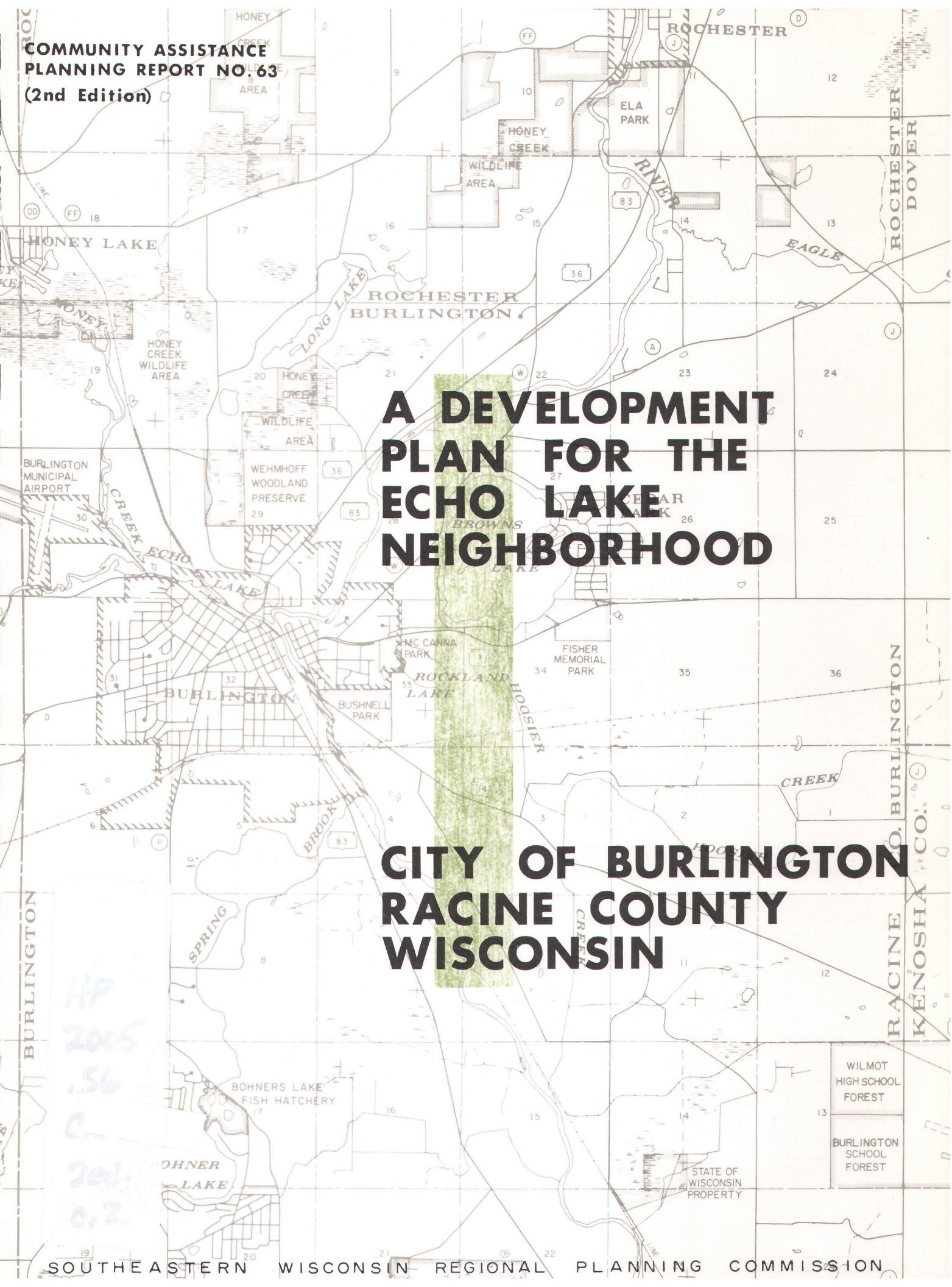
COMMUNITY ASSISTANCE
PLANNING REPORT NO. 63
(2nd Edition)



A DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD

CITY OF BURLINGTON RACINE COUNTY WISCONSIN

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Special acknowledgement is due Mr. Patrick J. Meehan, AIA, SEWRPC Principal Planner, for his contribution to the preparation of this report.

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NUMBER 63 (2nd Edition)

A DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD

City of Burlington
Racine County, Wisconsin

Prepared by the
Southeastern Wisconsin Regional Planning Commission
P. O. Box 769
Old Courthouse
916 N. East Avenue
Waukesha, Wisconsin 53187-1607

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August 1984

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SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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August 29, 1984

The Honorable Martin J. Itzin
Mayor of the City of Burlington
City Hall
300 N. Pine Street
Burlington, Wisconsin 53105

Dear Mayor Itzin:

The Commission is pleased to transmit herewith to the City of Burlington a final neighborhood development plan for the Echo Lake Neighborhood. A preliminary plan for this neighborhood was documented in the first edition of this report published in August 1982. This final plan takes into account the concerns expressed by Racine County and the Town of Burlington over some of the land use development recommendations contained in the preliminary plan. The final plan was the subject of a public hearing held before the Burlington Common Council on July 3, 1984. At that hearing, there was general agreement that the revised plan satisfactorily addresses the concerns expressed with respect to the preliminary plan.

This report, then, presents the final plan for the development of the Echo Lake Neighborhood, together with basic inventory information on the present stage of development of the neighborhood, including information on the resident population, land use, sanitary and storm sewerage, water supply, and street system of the neighborhood. Information is also presented on the climate, topography and drainage patterns, soils, woodlands and wetlands, and other physical features of the lands comprising the neighborhood. Such features constitute important considerations in any neighborhood planning effort. This final plan, which is consistent with both regional and local development efforts, is intended to serve as a point of departure for local officials and concerned citizens in making day-to-day development decisions concerning the neighborhood.

The Regional Planning Commission is most appreciative of the assistance and support given to this planning effort by city officials and city staff during the preparation of this plan. The Commission is also appreciative of the constructive efforts made by Racine County and the Town of Burlington in reviewing and commenting on the plan. The Commission staff stands ready to assist the City of Burlington in implementing the recommendations contained in the final plan.

Sincerely,

Kurt W. Bauer
Executive Director

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Chapter I

INTRODUCTION

The Southeastern Wisconsin Regional Planning Commission, almost since its inception in 1960, has urged local plan commissions to consider the preparation of detailed neighborhood unit development plans as an important means of guiding and shaping urban land use development and redevelopment in the public interest. SEWRPC Planning Guide No. 1, Land Development Guide, published in November 1963, discussed the importance of neighborhood unit planning to the attainment of good residential land subdivision. This guide indicated that effective public regulation of the important process of land subdivision--a process through which much of the form and character of a community are determined--requires the preparation of detailed neighborhood unit development plans. The regional land use plan originally adopted by the Commission in December 1966 more specifically recommended that local plan commissions identify neighborhood units within areas of existing or proposed urban use and prepare detailed plans for the development and redevelopment of these units over time.

The City of Burlington, on March 30, 1971, requested that the Regional Planning Commission staff assist the City in the delineation of neighborhood units for which detailed development plans are to be prepared. The Commission staff, working with the City Plan Commission, initially identified 13 neighborhood units. These 13 neighborhood units were presented in SEWRPC Community Assistance Planning Report No. 1, Residential, Commercial, and Industrial Neighborhoods--City of Burlington and Environs, published in February 1973. The report was adopted by the City on March 28, 1973, and the City, by letter dated April 18, 1974, requested that the Regional Planning Commission staff assist in the preparation of a development plan for the delineated Quarry Ridge Neighborhood. The City of Burlington and the Regional Planning Commission subsequently, on April 23, 1974, entered into an agreement under the terms of which the Commission agreed to assist the City in the preparation of neighborhood unit development plans, including the Quarry Ridge plan. Work began on the Quarry Ridge plan in May 1973, and the plan was completed and approved by the City of Burlington Plan Commission in December 1977. The development plan for that neighborhood unit is documented in SEWRPC Community Assistance Planning Report No. 29, A Development Plan for the Quarry Ridge Neighborhood, City of Burlington, Racine County, Wisconsin.

The purpose of this report is to describe the development plan for the Echo Lake Neighborhood unit within the Burlington area. The plan suggests future collector and land access street alignments and attendant block configurations, and identifies locations within the neighborhood best suited for institutional, recreational, and commercial, as well as for various kinds of residential, use. The plan identifies areas that should be protected from intensive development for environmental reasons and indicates the need to reserve major drainageway and utility easements. The plan is intended to provide one of several means of attaining the following goals for the Burlington area:

1. Economic growth at a rate consistent with area resources--including land, labor, and capital--and primary dependence on free enterprise in order to provide needed employment opportunities for the expanding labor force of the area.

2. A wide range of employment opportunities through a broad, diversified economic base.

3. Conservation and protection of desirable existing residential, commercial, industrial, and agricultural development in the Burlington area in order to maintain desirable social and economic values.

4. A broad range of choice among housing designs, sizes, types, and costs, recognizing changing trends in age group composition, income, and family living habits.

5. An adequate, flexible, and balanced level of community services and facilities.

6. An efficient and equitable allocation of fiscal resources within the public sector of the economy.

7. An attractive and healthful physical and social environment with ample opportunities for education, cultural activities, and outdoor recreation.

8. Protection, wise use, and sound development of the natural resource base.

9. Development of areas having distinctive individual character, based on physical conditions, historical factors, and local desires.

10. Provision of an energy-conscious and energy-efficient urban form.

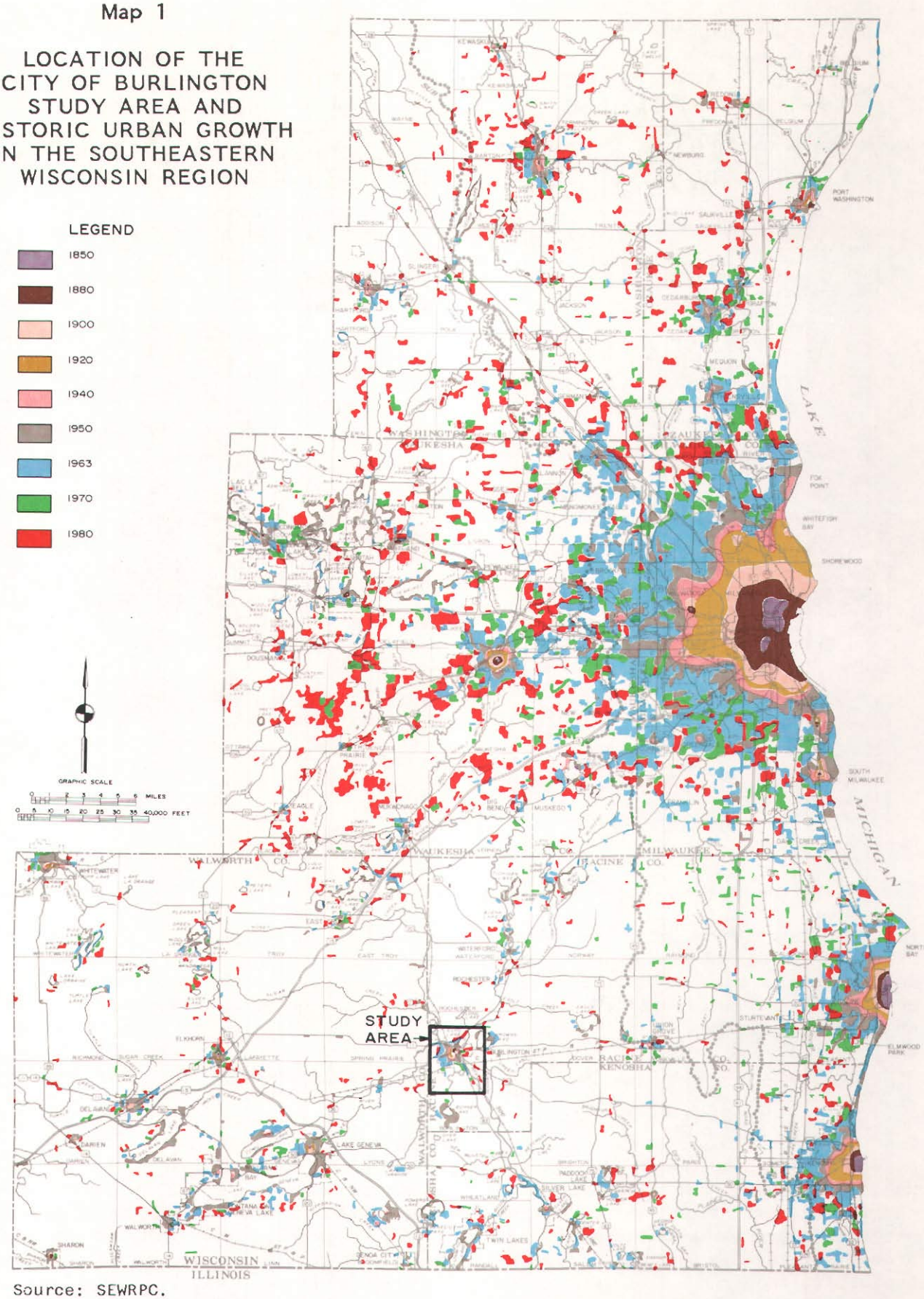
GENERAL SETTING

The City of Burlington is located in the southwestern portion of Racine County in U. S. Public Land Survey Township 3 North, Range 19 East and Township 2 North, Range 19 East. The City is bordered on all sides by the unincorporated town of Burlington. Map 1 shows the location of the City of Burlington and the extent of historic urban development in the Southeastern Wisconsin Region.

The City of Burlington has experienced slow but steady growth since 1950, as shown in Table 1. The population of the City increased from 4,780 persons in 1950 to 5,856 persons in 1960, and to 7,479 persons in 1970. The 1979 population of the City is estimated at 9,199. Population forecasts prepared by the Regional Planning Commission indicate that the population of the City may be expected to reach a level of about 14,200 persons by 1990 and about 16,500 persons by the year 2000. This anticipated future growth of the City dictates the conduct of a sound city planning program to provide a basis for development decision-making by local officials.

Map 1

LOCATION OF THE CITY OF BURLINGTON STUDY AREA AND HISTORIC URBAN GROWTH IN THE SOUTHEASTERN WISCONSIN REGION



Source: SEWRPC.

Table 1

HISTORIC AND FORECAST POPULATION LEVELS FOR THE CITY OF BURLINGTON: 1900-2000

Year	Population	Population Change From Previous Period (percent)
Actual		
1900	2,526	--
1910	3,212	27.2
1920	3,626	12.9
1930	4,114	13.5
1940	4,414	7.3
1950	4,780[a]	8.3
1960	5,856[b]	22.5
1970	7,479	27.7
1979	9,199[c]	23.0
Forecast		
1990	14,200[d]	--
2000	16,500[d]	--

[a] Parts of the Town of Burlington were annexed by the City of Burlington in 1943 and 1950, and parts of the City of Burlington reverted to the Town of Burlington in 1941 and 1946.

[b] Subsequent to 1950, a part of the Town of Burlington was annexed to the City of Burlington.

[c] Wisconsin Department of Administration estimate.

[d] Forecasts based upon sanitary sewer service area.

Source: SEWRPC.

THE NEIGHBORHOOD CONCEPT

The Regional Planning Commission recommendation concerning the preparation of detailed neighborhood unit development plans by local plan commissions is based upon the concept that an urban area should be formed of, and developed in, a number of spatially organized individual cellular units rather than as a single, large, formless mass. These cellular units may be categorized by their primary or predominant land use and, as such, may be industrial, commercial, institutional, or residential. The latter type of unit is the concern of this report.

Insofar as possible, each residential neighborhood unit should be bounded by arterial streets; major park, parkway, or institutional lands; bodies of water; or other natural or cultural features which serve to clearly and physically separate each unit from the surrounding units. Each residential neighborhood unit should provide housing for that population for which, by prevailing local standards, one public elementary school of reasonable size is typically required. The unit should further provide, within established overall density limitations, a broad range of lot sizes and housing types; a full complement of those public and semipublic facilities needed by the family

within the immediate vicinity of its dwelling, such as religious facilities, neighborhood parks, and neighborhood shopping facilities; and ready access to the arterial street system and, thereby, to those urban activities and services which cannot, as a practical matter, be provided in the immediate vicinity of all residential development--namely, major employment centers, community and regional shopping centers, major recreational facilities, and major cultural and educational centers. The internal street pattern of the residential neighborhood unit should be designed to facilitate vehicular and pedestrian circulation within the unit, but to discourage penetration of the unit by heavy volumes of fast through traffic. An elementary school should be centrally located adjacent to the neighborhood park so that the school and park together may function as a neighborhood center. The school and park should be located within walking distance of all areas of the neighborhood unit.

The residential neighborhood unit is intended to accommodate safe and healthy family home life and the activities associated with it. The neighborhood should be of adequate size and designed to promote stability and the preservation of amenities. The neighborhood concept is intended to promote convenience in living and traveling within an urban area; to promote harmony and beauty in urban development; and to bring the living area of the urban family into a scale which encourages the individual to take an active part in neighborhood and community affairs. The neighborhood unit concept is also intended to facilitate the difficult task of good land subdivision design. The proper relationship of individual subdivisions to areawide features, to existing and proposed land uses, and to other subdivisions can best be achieved through a precise plan for neighborhood unit development.

The neighborhood unit concept also provides a means for involving citizens in local planning programs. A neighborhood is that area most closely associated with the daily activities of family life, such as elementary education or convenience shopping. Residential neighborhoods, however, depend on the larger community for basic employment, comparison shopping, higher education, cultural activities, and certain personal services. A group of neighborhoods which function as a unit, providing the necessary level of external services and facilities required by the neighborhoods in the group, may be described as a community. By identifying neighborhood units and grouping them into communities, residential areas may be planned to provide a physical environment that is healthy, safe, convenient, and attractive; and public sentiment can be constructively focused on the community of interest so created. Because of its emphasis on the day-to-day needs and concerns of the family, neighborhood planning is particularly "people oriented."

Unlike the community comprehensive, or master plan, which is necessarily quite general, the plan developed for a neighborhood is quite precise. It depicts explicitly alternative development patterns which are practicable to meet such physical needs as traffic circulation, storm water drainage, sanitary sewerage, water supply, a sound arrangement of land uses, and access to solar energy resources. Neighborhood planning, therefore, must involve careful consideration of such factors as soil suitability, land slopes, drainage patterns, flood hazards, woodland and wetland cover, climate variables, existing and proposed land uses in and surrounding the neighborhood unit, and real property boundaries. Although the neighborhood unit concept most readily applies to medium- and high-density residential areas, it can be successfully

Table 2

LAND USE DISTRIBUTION IN A TYPICAL MEDIUM-DENSITY RESIDENTIAL NEIGHBORHOOD UNIT

Type of Area	Acres[a]	Percent of Area in Land Development Category	Typical Population and Density[a]	
			Number	Percent of Total
Residential Area	454.4	71.0	--	--
Single-Family Area	416.0	65.0	--	--
Population	--	--	5,330	85.2
Residential Acres per 1,000 Population	--	--	76.0	--
Persons per Residential Acre	--	--	12.8	--
Number of Dwelling Units	--	--	1,615	--
Dwelling Units per Residential Acre	--	--	3.9	--
Multifamily Area	38.4	6.0	--	--
Population	--	--	925	14.8
Residential Acres per 1,000 Population	--	--	41.5	--
Persons per Residential Acre	--	--	24.1	--
Number of Dwelling Units	--	--	355	--
Dwelling Units per Residential Acre	--	--	9.2	--
Public Area	32.0	5.0	--	--
Elementary School (K-6) Area	9.6	1.5	--	--
Number of Classrooms	--	--	20	--
Total Number of Pupils	--	--	500	--
Public Park and Playground Area	16.0	2.5	--	--
Other Public and Quasipublic Area	6.4	1.0	--	--
Neighborhood Commercial Area	6.4	1.0	--	--
Street Area	147.2	23.0	--	--
Total (population and land area)	640.0	100.0	6,255	100.0

NOTE: Medium density is defined as 2.3 to 6.9 dwelling units per net residential acre.

[a]Based upon typical medium-density neighborhood size of 640 acres.

Source: SEWRPC.

applied in low-density areas with some modifications of the design standards. Table 2 illustrates a typical land use distribution in a medium-density planned neighborhood unit, and is intended to provide a basis of comparison for the specific neighborhood unit designs presented herein. Chapter III of this report sets forth, in detail, residential neighborhood objectives, principles, and standards and design criteria upon which the alternative Echo Lake Neighborhood plans presented herein are based.

The neighborhood unit development plan, while precise, must, nevertheless, also be flexible. The plan is intended to be used as a standard for evaluating development proposals of private and public agencies. It should not be presumed that private developers cannot present development plans harmonious with sound development standards, nor that any development plans that are privately advanced and at variance in some respect with the adopted neighborhood plan are necessarily unacceptable. Local planning officials should remain receptive to proposed plan changes that can be shown to be better than the adopted plan, yet compatible with the overall objectives for the development of the neighborhood and the community as a whole.

THE NEIGHBORHOOD PLANNING PROCESS

The recommended neighborhood planning process consists of the following steps: 1) preparation of an overall community comprehensive plan; 2) neighborhood delineation; 3) inventory of the factors affecting land use development in the neighborhood area; 4) analysis of inventory data and the identification of neighborhood developmental problems and potentials; 5) formulation of neighborhood urban design criteria; 6) development of alternative neighborhood plans; 7) evaluation of alternative neighborhood plans; 8) neighborhood plan selection and adoption; and 9) neighborhood plan implementation and policy development. The neighborhood planning process is outlined in graphic form in Figure 1. Imperative within the neighborhood planning process is citizen participation and input. Also imperative to the process is the need to continually reevaluate alternative neighborhood plan schemes based upon the emergence of new data and citizen input.

The Community Comprehensive Plan

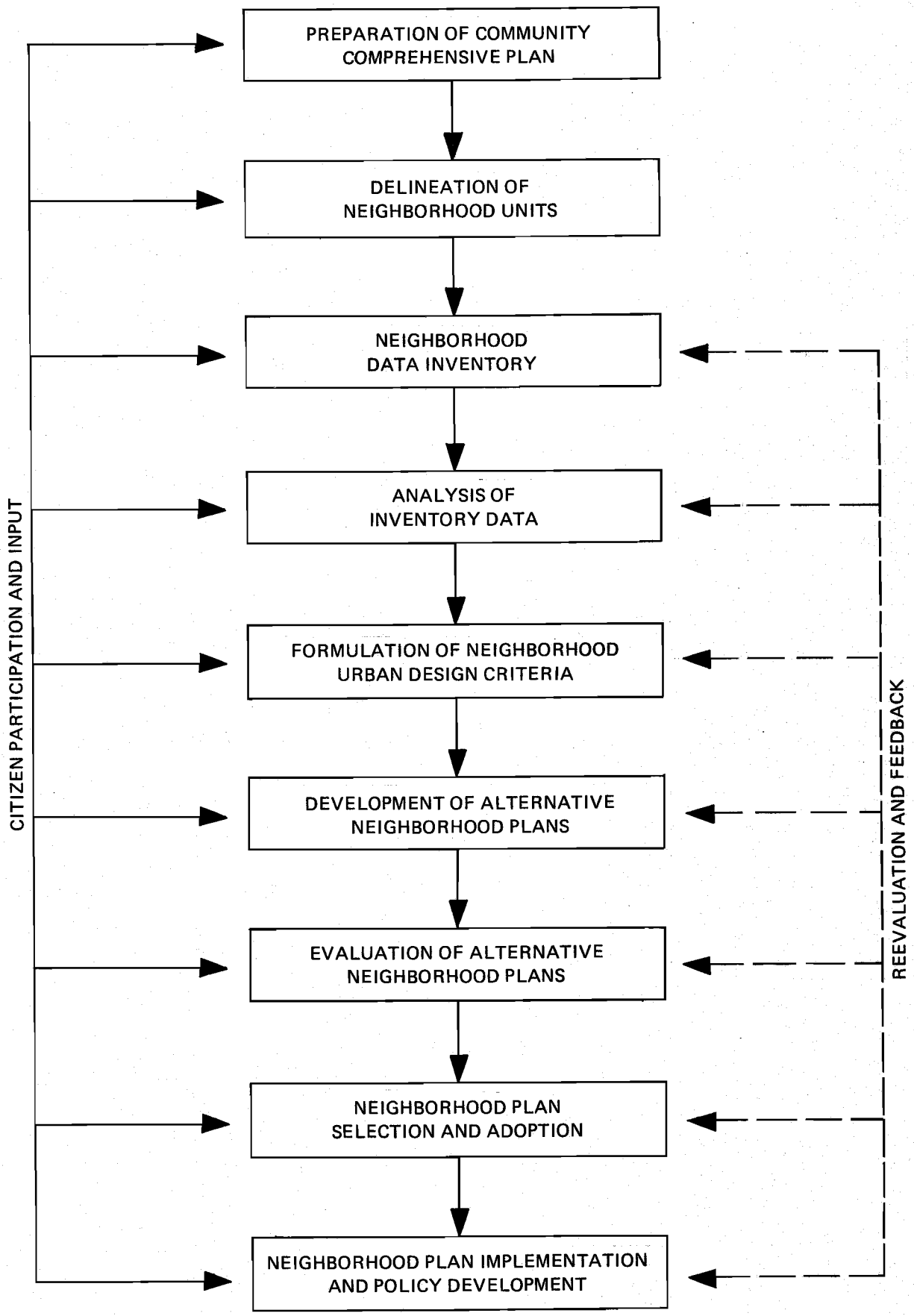
A community should have a comprehensive plan as a basis for the preparation of precise neighborhood unit development plans. The City of Burlington had a master plan prepared for the City by Mead and Hunt, Inc., Consulting Engineers of Madison, Wisconsin, entitled Burlington Wisconsin Master Plan--1960 in September 1960. The plan included information on Burlington's history and economic and demographic base and addressed the areas of traffic circulation, utilities, education, recreation, property identification, and municipal functions, as well as land use. The plan was prepared for the design year 1975 and did not extend much beyond the then-existing city boundaries. The delineation of neighborhood units was not included as part of that plan. The plan contained much information of value and, while now obsolete, was carefully reviewed as a part of the current planning effort in order to incorporate in this effort those concepts still held to be valid. These include the analysis of historic and forecast population growth for the City; the analysis of transportation within and around the City; the analysis of storm water drainage patterns, the sanitary sewer system, and the water distribution system; and the analysis of recreational and municipal facilities. This plan, however, was not adopted by the City.

Sound planning practice dictates that, just as neighborhood plans should be prepared within the framework of community plans, community plans should be prepared within the framework of regional plans. The adopted regional land use plan for the year 2000 as it applies to the City of Burlington and surrounding area is shown on Map 2, together with the delineated Echo Lake Neighborhood boundary.

Several of the adopted regional plan elements are particularly important to the preparation of a general plan for the City of Burlington and, therefore, to the development of precise neighborhood development plans within the City. These elements are described in the following SEWRPC reports: SEWRPC Planning Report No. 12, A Comprehensive Plan for the Fox River Watershed, which provides information on flooding along the Fox River, White River, and Echo Lake and other hydrologic and hydraulic data pertinent to the sound development of the Echo Lake Neighborhood; SEWRPC Planning Report No. 20, A Regional Housing Plan for Southeastern Wisconsin, which contains recommendations for low- and moderate-income housing development; SEWRPC Planning Report No. 21, A Regional Airport System Plan for Southeastern Wisconsin, which contains recommendations for airport system development; SEWRPC Planning Report No. 22,

Figure 1

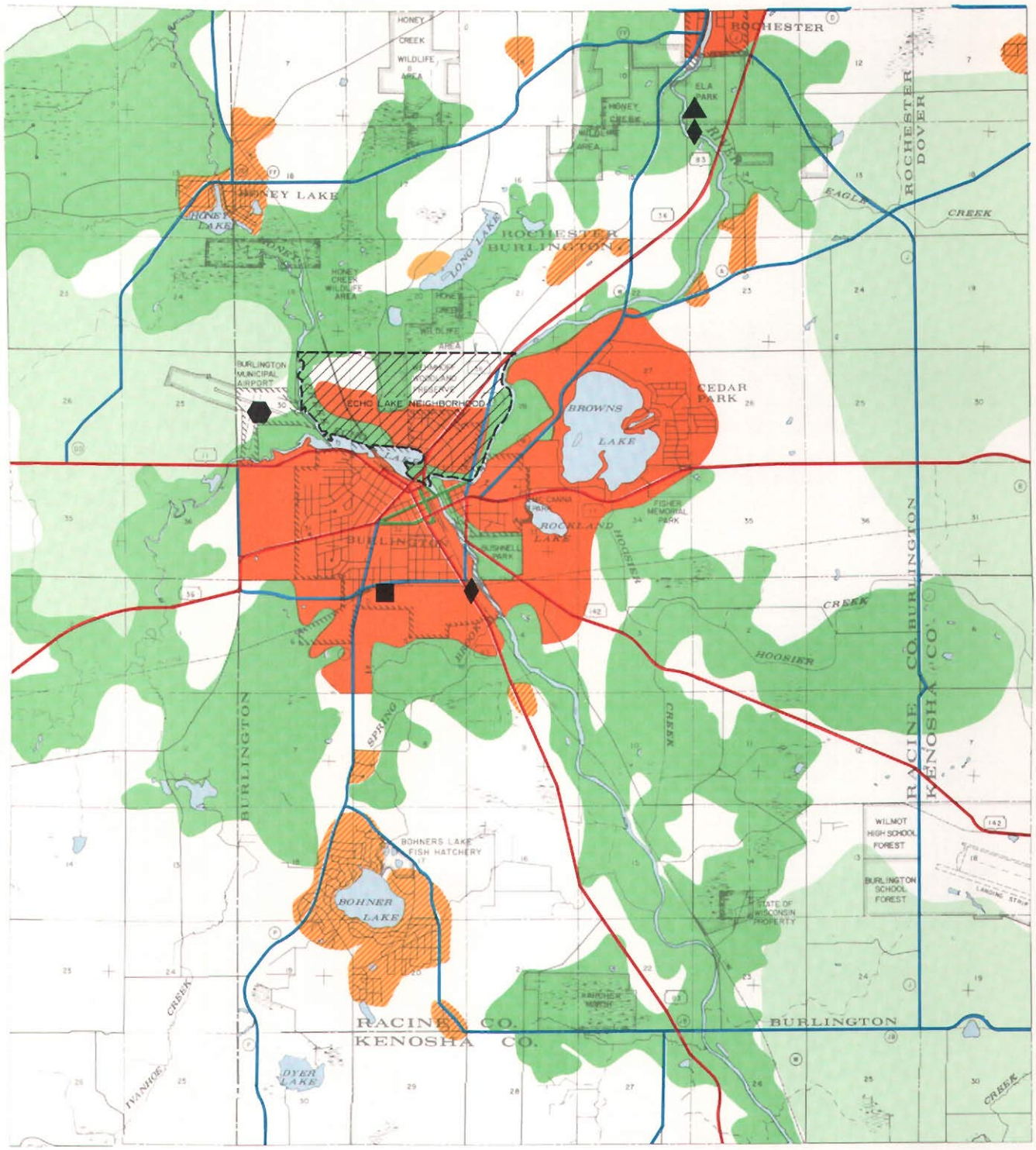
THE NEIGHBORHOOD PLANNING PROCESS



Source: SEWRPC.

Map 2

SELECTED ELEMENTS OF THE REGIONAL LAND USE, PARK AND OPEN SPACE, AND TRANSPORTATION PLANS FOR THE CITY OF BURLINGTON PLANNING AREA: 2000



LEGEND

- SUBURBAN RESIDENTIAL (0.2-0.6 DWELLING UNITS PER NET RESIDENTIAL ACRE)
- LOW DENSITY RESIDENTIAL (0.7-2.2 DWELLING UNITS PER NET RESIDENTIAL ACRE)
- MEDIUM DENSITY RESIDENTIAL (2.3 6.9 DWELLING UNITS PER NET RESIDENTIAL ACRE)
- MAJOR INDUSTRIAL CENTER
- MAJOR PUBLIC OUTDOOR MULTI-USE RECREATION CENTER
- AIRPORT
- PUBLIC SEWAGE TREATMENT PLANT
- PRIMARY ENVIRONMENTAL CORRIDOR
- PRIME AGRICULTURAL LAND
- OTHER AGRICULTURAL AND RURAL LAND
- WATER

ARTERIAL STREET AND HIGHWAY SYSTEM

- STATE TRUNK
- COUNTY TRUNK
- LOCAL

GRAPHIC SCALE
0 1 MILE
0 2000 4000 6000 8000 FEET

Source: SEWRPC.

A Jurisdictional Highway System Plan for Racine County, which contains recommendations for future highway system development; SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin: 2000, which contains recommendations for areawide land use and transportation system development and provides a particularly important basis for detailed neighborhood planning in Burlington; SEWRPC Planning Report No. 27, A Regional Park and Open Space Plan for Southeastern Wisconsin: 2000, which contains recommendations for park and open space reservation and development; and SEWRPC Planning Report No. 30, A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000, which contains recommendations for the treatment of sanitary sewage, the sizing of sewage treatment plants, and the location and extent of sanitary sewer service areas. The findings and recommendations of these adopted regional plan elements are all reflected as appropriate in the neighborhood unit development plan presented herein.

In the preparation for its neighborhood planning program, the City of Burlington in May 1973 obtained 1" = 200' scale, two-foot contour interval, topographic maps, prepared to Regional Planning Commission specifications, from the Racine County Planning Committee. Data used to determine real property boundary line patterns in the Echo Lake Neighborhood were gathered by the Southeastern Wisconsin Regional Planning Commission from available county tax records. The mapping of the real property boundaries upon the earlier prepared topographic maps was performed by the Southeastern Wisconsin Regional Planning Commission in July 1979. The resulting topographic and real property boundary data were essential to the preparation of the precise neighborhood unit development plan documented herein.

Neighborhood Delineation

The 13 neighborhood units initially delineated in SEWRPC Community Assistance Planning Report No. 1, Residential, Commercial, and Industrial Neighborhoods--City of Burlington and Environs, were refined and redelineated by the City into 10 neighborhood units--Browns Lake East Neighborhood, Browns Lake North Neighborhood, Browns Lake West Neighborhood, Burlington Industrial Park, Echo Lake Neighborhood, Hoosier Creek Neighborhood, Quarry Ridge Neighborhood, Spring Brook Neighborhood, Village Center Neighborhood, and the White River Neighborhood. The neighborhood units, as initially identified in 1973, were based upon the first generation regional land use, sanitary sewerage, and transportation system plans in effect at that time. However, since 1973 significant changes have been made to these plans as they pertain to the Burlington area. For example, the previously proposed urban-area bypasses for STH 11 and STH 83, which would have formed logical boundaries for neighborhood units, are no longer included in the new regional transportation system plan. Also, three of the original 13 delineated neighborhoods were dropped from further consideration since the areas in which they were located are not planned for public sanitary facility service in the foreseeable future. While none of these changes significantly affects the Echo Lake Neighborhood, such changes do affect most of the other neighborhoods included in the original delineation of neighborhoods for the City of Burlington. Accordingly, subsequent planning efforts in the City should be based upon the new regional land use, sanitary sewerage system, and transportation system plans.

Inventory and Analysis

Reliable basic planning and engineering data, collected on a uniform, areawide basis, are absolutely essential to the formulation of workable neighborhood development plans. Consequently, inventory and the attendant analysis of the resulting data becomes one of the first operational steps in the planning process. The crucial nature of factual information in the neighborhood planning process should be evident, since no intelligent decisions can be made, or alternative courses of action evaluated, without knowledge of the current state of the system being planned. The sound formulation of a neighborhood unit plan for the City of Burlington and environs requires that factual data be developed on the existing land use pattern; on the potential ultimate demand for each of the various major land use categories based upon neighborhood development objectives, principles, standards, and design criteria; and on the major determinants of these ultimate demands, as well as on the underlying natural resource and public utility base and its ability to support land use development.

The necessary inventory and analysis not only provide data describing the existing conditions but also provide a basis for identifying existing and potential problems in the neighborhood planning area. The inventory data are also crucial to the forecasting of ultimate neighborhood land use needs, to formulating alternative neighborhood plans, and to evaluating such alternative plans.

Urban Design Criteria

Urban design criteria serve as a guide to the preparation of alternative neighborhood plans. Urban design criteria are that body of information which can be applied to the development of a solution or solutions to a specific design problem or set of problems and are of a high level of specificity. The neighborhood plan should be related, in terms of its physical design, to the attendant urban design criteria, as described in Chapter III of this report.

Development of Alternative Neighborhood Plans

In the neighborhood planning effort, data regarding the ultimate design population for the neighborhood unit must be considered and are used, in part, in determining the ultimate land use of the neighborhood unit. The ultimate design population should be accommodated in each of the alternative plan designs for the neighborhood unit.

Plan Evaluation and Selection

Alternative neighborhood plans should be evaluated based upon their relative ability to attain the agreed-upon neighborhood unit development objectives. Such evaluation involves the use of data obtained during the inventory and analysis stages of the neighborhood planning process, and of the results of the alternative plan preparation process. In addition, the neighborhood plan evaluation and selection process requires that citizen desires be considered prior to the selection and adoption of a neighborhood plan. These aspects are accommodated at public hearings on the alternative plans and the recommended plan.

