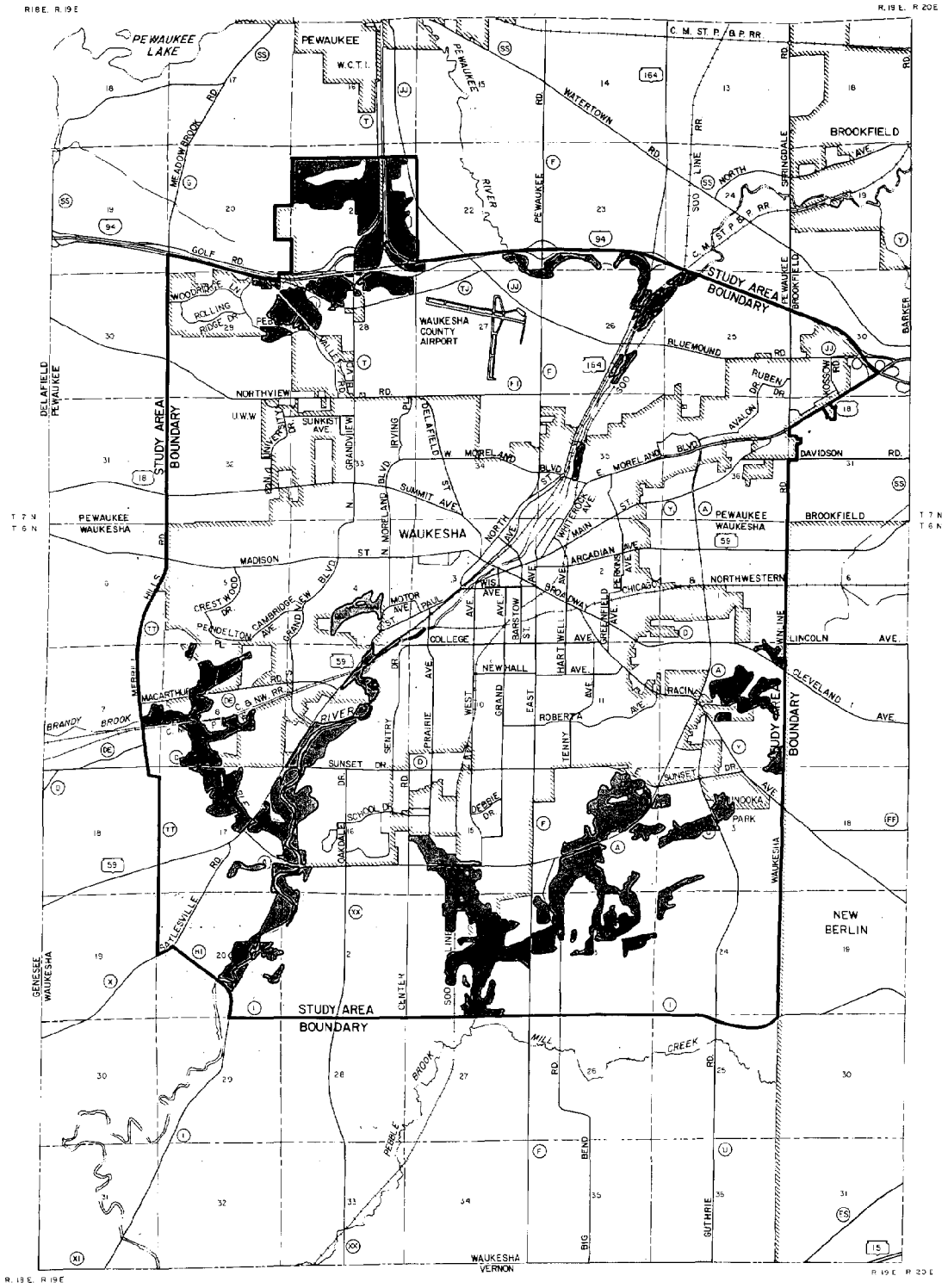
Plan Implementation Activities

The wetland management and protection plan for the City of Waukesha and environs includes recommendations for the preservation of all wetlands adjacent to the Fox (Illinois) River, Pewaukee River, Pebble Brook, and Pebble Creek that are presently under the jurisdiction of the federal Section 404 permit program and those wetlands located in the shoreland area of a navigable lake, flowage, river, or stream regulated by the DNR; the preservation of all other remaining wetlands located within the primary environmental corridor lands; the preservation of those isolated wetland areas having special wildlife and other natural values; and the protection of those wetlands which have been determined by the City Engineer to have potential to serve as stormwater retention areas and, therefore, to be important to the management of stormwater runoff. Implementation of the wetland protection and management plan would result in the attainment of the specific wetland protection and management objectives, principles, and standards presented in Chapter III of this report. The recommended plan

[4]Chapter 23.32(1), Wisconsin Statutes, 1980.

Map 18

WETLANDS LOCATED WITHIN THE PRIMARY ENVIRONMENTAL CORRIDORS IN THE CITY OF WAUKESHA AND ENVIRONS



Source: SEWRPC.

implementation measures are based upon, and related to, existing government programs and predicated upon existing enabling legislation. Specific wetland management and protection implementation activities are discussed below.

Zoning Ordinance Modification: In order for the existing city zoning ordinance to be an effective tool for the protection and management of wetlands, as recommended under the wetland management and protection plan for the City of Waukesha and environs, certain modifications to the ordinance are required. The following zoning districts and attendant regulations should be considered for inclusion in the existing zoning ordinance. The application of the following districts to specific areas in the City of Waukesha is discussed in succeeding sections of this chapter.

Flooding Zoning--A floodland zoning district should be used to prevent intensive urban development within the natural floodlands of rivers and streams, including the adjacent wetlands of the planning area. Ideally, no new flood damage-prone, urban-type development should be permitted within this district. However, in established communities, such as the City of Waukesha, it is often necessary to recognize existing development within floodlands. Accordingly, the City of Waukesha has three floodland overlay districts--the Floodway (FW), Flood Storage (FS), and the Urban Flood (UF) Districts. Permitted uses within the Floodway and Flood Storage Districts generally preclude flood damage-prone urban development, while the Urban Flood District permits the construction of elevated structures in floodplain areas when placed on and properly surrounded by fill. Excavation and filling are presently prohibited in the Floodway District. It is recommended that the City floodland zoning districts be applied as presently written.

Lowland Conservancy District--A lowland conservancy district should be used to preserve and protect the wetland areas of the planning area. In this respect it should be noted that the Lowland Conservancy District is a basic zoning district in the city ordinance, and could have floodland overlay districts superimposed. Thus, all wetlands to be preserved should be placed in the C-1 Lowland Conservancy District whether within or without flood hazard areas. No new urban development should be permitted in this district. The existing City of Waukesha C-1 Conservancy District can be adapted for this use. However, it is recommended that the district regulations be modified to include only low-land conservancy areas. Specifically, the Lowland Conservancy District should include all wetland areas adjacent to the Fox (Illinois) River, Pewaukee River, Pebble Brook, and Pebble Creek; all other wetland areas located within primary environmental corridors; isolated wetlands having special wildlife and other natural values; and those wetlands which are determined by the City to have potential to serve as stormwater retention areas and, therefore, to be important to the management of stormwater runoff. Permitted uses in the Lowland Conservancy District should be limited to:

1. Hiking, fishing, trapping, hunting, swimming, and boating, unless prohibited by other ordinances or laws;

2. The harvesting of wild crops--such as marsh hay, ferns, moss, wild rice, berries, tree fruits, and tree seeds--in a manner that is not injurious to the natural reproduction of such crops;

3. The practice of silviculture, including the planting, thinning, and harvesting of timber;

4. The construction and maintenance of fences;

5. Existing agricultural uses provided they do not involve extension of cultivated areas, extension or creation of new drainage systems, and further provided they do not substantially disturb or impair the natural fauna, flora, topography, or water regimen;

6. Ditching, tiling, dredging, excavating, or filling done to maintain or repair an existing agricultural drainage system only to the extent necessary to maintain the level of drainage required to continue the existing agricultural use;

7. The construction and maintenance of piers, docks, and walkways, including those built on pilings; and

8. The maintenance, repair, replacement, and construction of existing streets, roads, and bridges.

Upland Conservancy District--An Upland Conservancy District should be considered to preserve and protect significant prairies, woodlands, wildlife habitat areas, related scenic areas, and marginal farmlands, including particularly such areas adjacent to wetlands. While the Committee recognizes the need for some type of upland conservancy zoning district, specific recommendations for such a zoning district are beyond the scope of this report. If the recommendations made in this report concerning wetland preservation are fully implemented, some lands presently in a conservancy zoning district will no longer be zoned as such. Therefore, the City will need to consider the placement of these lands in a new, more appropriate conservancy zoning district.