Photo by Patrick J. Meehan.

Figure 2

ECHO LAKE AT THE SOUTHERN BOUNDARY OF THE ECHO LAKE NEIGHBORHOOD

Echo Lake, as it extends to the west looking from Milwaukee Avenue (STH 36 and STH 83), together with the Fox River form the southern boundary of the Echo Lake Neighborhood.

Neighborhood Plan Implementation

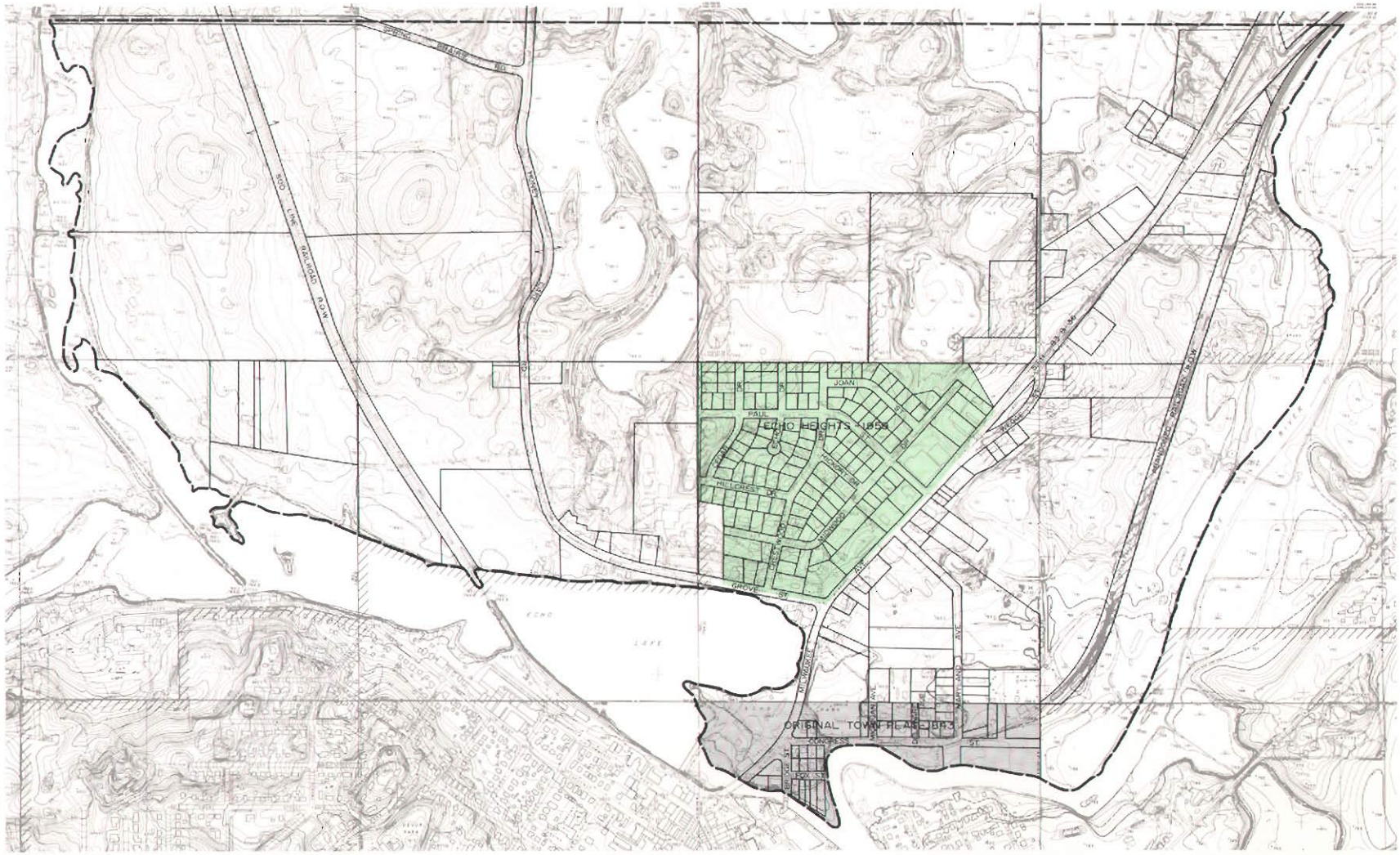
Implementation of the recommended neighborhood plan presented herein will require the use of several planning tools of a legal nature. Subdivision regulations should be used for the review of plats and certified survey maps specifying standards to be followed in the laying out of new streets, lots, and improvements in conformance with the plan. A zoning ordinance and accompanying zoning map should be used to determine the kind of land use, the arrangement of buildings on land, the intensity of the use of land, and needed supporting facilities which are permissible in the City in order to carry out the intent of the neighborhood plan. An official map should be used which shows the right-of-way lines and site boundaries of streets, highways, parkways, parks, and playgrounds which, according to the neighborhood plan, should be reserved for future public use. In addition, the implementation of the neighborhood plan is achieved through the formulation of public policies which will ensure plan implementation. The policies should be based upon the desired objectives of the plan and their respective attainment.

ECHO LAKE NEIGHBORHOOD LOCATION AND BOUNDARIES

The Echo Lake Neighborhood is located in the northern portion of the Burlington area. The neighborhood occupies portions of U. S. Public Land Survey Sections 28, 29, and 30 of Township 3 North, Range 19 East, Racine County. As shown on Map 2, the proposed Echo Lake Neighborhood is bounded on the north by Spring Prairie Road and U. S. Public Land Survey Sections 19, 20, and 21; on the south by Echo Lake (shown in Figure 2), the Quarry Ridge Neighborhood, and the Fox River; on the east by the Fox River; and on the west by Honey Creek. The total area of the Echo Lake Neighborhood is 995.5 acres. Of this total area, 316 acres, or about 32 percent, lie within the City of Burlington, and 679.5 acres, or about 68 percent, lie within the Town of Burlington.

Map 3

HISTORIC PLATTING WITHIN THE ECHO LAKE NEIGHBORHOOD: 1843-1979



LEGEND

- NEIGHBORHOOD BOUNDARY
- CITY OF BURLINGTON CORPORATE LIMITS: 1982
- EXISTING PROPERTY BOUNDARY LINE: 1982
- LANDS PLATTED BEFORE 1900
- LANDS PLATTED AFTER 1900
- UNPLATTED LANDS: 1982

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

HISTORY OF THE ECHO LAKE NEIGHBORHOOD

The southernmost portion of the Echo Lake Neighborhood was platted in 1843 as the Original Town Plat, a plat which created 101 lots. No subsequent subdivision plats were filed within the neighborhood area until 1959, when the Echo Heights subdivision in the south-central portion of the neighborhood was platted, a plat which created an additional 144 lots. Since 1959, no new subdivisions have been platted in the neighborhood area. Historic platting within the Echo Lake Neighborhood from 1843 to 1979 is shown on Map 3.

There are four sites in the Echo Lake Neighborhood which have historic significance. Two of those contain historic structures: the iron bridge spanning Echo Lake in the southwest corner of the neighborhood and the pioneer log cabin located in Echo Park. The other two sites of historic significance are archaeological sites in Echo Park, one consisting of Indian Mounds of the White/Fox River group, and the other an Indian worksite/campsite.

Chapter II

INVENTORY FINDINGS AND ANALYSIS

INTRODUCTION

The design of a neighborhood plan requires that certain factual data be gathered on the existing characteristics of the neighborhood area, including data on the underlying natural resource base as well as on the man-made features. The underlying natural resource base of the neighborhood includes topography and drainage patterns, soils, wetlands, woodlands, wildlife habitat, and climatic characteristics. Man-made features include community facilities, community utilities, real property ownership boundaries, land use, zoning, and the transportation system.

THE NATURAL RESOURCE BASE

The natural resources of an area are vital to its economic development and its ability to provide a pleasant and habitable environment for human life. Natural resources not only condition, but are conditioned by, growth and development. Meaningful planning efforts must, therefore, recognize the existence of a limited natural resource base to which urban development must be properly adjusted if serious environmental and developmental problems are to be avoided. This is particularly true in the Echo Lake Neighborhood because of the abundance of streams, lakes, wetlands, and other associated significant environmental features. A sound evaluation and analysis of the natural resource capabilities is, therefore, particularly important to planning for the development of the area.

For the purposes of the Echo Lake Neighborhood development plan, the principal elements of the natural resource base are defined as 1) the physiography and water-related features which include principal topographic features, watershed and watershed subbasin boundaries, surface water, wetland areas, and isolated floodland areas; 2) soil characteristics; 3) woodland areas; 4) wildlife habitat areas; and 5) climatic and microclimatic characteristics (neighborhood site-specific climate). Without a proper understanding and recognition of these elements and of the interrelationships which exist between them, human use and alteration of the natural environment proceeds at the risk of excessive costs in terms of both monetary expenditures and environmental degradation. The natural resource base is highly subject to grave misuse through improper land use and transportation facility development. Such misuse may lead to severe environmental problems which are difficult and costly to correct, and to the deterioration and destruction of the natural resource base itself. Intelligent selection of the most desirable land use plan from among the alternatives available must, therefore, be based in part upon a careful assessment of the effects of each plan upon the supporting natural resource base.

Topography and Surface Water Features

Map 4 shows the topography, surface drainage patterns, wetland areas, and flood hazard areas of the Echo Lake Neighborhood area.

Wetlands: Wetlands are defined as 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 swamps, marshes, bogs, and similar areas. Precipitation provides water to wetlands falling as either rain or snow, becoming surface water runoff or percolating through the soil to become groundwater seepage. Wetlands may receive mostly surface water (direct precipitation, overland flow, or lake and flood waters) or mostly groundwater (precipitation that infiltrates and moves through the ground). Surface water input is usually of short duration, whereas groundwater inflow is usually continuous. Where the wetland sits in the landscape affects the type of water it receives. Wetlands can occur in depressions or on slopes.

Wetlands have an important set of common, natural functions which make them valuable resources for the Burlington area. These resource values can be summarized as follows:

1. Wetlands affect the quality of water. Aquatic plants change inorganic nutrients such as phosphorus and nitrogen into organic material, storing it in their leaves or in the peat which is composed of their remains. The stems, leaves, and roots of these plants also slow the flow of water through a wetland, allowing the silt to settle out as well as catching some of it themselves. Thus, the removal of wetlands causes faster runoff and influences the quantity of runoff. Consequently, wetlands protect the downstream or offshore water resources from siltation and pollution.

2. Wetlands also influence the quantity of water runoff. As stated above, they act to retain water during dry periods and hold it back during floods, thus keeping the water table high and relatively stable. One acre of marsh is capable of absorbing or holding 300,000 gallons of water and, thus, helps protect areas against flooding and drought.

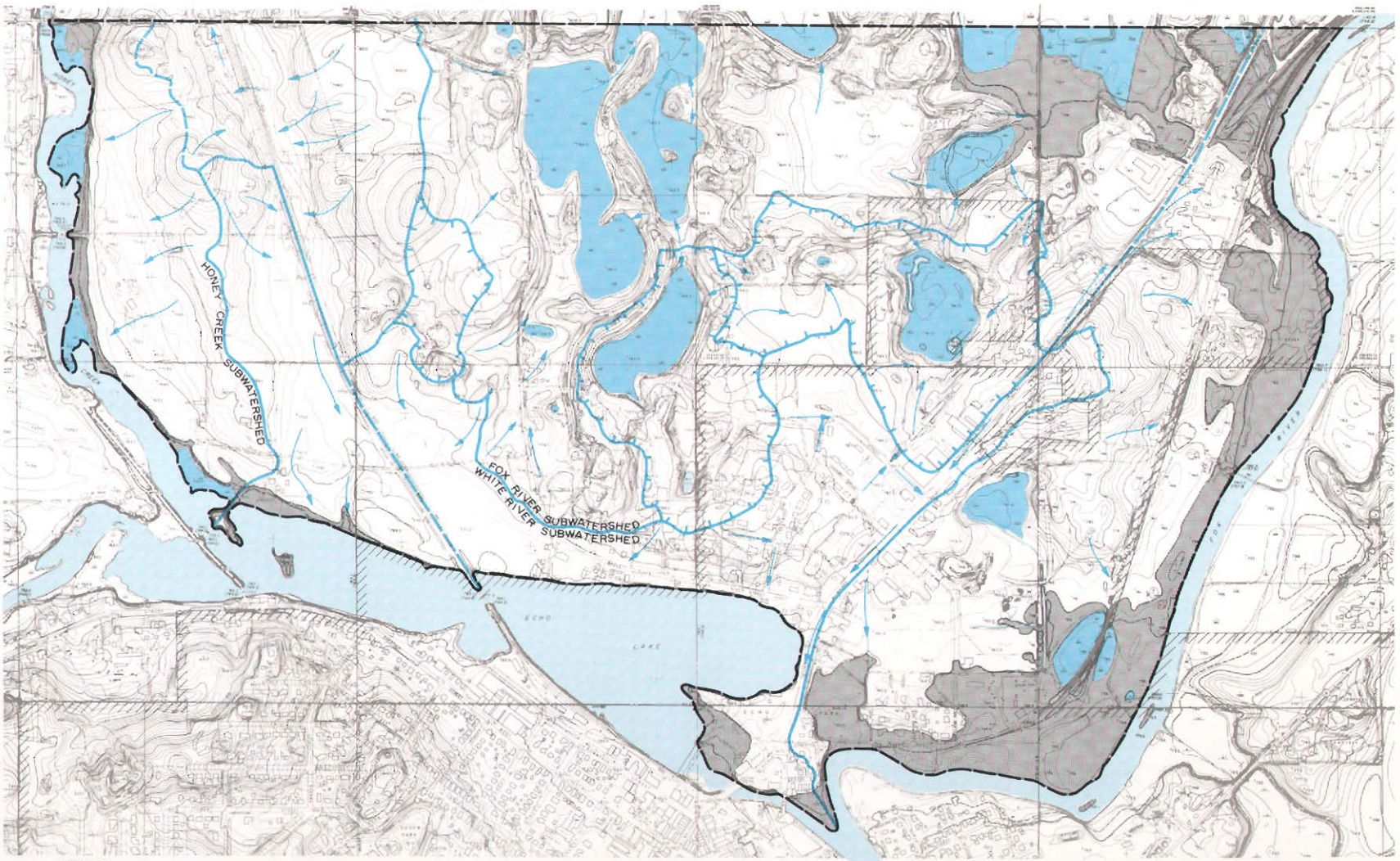
3. Wetlands are important resources for overall environmental health and diversity. They provide essential breeding, nesting, resting, and feeding grounds and predator escape cover for many forms of wildlife. These factors have the social value of providing general environmental health, as well as opportunities for recreational, research, and educational activities, while enhancing the aesthetics of the community.

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

Recognizing the many environmental attributes of wetland areas, continued efforts should be made to protect this resource by discouraging costly, both in monetary and environmental terms, wetland draining, filling, and urbanization.

Map 4

TOPOGRAPHY, SURFACE DRAINAGE, WETLAND AREAS, AND WATERSHED FEATURES IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- TWO-FOOT CONTOUR INTERVAL
- NEIGHBORHOOD BOUNDARY
- SUBWATERSHED BOUNDARY
- SUBBASIN BOUNDARY
- AREAS OF INTERNAL DRAINAGE
- DIRECTION OF FLOW
- WATER OR WATER COURSE
- WETLAND
- 100 YEAR RECURRENCE INTERVAL FLOODLANDS

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

The approximately 92 acres of wetlands in the Echo Lake Neighborhood area total about 9 percent of the area of the neighborhood, and include wetland-woodland areas such as the Wehmhoff Woodland Preserve. The greatest concentration of wetland areas occurs in the central and northeastern portions of the neighborhood.

The Echo Lake Neighborhood lies entirely within the Fox River watershed. Subwatershed boundaries, which identify the Honey Creek, the White River, and the Middle Fox River subwatersheds, are shown on Map 4. The general pattern of storm water runoff in each subwatershed is indicated on Map 4.

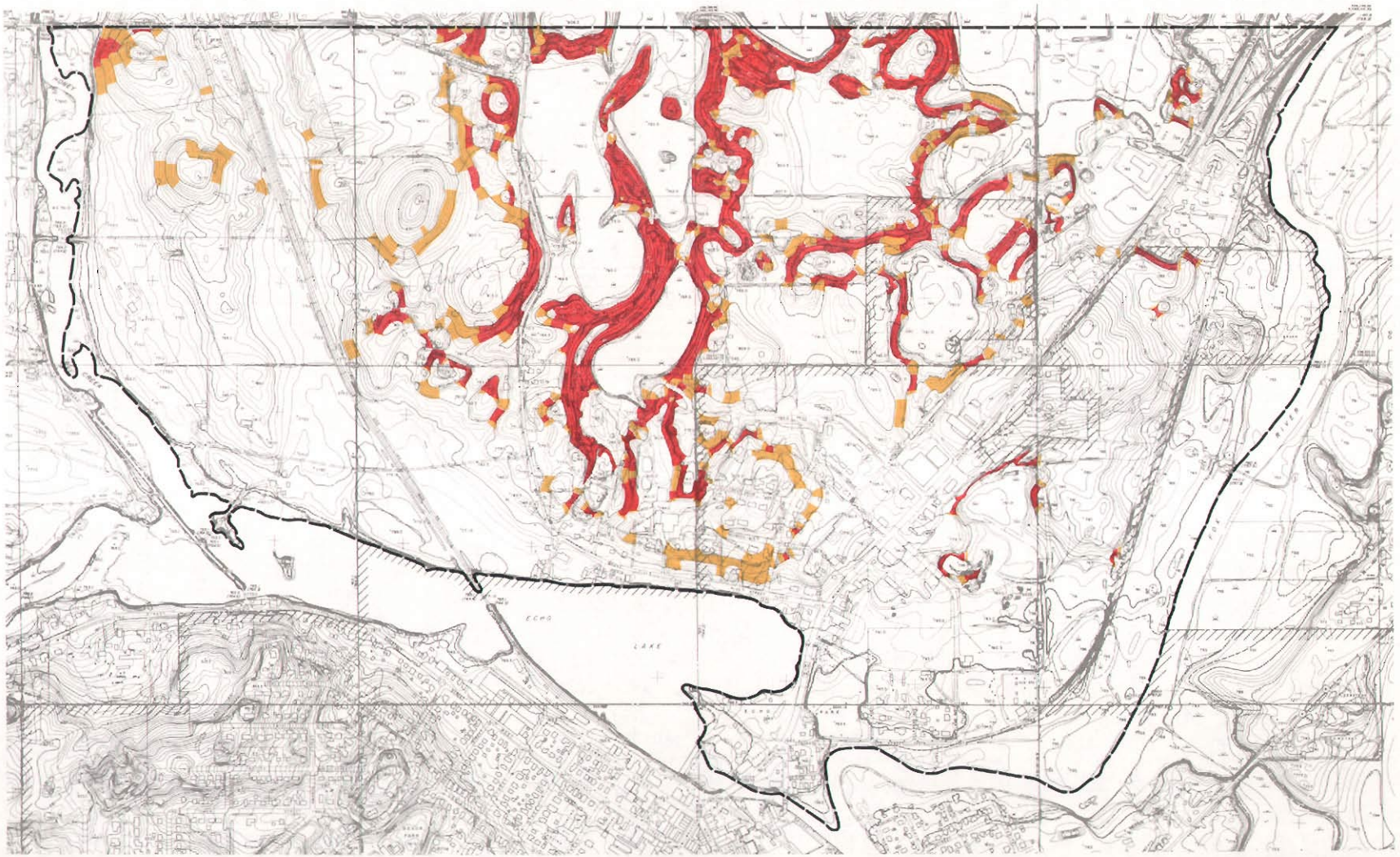
Floodlands: The floodlands of a river or stream are the wide, gently sloping areas contiguous with, and usually lying on both sides of, a river or stream channel. Rivers and streams occupy their channels most of the time. However, during even minor flood events, stream discharges increase markedly such that the channel is not capable of conveying all of the flow. As a result, stages increase and the river or stream spreads laterally over the floodlands. The periodic flow of a river onto its floodlands is a normal phenomenon, and in the absence of major, costly structural flood control works, will occur regardless of whether or not urban development is permitted on the floodlands. More specifically, 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 the event that may be expected to 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. The 100-year recurrence interval floodland contains within its boundaries the areas inundated by floods of less severe but more frequent occurrence, such as the 50-, 25-, 10-, and 5-year recurrence interval events. Floodland areas are generally not well suited to urban development because of flood hazards, high water tables, and inadequate soils. These floodland areas are, however, generally prime locations for needed park and open space areas.

Within the Echo Lake Neighborhood, 100-year recurrence interval floodlands are located along Honey Creek, Echo Lake, and the Fox River. These 100-year recurrence interval floodlands are shown on Map 4.

Slopes: Map 5 provides a slope analysis of the lands in the Echo Lake Neighborhood. This analysis serves as an aid in identifying areas within the neighborhood which have slopes of 12 percent or less, slopes from 12 percent to 20 percent, and slopes of 20 percent or more. Provided other development characteristics are favorable, slopes of less than 12 percent generally lend themselves well to urban-type development. Slopes of 12 percent and greater present difficulties for urban development, generally requiring extensive grading in order to prepare the lands for development, a practice which may destroy the natural resource base-related amenities of the area. Lands with slopes of 12 percent or more are found in the central and northeastern portions of the Echo Lake Neighborhood and must be carefully dealt with in the design and development of the neighborhood. The areas of steep slopes in the Echo Lake Neighborhood are generally associated with contiguous, low-lying wetland areas.

Map 5

ANALYSIS OF SLOPES IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- TWO-FOOT CONTOUR INTERVAL
- NEIGHBORHOOD BOUNDARY
- SLOPES LESS THAN 12 PERCENT
- SLOPES OF 12 TO 20 PERCENT
- SLOPES GREATER THAN 20 PERCENT

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Soils

Soil properties exert a strong influence on the manner in which man uses land. Soils are an irreplaceable resource, and development pressures upon land are making this resource more valuable. A need exists, therefore, to analyze soils in the Echo Lake Neighborhood in terms of how the soils can be best used and managed. This analysis requires a soils suitability study which maps the geographic location of the soils in the Echo Lake Neighborhood. Through the use of data provided by detailed soils surveys, the Commission staff has prepared soils interpretive maps showing the suitability of the various soil types for a variety of uses, including residential, commercial, and industrial uses.

Limitation of Soils: 21 identified types of soils occur within the Echo Lake Neighborhood area. The most prevalent type of soil is the Fox loam, which covers over 20 percent of the total area of the neighborhood. The second most prevalent type of soil found in the neighborhood is the Casco loam, which covers almost 19 percent of the total area of the neighborhood. Table 3 lists all the soils found in the Echo Lake Neighborhood area and indicates the suitability of these soils for residential development with public sanitary sewer service, with onsite soil absorption sewage disposal systems on lots less than one acre in area, with onsite soil absorption sewage disposal systems on lots one acre or more in area, and for light industrial and commercial buildings. The term "very slight limitation" in Table 3 indicates that the soil has few or no limitations for the listed use. The term "slight limitation" indicates that the soil has few limitations which can be readily overcome. The term "moderate limitation" indicates that the soil has more severe limitations, but ones that can normally be overcome with proper planning, careful design, and average management. The term "severe limitations" indicates that the soil has severe limitations that are too difficult and costly to overcome and which require above average design and management. The term "very severe limitations" indicates that development of the soil for the uses indicated will entail costs that are generally prohibitive, and will generally require major soil reclamation work.

Map 6 shows the location of those soils with severe and very severe limitations for residential development with public sanitary sewer service, including marsh soils, Sebewa silt loam, Mussey loam, Ehler silt loam, Bono silty clay loam, Abington silt loam, Terrace Escarpment (outwash), and Houghton mucky peat. Poorly drained soils have particularly severe limitations for residential use because development of these soils usually results in wet basements, or requires costly measures to prevent water from seeping into basements.

Selected Characteristics of Soils: Large areas in the Echo Lake Neighborhood contain soils which are not well suited for urban development. Table 4 and Map 7 indicate that approximately 391 acres, or about 39 percent of the total area of the neighborhood, are covered by soils which have severe and very severe limitations for residential use even with sanitary sewers, and which should be carefully considered in the development of the neighborhood. Generally, the soils with poor characteristics for development are located in wetland areas or are subject to flooding. Other soils that exhibit poor characteristics for residential development are those having a fluctuating

Table 3

LIMITATIONS OF SOILS FOR RESIDENTIAL, LIGHT INDUSTRIAL, AND COMMERCIAL DEVELOPMENT FOR THOSE SOIL SERIES FOUND IN THE ECHO LAKE NEIGHBORHOOD

Soil Type				Limitations of Soil for:				Area Covered (acres)	Percent of Neighborhood
SEWRPC Type		USDA Type							
SEWRPC Symbol	Name	USDA Symbol	Name	Residential Development with Public Sewer Service	Onsite Soil Absorption on Lots Less Than One Acre	Sewage Disposal Systems on Lots One Acre or More	Light Industrial and Commercial Buildings		
4	Marsh	Mf	Marsh	Very Severe--high water table	Very Severe--high water table; systems will not operate when flooded	Very Severe--high water table; systems will not operate when flooded	Very Severe--high water table	8.1	0.8
21	Hebron Loam	HeA HeB2 HeC2	Hebron Loam	Moderate on 0-12 percent slopes; Severe on steeper slopes; erosive on slopes, low bearing capacity, high shrink-swell potential	Severe--slow permeability restricts use of systems	Moderate--slow permeability restricts use of systems	Moderate--high shrink-swell potential, high compressibility, low shear strength	9.2	0.9
40	Saylesville Loam	ShA ShB ShC2	Saylesville Silt Loam	Moderate on 0-12 percent slopes; Severe on steeper slopes; erosive on slopes, high shrink-swell potential, frost heave	Severe--slow permeability restricts use of systems	Moderate on 0-12 percent slopes; Severe on steeper slopes; slow permeability restricts use of systems	Moderate on 0-6 percent slopes; Severe on steeper slopes; high shrink-swell potential, frost heave, erosive on slopes	13.0	1.3
72	Fox Loam	FoA FoB FoC2 CeC2 SrB FrA FrB	Fox Loam Casco Loam Sisson Fine Sandy Loam Fox Loam, clayey substratum	Slight on 0-12 percent slopes; Moderate on 12-20 percent slopes; Severe on steeper slopes; slightly drouthy, erosive on slopes	Very Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Very Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	208.4	20.9
72Z	Hebron Loam	FrA FrB	Fox Loam, loam substratum	Moderate on 0-12 pecent slopes; Severe on steeper slopes; erosive on slopes, low bearing capacity, high shrink-swell potential	Severe--slow permeability restricts use of systems	Moderate--slow permeability restricts use of systems	Moderate--high shrink-swell potential, high compressibility, low shear strength	13.0	1.3
73	Fox Silt Loam	FsA FsB FoC2	Fox Silt Loam Fox Loam	Slight on 0-12 percent slopes; Moderate on 12-20 percent slopes; Severe on steeper slopes; slightly drouthy, erosive on slopes	Very Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Very Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes; erosive on slopes	178.6	17.9

Table 3 (continued)

Soil Type				Limitations of Soil for:				Area Covered (acres)	Percent of Neighborhood
SEWRPC Type		USDA Type							
SEWRPC Symbol	Name	USDA Symbol	Name	Residential Development with Public Sewer Service	Onsite Soil Absorption on Lots Less Than One Acre	Sewage Disposal Systems on Lots One Acre or More	Light Industrial and Commercial Buildings		
75	Rodman Gravelly Loam	CcB CrC CrD2 CrE	Casco Sandy Loam Casco-Rodman Complex	Moderate on 0-12 percent slopes; Severe on steeper slopes; erosive on slopes, drouthy, difficult to install utilities; stony in places	Moderate on 0-12 percent slopes; Severe on steeper slopes; contamination of groundwater	Moderate on 0-12 percent slopes; Severe on steeper slopes; contamination of groundwater	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes; erosive on slopes, stony in places	22.7	2.3
76	Sebewa Silt Loam	Sm Cw So	Sebewa Silt Loam Colwood Silt Loam Sebewa Silt Loam, clayey substratum	Severe--high water table; wet basements, flotation of pipes	Very Severe--high water table; systems will not operate	Very Severe--high water table; systems will not operate	Severe--high water table	2.2	0.2
172	Casco Loam	FoA CeB CeB2 CeC2 CeD2 CrE MyB CoC CoD	Fox Loam Casco Loam Casco-Rodman Complex Miami Silt Loam Casco-Miami Loams	Slight on 0-12 percent slopes; Moderate on 12-20 percent slopes; Severe on steeper slopes; erosive on slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes; erosive on slopes, cuts difficult to vegetate	186.8	18.8
176	Mussey Loam	MzK	Mussey Loam	Severe--high water table; wet basements, flotation of pipes, occasional overflow	Very Severe--high water table; systems will not operate	Very Severe--high water table; systems will not operate	Severe--high water table	4.9	0.5
213	Ehler Silt Loam	Ph	Pella Silt Loam	Severe--liquefies easily, low bearing capacity, frost heave, high water table, wet basements, flotation of pipes	Very Severe--high water table; systems will not operate	Very Severe--high water table; systems will not operate	Severe--high water table; high shrink-swell potential, piping	15.7	1.6
217	Bono Silty Clay Loam	Mzc	Montgomery Silty Clay Loam	Severe--low bearing capacity, high shrink-swell potential, high water table, wet basements	Very Severe--high water table; slow permeability; systems will not operate	Very Severe--high water table; slow permeability, systems will not operate	Severe--high water table; high shrink-swell potential, low bearing capacity, low shear strength	20.0	2.0

Table 3 (continued)

Soil Type				Limitations of Soil for:				Area Covered (acres)	Percent of Neighborhood
SEWRPC Type		USDA Type							
SEWRPC Symbol	Name	USDA Symbol	Name	Residential Development with Public Sewer Service	Onsite Soil Absorption on Lots Less Than One Acre	Sewage Disposal Systems on Lots One Acre or More	Light Industrial and Commercial Buildings		
233	Matherton Silt Loam	MkA	Matherton Loam	Moderate--high water table	Very Severe--high water table; systems will not operate	Severe--high water table; systems will not operate	Moderate--high water table; frost heave	7.6	0.8
282	Casco-Rodman Loams	CeB CrC CrD2 CrE	Casco Loam Casco-Rodman Complex	Moderate on 0-12 percent slopes; Severe on steeper slopes; erosive on slopes, drouthy, difficult to install utilities, stony in places	Moderate on 0-12 percent slopes; Severe on steeper slopes; contamination of groundwater	Moderate on 0-12 percent slopes; Severe on steeper slopes; contamination of groundwater	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes; erosive on slopes, stony in places	103.2	10.4
324	Ionia Loam	DrA	Dresden Loam	Very Slight--erosive on slopes	Moderate--high water table for short periods restricts use of systems	Moderate--high water table for short periods restricts use of systems	Slight--high water table; erosive on slopes	30.3	3.0
326	Abington Silt Loam	Dt	Drummer Silt Loam, gravelly substratum	Severe--high water table; occasional overflow, wet basements	Very Severe--high water table; systems will not operate	Very Severe--high water table; systems will not operate	Moderate--high water table; occasional overflow	8.1	0.8
332	Kane Silt Loam	KaA MzfA KhA	Kane Loam Mundelein Silt Loam Kane Silt Loam, clay substratum	Moderate--high water table	Very Severe--high water table; systems will not operate	Severe--high water table; systems will not operate	Moderate--high water table; frost heave	5.4	0.5
361	Miami Loam	MyB MyCz MwD2	Miami Silt Loam Miami Loam	Very Slight on 0-6 percent slopes; Slight on 6-12 percent slopes; Moderate on 12-20 percent slopes; Severe on steeper slopes; erosive on slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	Slight on 0-6 percent slopes; Moderate on 6-12 percent slopes; Severe on steeper slopes	19.4	1.9
369	Mosel Silt Loam	AzB	Aztalan Loam	Moderate--low bearing capacity, high shrink-swell potential, high water table	Very Severe--high water table; slow permeability, systems will not operate	Very Severe--high water table; slow permeability, systems will not operate	Severe--high water table; high shrink-swell potential, low bearing capacity, low shear strength, high compressibility	34.6	3.5

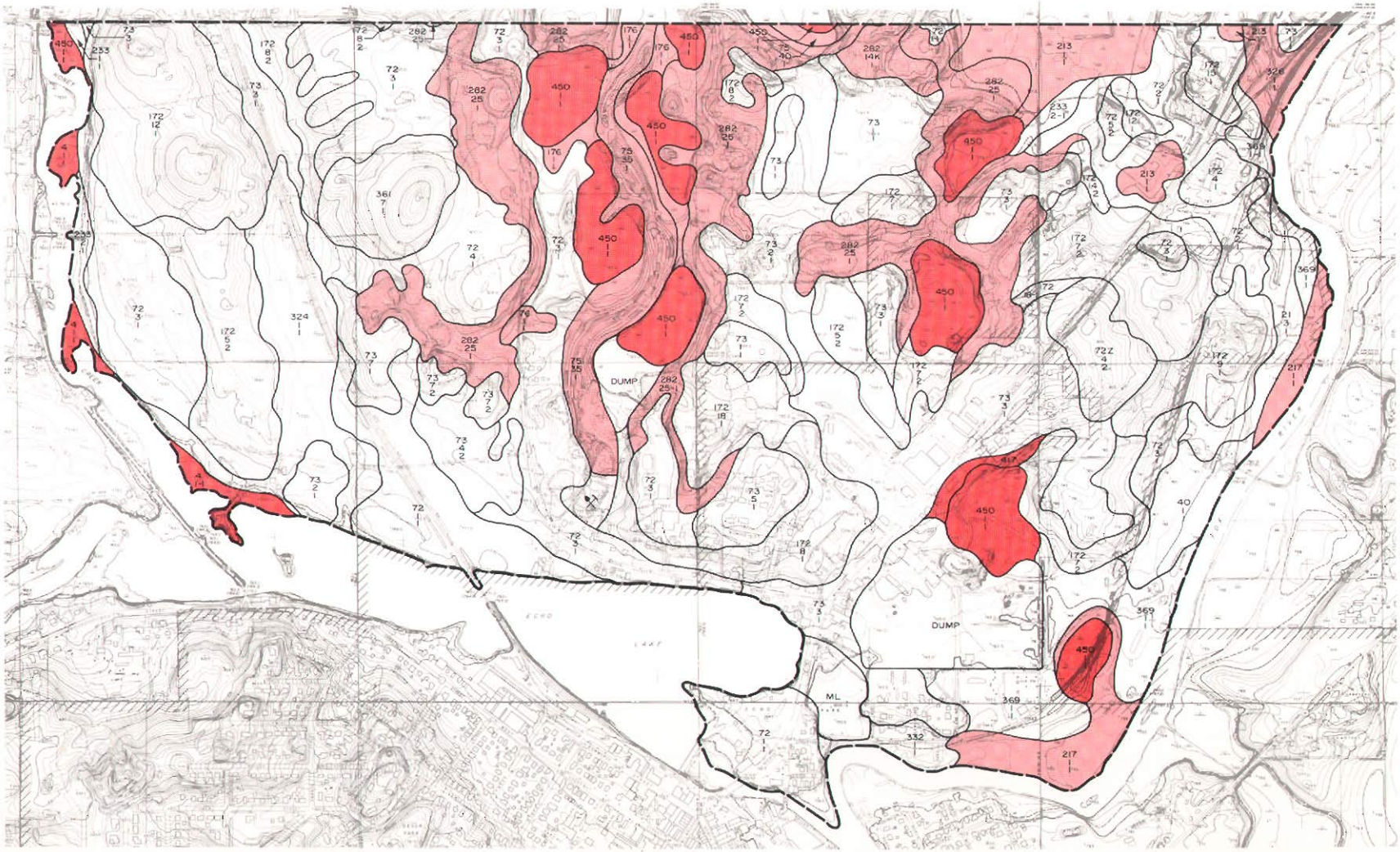
Table 3 (continued)

Soil Type				Limitations of Soil for:				Area Covered (acres)	Percent of Neighborhood
SEWRPC Type		USDA Type							
SEWRPC Symbol	Name	USDA Symbol	Name	Residential Development with Public Sewer Service	Onsite Soil Absorption on Lots Less Than One Acre	Sewage Disposal Systems on Lots One Acre or More	Light Industrial and Commercial Buildings		
417	Terrace Escarpment, Outwash	CrD2 CrE	Terrace Escarpments, Outwash	Very Severe--slopes generally too steep to install and maintain utilities	Very Severe--slopes too steep	Very Severe--slopes too steep	Very Severe--slopes too steep; subject to erosion	3.8	0.4
450	Houghton Mucky Peat	Ht	Houghton Muck	Very Severe--erosive; subject to shrinkage, low bearing capacity, high water table	Very Severe--high water table; systems will not operate	Very Severe--high water table; systems will not operate	Very Severe--erosive; high compressibility and instability, high water table	55.6	5.6
Dump	--	--	--	--	--	--	--	34.6	3.5
ML	Made Land	--	--	--	--	--	--	7.6	0.8
	Quarry	--	--	--	--	--	--	2.7	0.3
Total	--	--	--	--	--	--	--	995.5	100.0

Source: SEWRPC.