Concluding Remarks--Plan Implementation Activities: Under the recommended wetland protection and management plan for the City of Waukesha and environs, wetland areas within primary environmental corridors, as well as those identified special wetland areas, and wetlands determined to have significant stormwater management potential, should be preserved and protected through an appropriate combination of public ownership and public land use regulations. Under this proposal, as much as possible of the 1,867 acres of wetland within the primary environmental corridor lands located within the City of Waukesha environs--including the 230 acres currently in public ownership, the 575 acres proposed for county ownership, and the 554 acres proposed for city ownership, as well as the remaining 508 acres of primary environmental corridor lands currently held in other nonpublic ownership--would be placed in the C-1 Lowland Conservancy District by the City of Waukesha as shown on Map 19. In addition, consideration should be given to the placement of those prairies, woodlands, and prime wildlife habitat areas located within the primary environmental corridors and associated with wetland areas, into an Upland Conservancy District to be considered by another Committee.

Furthermore, all 48 acres of special wetland area and 63 acres of wetland determined to have significant stormwater management potential--including the

23 acres currently in public ownership and the 81 acres and seven acres, respectively, proposed for city and county ownership--would also be placed in a Lowland Conservancy District by the City of Waukesha, as shown on Map 19. Pending acquisition of these wetlands, such zoning would serve to preserve the natural function of the wetlands and prohibit urban and other incompatible uses.

At such time that wetlands recommended to be protected for the purposes of potential stormwater management may be determined by the City to be no longer necessary for such stormwater management, these areas may be rezoned into a more appropriate zoning district.

Summary of the Implementation of the Wetland Protection and Management Plan Recommendations

The protection and management of wetlands in the City of Waukesha and environs, including the preservation of associated primary environmental corridor lands, require that the natural resource base elements of the planning area be protected through a combination of public acquisition and public land use regulations. Under this proposal, it is recommended that the City of Waukesha examine the suitability of the existing zoning districts within the City with respect to the wetland protection and management elements discussed herein; and, after careful review and evaluation, effect any revisions and modifications to the existing city zoning ordinance, including the addition of new zoning districts. In addition, the City of Waukesha and Waukesha County should both undertake the steps necessary to acquire 1,217 acres of wetland within the City of Waukesha and environs. The generalized location of all wetland areas and associated primary environmental corridor lands proposed for preservation are shown on Map 17. It should be noted that conflicting land uses resulting from previously committed decisions made by the City may not make it feasible to rezone all of the recommended wetlands into a C-1 Lowland Conservancy District. Those wetlands where such decisions and commitments have been made are shown on Map 19.

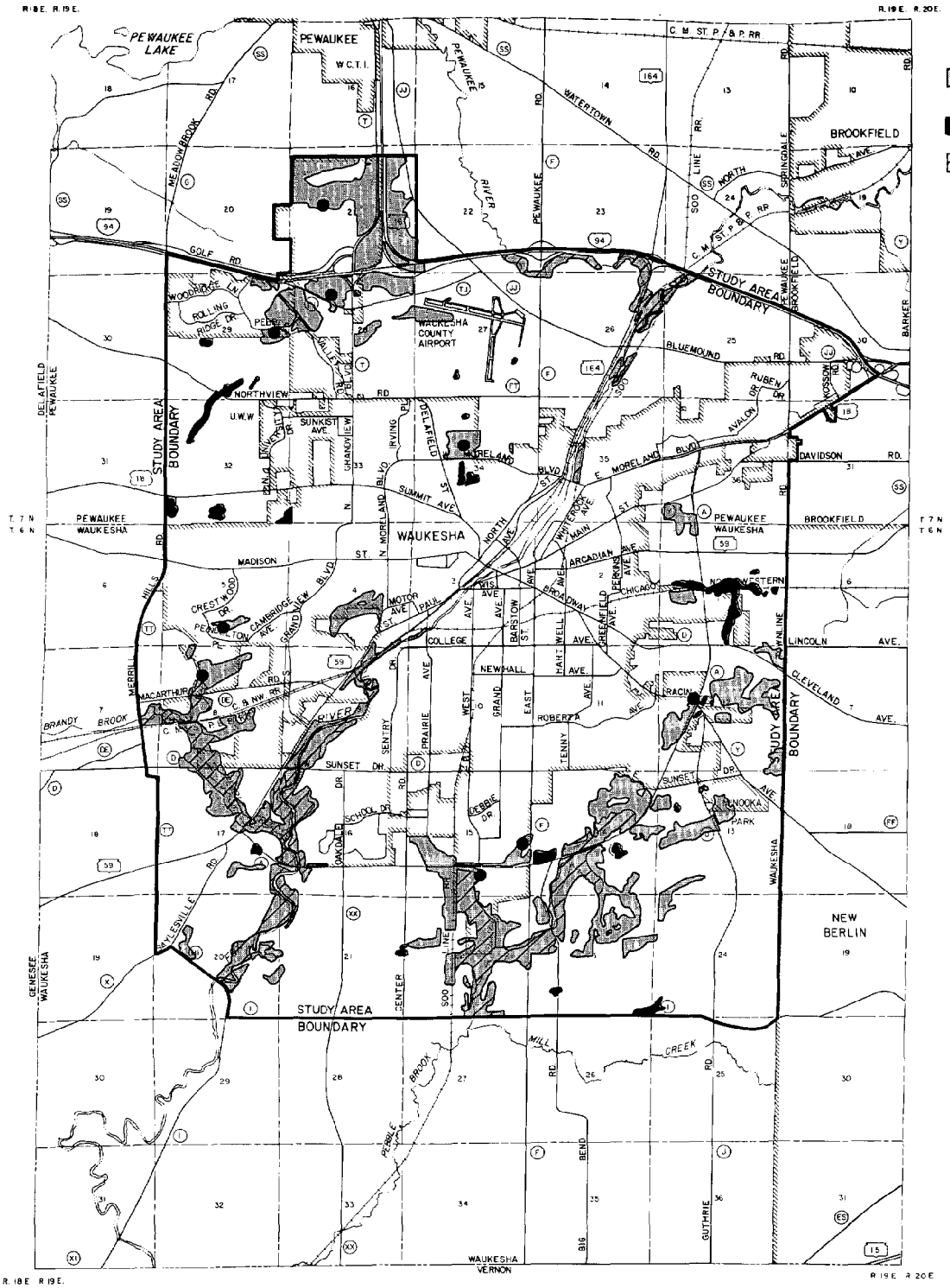
Plan Costs

It should be emphasized that the recommended wetland acquisition could be implemented by dedication as well as by purchase, and could be in the form of easements or development rights as well as fee simple. To the extent that wetlands in and adjacent to the City of Waukesha could be acquired by dedication, costs would be substantially reduced.

Implementation of the recommended wetland protection and management plan for the City of Waukesha and environs, assuming fee simple purchase, would require a public expenditure of about $608,500 over a 20-year plan implementation period (see Table 7). Of this total, $564,500, or 93 percent, would be expended for the acquisition of wetland areas within the primary environmental corridors, while the remaining $44,000, or 7 percent, would be expended for the acquisition of wetland areas outside the primary environmental corridors, but which contain significant natural resource value or have significant stormwater management potential. Of the total public expenditure of $608,500, Waukesha County would incur approximately $291,000, or 48 percent, for the acquistion

Map 19

RECOMMENDED WETLAND ZONING FOR THE CITY OF WAUKESHA AND ENVIRONS



LEGEND

- WETLAND THAT SHOULD BE CONSIDERED FOR PLACEMENT IN THE C-1 LOWLAND CONSERVANCY DISTRICT
- WETLAND NOT PROPOSED TO BE PRESERVED THROUGH ZONING
- WETLAND SUBJECT TO STATE-MANDATED SHORELAND ZONING
- WETLAND, PARTS OF WHICH MAY NOT BE INCLUDED IN THE C-1 LOWLAND CONSERVANCY DISTRICT BECAUSE OF COMMITMENTS PREVIOUSLY MADE BY THE CITY

GRAPHIC SCALE
0 1/2 1 MILE
0 2000 4000 6000 8000 FEET

Source: SEWRPC.

of primary environmental corridor lands within the City of Waukesha and environs study area. The remaining $317,500, or 52 percent, would be incurred by the City of Waukesha. It should be noted that these costs are expressed in 1980 dollars.

Table 7

A SUMMARY OF PLAN COSTS UNDER THE RECOMMENDED WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

Plan Element	City of Waukesha				
	Protection Through Public Land Use Regulation (acres)	Ownership (acres)		Capital Cost (1980 dollars)	Percent of Total Cost
		Existing	Proposed		
Primary Environmental Corridor Wetland Preservation	508	186	554	$277,000	45
Special Wetland Area Preservation	--	23	18	9,000	2
Stormwater Management Area Preservation	--	--	63	31,500	5
Plan Total	508	209	635	$317,500	52

Plan Element	Waukesha County			
	Ownership (acres)		Capital Cost (1980 dollars)	Percent of Total Cost
	Existing	Proposed		
Primary Environmental Corridor Wetland Preservation	44	575	$287,500	47
Special Wetland Area Preservation	--	7	3,500	1
Stormwater Management Area Preservation	--	--	--	--
Plan Total	44	582	$291,000	48

Plan Element	Total			
	Ownership (acres)		Capital Cost (1980 dollars)	Percent of Total Cost
	Existing	Proposed		
Primary Environmental Corridor Wetland Preservation	230	1,129	$564,500	93
Special Wetland Area Preservation	23	25	12,500	2
Stormwater Management Area Preservation	--	63	31,500	5
Plan Total	253	1,217	$608,500	100

Source: SEWRPC.

Chapter V

SUMMARY AND CONCLUDING RECOMMENDATIONS

The wetland protection and management plan for the City of Waukesha and environs, as presented herein, was prepared in response to a request received by the Regional Planning Commission from the City of Waukesha on March 31, 1981. The plan is intended to provide for the preservation and proper management of the remaining ecologically significant wetlands in and adjacent to the City of Waukesha in order to protect the important natural functions of those wetlands and to avoid the creation of serious and costly environmental and developmental problems that would be attendant to the filling and development of the wetlands.

The planning area considered in the wetland protection and management planning program encompases 31.54 square miles and includes the City of Waukesha and adjacent portions of the Towns of Pewaukee and Waukesha. The planning area is located in the central portion of Waukesha County on the western fringe of the Milwaukee urbanized area. Like Waukesha County, the planning area has been subject to intensive growth pressures. Between 1950 and 1980, the resident population of the City increased from 21,233 to 50,365 persons. This rapid growth coincided with a similar rapid expansion of the corporate area from 4.26 square miles in 1950 to 14.51 square miles in 1980.

As of 1980, approximately 10,248 acres, or 51 percent of the total planning area, were devoted to urban land uses, with the dominant urban land use--5,289 acres, or 26 percent of the planning area--being residential. The remaining urban land uses--commercial, manufacturing, transportation, and governmental--occupied an additional approximately 4,959 acres, or an additional 25 percent of the planning area. Approximately 9,895 acres, or 49 percent of the planning area, were still devoted to rural land uses, with the dominant rural land use--5,137 acres, or 25 percent of the planning area--being agricultural. Open water, wetlands, woodlands, and other open lands comprised about 4,758 acres, or 24 percent of the planning area. Of the latter, wetlands comprised 2,186 acres, or 11 percent of the total planning area.

Development and building activity in the City of Waukesha is regulated by zoning, building, and subdivision control ordinances. A total of 21 zoning districts is provided in the existing City of Waukesha zoning ordinance, including seven residential districts; six business and manufacturing districts; three public lands, governmental and institutional districts; three floodland districts; one agricultural district; and one conservancy district (see Table 2).

As shown on Map 3, at the time of settlement by Europeans in 1836, about 2,900 acres of wetlands existed in the planning area. These 2,900 acres comprised about 14 percent of the planning area. As shown on Map 7, by 1980, about 2,186 acres of wetlands remained. Thus, 714 acres, or about 25 percent of the original wetlands had been lost as the planning area was increasingly developed for urban use.

As shown on Map 8, in 1980 about 1,232 acres of woodland remained, constituting 6.1 percent of the planning area. About 263 acres, or 21 percent of the total woodland area, were also classified as wetlands. The remaining 969 acres of woodland were classified as upland woods. Also, as shown on Map 9, in 1980 about 18.5 acres of remnant prairie remained, constituting about 0.1 percent of the planning area. Of the total remaining remnant prairie, 2.6 acres, or 14 percent were also classified as wetlands. As indicated in Table 3, wildlife habitat areas in 1980 covered about 3,290 acres, or about 16 percent of the planning area. Of this total wildlife habitat area, 1,052 acres, or about 32 percent, were classified high-value habitat; 1,322 acres, or 40 percent, as medium-value habitat; and 916 acres, or about 28 percent, as low-value habitat. Of the total remaining wildlife habitat area, about 1,546 acres, or 47 percent, were also classified as wetlands.

About 5,607 acres, or 28 percent of the planning area, as shown on Map 11, are covered by soils with high water tables and poor drainage. About 4,390 acres, or 22 percent of the planning area, as shown on Map 12, are covered by soils poorly suited for urban development because of high water tables, steep slopes, high shrink-swell potential, and high compressability and instability even when provided with public sanitary sewer service.

A total of five natural areas, encompassing a total of 170 acres, were identified in the planning area. These five natural areas contain the best remaining examples of presettlement vegetation conditions in, and adjacent, to the City of Waukesha.

Environmental corridors in the planning area are shown on Map 14, and selected data concerning these corridors is given in Table 4. The primary environmental corridors, which contain almost all of the best remaining woodlands, wetlands, prairies, and wildlife habitat areas and all of the major bodies of surface water and related undeveloped floodlands and shorelands, encompass a total area of about 2,899 acres, or about 14 percent of the planning area. The secondary environmental corridors and isolated natural areas encompass an additional approximately 214 acres, or about 1 percent, and 444 acres, or 2.2 percent of the total planning area, respectively.

The primary objective of the wetland management and protection plan herein presented is the preservation and wise use of the underlying and sustaining natural resource base of the planning area. The specific principles and standards supporting this overall objective are set forth in Table 5. The remaining wetlands in the planning area perform an important set of natural functions which include support of a wide variety of desirable, and sometimes unique, plant and animal life; stabilization of lake levels and streamflows; entrapment and storage of plant nutrients in runoff, thus reducing the rate of enrichment of surface waters and obnoxious weed and algae growth; contribution to the atmospheric oxygen supply; contribution to the atmospheric water supply; reduction in the stormwater runoff by providing areas for floodwater impoundment and storage; protection of shorelines from erosion; entrapment of soil particles suspended in runoff and reductions in stream sedimentation; provision of groundwater recharge and discharge areas; and provision of the population with opportunities for certain scientific, educational, and recreational pursuits.

Of the remaining 2,186 acres of wetland in the planning area, 1,867 acres, or about 85 percent, are located within the 2,899 acres of primary environmental corridors delineated in the area. These corridors, as already noted, contain almost all of the best remaining woodlands, wetlands, prairies, and wildlife habitat areas in the planning area, and all of the major bodies of surface water and related undeveloped floodlands and shorelands. These corridors are, in effect, a composite of the best remaining elements of the natural resource base. The preservation of these corridors in essentially natural open uses is essential to the protection of the natural beauty of the planning area, provision of valuable recreational opportunities, and maintenance of a high level of environmental quality in, and adjacent to the the City of Waukesha.

Of the 2,186 acres of remaining wetlands, about 539 acres, or about 25 percent, as shown on Map 15, are regulated by the U. S. Army, Corps of Engineers. The federally regulated wetlands are all contained within the 1,867 acres of wetland located within the primary environmental corridors of the area.

In addition to the wetland areas located within the primary environmental corridors, a total of 48 acres of wetlands located outside the corridors, as shown on Map 17, have special wildlife and other natural resource values, and an additional 63 acres, as shown on Map 16, have significant stormwater management potential. As shown on Map 17, approximately 230 acres, or about 12 percent, of the wetland areas located within the primary environmental corridors; and 23 acres, or about 48 percent, of the wetland areas located outside the corridors and determined to have wildlife value are presently in public ownership. None of the approximately 63 acres of wetland located outside the corridors but determined to have significant stormwater management potential are in public ownership.

It is recommended that the Mayor and the Common Council of the City of Waukesha act to protect the remaining wetlands within the City of Waukesha and environs by:

1. Adoption of the wetland protection and management plan for the City of Waukesha and environs set forth herein. Model resolutions of adoption are attached hereto as Appendices C and D.

2. Modification of the City of Waukesha zoning ordinance to convert the existing (C-1) Conservancy District to a (C-1) Lowland Conservancy District. The recommended application of these districts to protect the wetlands is shown on Map 19. Pertinent model zoning district regulations are attached hereto as Appendix E.

3. Placement of the 48 acres of special wetland area and 63 acres of wetland area determined to have significant stormwater management potential into the (C-1) Lowland Conservancy District, as shown on Map 19.

4. Acquisition over the 20-year plan implementation period for public use of approximately 1,129 acres of wetland shown on Map 17 and located within the primary environmental corridors, including the 539 acres regulated by the U. S. Army, Corps of Engineers. Of this total 554 acres, or 49 percent, would be acquired by the City, and 575 acres, or 51 percent

by the County, as shown on Map 17. Acquisition could be by dedication as well as by purchase, and could be in the form of easements or development rights as well as in fee simple.