Map 6

SOIL LIMITATIONS FOR RESIDENTIAL DEVELOPMENT ON LOTS SERVED BY PUBLIC SANITARY SEWER SERVICE IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- 73 / 2 / 1 — SOIL TYPE DESIGNATION / PERCENT SLOPE / EROSION FACTOR
- SOILS THAT HAVE VERY SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT SERVED BY PUBLIC SANITARY SEWERS
- SOILS THAT HAVE SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT SERVED BY PUBLIC SANITARY SEWERS
- OTHER SOILS

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Table 4

SELECTED CHARACTERISTICS OF SOILS
IN THE ECHO LAKE NEIGHBORHOOD

Selected Characteristics	Area Covered (acres)	Percent of Total
Swamps, Marshes, Organic Materials, or Soils Which are Subject to Flooding or Overflow.....	87.5	8.8
Soils Which Have a Fluctuating or High Water Table or are Subject to Ponding, Overflow, Runoff, or Overwash Hazard.....	78.5	7.9
Soils That Have a Slow Permeability Rate.....	35.2	3.5
Soils That are Underlain by Shallow Bedrock or in Which Filter Fields are Subject to Siltation or the Groundwater Table is Subject to Contamination.....	--	--
Soils on Slopes of 13 Percent or Greater and Soils That are Highly Erosive.....	190.0	19.1
All Other Soils.....	604.3	60.7
Total	995.5	100.0

Source: SEWRPC.

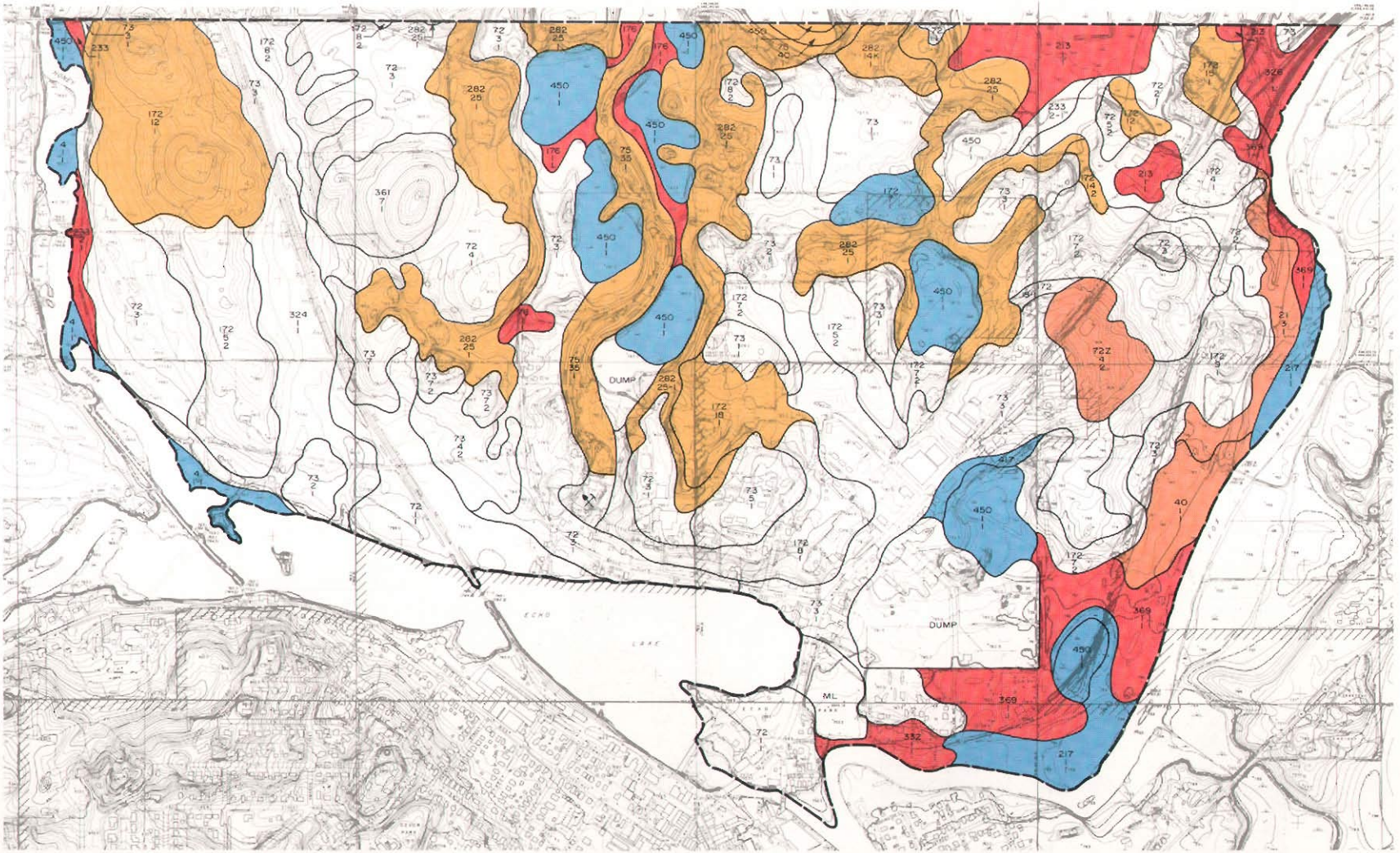
or high water table; those that are subject to ponding, overflow, or overwash hazard; and those which have a slope of 12 percent or more and have an erosive quality.

Woodlands and Wildlife Habitat Areas

Woodlands: Map 8 shows the location and extent of woodland and wildlife habitat areas in the Echo Lake Neighborhood. Woodlands have much value beyond potential monetary return as forest products. With good management they can serve a variety of uses and provide a number of important benefits. The quality of life within an area is greatly influenced by the overall quality of the environment, as measured in terms of clean air, clean water, scenic beauty, and diversity. In addition to contributing to clean air and water, the maintenance of woodlands within an area can contribute to the scenic beauty of an area and to the maintenance of a diversity of plant and animal life in association with human life. The existing woodlands of the neighborhood area, which required a century or more to develop, can be destroyed through mismanagement within a comparatively short time. The deforestation of woodlands contributes to the siltation of lakes and streams and the destruction of wildlife habitat. Woodlands can and should be maintained for their total values: scenic, wildlife, open space, educational, recreational, and air and water quality protection and enhancement. Woodlands in the Echo Lake Neighborhood occupy a combined area of approximately 99 acres of land, or 9.9 percent of the total area of the neighborhood, and generally occur in scattered areas throughout the neighborhood as shown on Map 8. However, a large concentration

Map 7

SELECTED CHARACTERISTICS OF SOILS IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- 73 / 2 / 1 — SOIL TYPE DESIGNATION / PERCENT SLOPE / EROSION FACTOR
- SWAMPS, MARSHES, ORGANIC MATERIALS, OR SOILS THAT ARE SUBJECT TO FLOODING OR OVERFLOW
- SOILS THAT HAVE A FLUCTUATING OR HIGH WATER TABLE OR ARE SUBJECT TO PONDING, OVERWASH, OR RUNOFF HAZARD
- SOILS THAT HAVE A SLOW PERMEABILITY RATE
- SOILS THAT HAVE A SLOPE OF 12 PERCENT OR GREATER
- OTHER SOILS

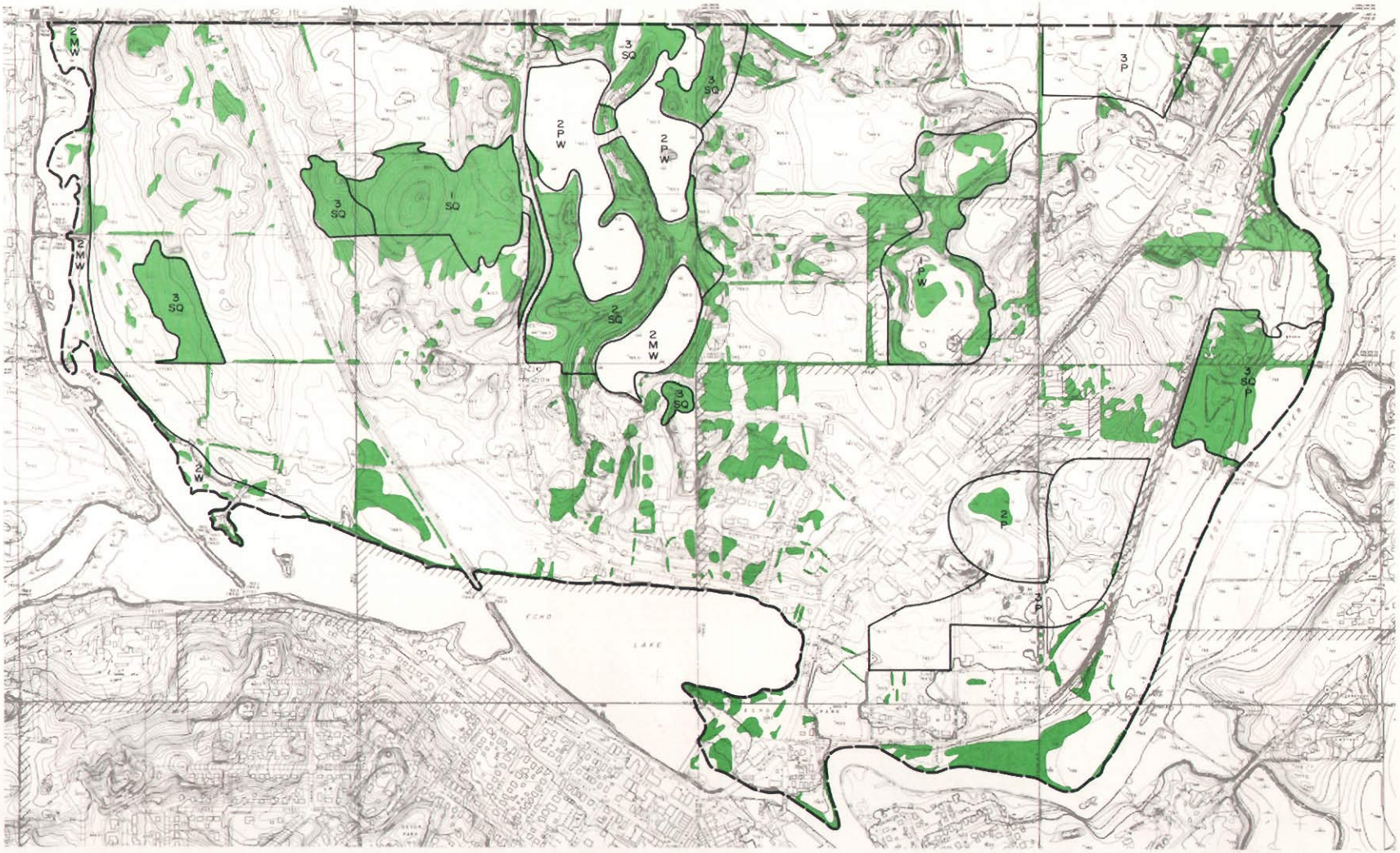
GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Map 8

WOODLAND AND WILDLIFE HABITAT AREAS IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- WOODLAND AREA
- WILDLIFE HABITAT AREA

WILDLIFE HABITAT RATING

- 1 HIGH VALUE
- 2 MEDIUM VALUE
- 3 LOW VALUE

DESIGNATION OF SPECIES GROUP

- P PHEASANT AND ASSOCIATED SPECIES
- SQ SQUIRREL AND ASSOCIATED SPECIES
- M MUSKRAT
- W WATERFOWL

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

of woodland area is represented by the 87-acre Wehmhoff Woodland Preserve, which is situated in the north-central portion of the neighborhood. The Wehmhoff Woodland Preserve is contiguous to the 938-acre Honey Creek Wildlife Area lying north of the Echo Lake Neighborhood.

Wildlife Habitat Areas: The existing wildlife habitat areas in the Echo Lake Neighborhood are also shown on Map 8. The map indicates the type of wildlife species associated with each habitat area outlined and also the respective value of each area in terms of three classifications. These classifications are based upon an appraisal of the area's overall value as habitat and potential for recreational use. The principal criteria used in determining the three classifications were size and quality of the habitat area, location of the area, and the number and kind of species within the area. Wildlife habitat areas are defined here as those areas which fulfill wildlife needs for food, cover, water, and space. The wildlife habitat areas are rated as having either high, medium, or low values.

A high-value wildlife habitat area is defined as an area which has a large diversity of species and in which the requirements of the major species which inhabit the area are fully met; an area in which the vegetation provides for nesting, travel routes, concealment, and modification of weather impact; and an area which has undergone little or no disturbance and is located in proximity to other wildlife habitat areas.

A medium-value wildlife habitat is defined as an area possessing all of the features of a high-value habitat but at a lower level of quality. The species diversity may not be as high as in the high-value areas. The structure and composition of the vegetation may not be fully adequate to provide for all of the nesting, travel route, concealment, or modification of weather impact needs of the wildlife. The area may have undergone disturbances or may not be located in proximity to other wildlife habitat areas. Deficiencies in any one or more of these factors may contribute to the classification of an area as a medium-value wildlife habitat area.

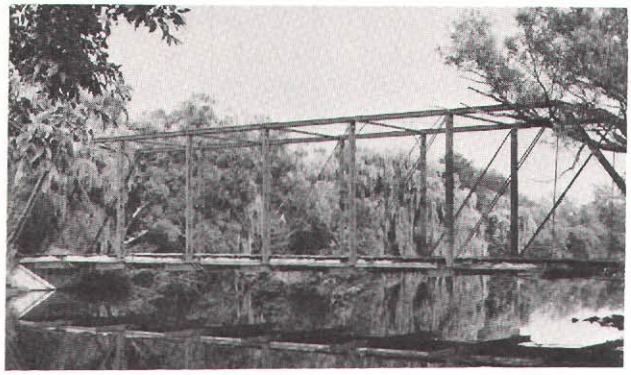
A low-value wildlife habitat area is defined as an area of a supplemental or remnant nature which is usually disturbed but which may provide the only available range in the area, supplement areas of a higher quality, or provide corridors linking higher value wildlife habitat areas.

Wildlife habitat areas designated as having high and medium values are found in the most abundance in the north-central portion of the neighborhood. The species found include pheasant, squirrel, muskrat, and waterfowl. Wildlife habitat areas designated as having low value are found along the Fox River and in scattered locations throughout the neighborhood.

The preservation of the remaining wildlife habitat areas in the Echo Lake Neighborhood is important. The existence of a variety of wildlife species in a residential neighborhood is indicative of ecosystem stability. Wildlife considerations can be integrated into a neighborhood plan through careful design. The integration of wildlife into the urban fabric enhances the aesthetic and economic value of the neighborhood area and provides educational and recreational opportunities for the residents.

Figure 3

VIEW OF THE IRON BRIDGE OVER ECHO LAKE



The iron bridge spanning Echo Lake in the southwest corner of the Echo Lake Neighborhood has been identified as having historical value.

Photo by Patrick J. Meehan.

Figure 4

VIEW OF HONEY LAKE ROAD

Honey Lake Road is a Racine County designated "rustic road" as it passes through the Echo Lake Neighborhood.

Photo by Patrick J. Meehan.

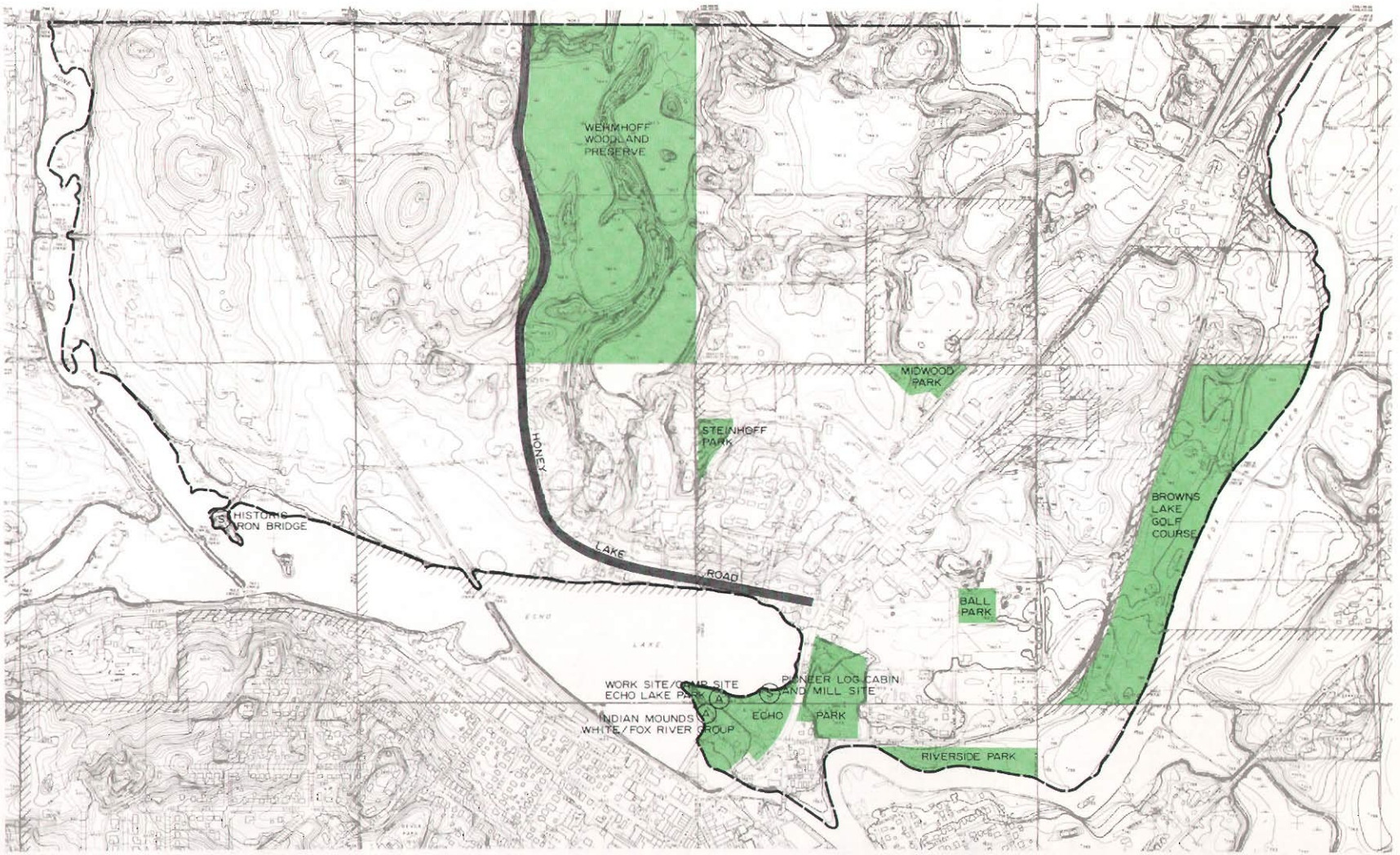
Other Natural Resource-Related Elements

In addition to the basic elements of the underlying and sustaining natural resource base, existing and potential sites having scenic, scientific, historic, and recreational value should be considered in the neighborhood planning process. Although these elements are not strictly a part of the natural resource base, they are so closely linked to that base that it is considered desirable to include them with that base. Map 9 indicates the location and extent of those types of natural resource-related elements which occur within the neighborhood area.

As indicated on Map 9, there are 10 sites in the Echo Lake neighborhood which have been identified as having scenic, scientific, historic, or recreational value. As noted earlier, there are four historic sites within the neighborhood. Two of these contain structures--the iron bridge spanning Echo Lake in the southwest corner of the neighborhood which is shown in Figure 3, and the pioneer log cabin located in Echo Park in the south-central portion of the neighborhood. Two of the sites having historic value are archaeological sites also located in Echo Park and consisting of Indian mounds and an Indian campsite. There are seven existing park areas in the neighborhood; the Wehmhoff Woodland Preserve, Echo Park, four neighborhood parks, and a portion of the Browns Lake Golf Club, which lies on the west bank of the Fox River. Honey Lake Road, which traverses the neighborhood, has been designated as a "rustic road" by Racine County, and is shown in Figure 4.

Map 9

RECREATIONAL AND HISTORIC SITES IN THE ECHO LAKE NEIGHBORHOOD: 1979



Source: SEWRPC.

Environmental Corridor Delineation

Environmental corridors are defined by the Regional Planning Commission as linear areas in the landscape which contain concentrations of high-value elements of the natural resource base. Preservation of the natural resource base and related elements, especially where these elements are concentrated in identifiable geographic areas, is essential to the maintenance of the overall environmental quality of an area, to the continued provision of certain amenities that provide a high quality of life for the resident population, and to the avoidance of excessive costs associated with the development, operation, and maintenance of urban land uses in some of these areas.

Seven elements of the natural resource base are considered by the Regional Planning Commission to be essential to the maintenance of the ecological balance and overall quality of life in an area. These elements include: 1) lakes, rivers, and streams, and their associated undeveloped shorelands and floodlands; 2) wetlands; 3) areas covered by wet, poorly drained, and organic soils; 4) woodlands; 5) prairies; 6) wildlife habitat areas; and 7) rugged terrain and high-relief topography having slopes exceeding 12 percent. Six of these seven elements of the natural resource base as they occur in the neighborhood have been described earlier in this chapter. Prairies, however, were not included in the analyses due to the absence of any specific data concerning the presence of prairie areas in the Echo Lake Neighborhood area.

As already noted, there are certain other elements which, although not a part of the natural resource base per se, are closely related to or centered on that base. These elements include: 1) existing parks and outdoor recreation sites; 2) potential park, outdoor recreation, and related open space sites; 3) historic sites and structures; 4) areas having scientific value; and 5) scenic areas and vistas or viewpoints. These elements, as they occur in the Echo Lake Neighborhood, are shown on Map 9. Scenic areas and vistas or viewpoints are defined as areas with a local relief greater than 30 feet and a slope of 12 percent or more having a ridge of at least 200 feet in length, and a view of at least three natural resource features--including surface water, wetlands, woodlands, agricultural lands, or other significant geological features--within approximately one-half mile of the ridge. No such scenic areas and vistas were identified within the Echo Lake Neighborhood.

The environmental corridors in the neighborhood were delineated, using the following criteria:

1. Point values between 1 and 20 were assigned to each natural resource and natural resource-related element. These point values were based on the premise that those natural resource elements having intrinsic natural resource values and a high degree of natural diversity should be assigned relatively high point values, whereas natural resource-related elements having only implied natural values should be assigned relatively low point values. These values for each element of corridor are shown in Table 5.

2. Each element was then depicted on 1" = 400' scale ratioed and rectified aerial photographs or 1" = 400' scale base maps of the study area.

3. Cumulative point values were totaled for all areas containing natural resource and natural resource-related elements. These are shown on Map 10 for the Echo Lake Neighborhood.

Table 5

POINT VALUE DESIGNATION FOR ELEMENTS OF PRIMARY AND SECONDARY ENVIRONMENTAL CORRIDORS AND OTHER ENVIRONMENTALLY SIGNIFICANT LANDS

Element	Code	Point Value
Natural Resource Base		
Lake		
Major (50 acres or larger)	LA	20
Minor (5-49 acres)	LM	20
River or Stream (perennial)	PS	10
Shoreland		
Perennial (lake, river, or stream)	SP	10
Intermittent Stream	SO	5
100-Year Floodland	FP	3
Wetland	WT	10
Wet, Poorly Drained, and Organic Soils	--[a]	--[a]
Woodland	WO	10
Wildlife Habitat		
High Value	WH	10
Medium Value	WM	7
Low Value	WL	5
Steep Slope		
20 Percent or Greater	SS	7
12 Percent to 19 Percent	SL	5
Prairie	PR	10
Natural Resource Base-Related		
Existing Park or Other Open Space Site		
Rural Open Space Site	OS	5
Other Park or Recreation Site	PK	2
Potential Park		
High Value	PH	3
Medium Value	PM	2
Low Value	PL	1
Historic Site		
Structural	HS	1
Other Cultural	HC	1
Archeological	HA	2
Scenic Viewpoint (combined with area of steep slopes)	SV	5
Natural and Scientific Area		
State Scientific Area	SA	15
Natural Area of Statewide or Greater Significance	NS	15
Natural Area of Countywide or Regional Significance	NC	10
Natural Area of Local Significance	NL	5

[a]Code letters and point values for wet, poorly drained, and organic soils wre not assigned. The consideration of wet, poorly drained, and organic soils in the determination of environmental corridors is discussed in "Refining the Delineation of Environmental Corridors in Southeastern Wisconsin," SEWRPC Technical Record, Vol. 4, No. 2, 1981.

Source: SEWRPC.

4. Environmental corridors were then delineated, based on the following criteria, as shown in Table 6:

   - Areas having a point value of 10 or greater, with a minimum area of 400 acres and a minimum length of two miles, are designated as primary environmental corridors.

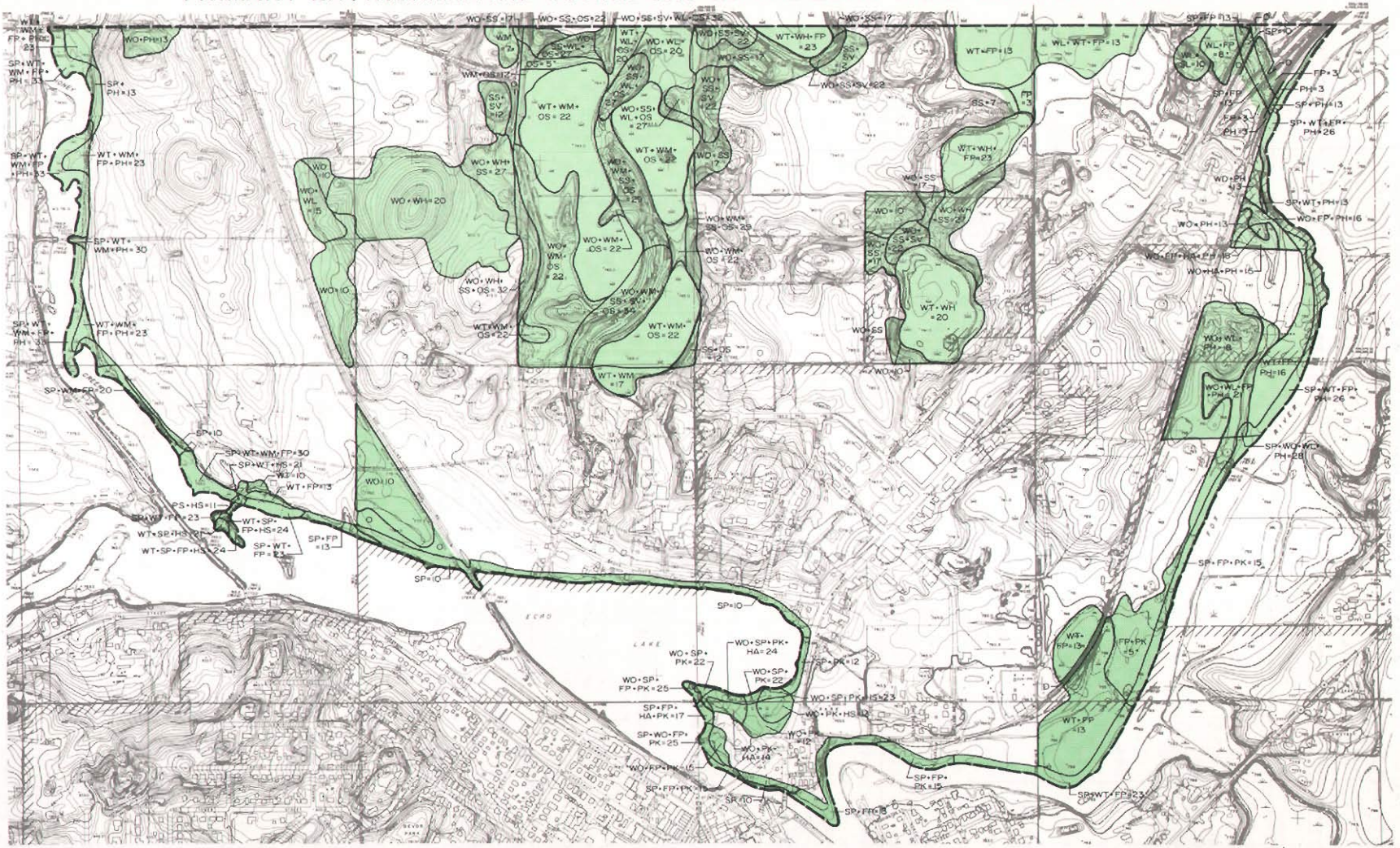
   - Areas having point values of 10 or greater, with a minimum area of 100 acres and a minimum length of one mile, are designated as secondary environmental corridors.

   - Isolated areas having point values of 10 or greater, with a minimum of five acres, are designated as isolated natural areas.

   - For separate areas with corridor values, linking segments are identified to establish corridor continuity when such areas meet the qualifications set forth in Table 7.

Map 10

PRIMARY ENVIRONMENTAL CORRIDORS IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- PRIMARY ENVIRONMENTAL CORRIDOR
- NATURAL RESOURCE AREA BOUNDARY
- SP • 10 IDENTIFICATION CODE FOR NATURAL RESOURCE COMPONENTS (SEE TABLE 5)

Source: SEWRPC.

Table 6

MINIMUM REQUIREMENTS FOR CLASSIFICATION OF PRIMARY AND SECONDARY ENVIRONMENTAL CORRIDORS AND OTHER ENVIRONMENTALLY SIGNIFICANT LANDS

Classification	Minimum Cumulative Point Value	Minimum Area (acres)	Minimum Length (miles)
Primary Environmental Corridor.....	10	400	2
Secondary Environmental Corridor[a] ...	10	100	1
Other Isolated Natural Areas.....	10	5	--

[a]Secondary environmental corridors may serve to connect primary corridor segments or be linked to primary environmental corridor segments, particularly when such secondary corridors are related to surface drainage (no minimum area or length requirements).

Source: SEWRPC.

Table 7

REQUIREMENTS FOR LINKING SEPARATED AREAS WITH CORRIDOR VALUES

Acres of Separated Corridor Value Lands	Maximum Continuity Distance Between Separated Areas With Corridor Values
640+	2,640 feet (1/2 mile)
320-639	1,760 feet (1/3 mile)
160-319	1,320 feet (1/4 mile)
80-159	880 feet (1/6 mile)
40-79	660 feet (1/8 mile)
20-39	440 feet (1/12 mile)
5-19	220 feet (1/24 mile)

Source: SEWRPC.

The primary environmental corridors as delineated within the Echo Lake Neighborhood are shown on Map 10. No secondary environmental corridors or isolated natural areas were identified.

It is important to note that, because of the many interlocking and interacting relationships existing between living organisms and their environment, the destruction or deterioration of any one element of the total natural resource base may lead to a chain reaction of deterioration and destruction. The drainage and filling of wetlands, for example, may destroy fish spawning grounds, wildlife habitat, groundwater recharge areas, and the natural filtration action and floodwater storage functions which contribute to maintaining high levels of water quality and stable streamflows and lake stages in a watershed. The resulting deterioration of surface water quality may, in turn, lead to the deterioration of the quality of the groundwater which serves as a source of domestic, municipal, and industrial water supply and on which low flows in rivers and streams may depend. Similarly, the destruction of woodland cover may result in soil erosion and stream siltation, more rapid storm water runoff, and attendant increased flood flows and stages, as well as the

destruction of wildlife habitat. Although the effects of any one of these environmental changes may not in and of itself be overwhelming, the combined effects will eventually create serious environmental and developmental problems. These problems include flooding, water pollution, deterioration and destruction of wildlife habitat, loss of groundwater recharge, and destruction of the unique natural beauty of the area. The need to maintain the integrity of the remaining environmental corridors and environmentally significant lands thus becomes apparent. The adopted regional land use plan accordingly recommends that the remaining primary environmental corridors be maintained in essentially natural, open uses, which may, in some cases, include limited agricultural and low-density residential uses. A total of approximately 289 acres of primary environmental corridor lands, representing 29 percent of the total area of the neighborhood, are recommended to be preserved and protected in an essentially natural, open state within the Echo Lake Neighborhood area.

Neighborhood Climatic Characteristics and Analysis

Climate may be regarded as a resource that presents both problems to be resolved and opportunities to be used in the sound development of a community. Climate may be defined as the habitual state and behavior of the atmosphere. Climate varies from place to place, but is relatively stable over time. The latter characteristic permits expectation of weather conditions. To define climate, an arbitrary reference period is selected and mean values of such characteristics as temperature and rainfall, together with measures of the variability in trace characteristics, are determined.

The general climate of a relatively large geographic area is termed the macroclimate. The climate of a smaller geographic area that may not be representative of the general climatic conditions within a larger surrounding area is termed the mesoclimate. Examples of mesoclimates include small valleys, forest clearings, frost hollows, and open spaces within towns, all of which may exhibit significant differences in meteorological conditions when compared with surrounding areas. The characteristics of the air space from the surface of the earth to a height where the underlying terrain does not significantly impact upon the mesoclimate--about six feet as a general rule--is termed the microclimate. The macroclimate has long been recognized in community planning and development, as reflected, for example, in certain features of architectural design, in the provision of ample curb lawns for the storage of snow, in storm water drainage design, and in such standards for public works as the minimum depth of cover for water mains. The climate of an area is susceptible to change and modification by man, as are the other elements of the natural resource base such as topography, drainage, soils, and vegetation. Urban form, however, can be planned and designed to accommodate this important environmental element in an energy use-efficient fashion and to improve the overall quality of the environment and the human comfort of neighborhood residents.

Those climatic elements which have particular importance in neighborhood planning, from the standpoint of energy utilization as well as human comfort, include solar radiation, air temperature, humidity, and wind. Each of these climatic elements represents physical conditions which should be considered in the urban design process used in creating the neighborhood plan. Each of these climatic variables is affected by other physical elements of the neighborhood area, including topography, character of the surface and ground cover, wetland

areas and bodies of water, and three-dimensional features such as vegetation and structures. Each of these climatic elements is also important for the potential utilization of solar energy in either a passive form--i.e., through proper orientation of building lots and structures for maximum heat gain in winter and minimum heat gain in summer--or active form--i.e., through proper orientation of building lots to accommodate the installation of efficient solar energy-collecting devices--and further serves to implement public policy with respect to long-term energy conservation.

Moreover, as envisioned in Section Ind. 22.01 of the Wisconsin Administrative Code, which constitutes the energy conservation portion of the new state uniform building code, knowledge of elements of the climate is important in order to promote the use of innovative approaches and techniques in building to achieve more effective utilization of energy. Such knowledge is required, for example, in order to properly analyze buildings to determine whether they meet state building code requirements with respect to thermal transmittance (U value). Solar radiation, air temperature, humidity, and wind are, accordingly, climatic elements which should be considered in neighborhood planning in order to promote conditions favorable for the design and construction of more energy-efficient and comfortable dwellings.

The solar radiation which reaches the earth's surface is termed insolation (incoming solar radiation), a term not to be confused with insulation. The quantity of insolation to be expected to fall upon level surfaces in the Echo Lake Neighborhood on an average day within each month of the year is shown in Table 8, expressed in terms of both British Thermal Units (BTU's) per square foot of surface area being struck and Langleys (one Langley equals 3.69 BTU's per square foot). The amount of insolation on any given day, however, may vary, depending upon such factors as cloud cover or haze associated with air pollution. It should be noted that insolation values higher than those shown in Table 8 can be obtained by orienting a solar heat-gaining surface so as to be perpendicular to the incoming solar radiation, which varies not only diurnally, but throughout the year, based upon the sun path for the Burlington area. A sun path diagram showing the path of the sun across the sky at a latitude of 44° North, close to that of Burlington (latitude 42°41'25" at the center of Section 29 in the Echo Lake Neighborhood) is included in Appendix A. The sun path diagram can be used to determine the angle and position of the sun at Burlington for any date and time of day, and assists in the locating and positioning of active solar heat-gaining surfaces--such as solar collectors--as well as of passive solar devices and uses.

The effects of air temperature on the amount of energy used for the heating and cooling of buildings can be indirectly measured in terms of heating degree-days and/or cooling degree-days. A heating degree-day is defined as the number of degrees that the daily mean temperature is below 65°F, and a cooling degree-day is defined as the number of degrees that the daily mean temperature is above 65°F. Air temperatures and degree-day normals for the Burlington area are set forth in Table 9. A procedure for calculating energy consumption in buildings through the use of the degree-day data and data derived in conforming with Section Ind. 22.01 of the Wisconsin Administrative Code is outlined in Appendix B.

Table 8

MEAN DAILY INSOLATION (INCOMING SOLAR RADIATION) DATA FOR THE BURLINGTON AREA

Month	Total Hemispheric Mean Daily Insolation[a]	
	BTU's per Square Foot	Langleys
January.....	479.4	130.0
February.....	736.5	199.8
March.....	1,088.8	295.3
April.....	1,442.7	391.3
May.....	1,768.4	479.7
June.....	1,977.1	536.3
July.....	1,961.8	532.1
August.....	1,719.0	466.3
September....	1,310.3	355.4
October.....	907.9	246.3
November.....	524.6	142.3
December.....	378.4	102.7
Annual	1,191.2	323.1

[a]The data are based upon the amount of insolation striking a level surface at Milwaukee for the period 1941 to 1970. A BTU (British Thermal Unit) is the amount of energy required to raise the temperature of one pound of water one degree Fahrenheit. A Langley is equivalent to one calorie of radiation energy per square centimeter; one Langley equals 3.69 BTU per square foot (BTU/ft^2).