5. Acquisition for public use by the City and County of the remaining 25 acres of special wetland area not presently in public ownership, and the 63 acres of wetland determined to have significant stormwater management potential, as shown on Map 16, if found by the City to be needed for stormwater management.

As summarized in Table 7, implementation of the recommended wetland protection and management plan for the City of Waukesha and environs would require a public expenditure of about $608,500 for the acquisition of wetlands in and adjacent to the City of Waukesha over a 20-year period. The City of Waukesha would incur approximately $317,500, or 52 percent of this cost, while Waukesha County would incur the remaining $291,000, or 48 percent of this cost. To the extent that the wetlands could be acquired by dedication, these costs would be substantially reduced.

It is envisioned that the recommended actions would serve to properly protect and manage the remaining wetland areas of the City of Waukesha and environs and, as such, would serve to help maintain a high level of environmental quality in the area, protect the natural scenic beauty of the area, and provide invaluable recreational opportunities for its citizens. In addition, the recommended actions would serve to support federal and state regulations and ensure the long-term protection of the remaining wetlands, clarify jurisdictional questions, and provide local property owners with a full notice of the public limitations on the use of their lands. Finally, the recommended actions would materially assist in the prevention of serious environmental and developmental problems which are difficult and costly to correct such as flooding and water pollution.

APPENDICES

Appendix A

AD HOC COMMITTEE ON WETLANDS

Geraldine Wuerslin.....Alderwoman, 6th District
Chairperson

John Batha, Ph.D. .....Associate Professor,
Biology Department,
Carroll College

William W. Carity.....Siepmann Realty Company

John N. Jahnke.....Jahnke & Jahnke Associates

Albin E. Kubala.....Architect, Plunkett-Keymar-Reginato and
Associates; Plan Commission Member

Rudolph V. Schoenecker.....President, Biwer's Shoe Store;
Plan Commission Member

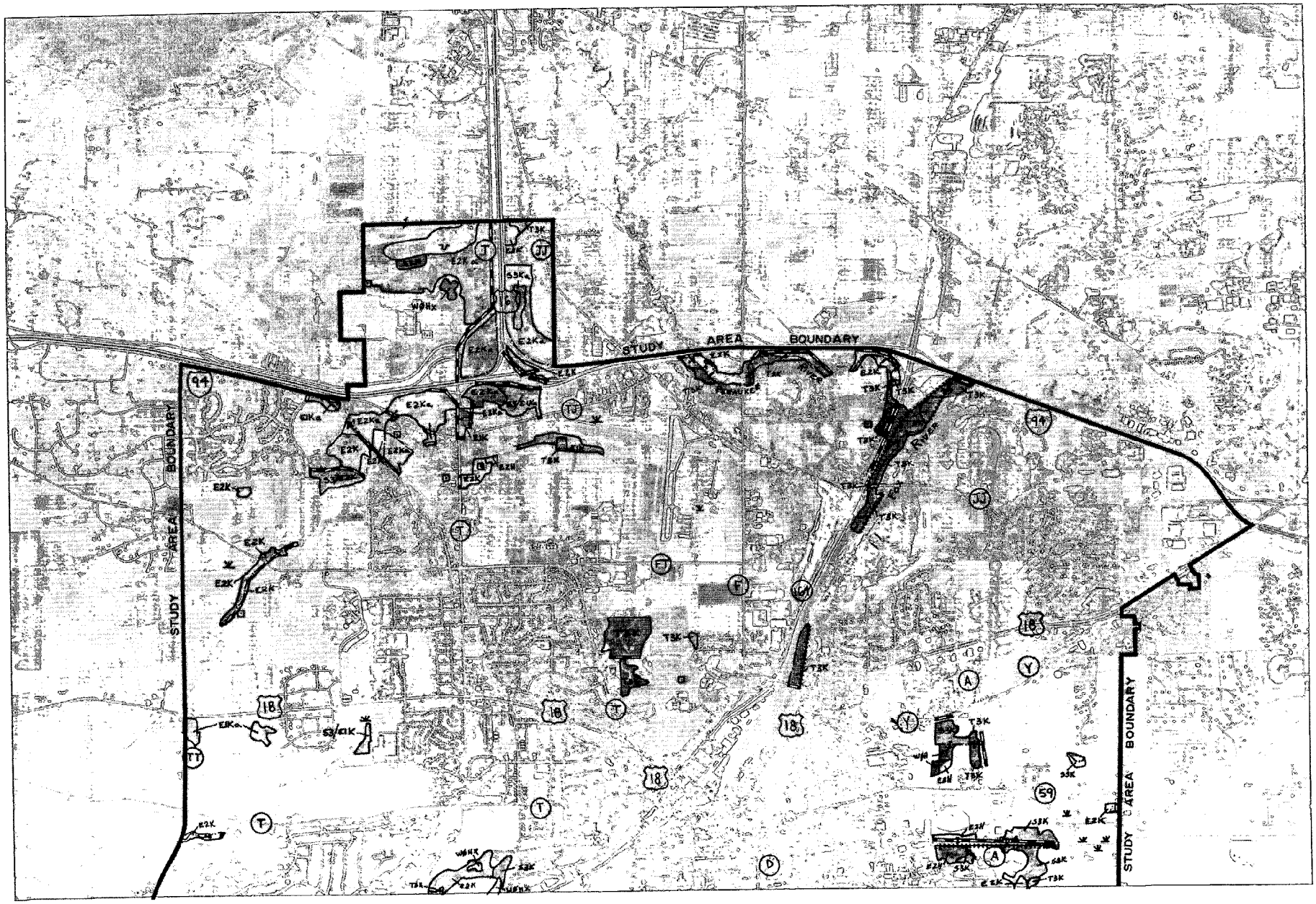
Jerome A. Schwarzmeier.....Senior Park Naturalist, Waukesha
County Park and Planning Commission

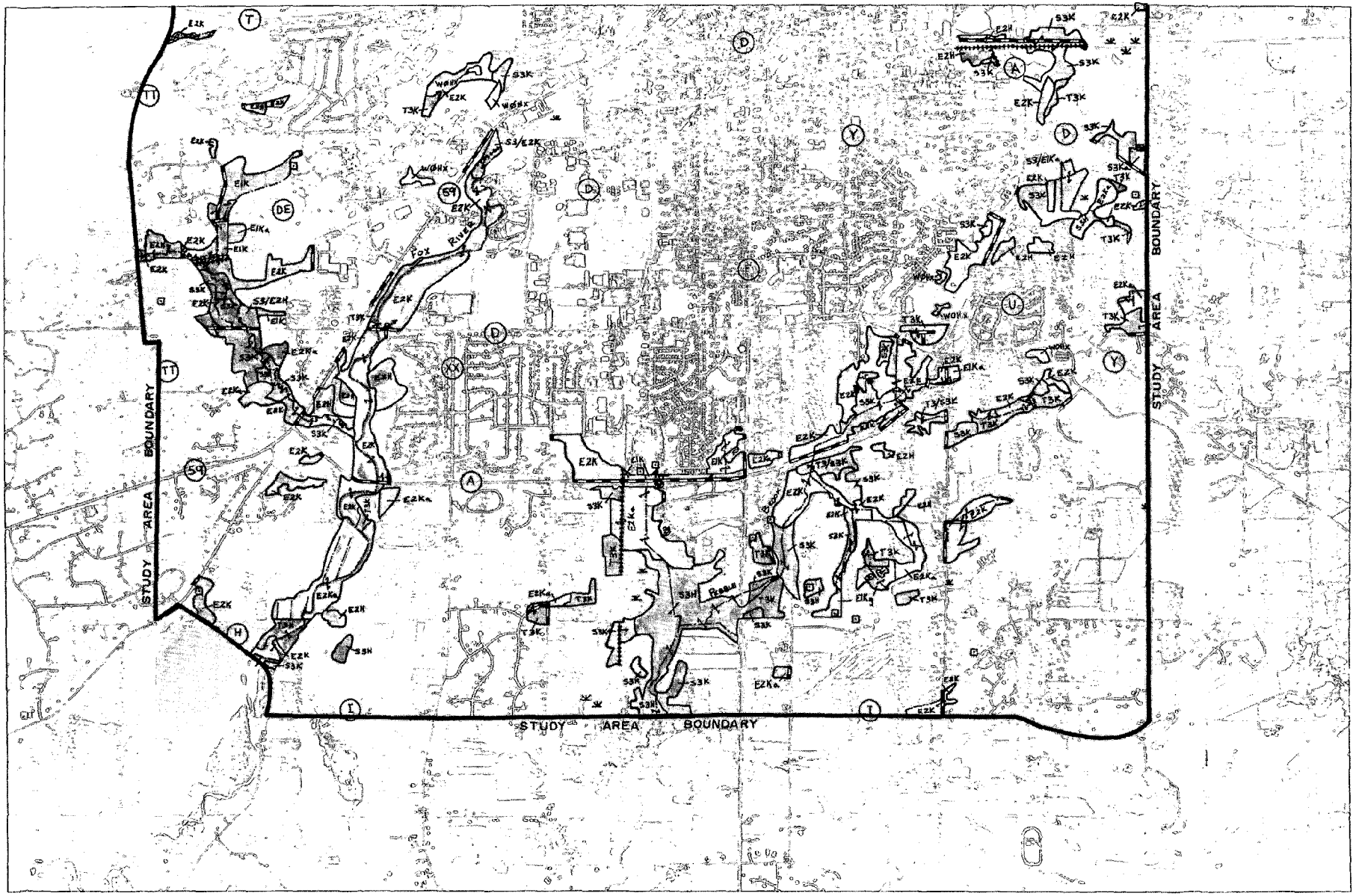
S. Thomas Stevens.....Park and Recreation Board Member