Source: National Solar Heating and Cooling Information Center and SEWRPC.

Humidity, a measure of the water vapor content of the air, can be described in either absolute or relative terms. Of the two, relative humidity is the most useful for architectural planning purposes and is important as an environmental factor affecting the design of solar energy cooling systems which are based upon evaporative cooling techniques. Relative humidity is defined as the ratio of the actual amount of water vapor in the air to the maximum amount of water vapor the air could hold at the ambient or surrounding temperature. The average daily relative humidity for the Burlington area is also shown in Table 9.

Wind can provide beneficial natural ventilation in the summer months. Wind can also be detrimental in winter months unless properly dealt with in the urban design process relating to such factors as lot and building orientation. Summer and winter winds can be directed in a desirable manner, through proper building design and use of topography, vegetation, and the orientation of building lots and structures. Wind is measured in terms of velocity and direction. The distribution of wind speed and direction over a long period of time at a particular site can be graphically depicted through the use of a "wind rose" diagram. The wind rose typically shows the relative joint frequency of occurrence of wind direction from 16 compass points and six wind speed categories for a particular time period. Three such wind roses constructed for use in the design of the Echo Lake Neighborhood plan are shown in Figures 5, 6, and 7. Figure 5 is the wind rose showing the distribution of wind direction

Table 9

GENERAL CLIMATIC DATA FOR THE BURLINGTON AREA

Month	Temperature (°F)[a]			Degree Day Normals[a]		Humidity[b]	Precipitation		Clear/Cloudy Days Sunrise to Sunset (mean number of days)[b]			Percent of Possible Sunshine[b]
	Mean	Mean Minimum	Mean Maximum	Heating Degree Day Normals	Cooling Degree Day Normals	Average Daily Relative Humidity (percent)	Precipitation Normals (average inches)[a]	Mean Snowfall (inches)[c]	Clear	Partly Cloudy	Cloudy	
January.....	21.0	14	27	1,364	--	72.0	1.4	10.4	7	6	18	45
February.....	23.7	16	31	1,156	--	71.8	1.1	4.8	7	6	15	47
March.....	32.3	23	41	1,015	--	72.8	2.4	6.7	6	8	17	51
April.....	46.1	36	56	572	4	70.3	3.4	0.5	7	8	15	54
May.....	56.5	45	68	293	28	69.5	3.0	--	7	10	14	59
June.....	66.9	55	78	70	127	71.5	4.6	--	8	10	12	64
July.....	71.4	60	83	15	214	72.3	4.2	--	11	11	9	71
August.....	69.7	58	81	26	172	75.5	3.4	--	11	11	9	67
September....	61.8	50	74	159	63	76.3	3.1	--	10	9	11	60
October.....	51.1	39	62	439	9	73.3	2.3	--	10	9	12	56
November.....	37.5	28	46	824	--	74.8	2.3	2.8	6	6	18	41
December.....	25.2	18	32	1,232	--	76.5	1.6	9.9	6	6	19	38
Annual	46.9	36.8	56.6	7,165	617	73.0	32.6	35.1	96	100	169	56

[a] At Burlington, Wisconsin, for the years 1952 through 1976.

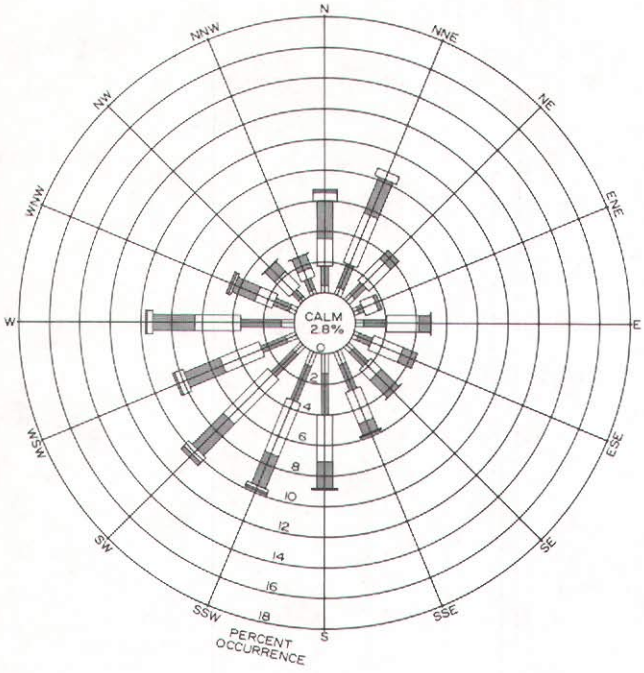
[b] At Milwaukee, Wisconsin, for the years 1941 to 1970.

[c] At Union Grove, Wisconsin, for the years 1931 through 1952.

Source: U. S. Department of Commerce, National Oceanic and Atmospheric Administration; Environmental Data Service; and SEWRPC.

Figure 5

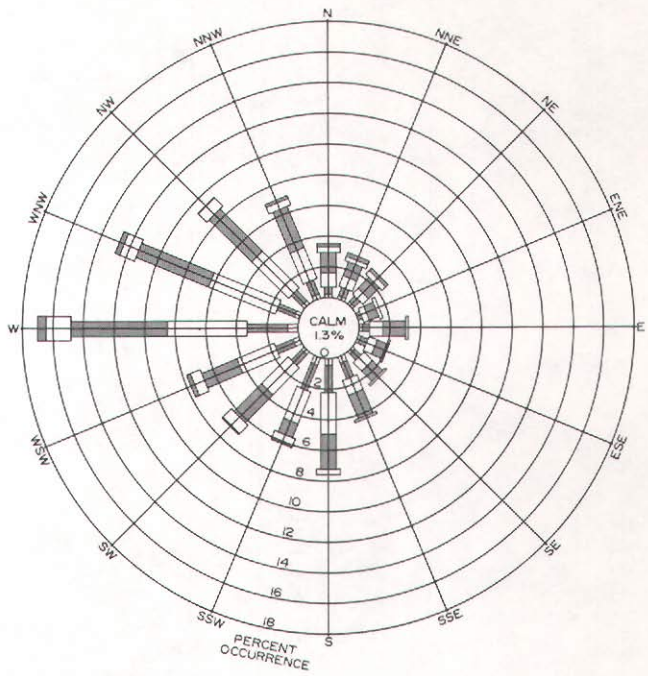
WIND ROSE FOR FREQUENCY DISTRIBUTION OF SUMMER WIND DIRECTION FOR MILWAUKEE: 1964-1973



Source: SEWRPC.

Figure 6

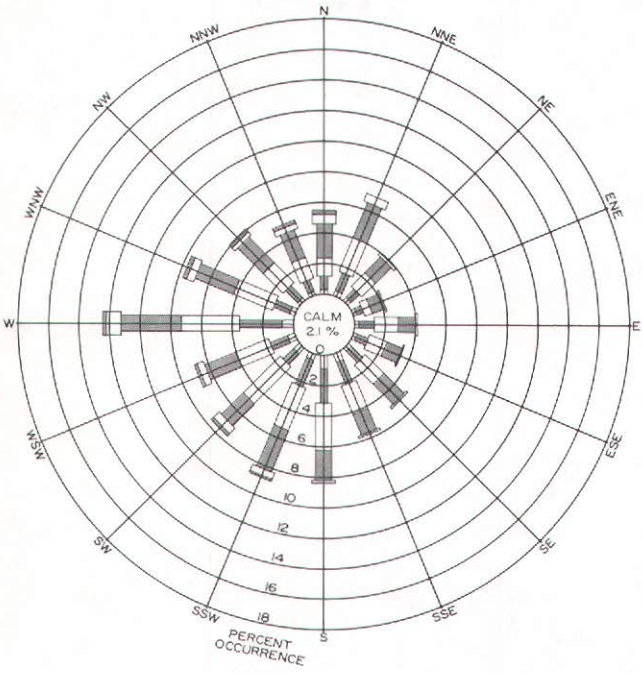
WIND ROSE FOR FREQUENCY DISTRIBUTION OF WINTER WIND DIRECTION FOR MILWAUKEE: 1964-1973

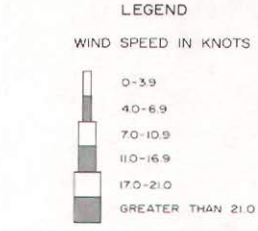


Source: SEWRPC.

Figure 7

WIND ROSE FOR FREQUENCY DISTRIBUTION OF ANNUAL PREVAILING WIND DIRECTION FOR MILWAUKEE: 1964-1973





NOTE: 1 NAUTICAL MILE PER HOUR (KNOT) = 1.1516 STATUTE MILES PER HOUR = 0.5144 METERS PER SECOND

Source: SEWRPC.

and wind speed during the summer months as averaged over a 10-year period, 1964 through 1973. As can be seen from an examination of Figure 5, winds during this season are most frequently from the southwest. The distribution of wind direction and wind speed during the winter season are shown in Figure 6, which indicates that the winds during this season are most frequently from the west and west-northwest. It is also interesting to note that in comparing Figure 5 and Figure 6, it can be seen that there is a greater relative frequency of occurrence of the higher wind speed categories during the winter months for all wind directions with the exception of winds from the north through the northeast directions. The annual frequency distribution of wind direction and wind speed, as shown in Figure 7, is predominantly from the west. Table 10 shows the winter, summer, and annual absolute and relative frequency of occurrence of wind directions with average wind speed for the area.

Knowledge of insolation, temperature, degree day normals, humidity, precipitation, and air movement should be basic to the urban designer, site planner, and building designer in order to properly place a building on a site, and to design an artificial environmental system which can function efficiently and effectively in the local climatic conditions. Lot orientation, building orientation, landscape plantings, insulation placement, vapor barrier placement, heating system size, and cooling system size are all dependent upon a knowledge of each of these climatic elements.

The Microclimate: Within the context of the general climate, or macroclimate, of the larger region within which a neighborhood is located, the specific climate, or microclimate, of the neighborhood area can be analyzed. The analysis of the neighborhood's microclimate should be a consideration in the location and orientation of future streets, blocks, lots, and eventually buildings in order to make the most efficient use of the climate in terms of energy conservation and the most effective use of passive as well as active solar energy methods and devices. Macroclimatic elements such as solar radiation, air temperature, humidity, and wind may have different effects upon different sites within the neighborhood, depending upon the physical characteristics of the terrain, the vegetation, the location and extent of bodies of water, and various other natural as well as man-made site features. These site-specific effects, when properly analyzed and identified, should influence neighborhood design and planning. Climate, however, is complex and variable, and any climatic analysis can serve only as a general analysis of probable climatic conditions within the neighborhood during the seasons of summer and winter, which represent the two extremes of the climatic spectrum.

A microclimatic analysis was done for the Echo Lake Neighborhood based upon the climatic conditions information presented earlier. The results of the microclimatic analysis are shown in graphic summary form on Map 11. Those areas shown in red represent slopes of 12 percent or more. Based upon the position of the sun in this latitude, as well as other solar radiation considerations, several conclusions can be drawn regarding the pattern of slopes within the Echo Lake Neighborhood:

1. North-facing slopes oriented between approximately North 95° West and North 95° East have the lowest available insolation.

Table 10

ABSOLUTE AND RELATIVE FREQUENCY OF OCCURRENCE OF WIND DIRECTIONS WITH AVERAGE WIND SPEED-- GENERAL MITCHELL FIELD: 1964-1973

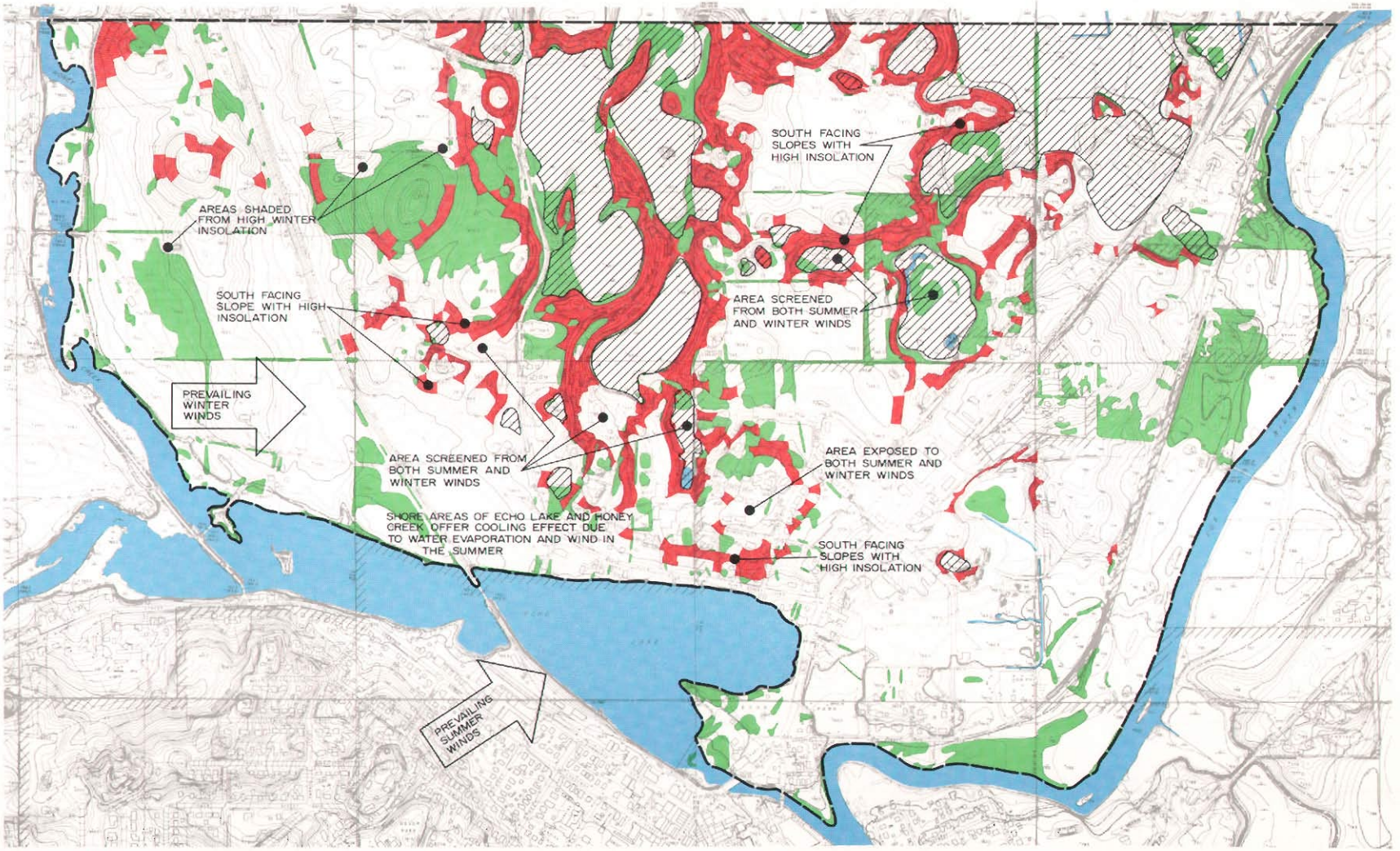
Wind Direction	Winter			Summer			Annual		
	Number of Observations	Relative Frequency (percent)	Average Wind Speed (knots)	Number of Observations	Relative Frequency (percent)	Average Wind Speed (knots)	Number of Observations	Relative Frequency (percent)	Average Wind Speed (knots)
North	244	3.4	12.0	479	6.5	10.3	1,627	5.6	11.6
North-Northeast	215	3.0	10.9	612	8.3	9.1	1,986	6.8	9.9
Northeast	193	2.7	11.9	307	4.2	7.5	1,119	3.8	9.3
East-Northeast	117	1.6	11.7	135	1.8	7.6	602	2.1	9.6
East	231	3.2	11.1	342	4.6	7.3	1,212	4.2	8.8
East-Southeast	142	2.0	9.9	300	4.1	8.2	909	3.1	8.9
Southeast	183	2.5	10.1	446	6.1	8.5	1,445	5.0	9.3
South-Southeast	305	4.2	9.2	402	5.5	7.2	1,664	5.7	8.5
South	553	7.7	9.7	630	8.6	7.4	2,466	8.4	8.7
South-Southwest	589	8.2	10.3	689	9.4	8.3	2,450	8.4	9.7
Southwest	526	7.3	11.1	746	10.1	9.3	2,182	7.5	10.2
West-Southwest	541	7.5	10.8	601	8.2	9.6	2,013	6.9	10.5
West	1,194	16.6	10.9	688	9.3	8.8	3,534	12.1	10.2
West-Northwest	914	12.7	11.4	336	4.5	9.0	2,247	7.7	10.7
Northwest	666	9.3	10.8	236	3.2	8.9	1,704	5.8	10.5
North-Northwest	490	6.8	10.7	204	2.8	8.8	1,415	4.8	10.5
Calms	96	1.3	--	207	2.8	--	624	2.1	--
Total (Average)	7,199	100.0	10.6	7,360	100.0	8.5	29,199	100.0	9.7

NOTE: A knot (one nautical mile per hour) is equivalent to 1.1516 statute miles per hour.

Source: National Climatic Center and SEWRPC.

Map 11

MICROCLIMATE ANALYSIS FOR THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- WATER
- WOODLAND AREAS
- SLOPES EXCEEDING 12 PERCENT
- AREAS OF IMPEDED AIR DRAINAGE; DAMP HOLLOWS; AND POTENTIAL NOCTURNAL FROST POCKETS

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

2. South-facing slopes oriented between approximately North 80° West and North 80° East have the highest available insolation.

3. East-facing slopes oriented between approximately South and North 45° East have maximum insolation in the morning.

4. West-facing slopes oriented between South and North 45° West have maximum insolation in the afternoon.

As discussed earlier and shown on the accompanying wind rose diagrams and in Table 10, prevailing winter winds are from the west, northwest, and southwest, and prevailing summer winds are from the southwest. During the summer these winds provide a cooling effect along the shores of Echo Lake within the Echo Lake Neighborhood--a fact which could be exploited for the cooling of development located in those areas.

Cold air is heavier than warm air, and because of this physical property, cold air from high-relief areas within the neighborhood flows to low areas and is replaced by warmer air from above these low areas. This process, occurring frequently at night when air pressure is high and the sky is clear, produces katabatic or drainage winds. The low areas in the neighborhood have been identified on Map 11 and are areas of impeded air drainage, which causes typically damp hollows in the summer and frost pockets in the winter. The nighttime temperatures in these areas may be as much as 10°F lower and the humidity 20 percent higher than in the surrounding areas which are at higher elevations. In the daytime these conditions reverse: the low areas will tend to be warmer than the ridges swept by winds and the humidity will also be lower. Generally, the placement of buildings in these areas should be avoided.

The wetland areas within the Echo Lake Neighborhood, as shown on Map 3, are not only important for those reasons outlined earlier, but are also important from a climatic standpoint. The presence of wetland areas can significantly alter local climatic conditions such as temperature, humidity, and wind speed.

Echo Lake also has an effect upon the microclimate of the neighborhood. Since the prevailing summer wind direction is from the west-by-southwest and southwest, it blows over this body of water, providing evaporative cooling to those areas adjacent to the lake in the neighborhood. This cooling effect may lower the summer temperature in the adjacent areas to as much as 10°F below the temperature of surrounding areas not affected by this condition.

Temperature within the Echo Lake Neighborhood can also be affected, to a small degree, by variations in soil types. A dry soil, such as sand and gravel, tends to cause higher temperatures and lower humidity; wet soils, loams, and clays in poorly drained marshy areas tend to cause lower temperatures and higher humidity. These variations caused by soil type and characteristics are, on the whole, small in magnitude; however, in situations such as siting a residence, the differences may be locally significant.

The microclimate of the Echo Lake Neighborhood area is affected by the significant amount of woodland areas within its boundaries. The woodland areas act as a purification element for the air which passes through them. The amount of airborne particles decreases rapidly toward the interior of a woodland, thus effectively filtering air currents passing through the woodland areas. This reduces some forms of air pollution.

The many woodland areas in the Echo Lake Neighborhood also affect the temperature of the neighborhood environment. The moisture dispelled into the atmosphere through transpiration contributes to the lowering of temperatures in surrounding areas. This lowering of temperature can average from 3°F to 5°F below the annual mean for the area; this effect is largest in the summer because of the existence of foliage on trees, and is negligible in winter because of the dormancy of deciduous vegetation.

The climatic elements discussed herein should be addressed in the design of the neighborhood since they are important elements to consider in providing an urban form which is energy use-efficient, and in providing an urban setting which enhances environmental quality, as well as provides for the comfort of the neighborhood residents.

MAN-MADE FEATURES

Existing Land Use

The existing land uses within the Echo Lake Neighborhood in 1979 are quantified in Table 11, and shown graphically on Map 12. In 1979, agricultural and open and unused lands accounted for about 471 acres, or 47 percent of the total neighborhood area, and represented the largest land use category. Residential lands accounted for 97 acres, or 10 percent. The limited existing urban development is located in the south-central portion of the neighborhood. A significant land use within the neighborhood is the 87 acres occupied by the Wehmhoff Woodland Preserve. Other significant land uses, although located outside the neighborhood proper, are Honey Creek, Echo Lake, and the Fox River.

Land Use Control

Land use development within that part of the neighborhood located in the City of Burlington is regulated by the City of Burlington Zoning Code (Chapter 17 of the Municipal Code). Seven of the nine zoning districts provided in the city ordinance have been applied within the neighborhood. Land use development within that part of the neighborhood located in the Town of Burlington is regulated by the Racine County zoning ordinance issued jointly by the Town and the County. Nine of the 25 zoning districts in the Racine County zoning ordinance have been applied within that portion of the neighborhood lying in the Town of Burlington. The boundaries of these zoning districts, together with the City of Burlington corporate limit lines in 1979, are shown on Map 13. Pertinent information concerning the regulations governing each of these zoning districts is set forth in Table 12. Approximately 23.4 percent of the Echo Lake Neighborhood is currently zoned for residential use. The recommended neighborhood unit plan presented later herein is intended to provide a basis for the redistricting of the neighborhood area into zoning districts which are more suitable to achieving the regional and local development objectives, as expressed in the plan and presented in Chapter III of this report.

The City of Burlington has also imposed height limitations on some of the lands within the Echo Lake Neighborhood in order to protect the aircraft approaches to the Burlington Municipal Airport located on the west side of

Table 11

EXISTING LAND USE IN THE ECHO LAKE NEIGHBORHOOD: 1979

Land Use Category	Number of Acres	Percent of Neighborhood
Residential		
Single Family	82.5	8.3
Two Family	2.8	0.3
Multiple Family	6.6	0.7
Under Development	5.5	0.5
Subtotal	97.4	9.8
Commercial		
Neighborhood Retail and Service	2.5	0.3
Community Retail and Service	35.4	3.6
Subtotal	37.9	3.9
Industrial	17.0	1.7
Governmental/Institutional		
Public	6.9	0.7
Private	0.7	0.1
Subtotal	7.6	0.8
Park and Recreational		
Neighborhood Parks[a]	10.5	1.1
Community Parks[b]	50.0	5.0
Other Recreational[c]	90.0	9.0
Subtotal	150.5	15.1
Transportation and Utilities		
Arterial Streets	12.9	1.3
Collector Streets	15.0	1.5
Minor Land Access Streets	21.7	2.2
Railroad Rights-of-Way	13.2	1.3
Utilities	2.3	0.2
Subtotal	65.1	6.5
Natural Areas[d]		
Wetlands	46.0	4.6
Woodlands	99.0	9.9
Wet-Woodlands	4.0	0.4
Subtotal	149.0	14.9
Agricultural, Open, and Other Unused Lands	471.0	47.3
Total	995.5	100.0

[a]This number includes Riverside Park, representing 4 acres, and Steinhoff and Midwood Parks, two recently developed neighborhood park sites, representing 6.5 acres.

[b]This number includes that portion of the Browns Lake Golf Club within the neighborhood, a county park, representing 31 acres; and Echo Lake Park, representing 19 acres.

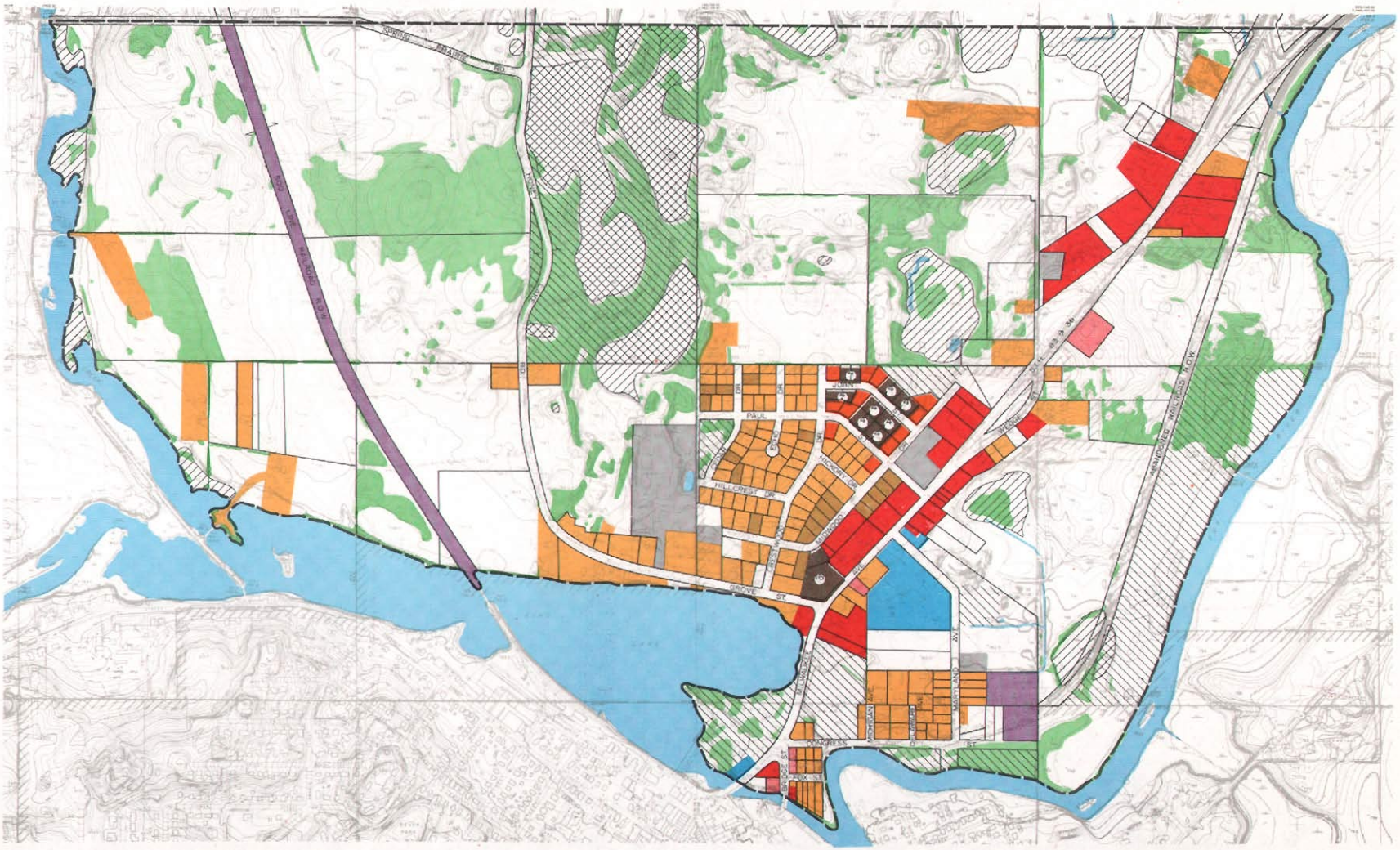
[c]This number includes the Wehmhoff Woodland Preserve, representing 87 acres, and 3 acres of private recreational facilities.

[d]Wetlands, woodlands, and wet-woodlands which are in park and recreational areas are excluded from this enumeration. Within the Wehmhoff Woodland Preserve, there are 42 acres of wetlands and 45 acres of woodlands.

Source: SEWRPC.

Map 12

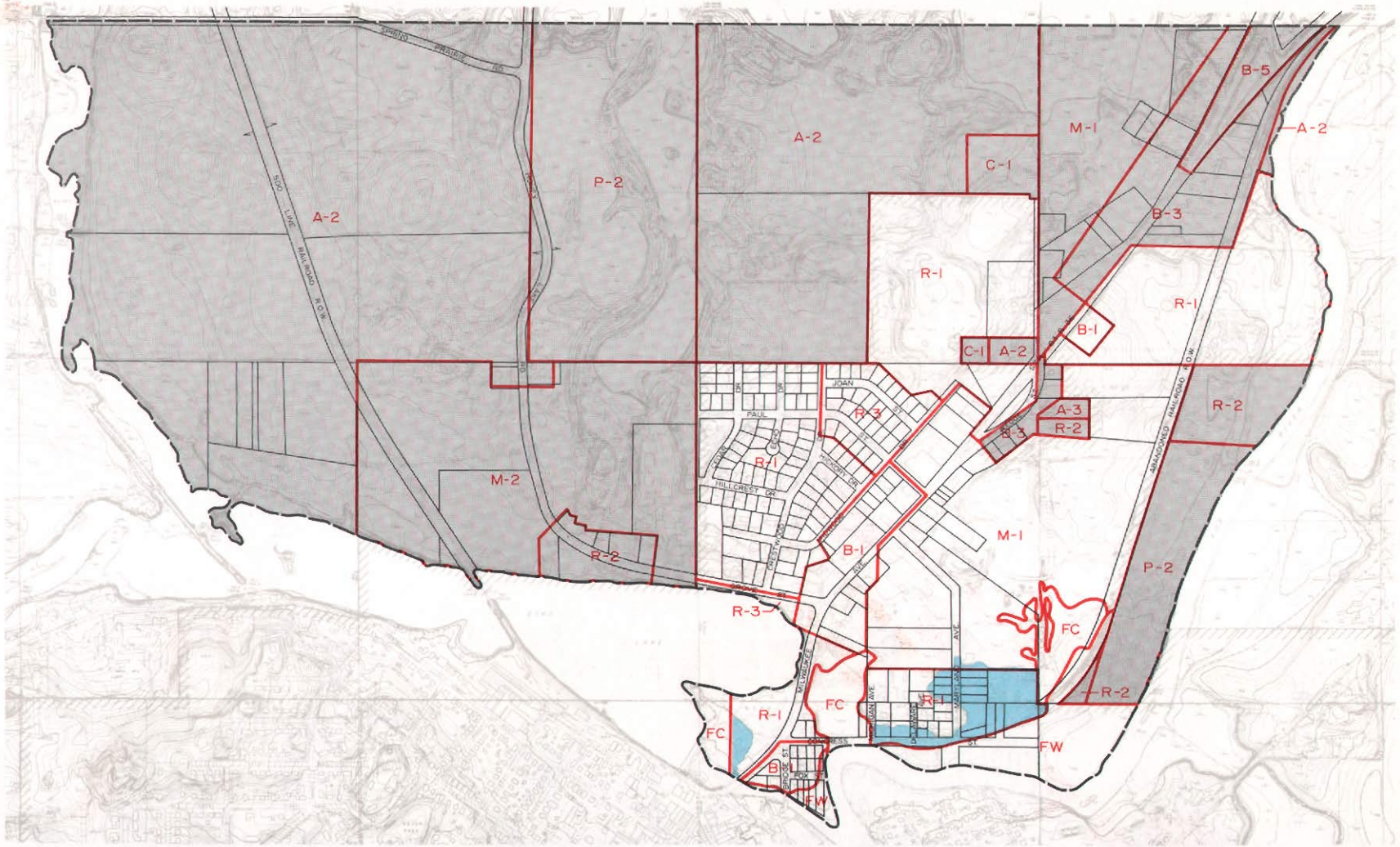
EXISTING LAND USE IN THE ECHO LAKE NEIGHBORHOOD: 1979



Source: SEWRPC.

Map 13

EXISTING ZONING DISTRICTS IN THE ECHO LAKE NEIGHBORHOOD: 1979



Source: SEWRPC.

Table 12

SUMMARY OF EXISTING ZONING DISTRICTS FOR THE ECHO LAKE NEIGHBORHOOD: 1979

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size		
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)
CITY OF BURLINGTON ZONING DISTRICTS (ALL CITY DISTRICTS)[a]							
R-1 Single-Family Residential District	Single-family dwellings, churches, schools, municipal buildings	Garage, stable	Home occupations, professional office	5.4	8,000	8,000	60
R-2 *Modified* Single-Family Residential District	Single-family dwellings, converted two-family residences from single-family residences, churches, schools, municipal buildings, etc.	Garage, stable	Home occupations, professional office	7.9	Single-family: 8,000; Two-family: 11,000	Single-family: 8,000; Two-family: 5,500	60
R-3 Multiple-Family Residential District	Uses of R-1 District, boarding house, hospitals, lodges, etc.	Garage, stable	Parking lots	12.8	For single-family and two-family uses, same as R-1 and R-2	8,000 for first family and 3,000 for each additional family	60
B-1 Commercial District	Uses permitted in R-3 District, commercial uses such as shops, theaters, restaurants, etc.	Uses customary in connection with principal uses	Animal hospital, bowling alley, warehousing, laboratories, manufacturing	--	--	--	--
M-1 Restricted Industrial District	Residential associated with commercial, commercial, laboratories, manufacturing, storage, etc.	Uses customary in connection with principal uses	--	21.7	Residential: 2,000	Residential: 2,000	--
M-2 General Industrial District	Ammunition manufacture, asphalt manufacture, garbage, dumping, slaughterhouse, smelting, etc.	--	--	Residential uses not permitted	Residential uses not permitted	Residential uses not permitted	Residential uses not permitted
FW Urban Floodway District	Drainage, movement of floodwater, stream bank protection, open parking, utilities	--	Navigational structures, bridges, marinas, utilities, parking lots	--	--	--	--
FC Floodplain Conservancy District	Preservation of scenic, historic, and scientific areas, drainage, public parks	--	Navigational structures, bridges, marinas, utilities	--	--	--	--
FFO Floodplain Fringe Overlay District	Uses, except structures, that are permitted in the underlying basic use district	--	Permitted structures in the underlying basic use district	--	--	--	--

Table 12 (continued)

Zoning District	Minimum Yard Requirements			Minimum Building Size			Maximum Building Height (feet)	Existing 1979 Zoning	
	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	Total Area (square feet)	Area per Family (square feet)	Floor Area (square feet)		Acres	Percent of Total
CITY OF BURLINGTON ZONING DISTRICTS (ALL CITY DISTRICTS)[a]									
R-1 Single-Family Residential District	20	For buildings 1½ stories: 6 feet; For buildings 2 to 2½ stories: 8 feet	25	800	800	--	35	203.4	20.4
R-2 Modified Single-Family Residential Disritrict	20	For buildings 1½ stories: 6 feet For buildings 2 to 2½ stories: 8 feet	25	1,200	600	--	35	--	--
R-3 Multiple-Family Residential District	20	6	25	N/A	One- or two-family structures-600 per family; more than two families-400 per family	--	35	15.5	1.6
B-1 Commercial District	--	Residential uses: 6	10	Residential: 800	--	--	40	20.8	2.1
M-1 Restricted Industrial District	15	6 typical; when abutting residential district: 15	10	Residential:400	Residential: 400	--	40	36.4	3.7
M-2 General Industrial District	15	12 if provided; when abutting residential districts: 25	10	--	Residential uses not permitted	--	50	--	--
FW Urban Floodway District	--	--	--	--	--	--	--	19.7	2.0
FC Floodplain Conservancy District	--	--	--	--	--	--	--	20.3	2.0
FFO Floodplain Fringe Overlay District	--	--	--	--	--	--	--	--[b]	--[b]

Table 12 (continued)

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size		
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)
TOWN OF BURLINGTON ZONING DISTRICTS (RACINE COUNTY ZONING ORDINANCE) [c]							
R-2 Suburban Residential District (unsewered)	One-family dwellings on lots not served by public sanitary sewer	--	Governmental and cultural uses, utilities, schools, clubs or fraternities, home occupations, professional offices	1.08	40,000	40,000	150
P-2 Recreational Park District	Public and existing private recreational uses such as arboretums, bathing, boating, nature trails, etc.	--	Extension of existing or creation of new private recreational uses, golf course, campgrounds, swimming pools, etc.	--	10 acres	--	--
C-1 Resource Conservation District	Fishing, flood overflow and floodwater storage, hunting, historic and scientific areas	--	Boating, game farms, grazing, orchards, swimming, wild crop harvesting	--	--	--	--
B-3 Commercial Service District	Retail establishments, home occupations, professional offices, restaurants, supermarkets, churches, radio and television studios, animal hospitals, etc.	--	Governmental and cultural uses, utilities, transportation terminals	--	15,000	--	75
B-5 Highway Business District	None	--	Restaurants, gift shops, places of entertainment, drug stores, etc.	--	4 acres	4 acres	4 acres
A-2 General Farming and Residential District II	Apiculture, dairying, grazing, raising of cash grain crops, greenhouses, one- and two-family dwellings, etc.	--	Mobile home parks, animal hospitals, airports, commercial egg production, commercial raising of animals, sod farming, etc.	1.0	Farm-10 acres; dwelling lot (public sewer) 40,000 per family; dwelling lot (septic tank): 40,000 per family plus such acreage as required	40,000	Farm: 300; dwelling lot: 150

Table 12 (continued)

Zoning District	Minimum Yard Requirements			Minimum Building Size			Maximum Building Height (feet)	Existing 1979 Zoning	
	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	Total Area (square feet)	Area per Family (square feet)	Floor Area (square feet)		Acres	Percent of Total
TOWN OF BURLINGTON ZONING DISTRICTS (RACINE COUNTY ZONING ORDINANCE)[c]									
R-2 Suburban Residential District (unsewered)	50	15	50	--	--	--	35	23.5	2.4
P-2 Recreational Park District	100	100	100	--	--	--	35	104.0	10.4
C-1 Conservation District	--	--	--	--	--	--	--	7.0	0.7
B-3 Commercial Service District	25 (with sewer)	10	25	--	--	--	35	30.0	3.0
B-5 Highway Business District	100	40	40	--	--	--	35	9.0	0.9
A-2 General Farming and Residential District II	100	25 for one-story building and 35 for two-story building	75	--	--	--	35	375.5	37.7

Table 12 (continued)

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size		
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)
TOWN OF BURLINGTON ZONING DISTRICTS (RACINE COUNTY ZONING ORDINANCE)[c]							
A-3 General Farming District III-Holding District	Apiculture, dairying, grazing, raising of grain crops, greenhouses, farm dwellings for resident owners and laborers	--	Mobile home parks, animal hospitals, airports, commercial egg production, commercial raising of animals, sod farming, etc.	--	40 acres	--	--
M-1 Light Industrial and Office District	General or clerical offices, research and testing laboratories, schools, wholesalers, light industry	--	Bus and rail depots, restaurants, fueling stations	--	As necessary to comply with all district regulations	--	150
M-2 General Industrial District	All M-1 permitted uses, manufacture of products from furs, glass, leather, metal, plastic, foods, printing, publishing, etc.	--	All structures and improvements for principal uses, airports, airstrips, governmental and cultural uses, animal hospitals	--	--	--	--

Table 12 (continued)

Zoning District	Minimum Yard Requirements			Minimum Building Size			Maximum Building Height (feet)	Existing 1979 Zoning	
	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	Total Area (square feet)	Area per Family (square feet)	Floor Area (square feet)		Acres	Percent of Total
TOWN OF BURLINGTON ZONING DISTRICTS (RACINE COUNTY ZONING ORDINANCE)[c]									
A-3 General Farming District III-Holding District	100	100	100	--	--	--	50	0.5	0.1
M-1 Light Industrial and Office District	100 or 25[d]	25 or 100[e]	25	--	--	--	Principal: 35; accessory: 30	43.0	4.3
M-2 General Industrial District	50	20	25	--	--	--	45	87.0	8.7
Total								995.5	100.0

[a]All City of Burlington zoning districts are included in this table.

[b]The FFO (Floodplain Fringe Overlay District) occupies 12.5 acres; however, since this is an overlay district, only the areas of the underlying zoning districts have been included in this table.

[c]Only those Town of Burlington zoning districts that are in the delineated Echo Lake Neighborhood are included.

[d]100 feet on all streets the opposite side of which lies in a more restrictive district in this or a neighboring municipality, and 25 feet minimum on streets both sides of which lie within this or a less restrictive district (wherein there shall be no structure of any kind or parking of automobiles).

[e]25 feet minimum, except where property is adjacent to residential districts, when it shall be not less than 100 feet. (Parking of automobiles permitted in offset; however, where property is adjacent to a residential district or public building area, no parking space or access drive shall be closer than 75 feet to any residential district or public building area.)

Source: SEWRPC.

Honey Creek adjacent to the neighborhood. These height limitations are shown on Map 14. The numbers shown as height restrictions on Map 14 represent, in feet, the maximum elevation above National Geodetic Vertical Datum (Mean Sea Level Datum) which a building or structure can attain in each height zone as delineated. SEWRPC Planning Report No. 21, A Regional Airport System Plan for Southeastern Wisconsin, proposes that certain areas on the southwest portion of the neighborhood be protected from incompatible land use development which could hinder proposed expansion of the Burlington Municipal Airport, and also proposes a clear zone trapezoid for limiting the height of structures built within its boundaries. The SEWRPC-proposed site improvement plan for the Burlington Municipal Airport is shown on Map 15.

Public Utilities

Public utility systems are one of the most important elements influencing community growth and development. Moreover, certain utility facilities are closely linked to the surface water and groundwater resources of the area, and may, therefore, affect the overall quality of the natural resource base. This is particularly true of sanitary sewerage, water supply, and storm water drainage facilities, which are in a sense modifications of, or extensions to, the natural lake, stream, and watercourse system of the area and of the underlying groundwater reservoir. Knowledge of the location and capacities of these utilities is, therefore, essential to intelligent land use planning for the neighborhood area.

In 1979, 180 acres of the Echo Lake Neighborhood, representing about 48 percent of the existing urban development within the neighborhood and about 38 percent of the total area of the neighborhood, were served by public sanitary sewer and public water supply facilities, as shown on Maps 16 and 17. Sanitary sewer facilities and public water supply facilities have not been expanded to service the balance of the neighborhood area. Also in 1979, 105 acres of the neighborhood, or about 28 percent of the existing urban development within the neighborhood and about 11 percent of the total neighborhood area, were served by a storm sewer system, as shown on Map 18.

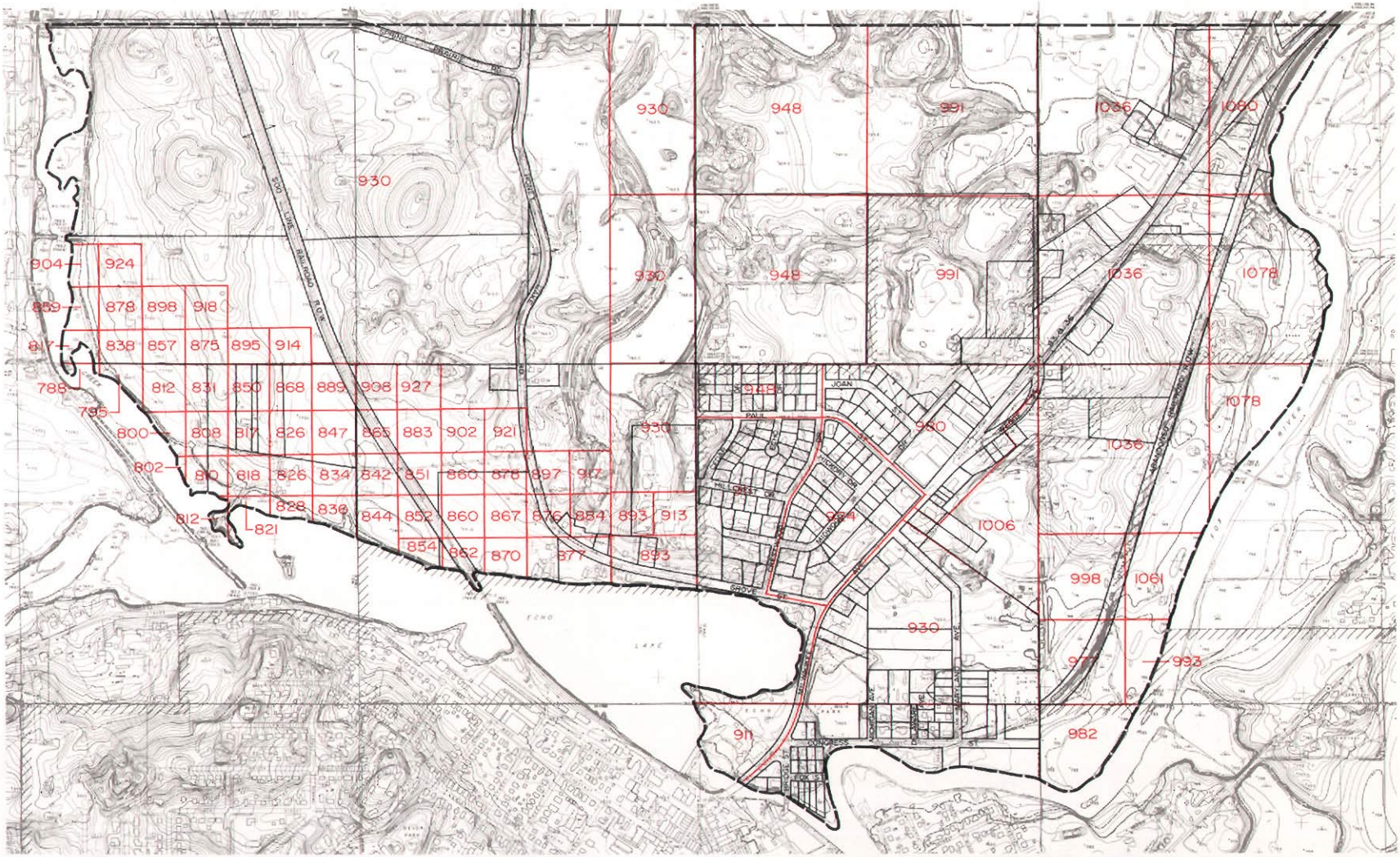
Community Facilities

There are no schools located within the boundaries of the Echo Lake Neighborhood. The Burlington area is provided public educational facilities through the Burlington Area K-12 School District. The Echo Lake Neighborhood is also served by the Burlington High School, located approximately one and one-half miles to the southeast of the neighborhood, and the Burlington Junior High School, located approximately one and one-quarter miles to the south of the neighborhood. Public elementary schools serving the Burlington area, include Cooper Elementary School, Lyons Elementary School, Waller Elementary School, and Winkler Elementary School.

The Echo Lake Neighborhood has a total of seven parks or recreation-related areas. As pointed out earlier, a significant area of the neighborhood is occupied by the Wehmhoff Woodland Preserve, totaling 87 acres, or 8.7 percent of the total neighborhood area. Echo Park occupies 19 acres of land at the intersection of Milwaukee Street (STH 36/STH 83), and Congress Street, and

Map 14

HEIGHT LIMITATION ZONING MAP OF THE BURLINGTON MUNICIPAL AIRPORT FOR THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- HEIGHT LIMITATION ZONE BOUNDARY
- 930 HEIGHT RESTRICTIONS IN FEET ABOVE MEAN SEA LEVEL

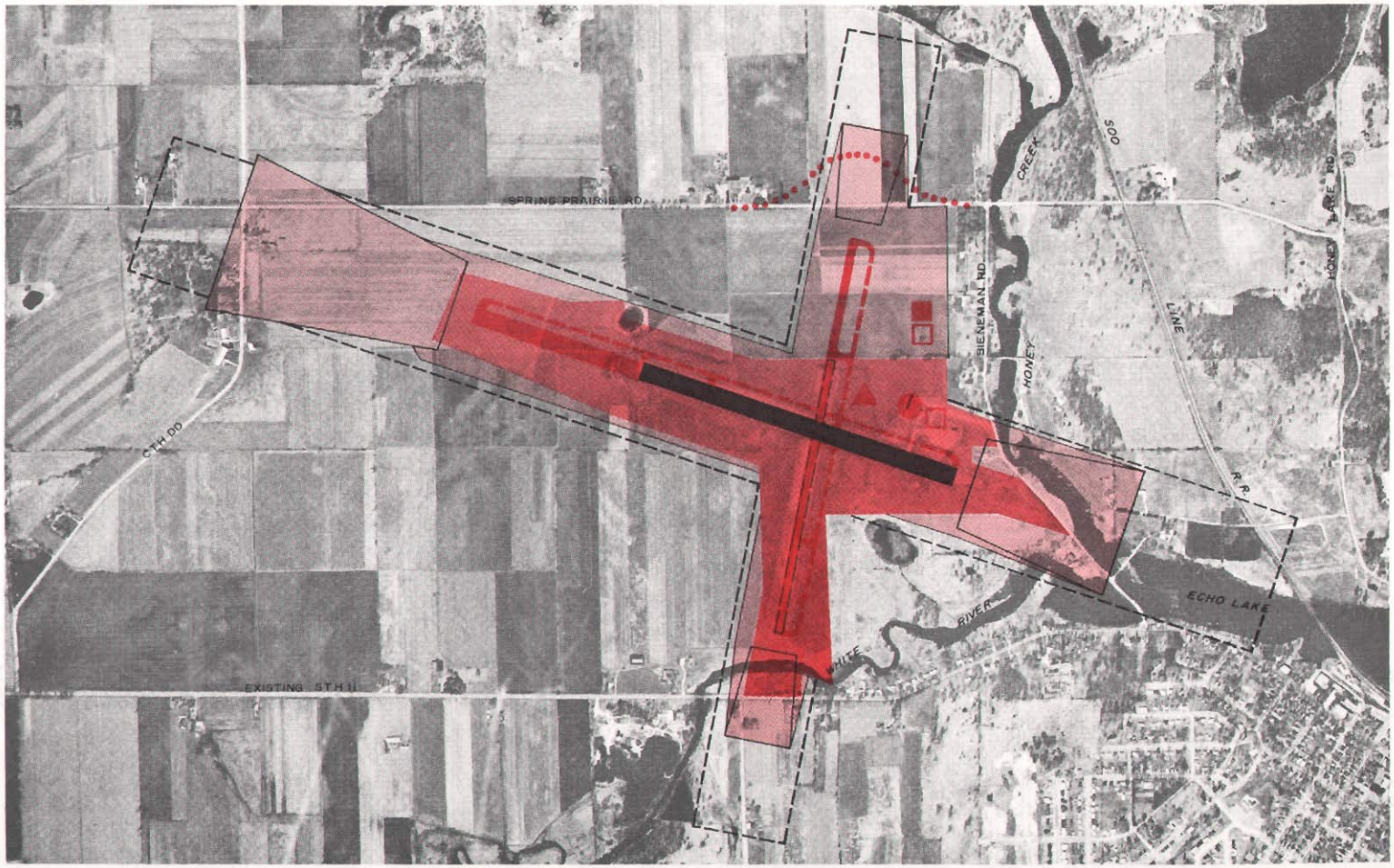
GRAPHIC SCALE

0 400 800 1200 FEET

Source: W. J. Zutter, Consulting Engineer of Madison, Wisconsin, and SEWRPC.

Map 15

PROPOSED SITE IMPROVEMENT PLAN FOR THE BURLINGTON MUNICIPAL AIRPORT



LEGEND

- LANDS CURRENTLY (1975) OWNED BY THE CITY OF BURLINGTON FOR AIRPORT PURPOSES
- LANDS PROPOSED TO BE ACQUIRED FOR AIRPORT SITE IMPROVEMENTS OR PROTECTED THROUGH EASEMENTS PROHIBITING INCOMPATIBLE LAND USE DEVELOPMENT
- EXISTING PAVED RUNWAY
- EXISTING TURF RUNWAY
- PROPOSED PAVED RUNWAY
- PROPOSED TAXIWAY
- CLEAR ZONE TRAPEZOID
- PROPOSED TERMINAL BUILDING EXPANSION
- PROPOSED AIRCRAFT PARKING APRON AREA
- PROPOSED AIRCRAFT HANGAR AREA
- PROPOSED AUTOMOBILE PARKING AREA
- PROPOSED ROAD REALIGNMENT
- AIRPORT INFLUENCE AREA—LIMIT OF AREA ELIGIBLE FOR FEDERAL AID

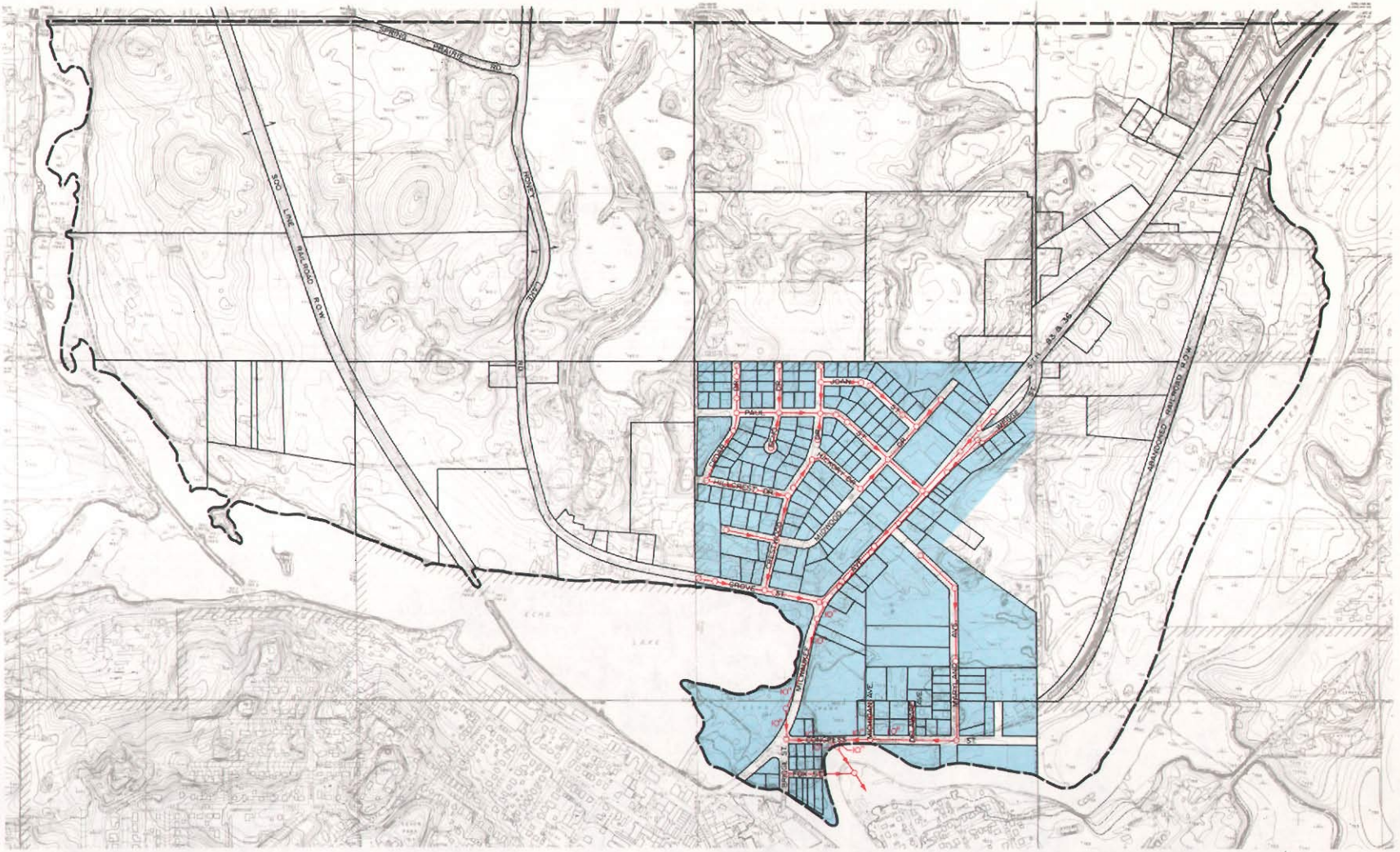
GRAPHIC SCALE

0 800 1600 2400 FEET

Source: SEWRPC.

Map 16

EXISTING SANITARY SEWER SERVICE IN THE ECHO LAKE NEIGHBORHOOD: 1979



LEGEND

- NEIGHBORHOOD BOUNDARY
- CITY OF BURLINGTON CORPORATE LIMITS: 1982
- 10" SANITARY SEWER, SIZE IN INCHES, AND DIRECTION OF FLOW (ALL 8" UNLESS OTHERWISE INDICATED)
- MANHOLE LOCATION
- EXISTING SANITARY SEWER SERVICE AREA

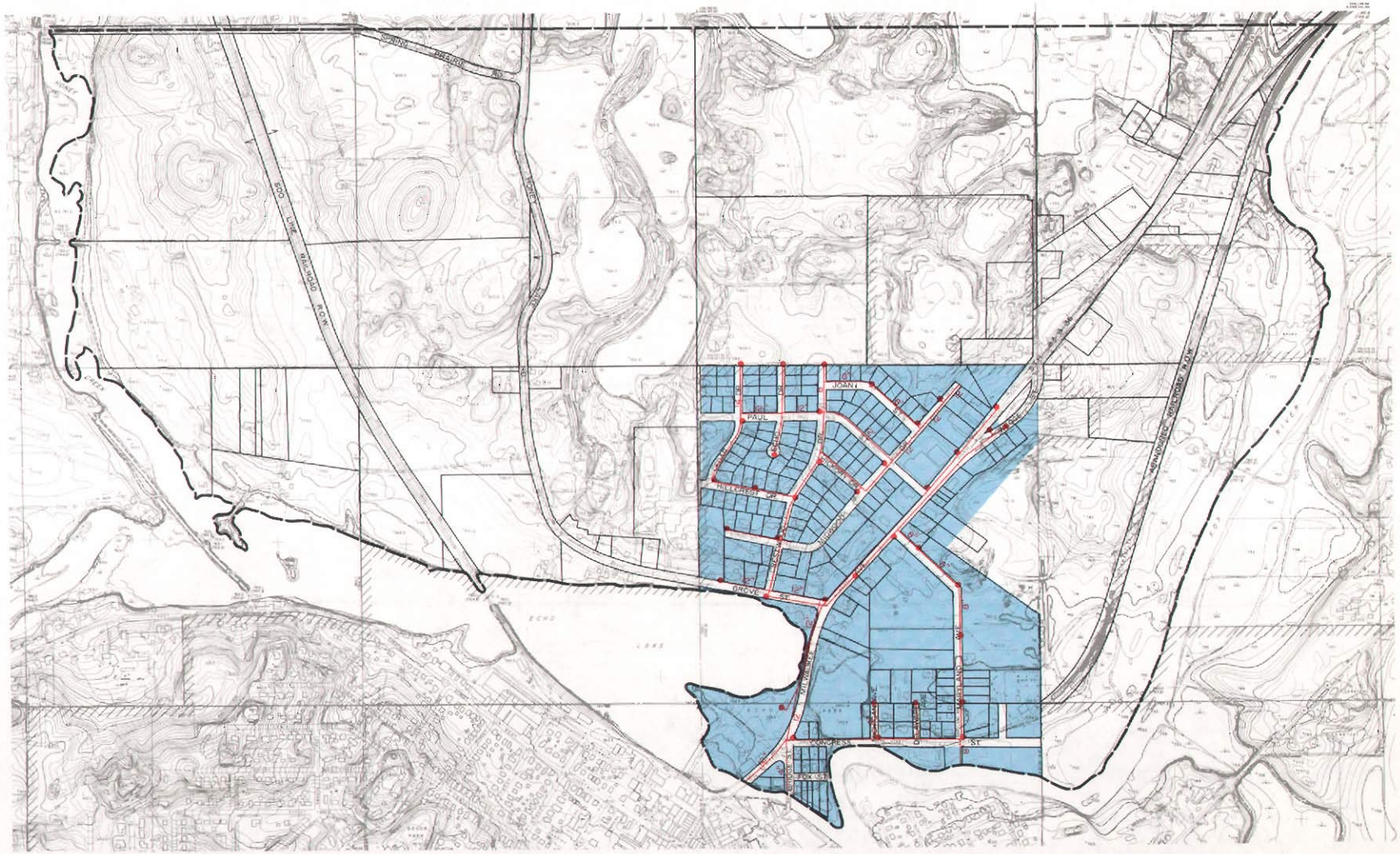
GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Map 17

EXISTING PUBLIC WATER SUPPLY IN THE ECHO LAKE NEIGHBORHOOD: 1979



LEGEND

- NEIGHBORHOOD BOUNDARY
- CITY OF BURLINGTON CORPORATE LIMITS : 1982
- 12" WATER MAIN AND SIZE IN INCHES (ALL 6" UNLESS OTHERWISE INDICATED)
- FIRE HYDRANT
- PUBLIC WATER SUPPLY SERVICE AREA

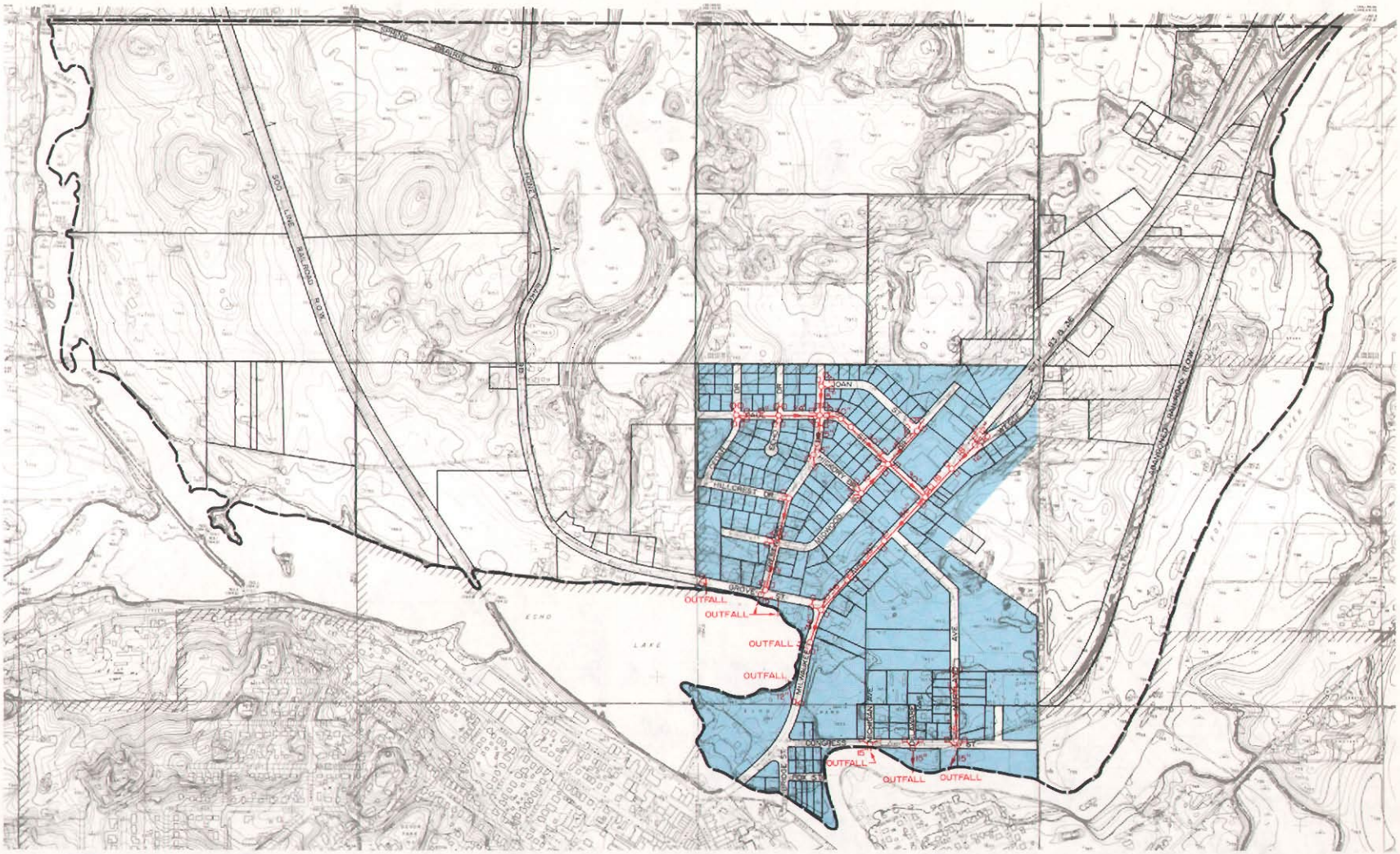
GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Map 18

EXISTING STORM SEWER SERVICE IN THE ECHO LAKE NEIGHBORHOOD: 1979



LEGEND

- NEIGHBORHOOD BOUNDARY
- CITY OF BURLINGTON CORPORATE LIMITS : 1982
- STORM SEWER, SIZE IN INCHES, AND DIRECTION OF FLOW (ALL 10" UNLESS OTHERWISE INDICATED)
- MANHOLE LOCATION
- CATCH BASIN LOCATION
- STORM SEWER SERVICE AREA

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

provides a baseball diamond, ice-skating rink, picnic area, playground, and swimming beach. A portion of the Browns Lake Golf Club--approximately 31 acres of the total 111 acres of the golf club--formerly in private ownership and now owned by Racine County, is located within the Echo Lake Neighborhood. Riverside Park is located along the northern boundary of the Fox River, occupies acres, and provides a picnic area, a playfield, and playground. The recently named Steinhoff Park, Midwood Park, and the ball park represent the balance of the park sites.

Library service is provided by the City of Burlington Public Library. Fire and police protection are provided by the City of Burlington. General commercial facilities are currently provided in the Burlington central business district, as well as along Milwaukee Avenue (STH 36/STH 83); and other scattered commercial sites are located throughout the City.

Street and Highway Facilities

The existing streets and highways within and adjacent to the Echo Lake Neighborhood area are shown on Map 12. Selected information concerning the existing rights-of-way of those streets and highways is set forth in Table 13. Streets and highways presently account for approximately 5 percent of the total area of the neighborhood. Arterial streets and highways in the Echo Lake Neighborhood measure 1.36 miles in length; collector streets, 1.88 miles; and minor streets, 2.71 miles. A total of 5.95 miles of streets and highways currently serve the neighborhood area.

In November of 1974, a study entitled Arterial Street Location Study - City of Burlington, Wisconsin, was prepared by Howard, Needles, Tammen and Bergendoff--Consulting Engineers of Milwaukee--to examine alternative locations for a proposed arterial bypass of the City of Burlington. The study presented four alternatives for the bypass facility, as shown on Map 19. Each of the four alternatives presented would affect the Echo Lake Neighborhood. The area of the Echo Lake Neighborhood which would be most affected by any of the four alternatives is that area bounded by STH 36 on the west and the Fox River on the east. Alternatives A, C, and D show the proposed bypass intersecting the Fox River and STH 36/STH 83, each at nearly right angles, whereas Alternative B proposes to locate the proposed bypass almost parallel to the Fox River and STH 36/STH 83, utilizing the abandoned electric interurban railroad right-of-way. Alternative B, as it passes through the Echo Lake Neighborhood, is generally in conformance with the location of the bypass, as shown in SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin: 2000. In June of 1978, the City of Burlington Plan Commission and the City Engineer further refined Alternative B to the route shown on Map 19 as revised Alternative B.

STH 36/STH 83, Honey Lake Road, Grove Street, and the proposed bypass using the existing abandoned railroad right-of-way present major design considerations for the neighborhood.

Table 13

EXISTING STREETS AND HIGHWAYS IN THE ECHO LAKE NEIGHBORHOOD: 1979

Street Classification	Name	Direction	Existing Right-of-Way (feet)	Length in Miles
Arterial Streets or Highways	Milwaukee Avenue (STH 36/83)....	Northeast/ Southwest	66 to 300 (varies)	1.36
Subtotal	--	--	--	1.36
Collector Streets	Grove Street.....	East-West	66	0.38
	Honey Lake Road.....	North-South	66	0.79
	Spring Prairie Road.....	East-West	66	0.71
Subtotal	--	--	--	1.88
Minor Streets	Bridge Street.....	North-South	66	0.08
	Cedar Drive.....	North-South	66	0.19
	Congress Street.....	East-West	66	0.38
	Crestwood Drive.....	North-South	66	0.35
	Delaware Avenue.....	North-South	60	0.05
	Elm Drive.....	North-South	66	0.14
	Fox Street.....	East-West	66	0.05
	Hickory Drive.....	Northwest/ Southeast	66	0.08
	Hillcrest Drive.....	East-West	66	0.01
	Joan Street.....	Northwest/ Southeast	66	0.15
	Maryland Avenue.....	North-South and Northwest/ Southeast	66	0.35
	Michigan Avenue.....	North-South	66	0.05
	Midwood Drive.....	East-West and Southwest/ Northeast	66	0.45
	Paul Street.....	East-West and Northwest/ Southeast	66	0.38
Subtotal	--	--	--	2.71
Total	--	--	--	5.95

Source: SEWRPC.

Real Property Ownership

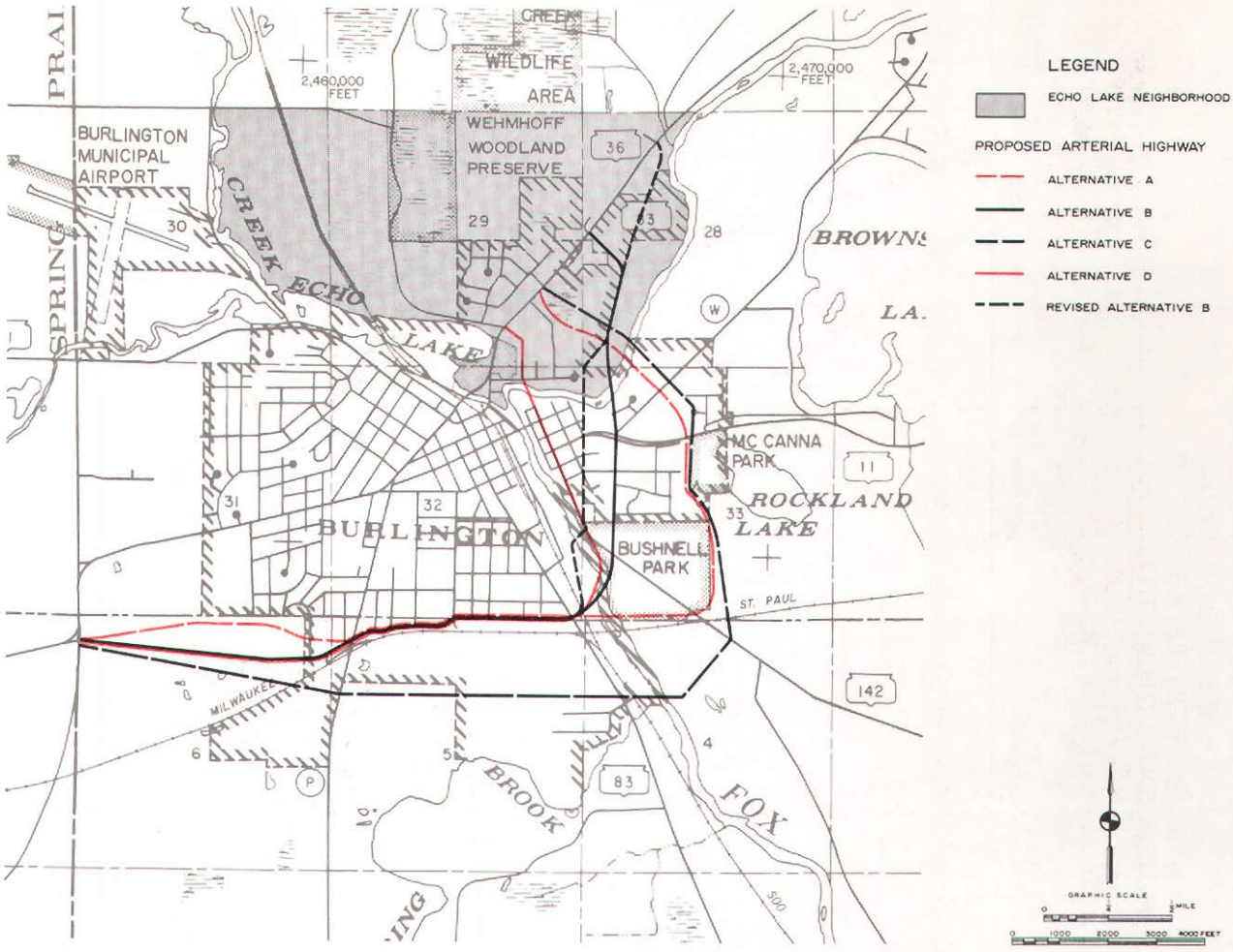
There are 270 separate parcels of real property existing within the Echo Lake Neighborhood, ranging in size from 6,000 square feet to about 80 acres. The boundaries of these parcels, together with existing structures, significant easements, and rights-of-way, are shown in their correct location and orientation on Map 20. Easements within the neighborhood provide locations for power, communication, and utility facilities.