Simon P. Vitale.....Alderman, 2nd District

Map B-1

WISCONSIN WETLANDS INVENTORY
CITY OF WAUKESHA AND ENVIRONS





LEGEND

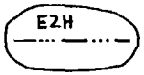
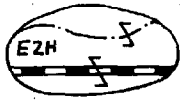
WETLAND AREA FIVE ACRES OR GREATER

WETLAND AREA LESS THAN FIVE ACRES, BUT TWO ACRES OR GREATER

WETLAND AREA LESS THAN TWO ACRES

GRAPHIC SCALE

WISCONSIN WETLANDS INVENTORY MAP LEGEND

Symbol	Example of Use	Description
———		Wetland-upland boundary; boundaries between cover types.
– – – – –		Boundary between wetland and deep water lake. A deep water lake is greater than six feet deep and does not support any wetland vegetation except submergents. (Shaded portion represents the lake.)
—···—···—		Level ditch constructed within a wetland for wildlife management.
—·—·—		Stream or drainage ditch less than 100 feet wide within or adjacent to a wetland. The dot-dash line is drawn down the center of the stream or ditch.
▒▒▒		Boundary between wetland and a primary river channel. A primary river channel is 100 feet wide or more and does not support any wetland vegetation except submergents.
⌙		Indicates the classification for the wetland mapping unit is the same on both sides of the linear feature.

MAN-MADE FEATURES

- Road
- Railroad
- Dike or levee
- Dam

POINT SYMBOLS

- Wetland smaller than two acres
- Dammed artificial pond smaller than two acres
- Excavated or blasted artificial pond smaller than two acres
- Spring within a wetland
- Beaver dam
- Areas of filled land adjacent to wetlands

MAP BOUNDARIES

- County boundary
- Township boundary
- Indicates the overlap of an orthophotoquad on a township base map

HIGHWAY SYMBOLS

- Interstate Highway
- U. S. Route
- State or County Highway

CLASSIFICATION SYSTEM FOR THE WISCONSIN WETLANDS INVENTORY

This wetland classification system is based on the new U. S. Fish and Wildlife Service "Classification of Wetlands and Deep-Water Habitats of the United States," but with a few simplifications to make it easier to use and understand.

Mapping Units

All wetlands which can be identified on the aerial photographs will be mapped as follows:

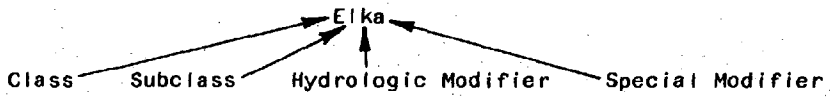
--- All wetlands of two acres or more will be mapped and classified. Wetland classification will be based on conditions which occurred as of the date of the aerial photography.

--- Wetlands of two acres or less will be indicated by a point symbol (⊻). Artificially constructed ponds of two acres or less will also be indicated by a point symbol (⊡ or △).

--- Large wetlands may be divided into smaller mapping units having different classifications. Mapping units may contain minor inclusions of other cover types. Inclusions will make up less than 30% of any mapping unit.

Components of the Classification System

The classification codes describe the class (Table 1), subclass (Table 1), and general hydrologic characteristics (Table 2) of a wetland mapping unit. Some classification codes will also have a "special modifier" (Table 3). The classification code will usually contain 3 or 4 letters and digits:



When small patches of different covertypes are intermingled within the wetland mapping unit, a mixed classification code will be used. Mixed classes are separated by a slash (e.g., T3/S3K), with the taller form of vegetation listed first.

TABLE 1. COVER TYPE CLASSES FOR THE WISCONSIN WETLANDS INVENTORY

Vegetated mapping units are classified by the uppermost layer of vegetation which covers 30% or more of the area. Vegetated classes take precedence over unvegetated classes if a choice has to be made. Subclasses in parentheses are only used where the information can be easily obtained from existing soil surveys, lake survey maps, or other data sources.

Class and Subclass	Description	Subclass Examples
A Aquatic bed	Plants growing entirely on or in a water body	--
(1) (Submergent)	(Aquatic bed plants growing entirely under water)	(Milfoil, coontail, pondweeds)
2 Floating	Aquatic bed plants having structures which float at the water surface	Rooted or free floating
3 Rooted floating	Rooted aquatic bed plants which have floating leaves	Pond lilies, water shield
4 Free floating	Aquatic bed plants which float freely on the water surface	Duckweed, water meal, surface algae
M Moss	Wetlands where the uppermost layer of vegetation is moss	Sphagnum moss

E	Emergent/wet meadow	Herbaceous plants which stand above the surface of the water or soil	--
1	Persistent	Plant remains persist into next year's growing season	Narrow- or broad-leaved
2	Narrow-leaved persistent	Persistent emergents having grass-like leaves without petioles	Cat-tail, most sedges and grasses
3	Broad-leaved persistent	Persistent emergents with wide leaf blades	Stinging nettle, some asters
4	Nonpersistent	Emergents which fall beneath the water and decompose over winter	Narrow- or broad-leaved
5	Narrow-leaved nonpersistent	Nonpersistent emergents with grass-like leaves without petioles	Wild rice, some bulrush stands
6	Broad-leaved nonpersistent	Nonpersistent emergents with wide leaf blades	Arrowhead, pickerel weed
S	Scrub/shrub	Woody plants less than 20 feet tall	--
1	Deciduous	Shrubs which drop their leaves in the fall	Needle- or broad-leaved
2	Needle-leaved deciduous	Stunted tamaracks	Stunted tamaracks
3	Broad-leaved deciduous	Deciduous shrubs other than tamarack	Willows, alder, young green ash
4	Evergreen	Shrubs which keep their leaves over winter	Needle- or broad-leaved
5	Needle-leaved evergreen	Evergreen shrubs with needle-like or scale-like leaves	Stunted black spruce
6	Broad-leaved evergreen	Evergreen shrubs with wide leaf blades	Labrador tea, leatherleaf
7	Dead	Dead shrubs	Shrubs killed by flooding
8	Needle-leaved	Any coniferous shrubs	Deciduous or evergreen
9	Broad-leaved	Any broad-leaved shrubs	Deciduous or evergreen
T	Forested	Woody plants taller than 20 feet	--
1	Deciduous	Trees which drop their leaves in the fall	Needle- or broad-leaved
2	Needle-leaved deciduous	Tamaracks	Tamaracks
3	Broad-leaved deciduous	Deciduous trees other than tamarack	Black ash, elm, silver maple
5	Needle-leaved evergreen	Evergreen trees with needle-like or scale-like leaves	White cedar, black spruce, balsam
7	Dead	Dead trees	Trees killed by flooding
8	Needle-leaved	Any coniferous tree	Deciduous or evergreen
F	Flats/unvegetated wet soil	Exposed wet soils which do not support vegetation	--
0	Subclass unknown	Soil characteristics undetermined	--
(1)	(Cobble/gravel)	(Flats composed of gravel and larger stones)	(Gravel bar in a fast flowing river)
(2)	(Sand)	(Flats composed of sand)	(Sand flats in the Wisconsin River)
(3)	(Mud)	(Flats composed of silt and clay-sized mineral particles)	(Mud flats in the Mississippi River)
(4)	(Organic)	(Exposed muck)	(Organic flats exposed by drawdown)
(5)	(Vegetated pioneer)	(Flats supporting herbaceous pioneer vegetation which is killed by rising water levels before the next growing season)	(Cocklebur growing on a sand flat)
W	Open water	Unnamed lakes and ponds less than 20 acres in size, and all lakes with a maximum depth of six feet or less, and unvegetated river sloughs	--
0	Subclass unknown	Bottom characteristics undetermined	--
(1)	(Cobble/gravel)	(Cobble or gravel bottom)	--
(2)	(Sand)	(Sand bottom)	--
(3)	(Mud)	(Mud bottom)	--
(4)	(Organic)	(Muck bottom)	--
U	Upland	Upland areas surrounded by wetland	Also used as a subclass to indicate small inclusions of upland (TU/EIKj)