URBAN DESIGN PROBLEMS AND CONSTRAINTS IN THE ECHO LAKE NEIGHBORHOOD

Problems relating to and constraints on development in the Echo Lake Neighborhood area are identified in summary form on Map 20. Some of the constraints may also provide opportunities for the enhancement of development through careful design. The problems and constraints were identified through a careful analysis of the natural resource base of the area, including particularly soils, wetlands, floodlands, and woodlands; of the primary environmental cor-

Map 19

ARTERIAL STREET LOCATION STUDY FOR THE CITY OF BURLINGTON, WISCONSIN: 1974

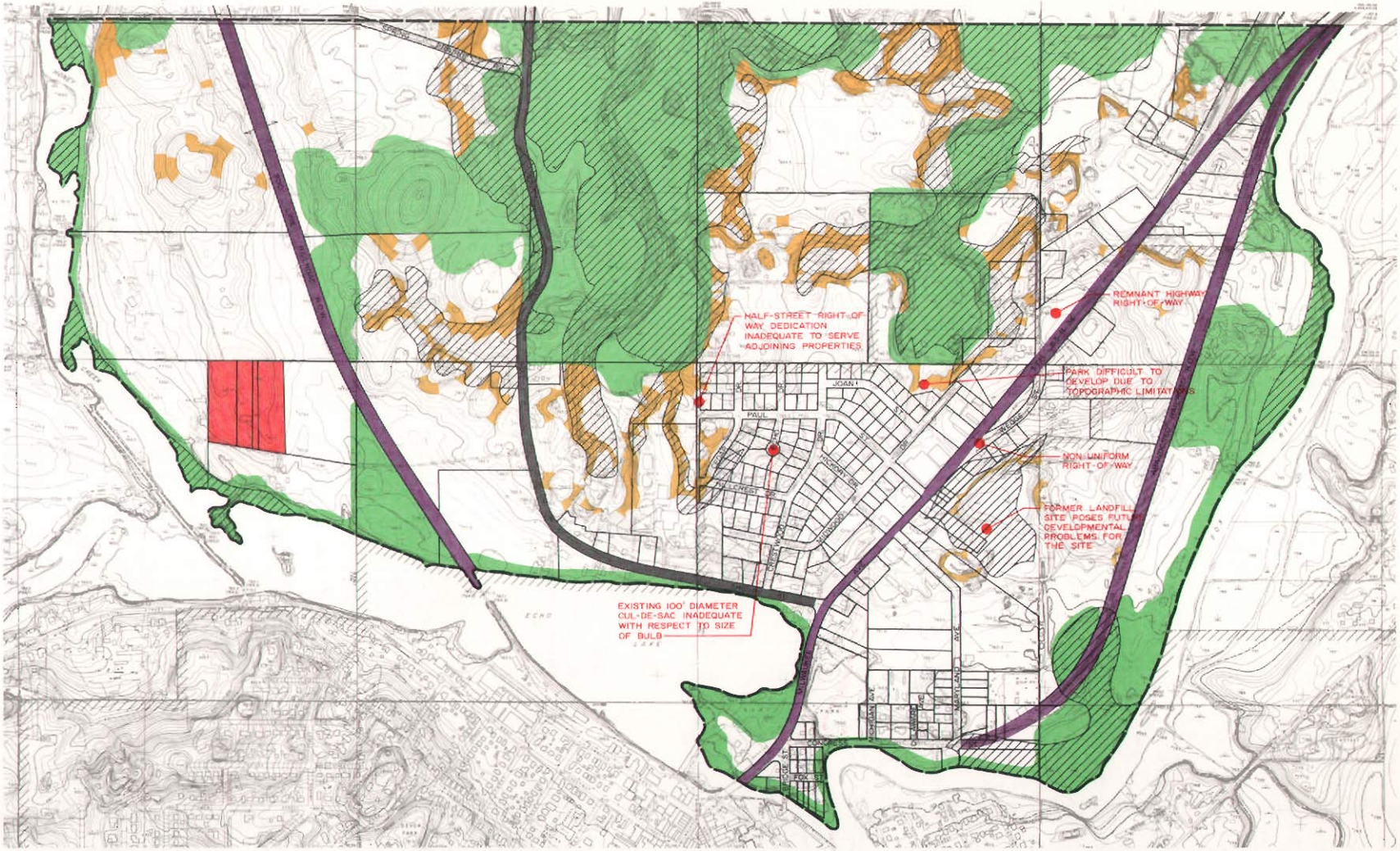


Source: Howard, Needles, Tammen, and Bergendoff, Arterial Street Location Study--City of Burlington, November 1974.

ridor delineation; of existing land use; and of existing real property ownership. Those areas identified as primary environmental corridors should be preserved in essentially natural, open uses and should not be infringed upon by urban development. Primary environmental corridors within the Echo Lake Neighborhood extend from the north into the central portion of the neighborhood, and include lands contained within the Wehmhoff Woodland Preserve, as well as privately owned lands. Primary environmental corridor lands are also located along the Fox River and Honey Creek, and around Echo Lake, as these waters form the eastern, southern, and western boundaries of the neighborhood. Many of the areas of the neighborhood covered by soils which pose severe and very severe soil limitations for urban development are also found in these primary environmental corridor areas. Steep slope areas of 12 percent or more are generally located within the primary environmental corridors; however, several areas of steep slopes lie outside the primary environmental corridors, as shown on Map 20 and will require careful study and proper engineering to accommodate urban development. Constraints relating to solar access are graphically shown on Map 11. The designated "rustic road," Honey Lake Road, also poses a constraint on development of contiguous properties since adequate lot depth and setbacks must be provided in order not to destroy the character of the road.

Map 20

EXISTING PROPERTY BOUNDARIES AND SUMMARY OF SELECTED CONSTRAINTS AFFECTING NEIGHBORHOOD DESIGN IN THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINES : 1982
- DELINEATED PRIMARY ENVIRONMENTAL CORRIDOR AREAS WHICH SHOULD REMAIN UNDEVELOPED
- AREAS CONTAINING SOILS WHICH POSE SEVERE AND VERY SEVERE LIMITATIONS FOR URBAN DEVELOPMENT
- AREAS CONTAINING STEEP SLOPES (12% +) WHICH WILL REQUIRE CAREFUL STUDY AND PROPER ENGINEERING TO ACCOMMODATE URBAN DEVELOPMENT
- EXCESSIVELY DEEP LOTS WHICH MAKE FUTURE SUBDIVISION DIFFICULT
- MANMADE FEATURE WHICH POSES A DEVELOPMENT CONSTRAINT
- HONEY LAKE ROAD - "RUSTIC ROAD" WHICH POSES DEVELOPMENT CONSTRAINTS AS WELL AS OPPORTUNITIES

GRAPHIC SCALE

0 400 800 1200 FEET

Source: SEWRPC.

Photo by Patrick J. Meehan.

Figure 8

VIEW OF THE DISMANTLED ELECTRIC RAILWAY RIGHT-OF-WAY

The abandoned electric interurban railway right-of-way, as it passes through the Echo Lake Neighborhood, is planned to be used as the location for the proposed CTH bypass of STH 36/STH 83 in the adopted regional transportation system plan.

Man-made features in the neighborhood area which pose developmental problems include the Soo Line Railroad right-of-way, which extends in a north-south direction through the western portion of the neighborhood between Honey Lake Road on the east and Honey Creek on the west; the former electric interurban roadway railroad right-of-way shown in Figure 8, which extends in a north-south direction parallel to the Fox River through the eastern portion of the neighborhood; and Milwaukee Avenue (STH 36/STH 83) which bisects the eastern one-half of the neighborhood. Long and narrow configurations of four lots located west of the Soo Line Railroad right-of-way and east of Honey Creek may make efficient future subdivision of these parcels difficult. Since commercial land uses front upon Milwaukee Avenue (STH 36/STH 83) and direct access is afforded to these uses, there is a need to protect the capacity and safety of this arterial by minimizing driveway entrances and exits to serve adjacent land uses, thereby minimizing the attendant traffic conflicts and hazards.

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Chapter III

RESIDENTIAL NEIGHBORHOOD URBAN DESIGN CRITERIA

INTRODUCTION

Urban design criteria can be defined as a body of information which can be applied in the development of a solution or solutions to a specific design problem or set of problems. Specific urban development decisions should be based in part upon urban design criteria. Urban design criteria must be of a relatively high level of specificity in order to assist in the development of detailed solutions to urban development problems. Accordingly, urban design criteria are herein proposed with respect to environmental preservation; neighborhood recreation facilities; service radii of neighborhood facilities; street, block, and lot layouts and arrangements; residential structure orientation for solar access and energy conservation; general landscaping; utility easements; and storm water drainage and erosion/sedimentation control. The various alternative neighborhood plans discussed in Chapter IV are based, in part, upon these various urban design criteria.

URBAN DESIGN CRITERIA

Environmental Preservation

Primary Environmental Corridors: Since primary environmental corridors are a composite of the best individual elements of the natural resource base, through the preservation of these corridors flood damage can be reduced, soil erosion abated, water supplies protected, air cleansed, and wildlife populations enhanced, and continued opportunities can be provided for scientific, educational, and recreational pursuits. Therefore, all remaining undeveloped lands within the designated primary environmental corridors should be preserved in essentially natural, open uses.

Lakes and Streams: Since inland lakes and streams contribute to the atmospheric water supply through evaporation; provide a suitable environment for desirable forms of plant and animal life; provide the resident population with opportunities for wholesome recreational areas; provide a desirable aesthetic setting for certain types of land use development; serve to receive, store, and convey flood waters; and provide certain water supply needs, these areas should not be infringed upon by urban development.

Wetlands: All wetland areas adjacent to streams or lakes, all wetlands within areas having special wildlife and other natural values, and all wetlands having an area in excess of five acres should not be allocated to any urban development except limited recreation uses and should not be drained or filled.

Woodlands and Vegetation: Every effort should be made to protect and retain existing natural vegetative cover, particularly trees. Trees should be protected and preserved during construction in accordance with sound conservation practices, including the use of wells or islands or retaining walls whenever surrounding grades are altered.

Table 14

OUTDOOR RECREATION FACILITY REQUIREMENTS IN A TYPICAL MEDIUM-DENSITY RESIDENTIAL NEIGHBORHOOD UNIT

Facility	Minimum Standard Public Facility Requirement	Number of Facilities Required	Total Acreage Required
Active Recreation			
Baseball Diamond.....	0.09 per 1,000	0.59 = 1	4.5
Basketball Goal.....	0.91 per 1,000	5.9 = 6	0.42
Ice Skating Rink.....	0.15 per 1,000	0.98 = 1	0.35 minimum
Playfield.....	0.39 per 1,000	2.5 = 3	4.95 minimum
Playground.....	0.35 per 1,000	2.3 = 2	1.24 minimum
Softball Diamond.....	0.53 per 1,000	3.4 = 2	5.36
Tennis Court.....	0.50 per 1,000	3.3 = 3	0.96
Subtotal	--	--	17.78 minimum
Passive Recreation Area....	Add 10 percent of active recreation area total		1.8
Other Recreation Area[a].....	Add 10 percent of active recreation area total		1.8
Total	--	--	21.38 minimum

NOTE: Medium density is defined as 2.3 to 6.9 dwelling units per net residential acre, with a total population of 6,500 within an area of one square mile (640 acres).

[a] Picnicking facilities should be provided in a neighborhood park.

Source: SEWRPC.

Wildlife Habitat: The most suitable habitat for wildlife--that is, the area wherein wildlife can best be fed, sheltered, and reproduced--is a natural habitat. Since good habitat for wildlife can best be achieved by preserving or maintaining in a wholesome state other resources such as soil, air, water, wetlands, and woodlands, the standards for each of these other resources, if met, would ensure the preservation of a suitable wildlife habitat and wildlife populations.

Soils: Since the proper relation of urban land use development to soil type and distribution can serve to avoid the creation of costly environmental problems and promote the wise use of an irreplaceable resource, sewered urban development should not be located in areas covered by soils identified in the regional detailed operational soil survey as having severe or very severe limitations for such development.

Neighborhood Recreational/Educational Facilities

Recreational lands at the neighborhood level should provide a focal point for neighborhood activities and should be located and developed in conjunction with a neighborhood elementary school. The elementary school and recreational facilities should be provided on a common site available to serve the recreation demands of both the school student and the resident neighborhood population. Using a neighborhood park site standard of 1.7 acres per 1,000 residents, and an elementary school site standard of 1.6 acres per 1,000 residents, a total site area of 3.3 acres per 1,000 residents should be provided, with the joint site having a minimum area of 10 acres in size, however. The individual recreational facility requirements should be based upon the values listed in Table 14.

Table 15

MAXIMUM WALKING DISTANCE AND TRAVEL TIME STANDARDS FOR A TYPICAL MEDIUM-DENSITY NEIGHBORHOOD

Facility	Optimum One-Way Walking Distance (miles)	Maximum One-Way Walking Distance (miles)	Maximum One-Way Automobile Travel Time (minutes)
Shopping Facilities			
Local Retail and Service Center	1/2	3/4	3
Community Retail and Service Center	1	1 1/2	15
Major Retail and Service Center	--	--	20
Industrial Employment Facilities			
Community Industrial Center	--	--	15
Major Industrial Center	--	--	20
Local Transit Facilities	1/2	3/4	--
Educational Facilities			
Elementary School (K-6)	1/2	3/4	--
Junior High (7-9)	1	1 1/2	15
Senior High (10-12)	--	--	20
Vocational and Higher Education	--	--	30
Outdoor Recreational Facilities			
Subneighborhood Recreation	1/2	1/4	--
Neighborhood Recreation	1/2	3/4	--
Community Recreation	--	--	20
Major Recreation	--	--	30

NOTE: Medium density is defined as 2.3 to 6.9 dwelling units per net residential acre.

Source: SEWRPC.

Walking Distances to Neighborhood Facilities: Residents of the neighborhood should be afforded convenient access to existing and proposed commercial facilities, educational facilities, transportation facilities, recreational facilities, and community facilities which meet the maximum walking distance and travel time criteria shown in Table 15.

Streets

Limitation of Access to Arterial Streets: Whenever proposed residential land uses abut an arterial street or highway, the character of the residential uses and the capacity and safety of the arterial facility should be protected by limiting access from the abutting land uses, and by separating through and local traffic, where possible, by reversed frontage. In addition, a planting screen should be provided in a nonaccess reservation along the rear property line.

Street Cross-Sections: Table 16 summarizes cross-sectional design criteria for desirable four-lane arterial streets, minimum four-lane arterial streets, desirable collector streets, minimum collector streets, minor streets, cul-de-sacs, and pedestrian ways. The respective cross-sections are shown graphically in Figure 9.

Street Grades: Unless necessitated by exceptional topography, the maximum grade of any street should not exceed the following: arterial streets, 6 percent; collector streets, 8 percent; minor streets, alleys, and frontage streets, 12 percent; and pedestrian ways, 12 percent unless steps of acceptable design are provided. In addition, the grade of any street should not

Table 16

STREET DESIGN CRITERIA FOR THE ECHO LAKE NEIGHBORHOOD

Type of Street	Minimum Right-of-Way to be Dedicated	Minimum Dimensions
Desirable Arterial Streets (four lane)	130 feet	Dual 36-foot pavement (face of curb to face of curb) 26-foot median 10-foot tree banks (curb lawn) 5-foot sidewalks 1-foot outside sidewalks
Minimum Arterial Streets (four lane)	66 feet	48-foot pavement (face of curb to face of curb) 3-foot tree banks (curb lawn) 5-foot sidewalks 1-foot outside sidewalks
Desirable Collector Streets	80 feet	48-foot pavement (face of curb to face of curb) 10-foot tree banks (curb lawn) 5-foot sidewalks 1-foot outside sidewalks
Minimum Collector Streets	66 feet	48-foot pavement (face of curb to face of curb) 3-foot tree banks (curb lawn) 5-foot sidewalks 1-foot outside sidewalks
Minor Streets	66 feet	36-foot pavement (face of curb to face of curb) 9-foot tree banks (curb lawn) 5-foot sidewalks 1-foot outside sidewalks
Cul-de-Sac[a] (turnaround)	60-foot radius	48-foot outside face of curb radius 24-foot inside pavement radius 6-foot tree banks (curb lawn) 5-foot sidewalks (if required) 1-foot outside sidewalks
Mid-Block Pedestrian Ways	16-foot average	5-foot minimum walk

[a] See Figure 9 for graphically illustrated detailed cul-de-sac design criteria.

Source: SEWRPC.

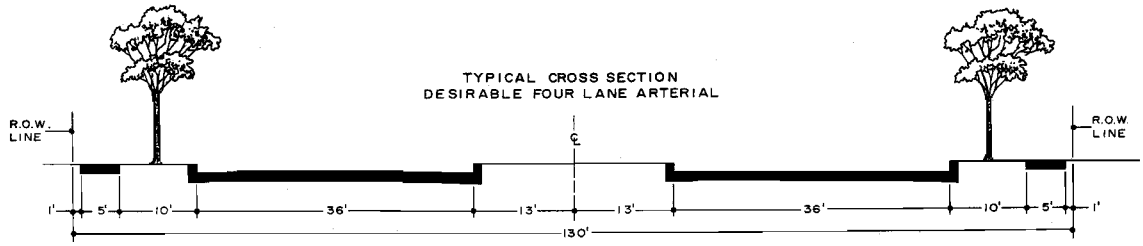
exceed 12 percent or be less than 0.5 percent. Street grades should be established so as to avoid excessive grading, the promiscuous removal of ground cover and tree growth, and unnecessary leveling of the topography.

Street Intersections: Streets should intersect each other at as near to right angles as topography and other limiting factors of design permit. In addition, the number of streets converging at one intersection should be held to a minimum, preferably to not more than two streets at one intersection; the number of intersections along arterial streets and highways should be held to a minimum, and the distance between such intersections should generally not be less than 1,200 feet; and property lines at street intersections should be rounded with a minimum radius of 15 feet or should be cut off by a straight line through the joints of tangency of an arc having a radius of 15 feet.

Street Alignment: When a continuous street centerline deflects at any point by more than 10 degrees, a circular curve should be introduced having a radius

Figure 9

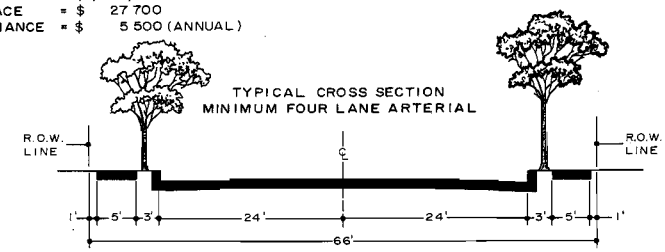
TYPICAL STREET AND HIGHWAY CROSS-SECTIONS RECOMMENDED FOR THE ECHO LAKE NEIGHBORHOOD, CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN



6" GRAVEL BASE
DUAL 36' HIGH TYPE PAVEMENT, 130' R.O.W.
SIDEWALK, STREET LIGHTING
ESTIMATED COST PER MILE:
CONSTRUCTION = $1,473,000
RESURFACE = $ 27 700
MAINTENANCE = $ 5 500 (ANNUAL)

CAPACITY RANGE:

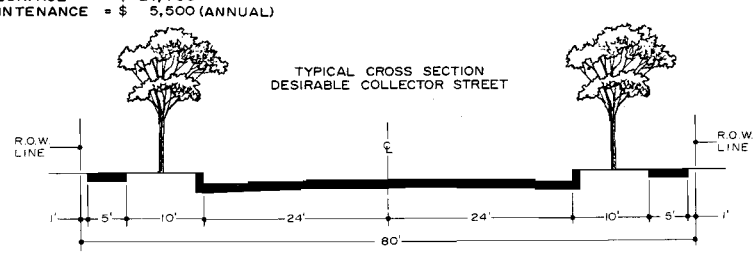
LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	14,100 VEH./DAY
C	15,300 VEH./DAY
D	17,400 VEH./DAY



6" GRAVEL BASE
48' HIGH TYPE PAVEMENT, 66' R.O.W.
SIDEWALK, STREET LIGHTING
ESTIMATED COST PER MILE:
CONSTRUCTION = $473,000
RESURFACE = $ 27, 700
MAINTENANCE = $ 5,500 (ANNUAL)

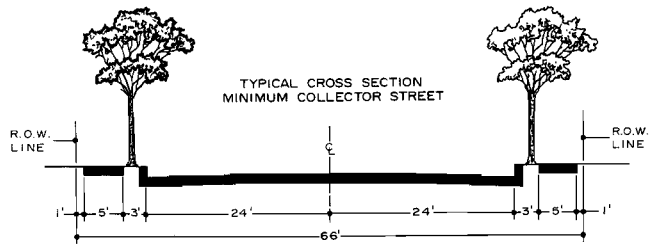
CAPACITY RANGE:

LEVEL OF SERVICE	MAXIMUM SERVICE VOLUME
B	14,100 VEH./DAY
C	15,300 VEH./DAY
D	17,400 VEH./DAY



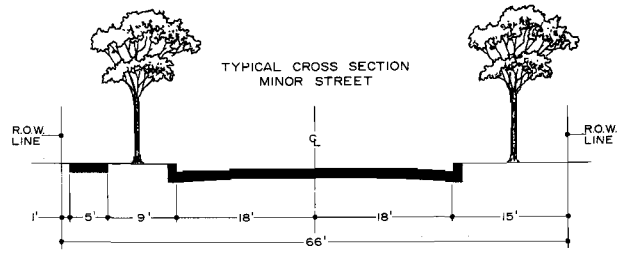
6" GRAVEL BASE
48' HIGH TYPE PAVEMENT
80' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $ 308,000
RESURFACE = $ 27,700
MAINTENANCE = $ 4,500 (ANNUAL)



6" GRAVEL BASE
48' HIGH TYPE PAVEMENT, 66' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $473,000
RESURFACE = $ 27, 700
MAINTENANCE = $ 5,500 (ANNUAL)

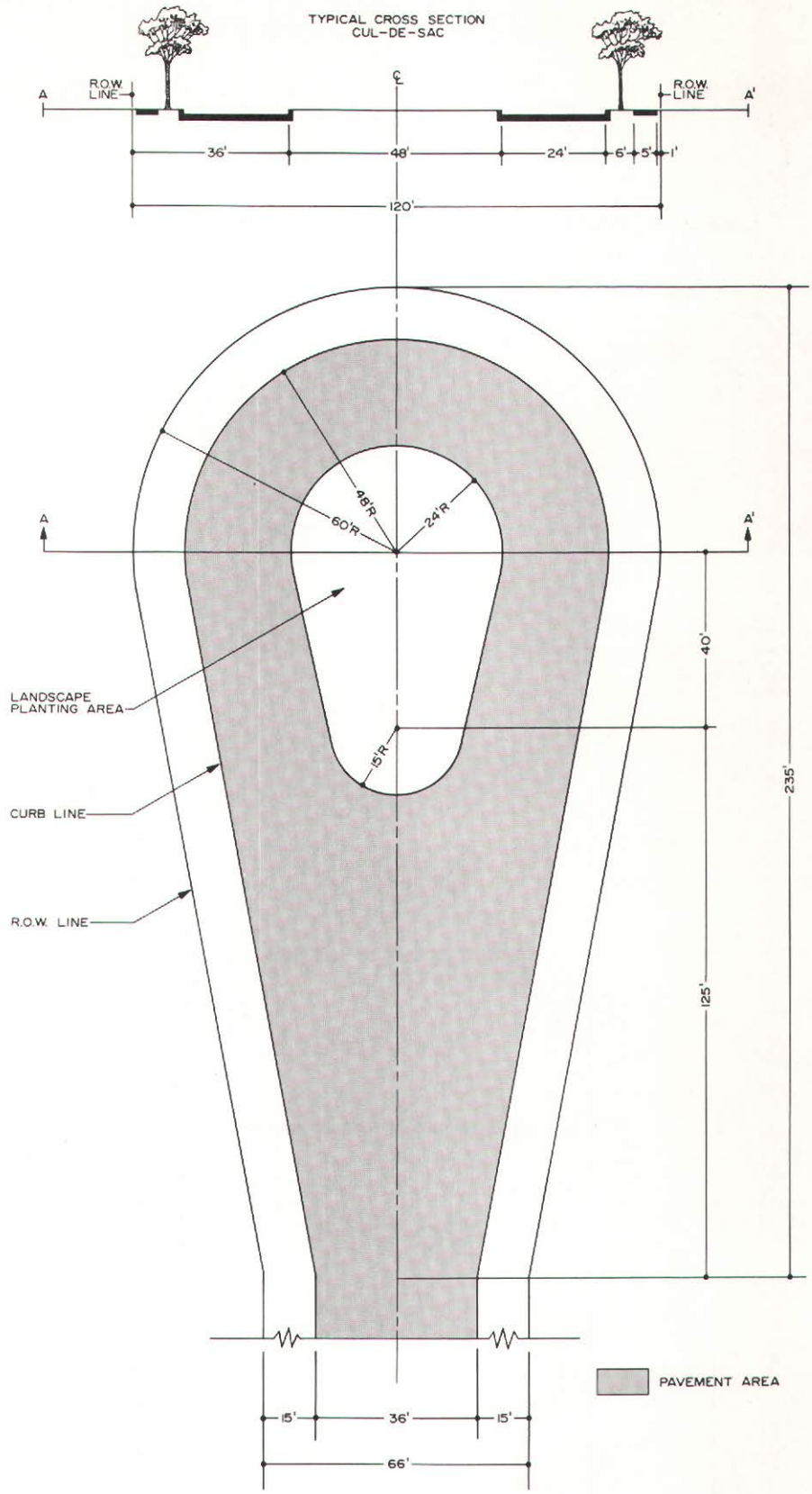


6" GRAVEL BASE
36' HIGH TYPE PAVEMENT
66' R.O.W.

ESTIMATED COST PER MILE:
CONSTRUCTION = $ 175,000
RESURFACE = $ 20 900
MAINTENANCE = $ 2,600 (ANNUAL)

NOTE: ESTIMATED COSTS ARE IN CONSTANT 1973 DOLLAR AMOUNTS

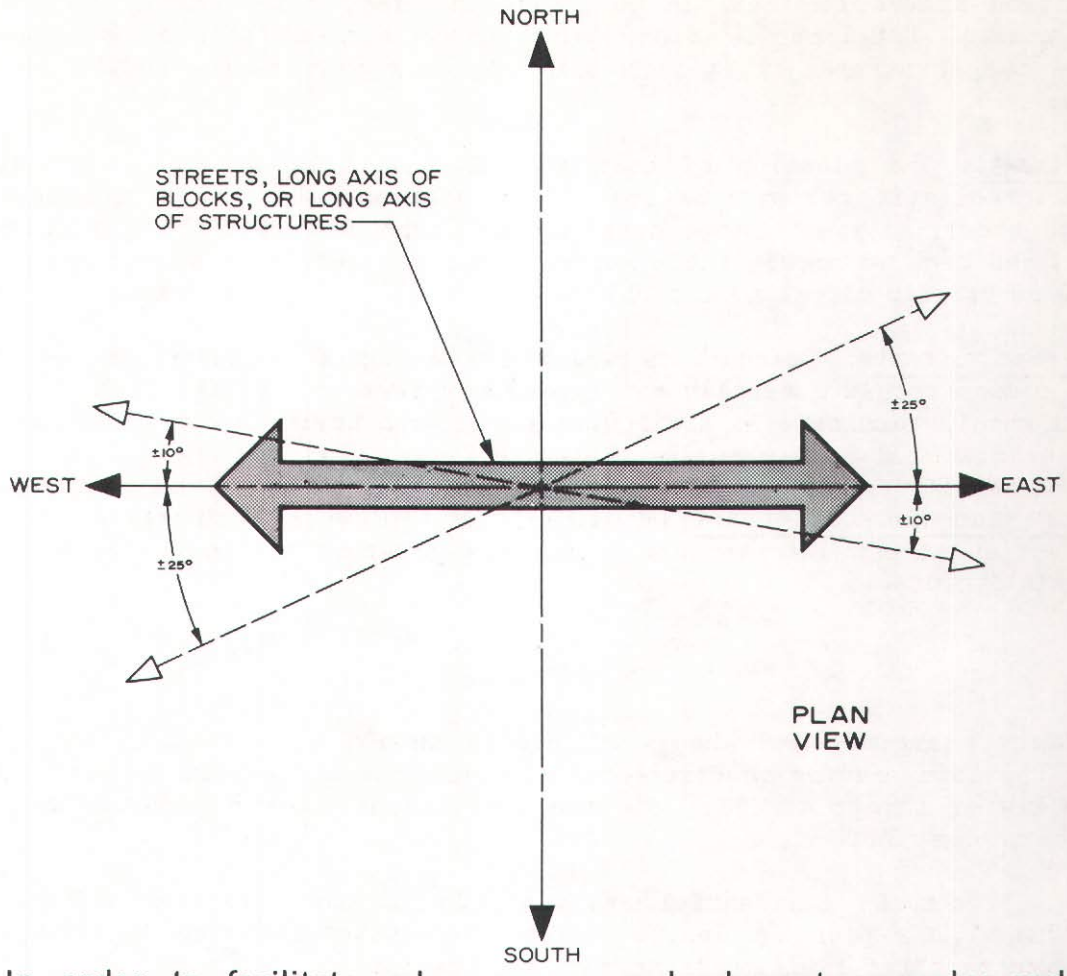
Figure 9 (continued)



Source: SEWRPC.

Figure 10

ORIENTATION FOR SOLAR ACCESS



In order to facilitate solar access, and where topography and other natural features permit, generally streets and the long axis of blocks and structures should be laid out in an east-west direction, with a maximum of 10°± variation to the northwest and a maximum of 25°± variation to the southwest, as shown.

Source: SEWRPC.

of curvature on the centerline of not less than the following: arterial streets, 500 feet; collector streets, 300 feet; and minor streets, 100 feet. A tangent at least 100 feet in length should be provided between reverse curves on arterial and collector streets. In addition, minor and collector streets should not necessarily continue across arterial streets. If the distance between the centerline intersections of any street and any intersecting street is less than 250 feet measured along the centerline of the intersecting streets, then the street location should be adjusted so that the distance is increased or the adjoinment across the intersecting street is continuous, thus avoiding a jog in the flow of traffic.

Street Orientation for Solar Access: In order to facilitate solar access, where topography and other natural features permit streets should generally be layed out in an east-west direction, with a maximum of 10° variation to the northwest and a maximum of 25° variation to the southwest, as shown in Figure 10. In situations where topography and other natural features do not

permit streets to be layed out in an east-west direction, lot and/or building orientation should be flexible to compensate for these natural barriers to solar access. Developments along north-south streets should be encouraged to have the structures built with the long roof axis facing south, as shown in Figure 10.

Half Streets: The platting of half streets should be avoided. Half streets put an unrealistic reliance on the chance that adjacent property owners will develop their adjacent properties at the same time. If half streets are allowed and then improved, their narrow width may result in street maintenance as well as traffic circulation problems.

Cul-de-Sac Streets: Cul-de-sacs which are designed to have one end permanently closed should generally not exceed 600 feet in length. Such cul-de-sac streets should terminate in a circular turnaround having a design as described in Table 16 and shown graphically in Figure 9.

Handicap and Bicycle Access: Wheelchair and bicycle curb ramps should be installed at street intersection crosswalks pursuant to Section 66.616 of the Wisconsin Statutes.

Blocks

The widths, lengths, and shapes of blocks should be suited to the planned use of the land; zoning requirements; the need for convenient access, control, and safety of street traffic; and the limitations of and opportunities provided by topography.

Length: Blocks in residential areas should not be less than 600 feet nor more than 1,200 feet in length unless otherwise dictated by exceptional topography or other limiting factors of good design.

Pedestrian Ways: Pedestrian ways of not less than 16 feet in width may be required near the center and entirely across any block of more than 900 feet in length to provide adequate pedestrian circulation or access to schools, parks, shopping centers, churches, or transportation facilities.

Width: Blocks should be wide enough to provide for two tiers of lots of appropriate depth except where required to separate residential development from through traffic. Width of lots or parcels reserved or designated for commercial or industrial use shall be adequate to provide for the off-street service and parking areas required by the use contemplated and to meet the area zoning restrictions for such use.

Utilities: Telephone and electric power lines should, where practical, be placed on midblock easements of not less than 20 feet in width centered on the property line and, where possible, along rear lot lines for underground construction.

Block Orientation for Solar Access: In order to facilitate solar access, and where topography and other natural features permit, generally blocks should be laid out with the long axis of the block oriented in an east-west direction, with a maximum of 10° variation to the northwest and a maximum of 25° variation to the southwest, as shown in Figure 10.

Lots

The size, shape, and orientation of lots shall be appropriate for the location of the subdivision and for the type of development and use contemplated. The lots should be designed to provide an aesthetically pleasing building site and a proper architectural setting for the building contemplated.

Side Lots: Side lot lines should be at right angles to straight street lines or radial to curved street lines on which the lots face. Lot lines should follow municipal boundary lines rather than cross them.

Double Frontage: Double frontage or "through" lots should be prohibited except where necessary to provide separation of residential development from arterial traffic or to overcome specific disadvantages of topography and orientation.

Access: Every lot should front or abut a public street for a distance of at least 40 feet.

Lot Size: Area and dimensions of all lots should conform to the requirements of the City of Burlington Zoning Code for subdivisions within the neighborhood.

Lot Depth: Excessive depth of lots in relation to width should be avoided, and a proportion of two to one should be considered a maximum depth-to-width ratio. Depth of lots or parcels designated for commercial or industrial use should be adequate to provide for the off-street service and parking areas required by the use contemplated.

Lot Width: Lots within the interior of a block should have the minimum average width required in the proposed zoning districts for the City of Burlington as contained in Chapter V of this plan.

Corner Lots: Corner lots should have an additional width of 10 feet to permit adequate building setbacks from side streets.

Lot Orientation for Solar Access: In order to facilitate solar access, and where topography and other natural features permit, residential lots should be laid out with the long axis of the lot in a north-south orientation.

Residential Structure Orientation for Solar Access and Energy Conservation

Code Conformance: Single-family and two-family dwelling structures should be constructed in such a manner as to meet the minimum energy conservation standards as defined in the Wisconsin Administrative Code, Section Ind. 22, entitled "Energy Conservation" of the Uniform Dwelling Code.

Orientation of Structures: In order to facilitate solar access, generally the long axis of a residential structure should be in an east-west orientation, with a maximum of 10° variation to the northwest and a maximum of 25° variation to the southwest, as shown in Figure 10.

Solar Access Protection: Solar access protection for individual properties should be afforded to south-facing slopes with high insolation, to south-facing rooftops and walls, to portions of lots adjacent to south-facing walls,

and to portions of lots which could be used as sites for detached solar collection devices.

Building Shadows: Buildings should not be of a height which would cast a shadow during daylight hours between 9 a.m. and 3 p.m. local time of the winter solstice on any portion of another building--or parcel of land if no building exists.

General Landscaping

Every effort should be made to protect and retain all existing trees, shrubbery, vines, and grasses not actually lying in public roadways, drainageways, paths, and trails. Trees should be protected and preserved during construction in accordance with sound conservation practices, including the use of wells or islands or retaining walls whenever abutting grades are altered.

Soils and Landscape Tree Planting: A general landscape guide for the planting and selection of various trees to perform a variety of functions such as shade, street landscaping, lawn landscaping, hedges, screens, and windbreaks for the Echo Lake Neighborhood is shown in Appendix C. The landscape guide table is based upon soil types found in the neighborhood and shows the various types of trees which can be accommodated for a variety of landscape planting uses. The various soils found in the neighborhood have been grouped into categories termed "woodland suitability groups," based upon their response and suitability to the same or similar tree species. The woodland suitability groups have been numbered according to a statewide classification system.

Woodland Suitability Group 1 provides a slight hazard in the establishment of trees due to frost action and potential drowning. In areas of soils of Woodland Suitability Group 2, tree planting is frequently delayed by wet soil conditions. Because of the droughty nature of the soils in Woodland Suitability Group 6, caused by low available moisture capacity, tree growth is very slow. And, because the soils in Woodland Suitability Group 6 are poor for all species, existing trees should be saved wherever possible. Frosts and fluctuating water tables can pose some serious problems to landscape tree planting on soils in Woodland Suitability Group 10.

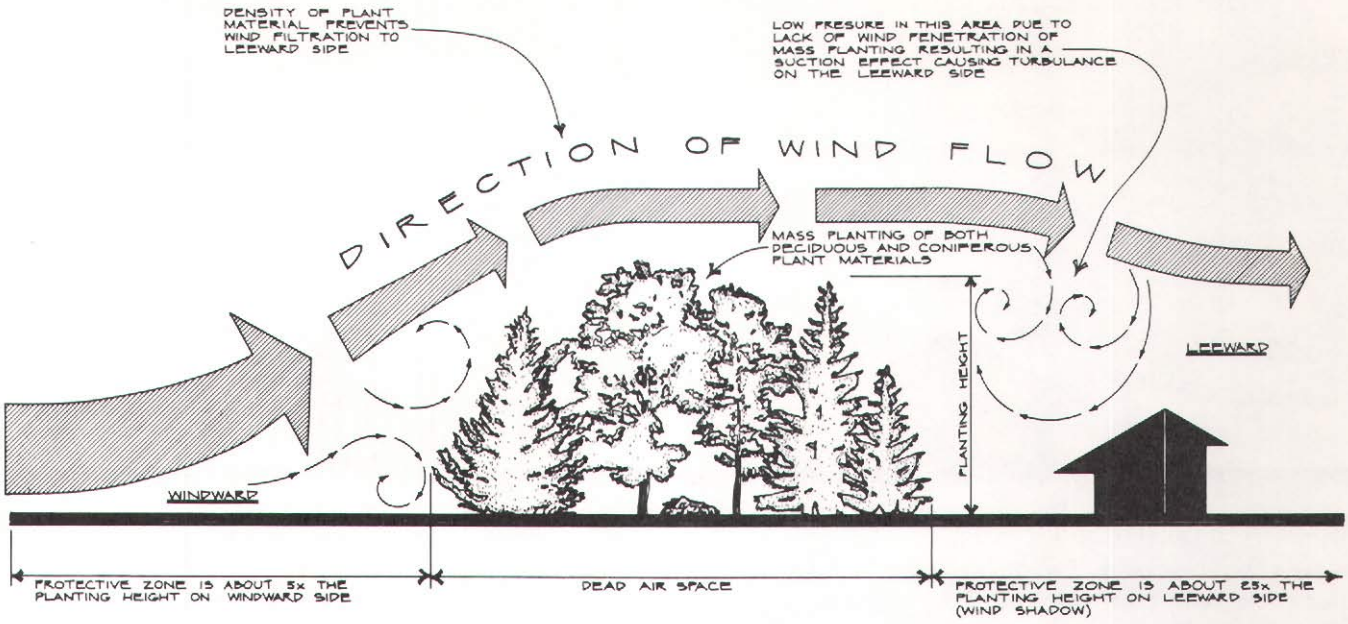
Cutting and Clearing: Tree cutting and shrubbery clearing should not exceed 30 percent of the lot or tract and should be conducted so as to prevent erosion and sedimentation and preserve and improve scenic qualities.