TABLE 2. HYDROLOGIC MODIFIERS FOR THE WISCONSIN WETLANDS INVENTORY

Hydrologic modifier		Situation applied to:	Used with the following subclasses
L	Standing water, Lake	Lakes of 20 acres or more having a maximum depth of six feet or less (smaller lakes and ponds receive the "H" hydrologic modifier)	A1-A4, E4, E6, S7, T7, F0-F5, W0-W4
R W4	Flowing water, River	The abandoned and secondary channels of rivers and streams	A1-A4, E4, E5, E6, S7, T7, F0-F5, W0-
H	Standing water, Palustrine	Wetlands which are not in a lakebed or river channel, but which have surface water present for much of the growing season	All subclasses
K	Wet soil, Palustrine	Areas which are wetlands, but do not appear to have surface water for prolonged periods of time	M0, E1, E2, E3, S1-S9, T1-T8, F0-F5

TABLE 3. SPECIAL MODIFIERS FOR THE WISCONSIN WETLANDS INVENTORY

a Abandoned - Areas which appear to have been cultivated in the past, but which have since been abandoned from cultivation and have reverted to wetland vegetation.

c Cranberry bog - Used to indicate all artificially constructed cranberry bogs.

e Exposed flats complex - Wetland mapping units bearing this modifier are a combination of exposed flats (e.g., sand flats in the Wisconsin River) and secondary river channels which are too small to delineate individually.

f Farmed - Soils classified by the National Cooperative Soil Survey as poorly drained or very poorly drained which are cultivated only during drought years and periods of low water table. Includes areas which are regularly mowed for marsh hay.

g Grazed - Wetlands which are used for pasturing livestock.

j Central Sands complex - wetland mapping units bearing this modifier occur in Central Wisconsin where small areas of peat, wet sand, and dry sand ridges are so intermingled that they cannot be delineated individually.

m Mats - Used to indicate areas where wetland vegetation is floating on water as a mat, rather than being rooted in soil.

s Ridge and swale complex - This landform occurs mainly along the Lake Michigan coast, where narrow beach ridges (strand lines) were formed parallel to the shore as the water in Lake Michigan receded during post-glacial times. Depressions (swales) between the beach ridges contain wetland vegetation, but the ridges themselves are dry. The complex is used to indicate areas where the swales are too small to delineate individually.

v Vegetation recently removed - Used to indicate areas where the vegetation has recently been totally or partially removed by clearing, shearing, logging, or other means.

w Floodplain complex - This modifier describes the floodplains of rivers and streams which are composed of small areas of seasonally flooded wetlands, wet meander scars, oxbow lakes, and small inclusions of upland, all of which are too small to delineate individually.

x Excavated - Used to indicate wetlands which have been artificially excavated, usually for the purpose of creating ponds. Gravel pit ponds and other ponds created by mining are not considered to be wetlands unless they support wetland vegetation.

z Evidence of muskrat activity - When muskrat lodges and eat-out areas can be detected on the aerial photographs, this modifier is used.

Appendix C

A SUGGESTED CITY OF WAUKESHA PLAN COMMISSION RESOLUTION FOR ADOPTING THE WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

WHEREAS, the City of Waukesha pursuant to the provisions of Section 62.23(1) of the Wisconsin Statutes has created a City Plan Commission; and

WHEREAS, it is the duty and function of the City Plan Commission, pursuant to Section 62.23(3) of the Wisconsin Statutes, to make and adopt a master plan for the physical development of the City of Waukesha and environs; and

WHEREAS, the Mayor of the City of Waukesha acted to create an Ad Hoc Committee on Wetlands on October 2, 1979, which Committee was charged with preparation of a recommended wetland protection ordinance for the City of Waukesha; and

WHEREAS, the City of Waukesha requested the Southeastern Wisconsin Regional Planning Commission on March 31, 1981, to assist the Committee in the preparation of a recommended wetland protection ordinance for the City of Waukesha; and

WHEREAS, the Ad Hoc Committee on Wetlands defined wetlands as those areas which are inundated or saturated by surface or groundwater at a frequency and with a duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. In southeastern Wisconsin such areas include 11 basic wetland types, including deep marshes, shallow marshes, southern sedge meadows, shrub carrs, alder thickets, fresh (wet) meadows, low prairies, fens, bogs, lowland hardwoods, and conifer swamps; and

WHEREAS, the Ad Hoc Committee on Wetlands recognized that wetlands form an important part of the landscape in and adjacent to the City of Waukesha in that they perform an important set of natural functions that make them ecologically and environmentally invaluable resources, in that wetlands:

1) Affect the quality of water thereby protecting the surface water resources from siltation and pollution.

2) Influence the quantity of water thereby stabilizing stream flows and controlling downstream flooding.

3) When located along the shoreline of rivers and streams, help protect the shoreline from erosion.

4) Serve as groundwater recharge and discharge areas.

5) Serve as important resources for overall ecological health and diversity and, as such, give wetlands research and educational value; support activities such as hunting, trapping, and fishing; and add aesthetic value to the City of Waukesha and environs.

6) Have severe limitations for residential, commercial, and industrial development, such limitations owing to the erosive character, high compressibility and instability, high water table, low bearing capacity, and high shrink-swell potential of wetland soils; and

WHEREAS, of the original estimated 2,900 acres of wetlands located within the City of Waukesha and environs, an estimated 714 acres, or 25 percent, have been lost during the period between 1836 and 1980, with approximately 271 acres, or 38 percent, of this total wetland loss occurring between 1963 and 1980; and

WHEREAS, wetlands within the City of Waukesha and environs in 1980 covered about 2,186 acres, of which large areas are located along the main stem of the Fox (Illinois) River, Pewaukee River, Pebble Creek, and Pebble Brook; and

WHEREAS, Chapter 330, Laws of 1981, enacted on April 29, 1982, requires that cities and villages place wetlands located in the statutory shoreland zoning jurisdictional area in a shoreland-wetland zoning district.

WHEREAS, the Ad Hoc Committee on Wetlands, in order to guide the protection and management of the remaining wetland areas in and adjacent to the City of Waukesha, requested the Southeastern Wisconsin Regional Planning Commission to prepare a wetland protection and management plan for the City of Waukesha and environs which includes:

1) A collection, compilation, processing, and analysis of information concerning the wetland areas in and adjacent to the City;

2) A wetland protection and management plan which considers the various natural functions that wetlands perform;

3) The consideration of existing local, state, and federal regulations concerning wetlands; and

4) Suggested revisions to the city ordinances for the implementation of the selected plan.

WHEREAS, the aforementioned inventories, analyses, objectives, wetland plans, and implementing ordinance revisions are set forth in a published report entitled SEWRPC Community Assistance Planning Report No. 77, A Wetland Protection Plan for the City of Waukesha and Environs; and

WHEREAS, the City Plan Commission considers the plan to be a valuable guide to the future development of the City.

NOW, THEREFORE, BE IT RESOLVED that pursuant to Section 62.23(3) of the Wisconsin Statutes, the City of Waukesha Plan Commission on the _____ day of _____ 1983, hereby adopts SEWRPC Community Assistance Planning Report No. 77 as a guide for the protection and management of the wetlands located in and adjacent to the City of Waukesha and as a part of the master plan for the physical development of the City.

BE IT FURTHER RESOLVED that the Secretary of the City of Waukesha Plan Commission transmit a certified copy of this resolution to the Common Council of the City of Waukesha and the Southeastern Wisconsin Regional Planning Commission.

_____

Chairman, City of Waukesha
Plan Commission

ATTESTATION:

_____

Secretary, City of Waukesha
Plan Commission

Appendix D

A SUGGESTED CITY OF WAUKESHA COMMON COUNCIL RESOLUTION FOR ADOPTING THE WETLAND PROTECTION AND MANAGEMENT PLAN FOR THE CITY OF WAUKESHA AND ENVIRONS

WHEREAS, the City of Waukesha pursuant to the provisions of Section 62.23(1) of the Wisconsin Statutes has created a City Plan Commission; and

WHEREAS, it is the duty and function of the City Plan Commission, pursuant to Section 62.33(3) of the Wisconsin State Statutes, to make and adopt a master plan for the physical development of the City of Waukesha and environs; and

WHEREAS, the Mayor of the City of Waukesha acted to create an Ad Hoc Committee on Wetlands on October 2, 1979, which Committee was charged with preparation of a recommended wetland protection ordinance for the City of Waukesha; and

WHEREAS, the City of Waukesha requested the Southeastern Wisconsin Regional Planning Commission on March 31, 1981, to assist the Committee in the preparation of a recommended wetland protection ordinance for the City of Waukesha; and

WHEREAS, the Ad Hoc Committee has prepared, with the assistance of the Southeastern Wisconsin Regional Planning Commission, a plan for the protection and management of the remaining wetland areas in and adjacent to the City of Waukesha, said plan embodied in SEWRPC Community Assistance Planning Report No. 77, A Wetland Protection Plan for the City of Waukesha and Environs; and

WHEREAS, the City Plan Commission did on the _____day of _____ 1983, adopt SEWRPC Community Assistance Planning Report No. 77 as a part of the master plan for the physical development of the City, and has submitted a certified copy of that resolution to the Common Council of the City of Waukesha; and

WHEREAS, the Common Council of the City of Waukesha concurs with the City Plan Commission and the objectives and policies set forth in SEWRPC Community Assistance Planning Report No. 77.

NOW, THEREFORE, BE IT RESOLVED that the Common Council of the City of Waukesha on the _____ day of _____ 1983, hereby adopts SEWRPC Community Assistance Planning Report No. 77 as a guide for the protection and management of the remaining wetlands in and adjacent to the City of Waukesha; and

BE IT FURTHER RESOLVED that the staffs of the City of Waukesha Engineering, Planning, and Parks Departments are hereby directed to undertake those steps necessary to implement the recommendations set forth in SEWRPC Community Assistance Planning Report No. 77; and

BE IT FURTHER RESOLVED that the City Plan Commission shall annually review the City of Waukesha wetland protection and management plan and shall recommend extensions, changes or additions to the plan which the Commission considers necessary. Should the City Plan Commission find that no changes are necessary, this finding shall be reported to the Common Council.

_____, President
Common Council of the City of Waukesha

_____, Mayor
City of Waukesha

ATTESTATION:

_____, Clerk
City of Waukesha

Appendix E

SUGGESTED AMENDMENT TO THE CITY OF WAUKESHA ZONING ORDINANCE TO CONFORM TO THE WISCONSIN WETLANDS PROTECTION ACT

1. Amend Section 22.04 by adding the following definitions in their appropriate alphabetical order:

( ) DRAINAGE SYSTEM. One or more artificial ditches, tile drains, or similar devices which collect surface runoff or groundwater and convey it to a point of discharge.

( ) FLOODPLAIN. The land which has been or may be covered by floodwaters during the regional flood, as defined in Section 24.02(20) of this Ordinance.

( ) NAVIGABLE WATERS. All natural inland lakes and all streams, ponds, sloughs, and flowages which are navigable under the laws of the State of Wisconsin.

( ) ORDINARY HIGH WATER MARK. The point on the bank or shore of a navigable body of water to which the presence and action of surface water is so continuous as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristics.

( ) SHORELANDS. Those lands lying within the following distances from the ordinary high water mark of navigable waters: 1,000 feet from a lake, pond or flowage; and 300 feet from a river or stream or to the landward side of the floodplain, whichever distance is greater. Shorelands shall not include those lands adjacent to farm drainage ditches, where, (a) such lands are not adjacent to a navigable stream or river; (b) those parts of such drainage ditches adjacent to such lands were nonnavigable streams before ditching or had no previous stream history; and (c) such lands are maintained in nonstructural agricultural use.

( ) WETLANDS. An area where water is at, near, or above the land surface long enough to support aquatic or hydrophytic vegetation and which have soils indicative of wet conditions.

2. Repeal and recreate Section 22.05 to read as follows:

22.05 ZONING DISTRICTS

NATURAL RESOURCE DISTRICTS

(1)	C-1	Lowland Conservancy District
(2)	A-1	Agricultural District

RESIDENCE DISTRICTS

(3)	R-1	One-Family Residence District
(4)	R-1-S	One-Family Suburban Residence District
(5)	R-2	One-Family Residence District

(6)	R-2-A	Two-Family Residence District
(7)	R-3	One- to Four-Family Residence District
(8)	R-4	Multifamily Residence District
(9)	R-4-A	Residential Planned Development District

NONRESIDENCE DISTRICTS

(10)	B-1	Neighborhood Business District
(11)	B-2	Central Business District
(12)	B-3	General Business District
(13)	B-4	Limited Business Development District
(14)	M-1	Light Manufacturing and Warehouse District
(15)	M-2	General Manufacturing District

PUBLIC DISTRICTS

(16)	P-1	Public Open Space District
(17)	P-2	Cemeteries District
(18)	P-3	Public Land and Institutions District

3. Repeal and recreate Section 22.24 to read as follows:

22.24 RIVER SETBACKS. All buildings shall be setback at least 50 feet from the ordinary high water mark of all rivers and streams, except that the north bank of the Fox River between Barstow and Madison Streets shall be exempt from this requirement.

4. Repeal and recreate Section 22.28 to read as follows:

22.28 C-1 LOWLAND CONSERVANCY DISTRICT. (1) PURPOSE. The purpose of this district is to preserve, protect, and enhance the ponds, streams, and wetland areas of the City of Waukesha. The preservation, protection and enhancement of these areas will serve to maintain safe and healthful conditions; maintain and improve water quality, both ground and surface; prevent flood damage; control stormwater runoff; protect stream banks from erosion; protect groundwater recharge and discharge areas; protect wildlife habitat; protect native plant communities; avoid the location of structures on soils which are generally not suitable for such use; and protect the water-based recreational resources of the City.

(2) PERMITTED USES.

(a) Hiking, fishing, trapping, hunting, swimming, and boating, unless prohibited by other ordinances or laws;

(b) The harvesting of wild crops, such as marsh hay, ferns, moss, wild rice, berries, tree fruits and tree seeds, in a manner that is not injurious to the natural reproduction of such crops;

(c) The practice of silviculture, including the planting thinning, and harvesting of timber;

(d) Construction and maintenance of fences;

(e) Existing agricultural uses provided they do not involve extension of cultivated areas, extension of or creation of new drainage systems, and further provided they do not substantially disturb or impair the natural fauna, flora, topography, or water regimen;

(f) Ditching, tiling, dredging, excavating, or filling done to maintain or repair an existing agricultural drainage system only to the extent necessary to maintain the level of drainage required to continue the existing agricultural use.

(g) The construction and maintenance of piers, docks, and walkways, including those built on pilings; and

(h) The maintenance, repair, replacement, and construction of existing streets, roads, and bridges.

(3) CONDITIONAL USES. The following uses are permitted in C-1 Districts only if specifically authorized by the Board of Zoning Appeals.

(a) The construction of roads which are necessary for the continuity of the City street system, necessary for the provision of essential utility and public safety services, or necessary to provide access to permitted open space uses, provided that:

1. The road cannot, as a practical matter, be located outside of a wetland; and

2. The road is designed and constructed to minimize the adverse impact upon the natural functions of the wetland and meets the following standards:

a. The road shall be designed and constructed for the minimum cross-section practical to serve the intended use;

b. Road construction activities are to be carried out in the immediate area of the roadbed only; and

c. Any filling, flooding, draining, dredging, ditching, tiling or excavating that is to be done must be necessary for the construction or maintenance of the road.

(b) The construction and maintenance of nonresidential buildings used solely in conjunction with raising of waterfowl, minnows, or other wetland or aquatic animals or used solely for some other purpose which is compatible with wetland preservation, if such building cannot, as a practical matter, be located outside of a wetland, provided that:

1. Any such building does not exceed 500 square feet in floor area; and

2. No filling, flooding, draining, dredging, ditching, tiling, or excavating is to be done.

(c) The establishment and development of public and private parks and recreation areas, boat access sites, natural and outdoor education areas, historic and scientific areas, wildlife refuges, game preserves, and private wildlife habitat areas, provided that:

1. Any private recreation or wildlife habitat area must be used exclusively for that purpose;

2. No filling is to be done; and

3. Ditching, excavating, dredging, dike and dam construction may be done in wildlife refuges, game preserves and private wildlife habitat areas, but only for the purpose of improving wildlife habitat or to otherwise enhance wetland values.

(d) The construction and maintenance of electric, gas, telephone, water and sewer transmission and distribution lines, and related facilities, by public utilities and cooperative associations organized for the purpose of producing or furnishing heat, light, power or water to members, provided that:

1. The transmission and distribution lines and related facilities cannot as a practical matter be located outside of a wetland; and

2. Any filling, excavating, ditching or draining that is to be done must be necessary for such construction or maintenance and must be done in a manner designed to minimize flooding and other adverse impacts upon the natural functions of the wetlands.

(e) The construction and maintenance of railroad lines, provided that:

1. The railroad lines cannot as a practical matter be located outside of a wetland; and

2. Any filling, excavating, ditching, or draining that is to be done must be necessary for such construction or maintenance and must be done in a manner designed to minimize flooding and other adverse impacts upon the natural functions of the wetland.

(4) PROHIBITED. Changing of terrain, removal of top soil, quarrying, mining, damming, relocating of any watercourse shall not be permitted except as required to conduct those permitted or conditional uses as specified in this District.