Paths: Paths and trails in wooded and wetland areas should not exceed 10 feet in width unless otherwise approved by the City of Burlington, and should be designed and constructed so as to result in the least removal and disruption of trees and shrubs and the minimum impairment of natural beauty.

Street Trees: At least one street tree of an approved species and of at least 10 feet in height should be planted for each 50 feet of frontage on proposed dedicated streets. However, the placement and selection of street tree species should not hamper or interfere with solar access to natural light and air for nearby lots. Appendix D sets forth the species characteristics of selected trees to aid in the selection of trees for landscape planting. However, tree species should be selected, in part, based upon soil conditions and species hardiness to soil conditions, as set forth in Appendix C.

Figure 11

LANDSCAPE PLANTING FOR WIND PROTECTION



A mass planting of landscape materials, including both deciduous and coniferous varieties, can decrease the wind velocity about five times the planting height on its windward side and about twenty-five times its height on the leeward (wind shadow) side of the mass planting.

Source: SEWRPC.

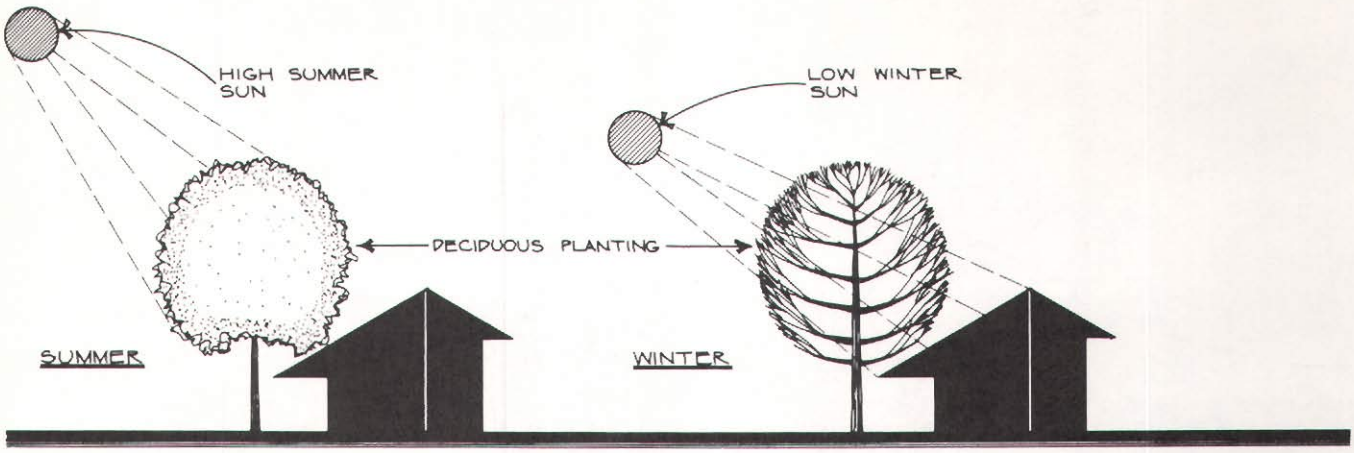
Wind and Landscape Planting: With respect to wind, landscaping should be done in such a way so as to minimize winter wind and promote summer wind effects on structures; winter wind protection is afforded by planting landscaping of an adequate height on the west of structures. However, if solar access would be blocked, low shrubs should be used to divert or enhance winds. An optimum distance between a winter windbreak and a structure is approximately twice the tree height. A coniferous windbreak that is two rows wide is nearly optimum for efficiency, and additional rows would not significantly increase its effectiveness as a windbreak. Figure 11 illustrates the concept.

Noise and Landscape Planting: Groups of trees, shrubs, and other landscape masses, such as earth berms, can serve as noise barriers and should be utilized where noise could create problems for neighboring land uses. Such landscaped noise barriers are most effective when the barrier is near the noise source or receiver. Under daytime conditions, dense landscape plantings can provide noise reductions of 5 to 8 dBA[1] of traffic noise. Also, earth

[1]The source of acoustic energy is characterized by its Sound Pressure Level (SPL), usually measured in decibels (dB), by the tonal composition of the noise, and by the variation of SPL in time. Many scales for measuring noise have been devised. Of these scales, the A weighted measure of SPL (written as dBA) is becoming more and more common as a measure of environmental noise. For this measure, the weighting of the tonal composition of the noise is similar to that of the human ear.

Figure 12

DECIDUOUS LANDSCAPE PLANTING AND SEASONAL SOLAR ACCESS



Generally, landscape plantings to the south of structures would be broad, deciduous species with open twig patterns affording the passage of light through the branch structure in the winter. The choice of deciduous plantings should be made since they drop their leaves in the fall and allow low winter sun to penetrate their branching structure. In the summer, the deciduous plantings can also provide sun shading of the structure, thus lowering unwanted summer heat gain.

Source: SEWRPC.

berms 12 feet high, when combined with dense landscape plantings, can reduce truck noise by 10 to 15 dBA. However, landscaped sound barriers can be expected to be less effective at night than during the day since, when surface air is cool (inversions), the noise will be refracted over any noise barrier. Landscape planting noise barriers should be used whenever possible.

Solar Access and Landscape Planting: With respect to solar access, landscaping planted to the south of structures should be short, broad, deciduous species with open twig patterns, affording the passage of light through the branch structure in the winter. Figure 12 illustrates the concept. Landscaping should not be of a height which would cast a shadow during daylight hours between 9 a.m. and 3 p.m. local time of the winter solstice on any portion of a building--or parcel of land if no building exists.

Solar Access and Open Space: In residential areas, the location of open space should be such that, whenever possible, the open space acts as a buffer between short structures and the shadows cast by neighboring structures or landscape materials.

Easements

Utility easements of widths adequate for the intended purpose but not less than 10 feet on each side of all rear lot lines and on side lot lines or across lots may be required by the City of Burlington where necessary or advisable for electric power and communication wires and conduits; storm and sanitary sewers; and gas, water, and other utility lines. Where a subdivision is traversed by a watercourse, an adequate drainageway or easement should be

provided as may be required by the City Engineer. Solar access easements may be incorporated into preliminary and final plats or can be handled on an individual lot basis between property owners.

Storm Water Drainage and Erosion/Sedimentation Control

Storm water drainage facilities should be adequate to serve the subdivision, and may include curbs and gutters, catch basins and inlets, storm sewers, road ditches, culverts, open channels, water retention structures, and settling basins. The facilities should be of adequate size and grade to hydraulically accommodate the maximum potential values of flow through and from the subdivision, and shall be so designed as to prevent and control soil erosion and sedimentation and to present no hazards to life or property.

Where feasible, storm water drainage should consist of landscaped open channels of adequate size and grade to hydraulically accommodate maximum potential volumes of flow. These design details are subject to review by the City Engineer.

Earthmoving activities such as grading, topsoil removal, mineral extraction, road cutting, waterway construction or enlargement, excavation, channel clearing, ditching, drain tile laying, dredging, and lagooning should be so conducted as to prevent erosion and sedimentation and to least disturb the natural fauna, flora, watercourse, water regimen, and topography. Cut and filled lands outside of street rights-of-way should be graded to a maximum slope of 25 percent or to the angle of repose of the soil.

The subdivider should plant those grasses, trees, and vines--the species and size of which are to be determined by the City or, in the case of trees, those shown in Appendix C--necessary to prevent soil erosion and sedimentation. The City of Burlington may require the subdivider to provide or install certain protection and rehabilitation measures, such as fencing, slopes, seeding, trees, shrubs, riprap, wells, revetments, jetties, clearing, dredging, snagging, drop structures, brush mats, willow poles, and grade stabilization structures.

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Chapter IV

ALTERNATIVE PLANS AND RECOMMENDED PLAN FOR THE ECHO LAKE NEIGHBORHOOD

INTRODUCTION

In accordance with the general community development objectives and the neighborhood unit design principles previously outlined herein, a series of alternative neighborhood development plans were prepared for the Echo Lake Neighborhood. Alternative Plans A and B for the neighborhood are shown on Maps 21 and 22, respectively, and Alternative Plan C, the recommended plan, is shown on Map 23. The recommended transportation and park and open space plans for the recommended plan are shown on Map 24. The plans were prepared at a scale of 1" = 200', using topographic maps having a vertical contour interval of two feet, to which cadastral data, compiled by SEWRPC using Racine County records, were added. All of the basic data pertinent to land subdivision design--including such topographic features as wetlands, floodlands, drainage patterns, and slopes; soil characteristics; woodlands; wildlife habitat; areas having scenic, scientific, historic, and recreational value; climatic characteristics; environmental corridors; existing land use; real property boundaries; and utilities--were carefully considered in the preparation of the alternative and recommended neighborhood plan designs. The preparation of these designs was also guided by the various urban design criteria outlined and discussed in Chapter III.

THE ALTERNATIVE AND RECOMMENDED PLANS

Certain urban design features are common to all of the alternative plans for the Echo Lake Neighborhood presented herein. These common features relate to the location of a new fire station, and to the location and configuration of the primary environmental corridors, as described in Chapter II of this report.

A proposed new fire station is shown on all the alternative plans to be located near the site of the existing city garage on Maryland Avenue in the southeast corner of the neighborhood. The location of this additional city fire station was based upon consideration of several factors, most important of which was the poor access to the Echo Lake Neighborhood available to existing fire fighting equipment. This poor access is due to the natural barriers formed by the Fox River on the east, Echo Lake on the south, and Honey Creek on the west. Since all the alternative plan designs for the Echo Lake Neighborhood presented provide for intensive commercial and residential land use development in that area of the neighborhood adjacent to STH 36/ STH 83, a fire station location should be provided that facilitates quick response into high-risk areas without decreasing the protection provided to other areas of the community, should a second fire occur. To the extent practicable, fire stations should also be located near areas of high property damage risk due to intensive commercial development, and to areas in which there may be a high risk of human injury and death. The location of a fire station in the general area recommended would allow ready access to all areas

of the neighborhood. The available site in this general area would be of sufficient size to accommodate a fire station and ancillary fireman training facilities, if required by the City in the future.

With the adoption of SEWRPC Planning Report No. 27, A Regional Park and Open Space Plan for Southeastern Wisconsin: 2000, it was recognized that recreation demands within the Region, as well as within the Burlington area, could not be effectively satisfied solely by providing public general-use outdoor recreation sites, and that certain recreational pursuits such as hiking, biking, horseback riding, pleasure driving, and ski touring can best be accommodated through a system of recreational trails located through linear areas of concentrated recreational-related natural resource base features such as the primary environmental corridors. A well-designed system of recreation trails provided as an integral part of linear open space lands can also serve to physically connect existing and proposed public parks, thus forming a truly integrated park- and recreation-related open space system. The linear open space lands can, in addition, enhance adjacent residential land values, satisfy human needs for natural surroundings, serve to protect the natural resource base, and ensure that many scenic areas of natural, cultural, or historic interest can perform their proper role as form determinants of the existing and future land use patterns.

Recreational trails are defined for the purposes of this report as publicly owned, continuous, linear expanses of land at least 15 miles in length which are located within scenic areas or areas of natural, cultural, or historic interest, and which provide opportunities for residents to participate in trail-oriented outdoor recreation activities. Such a trail was designated in the regional park and open space plan through portions of the Burlington area, and this trail passes through the Echo Lake Neighborhood along the Fox River, Echo Lake, and Honey Creek. The minimum width of the corridor for such a trail should be at least 200 feet in order to provide an adequate open space setting for trail-associated activities and uses. This proposed linear recreation corridor is shown on all of the alternative precise neighborhood plans presented herein, with recreation corridor lands shown contiguous to the Fox River on the east and Honey Creek on the west. The linkage between these two sections of recreation trail is broken by Milwaukee Avenue (STH 36/STH 83) and the existing urban development contiguous to Echo Lake and Grove Street. These two separate and somewhat segregated sections of the proposed recreational corridor are proposed to be linked by a bicycle path. The recommended route for this bicycle path is shown on Map 24.

If existing street rights-of-way and existing street pavements are to be used, in part, for portions of the bicycle path system, the pavement width along the concerned streets should be of an adequate width to provide for the safe lateral separation of the bicyclist from motor vehicle traffic. With respect to the development of a bicycle path system along streets within the Echo Lake Neighborhood, a striped portion of the paving for exclusive or semi-exclusive bicycle use is recommended since it is a very economical design approach. This type of bicycle lane formalizes the lateral separation between bicycles and motor vehicles through the striping of the pavement to visually and symbolically separate the bicycle traffic from the motor vehicle traffic. This type of visual and symbolic separation has the advantage of making the movements of both the bicyclist and the motor vehicle more predictable. A principal disadvantage of such a design treatment, however, is the difficulty

in justifying the preemption of a parking or a traffic lane in order to make room for such a facility. Recommended typical street cross-sections along the recommended bicycle path linkage shown on Map 24 are set forth in Figure 13. The paving of these bicycle paths should be smooth and hard. Wherever possible, grades on bicycle paths should be kept to a minimum of about 2 to 3 percent and should generally not exceed 5 percent. Depending on the location, average maintained horizontal illumination levels of 0.5 footcandle to 2 footcandles should be considered for fixed source lighting along bicycle paths, and the luminaires should be at a scale and size appropriate to pedestrian and bicycle path use. Also, the path, while being safe, should afford the rider with changing views and vistas through the neighborhood.

All of the alternative plans provide for the preservation of the primary environmental corridor areas, as delineated in Chapter II of this report, either in parkland area or in other open space use. Maps 21, 22, and 23 show alternative plans for the neighborhood area. Pertinent land use data for each alternative plan are set forth in Table 17.

Alternative Plan A

Residential: Alternative Plan A proposes single-family residential development in the west and central portions of the neighborhood. Single-family residential uses would account for about 215 acres of land, or about 22 percent of the total area of the neighborhood, and would provide for the development of about 800 single-family dwelling structures.

Two-family residential development is proposed for the area contiguous to the northern boundary of the proposed school site; in the northeast corner of the neighborhood contiguous to proposed open space and commercial uses; and in the southeastern portion of the neighborhood contiguous to proposed commercial uses. Two-family residential uses would account for about 13 acres of land, or about 1.3 percent of the total area of the neighborhood, and provide for the development of about 115 dwelling units.

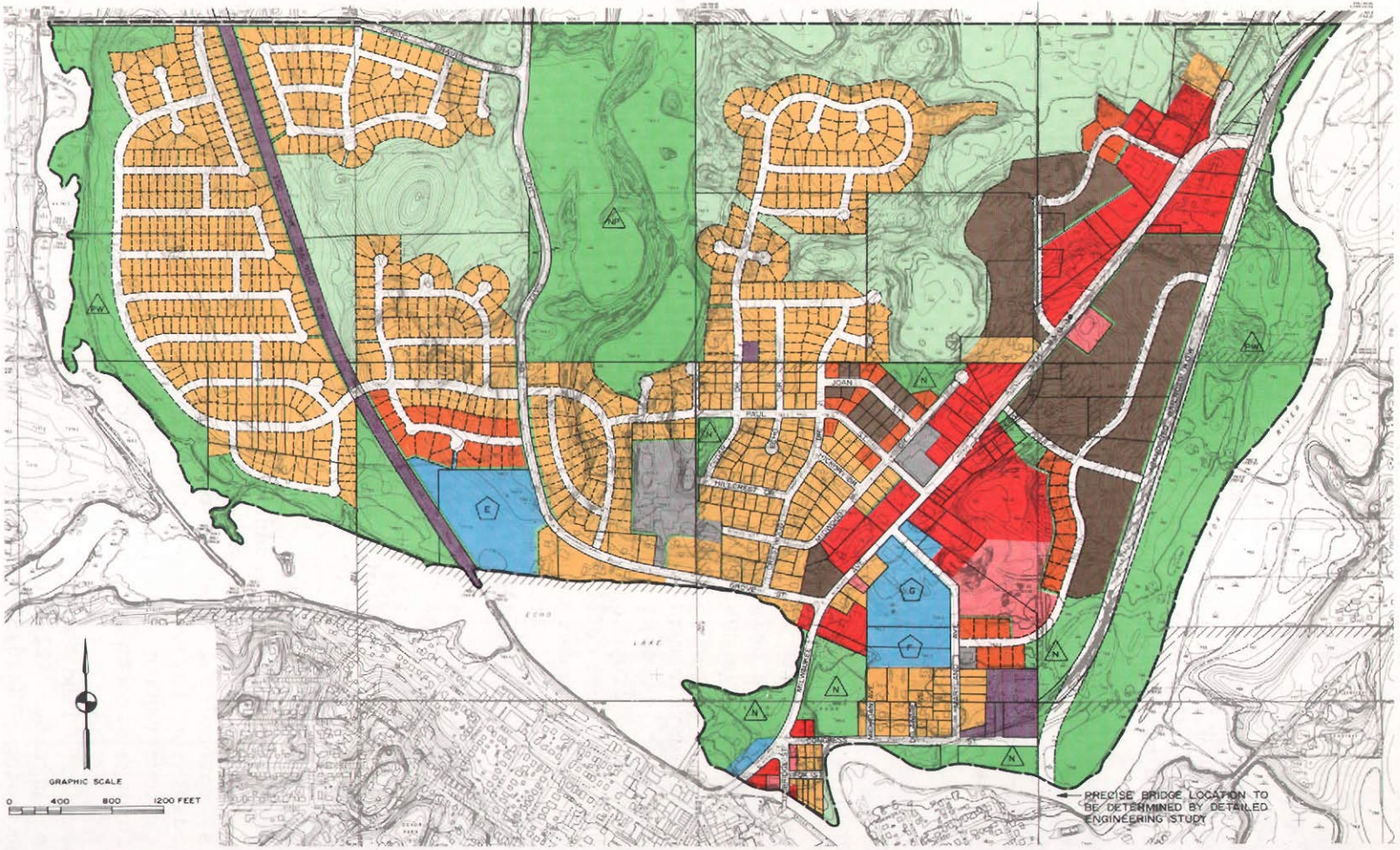
Multifamily residential uses are proposed for the eastern one-half of the neighborhood between existing STH 36/STH 83 and the proposed bypass, as well as west of existing STH 36/STH 83. The multifamily residential land uses would account for about 54 acres of land, or about 5 percent of the total area of the neighborhood, and provide for the development of about 780 total dwelling units.

Unlike Alternative Plans B and C discussed later, no cluster or planned unit development type of residential development is proposed under Alternative Plan A. Rather, a conventional subdivision design approach was used throughout. The land subdivision layout under this alternative utilizes cul-de-sac streets only where topographic conditions or other limitations do not permit the provision of through streets for local land access.

Commercial: Commercial land uses, including community retail sales and service, are proposed under Atlternative Plan A to continue to develop in the vicinity of the existing STH 36/STH 83, with access to that highway, however, being limited. A neighborhood shopping area is proposed to be developed on the former landfill site contiguous to Maryland Avenue, and the existing food

Map 21

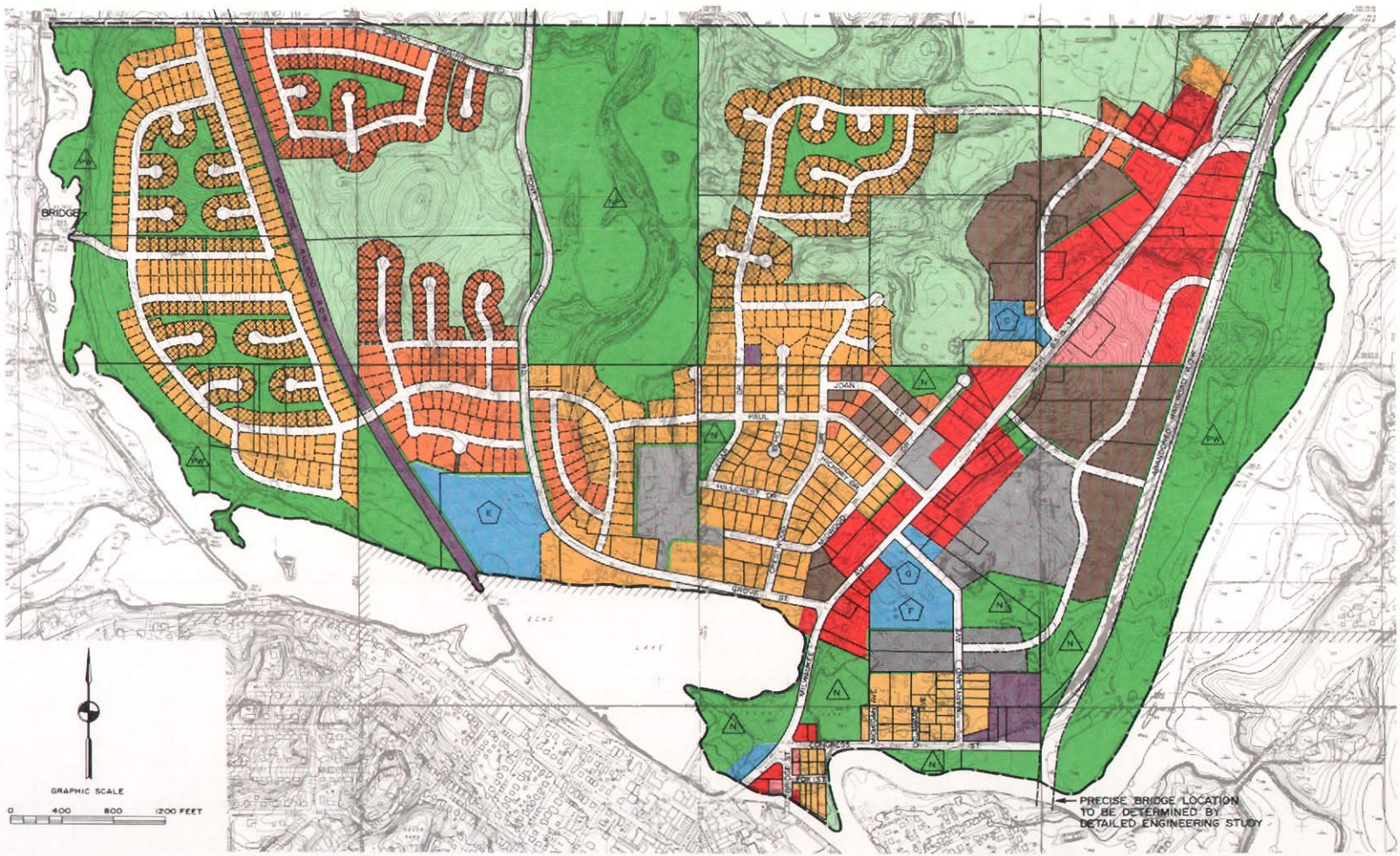
ALTERNATIVE PLAN A: PRECISE NEIGHBORHOOD UNIT DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD



Source: SEWRPC.

Map 22

ALTERNATIVE PLAN B: PRECISE NEIGHBORHOOD UNIT DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE : 1982
- PROPOSED PROPERTY BOUNDARY LINE
- SINGLE-FAMILY RESIDENTIAL
- SINGLE-FAMILY RESIDENTIAL - CLUSTER PLANNED UNIT DEVELOPMENT
- TWO-FAMILY RESIDENTIAL
- TWO-FAMILY RESIDENTIAL - CLUSTER PLANNED UNIT DEVELOPMENT
- MULTIPLE-FAMILY RESIDENTIAL
- NEIGHBORHOOD COMMERCIAL
- COMMUNITY COMMERCIAL
- GOVERNMENTAL AND INSTITUTIONAL
  - (C) CHURCH
  - (F) FIRE STATION
  - (E) ELEMENTARY SCHOOL
  - (G) MUNICIPAL GARAGE
- PUBLIC UTILITY AND RAILROAD
- PARK AND OPEN SPACE
  - (N) NEIGHBORHOOD PARK
  - (NP) NATURE PRESERVE
  - (PW) PARKWAY
- PRIMARY ENVIRONMENTAL CORRIDOR
- LIGHT MANUFACTURING
- EXISTING PUBLIC STREET R.O.W.
- PROPOSED PUBLIC STREET ROW (66' MINIMUM WIDTH)

Source: SEWRPC.

Table 17

EXISTING AND ALTERNATIVE PLAN DESIGN LAND USES IN THE ECHO LAKE NEIGHBORHOOD, CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

Land Use Category	Existing Land Use 1979		Alternative Plan A		Alternative Plan B		The Recommended Plan Alternative Plan C	
	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total	Acres	Percent of Total
Residential								
Single Family	82.5	8.3	214.9	21.6	123.8	12.5	111.9	11.3
Single Family (cluster PUD)	--	--	--	--	52.9	5.3	52.9	5.3
Two Family	2.8	0.3	13.3	1.3	38.0	3.8	39.1	3.9
Two Family (cluster PUD)	--	--	--	--	26.3	2.6	34.1	3.4
Multifamily	6.6	0.7	54.0	5.4	42.7	4.3	42.7	4.3
Subtotal	91.6	9.3	282.2	28.4	283.7	28.5	280.7	28.2
Commercial								
Neighborhood Retail and Service	2.5	0.3	11.2	1.1	9.0	0.9	9.0	0.9
Community Retail and Service	35.4	3.6	39.6	4.0	46.3	4.7	46.3	4.7
Subtotal	37.9	3.9	50.8	5.1	55.3	5.6	55.3	5.6
Industrial	17.0	1.7	11.7	1.2	34.9	3.5	34.9	3.5
Governmental and Institutional								
Public	6.9	0.7	24.0	2.4	20.8	2.1	20.8	2.1
Private	0.7	0.1	0.7	0.1	3.9	0.4	3.9	0.4
Subtotal	7.6	0.8	24.7	2.5	24.7	2.5	24.7	2.5
Park and Recreational								
Neighborhood Parks	10.5	1.1	30.0	3.0	34.4	3.4	34.4	3.4
Community Parks	50.0	5.0	159.2	16.0	163.2	16.4	167.3	16.8
Private Parks	3.0	0.3	--	--	18.5	1.9	18.5	1.9
Other Recreational	87.0	8.7	87.0	8.7	87.0	8.7	87.0	8.7
Subtotal	150.5	15.1	276.2	27.7	303.1	30.4	307.2	30.8
Streets, Public Ways, and Utilities								
Arterial Streets	12.9	1.3	32.4	3.3	32.4	3.3	32.4	3.3
Collector Streets	15.0	1.5	31.8	3.2	38.0	3.8	38.0	3.8
Minor Land Access Streets	21.7	2.2	82.9	8.3	76.6	7.7	75.5	7.6
Railroad Rights-of-Way	13.2	1.3	11.2	1.1	11.2	1.1	11.2	1.1
Utilities	2.3	0.2	4.1	0.4	4.1	0.4	4.1	0.4
Subtotal	65.1	6.5	162.4	16.3	162.3	16.3	161.2	16.2
Natural Areas	159.2	16.0	133.5	13.4	131.5	13.2	131.5	13.2
Agricultural, Open Lands, Unused Lands, and Other Lands	466.3	46.7	54.0	5.4	--	--	--	--
Total	995.5	100.0	995.5	100.0	995.5	100.0	995.5	100.0

Source: SEWRPC.

store on STH 36/STH 83 is proposed to be retained as a neighborhood commercial facility. No commercial land uses are shown in the central or western portions of the neighborhood.

Neighborhood retail sales and service commercial land uses would account for about 11 acres of land, or about 1.1 percent of the total area of the neighborhood. The community retail and service commercial land uses would account for about 40 acres of land, or about 4 percent of the total area of the neighborhood.

Industrial: Industry-related land uses are shown only in those areas where such facilities were existing in 1979. No expansion of these industrial facilities is proposed in the plan. Under Alternative Plan A, industrial land uses would accordingly account for about 12 acres of land, or about 1.2 percent of the total area of the neighborhood.

Governmental and Institutional: Governmental and institutional land uses under Alternative Plan A would account for a total of about 25 acres of land, or about 2.5 percent of the total area of the neighborhood. These land uses include a proposed neighborhood elementary school and a proposed fire station in addition to the existing city garage.

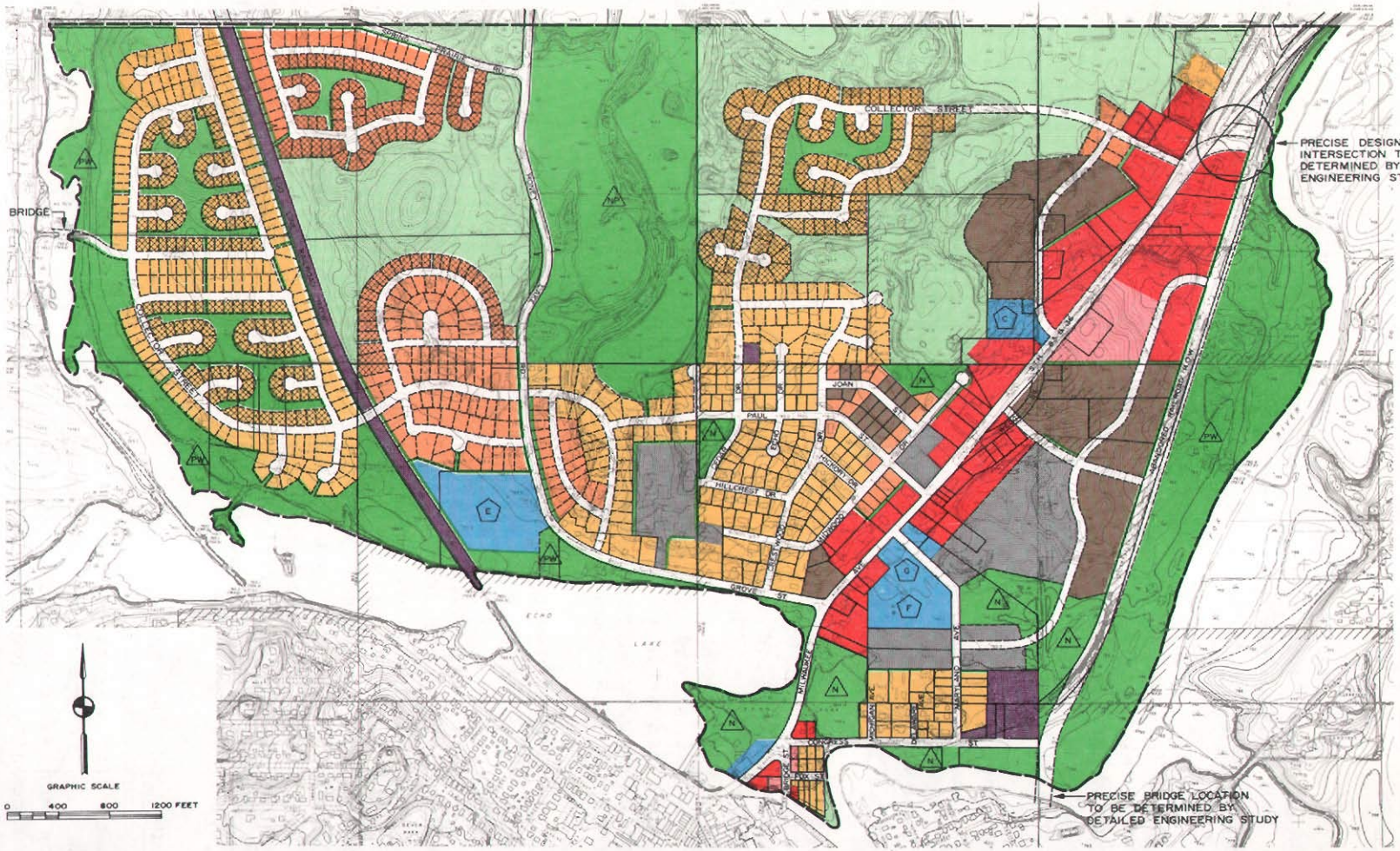
The elementary school site and associated recreational facilities would occupy approximately 15 acres of land located on the west side of Honey Lake Road--a Racine County-designated "rustic road"--east of the Soo Line Railroad right-of-way and north of Echo Lake. This site is proposed because of its central location within the neighborhood, its location along a collector street--Honey Lake Road--for ease and safety of access, and for its relatively gentle sloping topographic character which is supportive of this type of building, as well as the school's associated recreational facilities requiring relatively level land for economical development.

Park, Recreation, and Open Space: As discussed earlier, Alternative Plan A proposes a recreational corridor with a bicycle trail along the Fox River, Echo Lake, and Honey Creek. In addition, Alternative Plan A proposes to retain all the existing park facilities described in Chapter II with the exception of the baseball field located at the former landfill site. Community park and recreation land uses under Alternative Plan A would account for a total of about 160 acres, or about 16 percent of the total area of the neighborhood; neighborhood park and recreation land uses would account for about 30 acres, or about 3 percent; and the Wehmhoff Woodland Preserve would account for about 87 acres, or about 9 percent of the total area of the neighborhood. Other open space areas, primarily delineated primary environmental corridors, would comprise about 134 acres, or about 13 percent of the total area of the neighborhood.

Streets and Circulation: The proposed street system for the neighborhood is organized on a functional basis and consists of arterial, collector, and land access, or minor streets. Arterial streets are arranged so as to facilitate ready access from the neighborhood to centers of employment, governmental activity, shopping and services, and recreation both within and beyond the boundaries of the community. They are properly integrated with and related to the existing and proposed regional system of major streets and highways and are continuous in alignment with existing or planned arterial streets and highways with which they are to connect. Two arterial streets or highways are

Map 23

ALTERNATIVE PLAN C: THE RECOMMENDED PRECISE NEIGHBORHOOD UNIT DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD



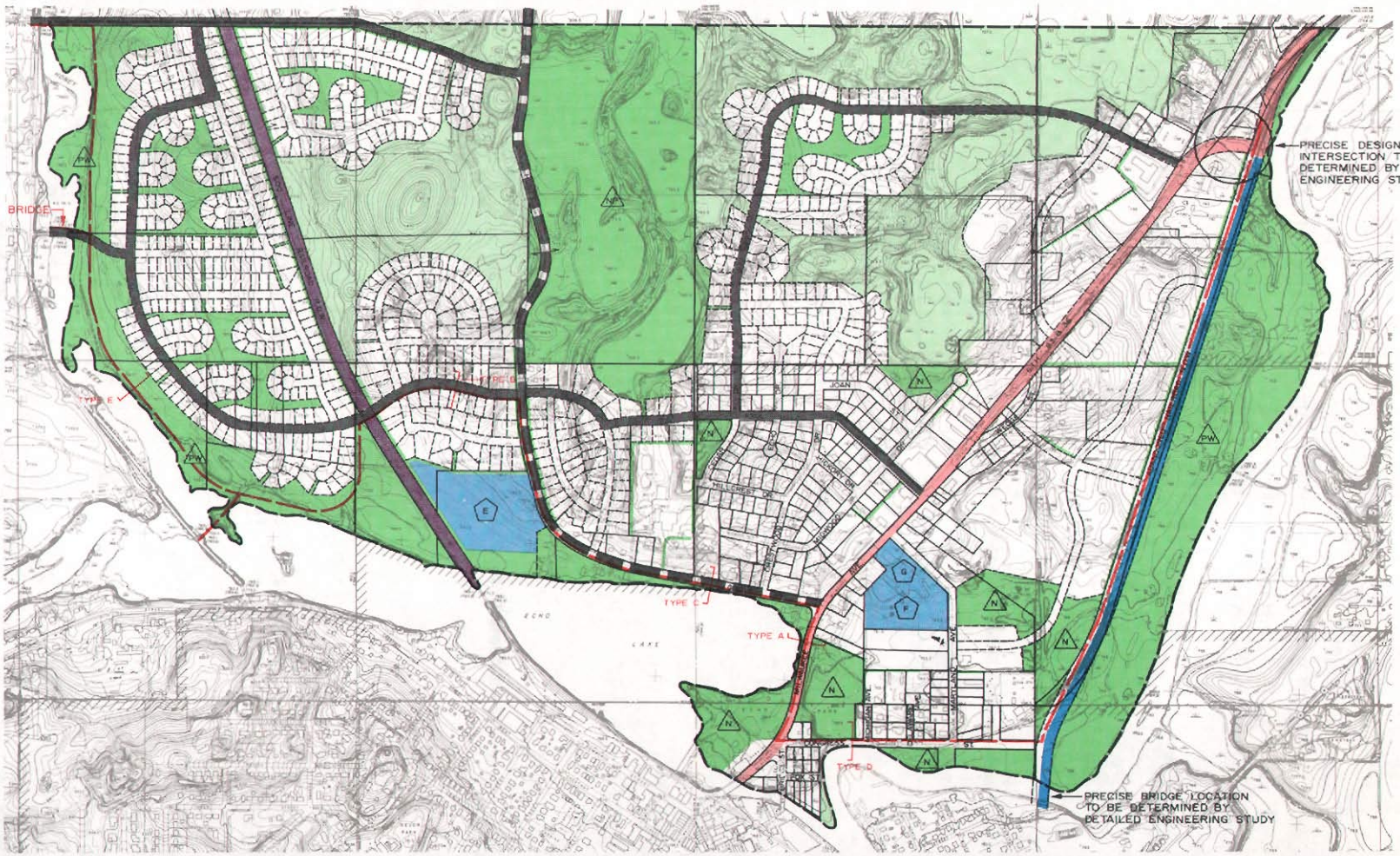
LEGEND

- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE : 1982
- PROPOSED PROPERTY BOUNDARY LINE
- SINGLE-FAMILY RESIDENTIAL
- SINGLE-FAMILY RESIDENTIAL - CLUSTER PLANNED UNIT DEVELOPMENT
- TWO-FAMILY RESIDENTIAL
- TWO-FAMILY RESIDENTIAL - CLUSTER PLANNED UNIT DEVELOPMENT
- MULTIPLE-FAMILY RESIDENTIAL
- NEIGHBORHOOD COMMERCIAL
- COMMUNITY COMMERCIAL
- GOVERNMENTAL AND INSTITUTIONAL
  - (C) CHURCH
  - (F) FIRE STATION
  - (E) ELEMENTARY SCHOOL
  - (G) MUNICIPAL GARAGE
- PUBLIC UTILITY AND RAILROAD
- PARK AND OPEN SPACE
  - (N) NEIGHBORHOOD PARK
  - (NP) NATURE PRESERVE
  - (PW) PARKWAY
- PRIMARY ENVIRONMENTAL CORRIDOR
- LIGHT MANUFACTURING
- EXISTING PUBLIC STREET R.O.W.
- PROPOSED PUBLIC STREET ROW (66' MINIMUM WIDTH)

Source: SEWRPC.