5. Repeal and recreate Section 22.63(2)(d) to read as follows:

(d) Decisions of the Board. The Board shall decide all applications and appeals within 45 days after the final hearing thereon. A certified copy of the Board's decision shall be transmitted to the applicant or appellant, and to the Zoning Inspector. Such decision shall be binding upon the Zoning Inspector and observed by such person, and the Zoning Inspector shall incorporate the terms and conditions of the same in the permit to the applicant or appellant, whenever a permit is authorized by the Board. A decision of the Board shall not become final until 5 days from the date such decision is made, unless the Board shall find the immediate taking effect of such decision is necessary for the preservation of personal rights or property and shall so certify on the record.

6. Repeal and recreate Section 22.63(3)(a) to read as follows:

(3) POWERS. (a) Conditional Uses, Special Exceptions and Interpretation of Zoning Map. The Board may hear and decide, in accordance with the provisions of the Zoning Code, applications for condi-

tional uses, special exceptions or for interpretation of the Zoning Map, or for decision upon other special questions on which the Board is authorized to pass. In considering an application for a conditional use, a special exception or interpretation of the Zoning Map, the Board shall give due regard to the nature and condition of all adjacent uses and structures; and in authorizing a conditional use or special exception, the Board may impose such requirements and conditions with respect to location, construction, maintenance and operation, in addition to those expressly stipulated in the Zoning Code for the particular conditional use or special exception, as the Board may deem necessary for the protection of adjacent properties and the public interest. In the case of conditional use applications in the C-1 District which are located in Shorelands, as defined in Section 22.04( ), the Board shall transmit a copy of the application to the Wisconsin Department of Natural Resources (DNR) for review and comment. Final action on C-1 application in the Shorelands shall not be taken for 30 days or until the DNR has made its recommendation, whichever comes first. A copy of all decisions regarding C-1 Distict conditional use applications or appeals in Shorelands shall be transmitted to the DNR within 10 days of such decision.

7. Repeal and recreate Section 22.63(3)(e) to read as follows:

(e) Interpretation of Zoning Map. Where the street or lot layout actually on the ground, or as recorded, differs from the street and lot lines as shown on the Zoning Map, the Board, after notice to the owners of the property and after public hearing, shall interpret the map in such a way as to carry out the intent and purpose of the Zoning Code. In case of any question as to the location of any boundary line between zoning districts, a request for interpretation of the Zoning Map may be made to the Board and a determination shall be made by it. When the Board is asked to interpret a C-1 District boundary where an apparent discrepency exists between the City's official wetlands inventory map and actual field conditions when the Zoning Map was adopted, the City shall contact the Southeast District Office of the Wisconsin Department of Natural Resources (DNR) to determine if the wetland inventory map is in error. If the DNR staff concur with the City that a particular area was incorrectly mapped as a wetland, the City shall have the authority to immediately grant or deny a land use permit in accordance with the regulations applicable to the correct zoning district. In order to correct wetland mapping errors shown on the official zoning map, the City shall be responsible for initiating a Zoning Map amendment within a reasonable period of time.

8. Renumber Section 22.64(8) as Section 22.64(9)

9. Create a new Section 22.64(8) to read as follows:

(8) REZONING OF SHORELANDS IN THE C-1 CONSERVANCY DISTRICT. (a) For all proposed text amendments in the C-1 District and for C-1 District map amendments located in the Shoreland, as defined in Section 22.04( ), the City shall transmit the following to the Wisconsin Department of Natural Resources:

1. A copy of every petition for a text or map amendment to the C-1 Conservancy District, within five days of the filing of such petition with the City Clerk;

2. Written notice of the public hearing to be held on a proposed amendment, at least 10 days prior to such hearing;

3. A copy of the City Plan Commission's findings and recommendations on each proposed amendment, within 10 days after the submission of those findings and recommendations to the Common Council; and

4. Written notice of the Common Council's decision on the proposed amendment, within 10 days after it is issued.

(b) A wetland, or a portion thereof, in the shoreland portion of the C-1 District shall not be rezoned if the proposed rezoning may result in a significant adverse impact upon any of the following:

1. Storm and flood water storage capacity;

2. Maintenance of dry season streamflow, the discharge of groundwater from wetland to another area, or the flow of groundwater through a wetland;

3. Filtering or storage of sediments, nutrients, heavy metals or organic compounds that would otherwise drain into navigable waters;

4. Shoreline protection against soil erosion;

5. Fish spawning, breeding, nursery or feeding grounds;

6. Wildlife habitat; or

7. Areas of special recreational, scenic or scientific interest, including scarce wetland types.

(c) If the Department of Natural Resources (DNR) has notified the City Plan Commission that a proposed amendment to the shoreland portion of the C-1 District may have a significant adverse impact upon any of the criteria listed in Section 22.64(8)(b) of this Ordinance, that amendment, if approved by the Common Council, shall contain the following provision:

"This amendment shall not take effect until more than 30 days have elapsed since written notice of the Common Council's approval of this amendment was mailed to the Department of Natural Resources. During that 30-day period, the Department of Natural Resources may notify the Common Council that it will adopt a superceding shoreland ordinance for the City pursuant to Section 62.231 of the Wisconsin Statutes. If the Department does so notify the Common Council, the effect of this amendment shall be stayed until the Section 62.231 adoption procedure is completed or otherwise terminated."

LETTER FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CONCERNING WETLAND ZONING IN THE CITY OF WAUKESHA

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

November 11, 1982

IN REPLY REFER TO: 3550-1

RECEIVED
NOV 12 1982
SEWRPC

Mr. Kurt Bauer, Executive Director
Southeast Wis. Reg. Plan. Comm.
P. O. Box 769
Waukesha, WI 53187

Dear Mr. Bauer:

Re: Wetland Zoning Amendments - City of Waukesha

We have reviewed the suggested amendments to the City of Waukesha's zoning ordinance and find the amendments to be consistent with shoreland-wetland standards contained in Chapter NR 115, Wis. Adm. Code. As you know, this administrative rule sets forth minimum shoreland-wetland standards that all counties must comply with in their shoreland zoning ordinances.

As I discussed with Don Reed previously, administrative rules regulating wetlands within shoreland areas of cities and villages have not been developed by the Department at this time. Rules are expected to be promulgated in the fall of 1983.

Although the Department is not obligated to review wetland rezoning petitions as required in Section 22.64(8) of the proposed amendments at this time, staff from our Milwaukee office will work cooperatively with City officials and Commission staff to establish a viable wetland protection program for the City of Waukesha.

It should be pointed out to City officials that changes to the wetland provisions of Waukesha's zoning ordinance may be necessary after the Department formally adopts an administrative rule regulating shoreland-wetland development for cities and villages.

I would like to take this opportunity to commend Mr. Don Reed of your staff for his efforts in working with local officials to establish strong wetland protection programs. I know Don has spent a considerable amount of time working with Waukesha officials and citizens and he has always provided valuable assistance to Department staff.

We are fowarding a copy of the suggested amendments to our Southeast District staff for any comments they may have.

Sincerely,
Bureau of Water Regulation & Zoning

Joe King

Joe King
Shoreland Management Specialist
Floodplain-Shoreland Management Section

JK:mn

cc: Greg Pilarski-SED

Appendix G

LETTER FROM THE U. S. ARMY CORPS OF ENGINEERS CONCERNING AERIAL PHOTOGRAPHS OF WAUKESHA WETLANDS

Department of the Army
St. Paul District, Corps of Engineers
1135 U. S. Post Office and Custom House
St. Paul, Mn. 55101

RECEIVED
FEB 05 1981
SEWRPC

NCSCO-RF (CC 570-22)

02 FEB 1981

Frank M. Hedgcock
Director of Planning
City of Waukesha
201 Delafield Street
Waukesha, Wisconsin 53186

Dear Mr. Hedgcock:

The purpose of this letter is to confirm the St. Paul District's preliminary determination as to which areas within the City of Waukesha would require an individual permit under Section 404 of the Clean Water Act. A member of my staff met with representatives of the City of Waukesha and the Southeastern Wisconsin Regional Planning Commission.on 9 January 1981, to discuss this matter. The inclosed aerial photographs delineate those areas within the city that would require an individual Section 404 permit. No changes, other than those discussed at the meeting, have been made.

The St. Paul District is also investigating the possible violationswhich were discussed at the meeting. You will be advised of the progress of t these investigations.

If you have any questions concerning these matters, please call Mr. Steve Eggers at (612) 725-7772. I appreciate your interest and cooperation in our regulatory program.

2 Incl.
as stated

HAROLD E. TAGGATZ
Chief, Regulatory Functions Branch
Construction-Operations Division

Copies furnished:
Don Reed
Southeastern Wisconsin Regional Planning Commission

DATE DUE

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