Map 24

ALTERNATIVE PLAN C: THE RECOMMENDED TRANSPORTATION AND OPEN SPACE PLAN FOR THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE : 1982
- PROPOSED PROPERTY BOUNDARY LINE
- PARK AND OPEN SPACE
- NEIGHBORHOOD PARK
- NATURE PRESERVE
- PARKWAY
- LANDSCAPE BUFFER STRIP, DRAINAGE EASEMENTS, OR PEDESTRIAN ACCESS TO PARK AND OPEN SPACE LANDS
- PRIMARY ENVIRONMENTAL CORRIDOR AND ACCESS TO CORRIDOR LANDS
- GOVERNMENTAL AND PUBLIC INSTITUTIONAL
- ELEMENTARY SCHOOL
- FIRE STATION
- MUNICIPAL GARAGE
- RAILROAD
- STATE TRUNK NONFREEWAY
- COUNTY TRUNK HIGHWAY
- COLLECTOR STREET
- COLLECTOR STREET / RUSTIC ROAD
- RECREATION TRAIL / BICYCLE PATH
- TYPE A — CROSS SECTION LOCATION (SEE FIGURE 13)
- EXISTING PUBLIC STREET R.O.W.
- PROPOSED PUBLIC STREET R.O.W. (66' MINIMUM WIDTH)

GRAPHIC SCALE
0 400 800 1200 FEET

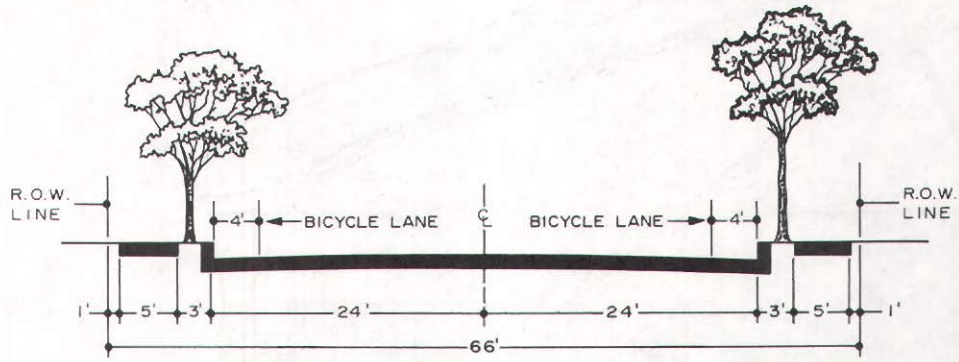
Source: SEWRPC.

Figure 13

RECOMMENDED TYPICAL CROSS-SECTIONS FOR STREETS WITH BICYCLE LANES AND FOR A DESIRABLE TWO-LANE BICYCLE PATH

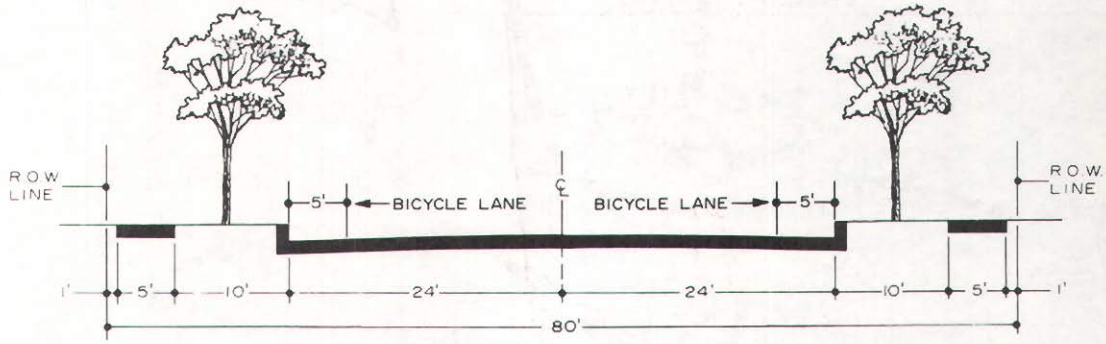
TYPE A

RECOMMENDED TYPICAL CROSS-SECTION MINIMUM FOUR-LANE ARTERIAL WITH BICYCLE LANES (UNOFFICIAL AND UNMARKED)



TYPE B

RECOMMENDED TYPICAL CROSS-SECTION DESIRABLE COLLECTOR STREET WITH BICYCLE LANES



TYPE C

RECOMMENDED TYPICAL CROSS-SECTION MINIMUM COLLECTOR STREET WITH MINIMUM BICYCLE LANES

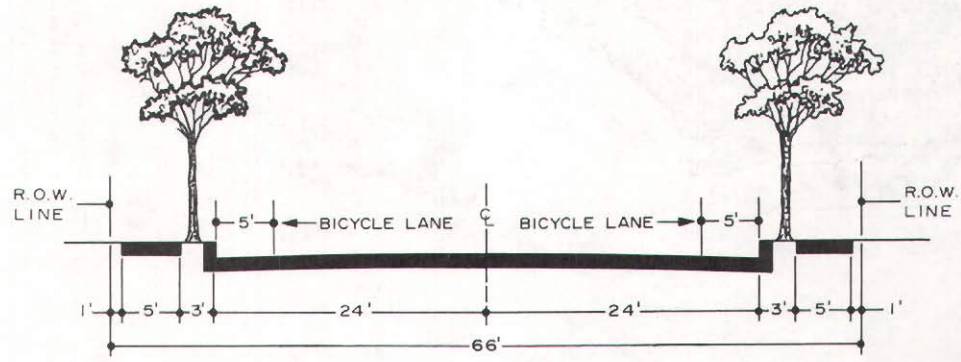
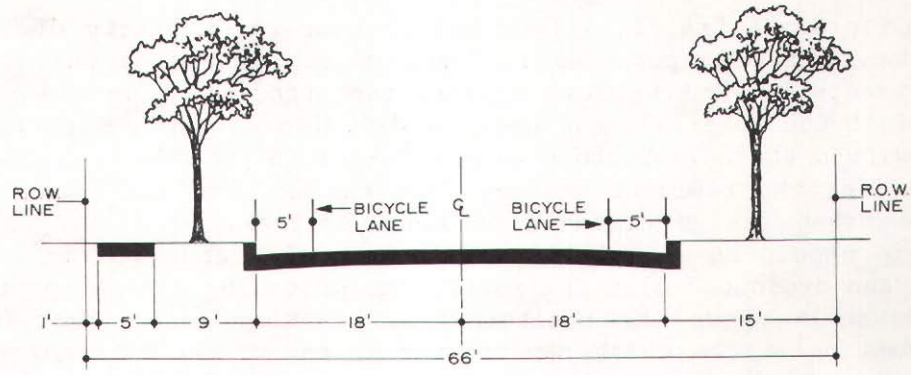


Figure 13 (continued)

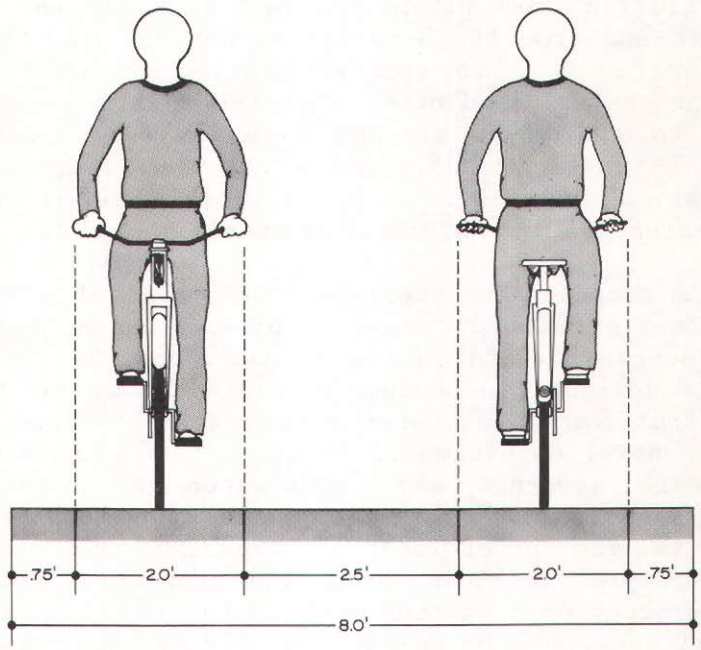
TYPE D

RECOMMENDED TYPICAL CROSS-SECTION MINOR STREET WITH BICYCLE LANES (UNOFFICIAL AND UNMARKED)



TYPE E

RECOMMENDED MINIMUM TWO-LANE BICYCLE PATH ON SEPARATE RIGHT-OF-WAY



Source: SEWRPC.

shown under Alternative Plan A--the existing STH 36/STH 83 (Milwaukee Avenue) and the proposed bypass which would utilize the abandoned electric interurban railway right-of-way which lies west of and parallel to the Fox River. This bypass is a part of the adopted regional transportation system for the area and was discussed in Chapter II. The bypass is shown on Map 19 as it relates to the greater Burlington area.

In order to promote traffic safety and protect the capacity of the arterial street system, the plan proposes to limit direct access of building sites to arterial streets by backing lots against the arterials. The depth of the lots backed against the arterials has been increased over the generally prevailing lot depth within the neighborhood unit in order to provide room for a planting strip to buffer the residential uses from the arterial streets, as provided for by the urban design criteria outlined earlier. Generally, the planting screen strip should be a minimum of 20 feet wide and provide a mixture of coniferous and deciduous planting materials, providing a sight-proof landscape screen. Figure 14 shows three alternative planting screen designs for this type of planting screen which can be used in any of the alternative neighborhood plans shown. However, the placement of these landscape screens should not interfere with solar access. A guide for the selection of appropriate plant materials for this type of screen is presented in Appendix E. The arterial streets and highways would total 2.37 miles in length, as indicated in Table 18.

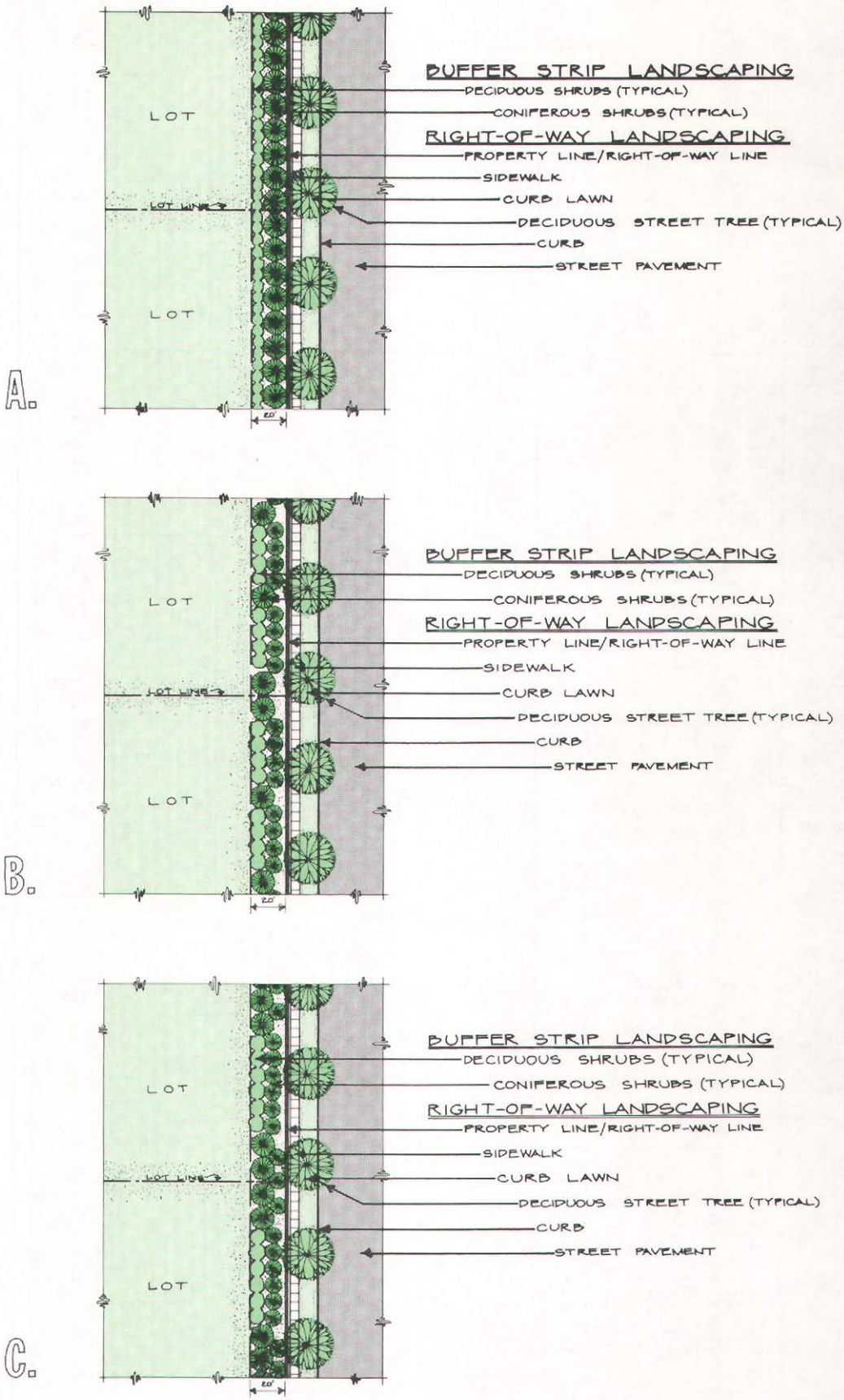
Collector streets are arranged so as to provide for the ready collection and distribution of traffic from and to residential areas and for the conveyance of this traffic to and from the arterial street and highway system. The collector streets are related to special traffic generators such as schools, churches, shopping centers, and other proposed concentrations of population or activities, and to the major streets to which they connect. Grove Street, Honey Lake Road (a rustic road), Spring Prairie Road, Paul Street, and an unnamed street which lies east of Honey Creek, are all proposed collector streets under Alternative Plan A, and would total 3.72 miles in length.

Alternative Plan A proposes the eventual development of a total of 10.36 miles of minor land access streets, an increase of 7.65 miles over the existing 1979 mileage of land access streets in the neighborhood. The proposed land access street network is designed to achieve an efficient use of land; to discourage use by through traffic; to minimize street area; to provide an attractive setting for residential development; to facilitate the provision of efficient storm water drainage, sewerage, and public water supply facilities; and to fit the natural terrain, thereby minimizing the need for earthwork during the development process. The street locations are based upon careful consideration of a number of factors, including soil characteristics, topography, property boundaries, a hierarchy of functions within the total street system, existing and proposed land uses, the principles of good neighborhood planning, and the urban design criteria presented herein. Also, the orientation of the streets as shown would facilitate solar access, as suggested by Figure 10 presented earlier and by the urban design criteria outlined in Chapter III.

Selected data on the proposed street system for the Echo Lake Neighborhood are set forth in Table 18, which indicates the classification, existing rights-of-way, proposed rights-of-way, typical cross-sections, and length in miles of all streets proposed under Alternative Plan A.

Figure 14

ALTERNATIVE LANDSCAPE PLANTING DESIGNS FOR PLANTING SCREENS



Source: SEWRPC.

Table 18

STREETS AND HIGHWAYS IN THE ECHO LAKE NEIGHBORHOOD: 1979 AND ALTERNATIVE PLAN A ULTIMATE DEVELOPMENT

Street Classification	Name	Existing Right-of-Way (feet)	Proposed Right-of-Way (feet)	Typical Cross-Section[a]	Length (miles)
Arterial Streets or Highways	Milwaukee Avenue (STH 36/STH 83)	66 to 300 (varies)	66 to 300 (varies)	Existing	1.36
	STH 36 bypass	--	130	Desirable four lane	1.01
Subtotal	--	--	--	--	2.37
Collector Streets	Grove Street	66	66	Minimum collector	0.38
	Honey Lake Road	66	66	Minimum collector	0.79
	Spring Prairie Road	66	66	Minimum collector	0.71
	Paul Street	66	66	Minimum collector	0.51
	Unnamed	--	66	Minimum collector	0.14
	Unnamed	--	80	Desirable collector	1.19
Subtotal	--	--	--	--	3.72
Minor Streets	Bridge Street	66	66	Minor street	0.08
	Cedar Drive	66	66	Minor street	0.57
	Congress Street	66	66	Minor street	0.38
	Crestwood Drive	66	66	Minor street	0.50
	Delaware Avenue	66	66	Minor street	0.05
	Elm Drive	66	66	Minor street	0.22
	Fox Street	66	66	Minor street	0.05
	Hickory Drive	66	66	Minor street	0.08
	Hillcrest Drive	66	66	Minor street	0.01
	Joan Street	66	66	Minor street	0.15
	Maryland Avenue	66	66	Minor street	0.35
	Michigan Avenue	66	66	Minor street	0.05
	Midwood Drive	66	66	Minor street	0.45
	Unnamed streets	--	66	Minor street	7.42
Subtotal	--	--	--	--	10.36
Total	--	--	--	--	16.45

[a]Typical cross-section dimensions are listed in Table 16 and are graphically represented in Figure 9.

Source: SEWRPC.

Alternative Plan B

Residential: Alternative Plan B, as shown on Map 22, proposes single-family residential subdivision development in the central and western portions of the neighborhood. Single-family residential subdivision development, of conventional land subdivision design, would occupy about 124 acres, or about 12 percent, of the total area of the neighborhood. Single-family residential "cluster"-type development is proposed for portions of the north-central and western areas of the neighborhood, and would account for about for 53 acres, or 5.3 percent of the total area of the neighborhood.

In cluster-type development, the buildings are arranged in closely related groups on smaller lots than are used in conventional land subdivisions. Side yard, rear yard, and front yard requirements are reduced from those typically associated with conventionally designed land subdivisions. Common open space and recreational areas are provided typically contiguous to the rear boundary lot lines. In large cluster developments, the open space lands may form a pedestrian walkway system linking various activities and facilities in the neighborhood, as well as providing for certain recreational uses. Cluster development can accommodate either attached or detached dwelling units. Table 19 outlines some contrasts and comparisons, with respect to urban design characteristics, between conventional subdivision design and cluster subdivision design. Figure 15 shows a typical cul-de-sac cluster development with one dwelling unit per lot and common open space; Figure 16 shows a typical cul-de-sac cluster development with one attached/zero lot line (no side yard setback) dwelling unit per lot and common open space; and Figure 17 shows a typical mixed dwelling structure cluster development with attached multiple-family dwelling structures and common open space. In each of the three figures, the overall density of the development, including developable open space, would not be permitted to exceed the maximum residential development density determined by the underlying zoning district in which the development is located. Cluster-type development should be accomplished under a planned unit development overlay district zoning classification.

Typical two-family residential subdivision developments are proposed under Alternative Plan B for areas contiguous to the proposed school site, and along Spring Prairie Road in the northwest corner of the neighborhood. Typical two-family residential uses account for about 38 acres of land, or about 4 percent of the total area of the neighborhood. Two-family residential, cluster-type development is proposed for the northwest area of the neighborhood, occupying about 26 acres, or about 3 percent of the total area of the neighborhood. The overall density of these proposed cluster two-family developments, including developable open space, would not exceed the maximum two-family residential development density determined by the underlying zoning district in which the development is located.

As in Alternative Plan A, in Alternative Plan B multifamily residential uses are located in the eastern portion of the neighborhood between the existing STH 36/STH 83 and the proposed bypass, as well as in an area west of the existing STH 36/STH 83 (see Map 22). The multifamily residential land uses would occupy about 43 acres of land, or about 4 percent of the total area of the neighborhood, and would provide for about 620 dwelling units.

Table 19

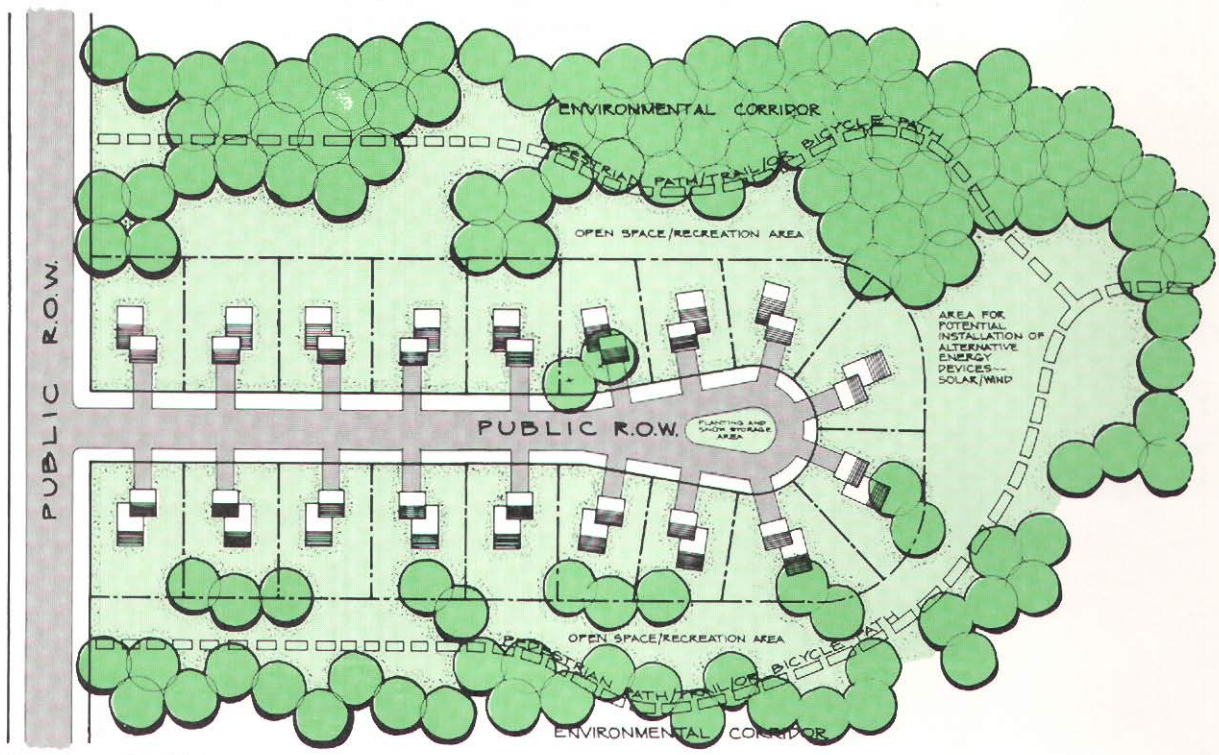
COMPARISON OF DESIGN CHARACTERISTICS: CONVENTIONAL SUBDIVISION DESIGN VERSUS CLUSTER AND PLANNED UNIT DEVELOPMENT SUBDIVISION DESIGN

Consideration	Type of Subdivision Design	
	Conventional	Cluster/PUD
Housing Choice	Limited generally to single-family or two-family detached homes	Potential for a wide range of housing types and styles, providing great diversity
Marketability	Varies with location, price, and market demand	Also varies with location, price, and market demand. Although the open space of a cluster/PUD, if properly designed and developed, is typically a strong selling point, and although cluster/PUD's often outsell traditional subdivisions in other parts of the country, this has not historically been the case within southeastern Wisconsin. A growth in regional acceptance of the cluster/PUD concept may be expected, however, once the public becomes educated concerning the higher quality of urban design associated with such developments
Legal Requirements	Requires only compliance with zoning and subdivision regulations	Requires careful site plan review by the Plan Commission and permits modification of certain zoning and subdivision regulations
Maintenance Cost of Common Open Space	The only open space is in privately owned yards	Costs must be borne through a homeowners' association
Costs of Utility Lines	May be higher than cluster development because of relatively larger lot sizes resulting in greater frontage	Clustering may result in economies in both installation and maintenance
Costs of Road Installation and Maintenance	High proportion of land devoted to streets results in higher costs of installation and maintenance, as well as higher land costs	Minimal portion of total land area in streets, with resultant lower construction, maintenance, and land costs
Recreation and Open Space	Private back yards. Public parks located at some distance from the dwelling units	Ready access to resident-owned common open spaces--as well as private back yards in most cases
Site Plan	More limited opportunity for varied and imaginative design	Allows maximum flexibility in site design
Natural Features, Topography, Vegetation, Wildlife Habitat, and Wetlands	More apt to be disturbed to facilitate subdivision development and to ensure maximum number of units from available land	More apt to be preserved as amenities integral to the site plan
Traffic	Rapid through traffic can be discouraged by good design	Rapid through traffic can be more readily discouraged by good design
Pedestrian Circulation	Street intersections and through traffic have the potential to make walking unsafe, particularly for children and the elderly	Can be designed to separate pedestrian and vehicular traffic for maximum safety. Pedestrian circulation can be directed through the open space areas rather than along street rights-of-way
Solar Access (sun and wind)	Limited flexibility of building placement based upon setback requirements. Individual lot owners can be adversely affected by neighbors, thus limiting solar access potential	Flexibility of building placement more readily allows for proper solar access orientation. Consideration can be given in the entire development for access to each lot or building. Common open space allows for the construction of solar energy systems wich can serve more than one dwelling unit
Security/Safety	Visual surveillance by residents of street rights-of-way and private yards	Cul-de-sac street designs allow for communal visual surveillance of street areas. However, visual surveillance of open areas may be hampered by landscaping, and unlimited access to these areas by persons from outside the cluster/PUD development may cause security concerns
Visual Characteristics/ Impact	Curving streets can offer changing vistas; however, a rectilinear street pattern can create visual monotony. No common open spaces to add to aesthetics	Curving streets can offer changing vistas. Common open spaces can add to the aesthetics
Social Interaction	Typically, no homeowners' association to foster neighborhood interaction	Homeowners' association can provide the vehicle for local communal social interaction. In addition, cul-de-sacs serve as a catalyst for social interaction among neighbors sharing the same cul-de-sac

Source: SEWRPC.

Figure 15

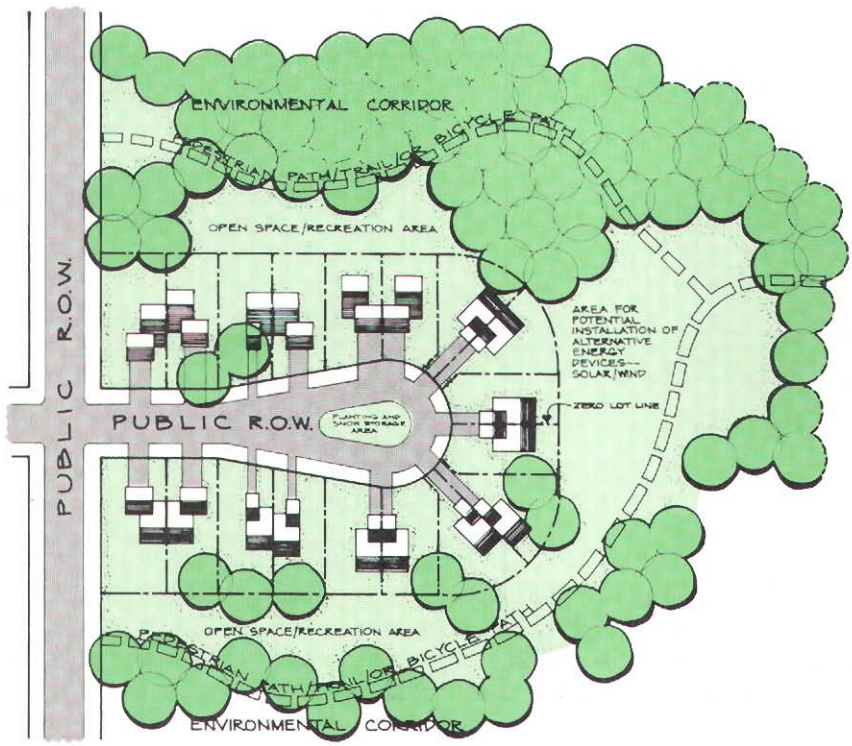
TYPICAL CUL-DE-SAC TYPE CLUSTER DEVELOPMENT WITH ONE SINGLE-FAMILY DWELLING UNIT PER LOT AND COMMON OPEN SPACE



Source: SEWRPC.

Figure 16

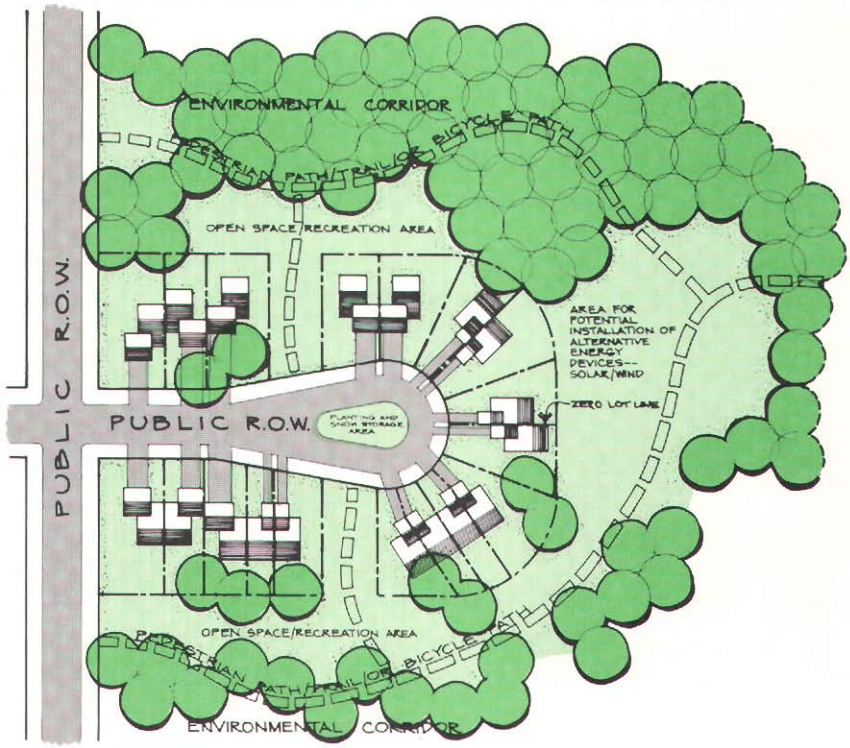
TYPICAL CUL-DE-SAC TYPE CLUSTER DEVELOPMENT WITH ONE ATTACHED/ZERO LOT LINE DWELLING UNIT PER LOT AND COMMON OPEN SPACE



Source: SEWRPC.

Figure 17

TYPICAL MIXED DWELLING STRUCTURE TYPE CLUSTER DEVELOPMENT WITH ATTACHED MULTIFAMILY DWELLING STRUCTURES AND COMMON OPEN SPACE



Source: SEWRPC.

Commercial: As under Alternative Plan A, commercial land uses, including community retail sales and service, are proposed to be developed in the vicinity of the existing STH 36/STH 83, with access to that highway, however, being limited. The existing food store located on STH 36/STH 83 is proposed to remain as a neighborhood commercial facility. Again, as under Alternative Plan A, no commercial land uses are proposed in the central or western portions of the neighborhood.

The neighborhood retail sales and service commercial land uses would occupy about nine acres of land, or 1 percent of the total area of the neighborhood. The community retail sales and service commercial land uses would occupy about 46 acres of land, or about 5 percent of the total area of the neighborhood.

Industrial: Unlike Alternative Plan A, industrial land uses are not only proposed to be maintained in areas where such facilities were existing in 1979, but are also proposed to be developed on and contiguous to the former landfill site located between the existing STH 36/STH 83 and the proposed bypass, as shown on Map 22. These industrial land uses would account for about 35 acres of land area, or about 4 percent of the total area of the neighborhood.

Governmental and Institutional: Under Alternative Plan B, governmental and institutional land uses would account for a total of about 25 acres of land, or about 2 percent of the total area of the neighborhood. These land uses would include a proposed neighborhood elementary school, a proposed fire station, and a proposed church, as well as the existing city garage.

Park, Recreation, and Open Space: As already noted, Alternative Plan B also proposes a recreational corridor with a bicycle trail along the Fox River, Echo Lake, and Honey Creek. In addition, Alternative Plan B proposes to retain all the existing park facilities described in Chapter II. Community park and recreation land uses under this alternative would occupy a total of about 163 acres of land, or about 16 percent of the total area of the neighborhood. Neighborhood park and recreation land uses would occupy about 34 acres of land, or about 3 percent of the total area of the neighborhood. Privately owned parks within residential cluster developments would occupy about 18 acres of land, or about 2 percent of the total area of the neighborhood. The Wehmhoff Woodland Preserve, a public nature preserve, would be retained and would occupy about 87 acres of land, or about 9 percent of the total area of the neighborhood. Other open space areas, including delineated primary environmental corridors and other natural areas, would occupy about 132 acres of land, or about 13 percent of the total area of the neighborhood.

Streets and Circulation: Alternative Plan B, like Alternative Plan A, proposes the development of a street system for the neighborhood which would be organized on a functional basis consisting of arterial, collector, and land access streets. Table 20 provides pertinent data on proposed street systems. A bypass of STH 36/STH 83 is accommodated and would utilize the abandoned electric interurban railway right-of-way which lies west of and parallel to the Fox River. The existing STH 36/STH 83 would be retained as an arterial facility. These two arterial streets and highways would together total 2.37 miles in length. Cedar Drive, Grove Street, Honey Lake Road (a Racine County-designated "rustic road"), Spring Prairie Road, Paul Street, and an unnamed street which lies east of Honey Creek and another located in the northeast portion of the neighborhood would all function as collector streets, as shown on Map 22, and would total 4.79 miles in length. Alternative Plan B also proposes the eventual development of a total of 9.28 miles of minor land access streets, an increase of 6.57 miles over the mileage of such streets in the neighborhood in 1979.

Also, as under Alternative Plan A, in order to promote traffic safety and protect the capacity of the arterial street system, Alternative Plan B proposes to limit direct access from building sites to arterial streets, and in some cases collector streets, by backing lots against these street types and providing a planting screen strip of about 20 feet in width along the arterial street, as shown in Figure 14. Finally, the proposed orientation of the streets, like that in Alternative Plan A, would facilitate solar access, as suggested by Figure 10, and by the various solar-related urban design criteria outlined in Chapter III.

Alternative Plan C--The Recommended Plan

Alternative Plan C, the recommended plan, was developed from earlier alternative plans, considering the recommendations of the City Plan Commmission and the Racine County Planning Department.

Residential: Alternative Plan C, as shown on Map 23, proposes typical single-family residential subdivision development in the central and western portions of the neighborhood. This typical single-family residential subdivision development would occupy about 112 acres, or about 11 percent of the

Table 20

STREETS AND HIGHWAYS IN THE ECHO LAKE NEIGHBORHOOD: 1979 AND ALTERNATIVE PLAN B ULTIMATE DEVELOPMENT

Street Classification	Name	Existing Right-of-Way (feet)	Proposed Right-of-Way (feet)	Typical Cross-Section[a]	Length (miles)
Arterial Streets or Highways	Milwaukee Avenue (STH 36/STH 83)	66 to 300 (varies)	66 to 300 (varies)	Existing	1.36
	STH 36 bypass	--	130	Desirable four lane	1.01
Subtotal	--	--	--	--	2.37
Collector Streets	Cedar Drive	66	66	Minimum collector	0.47
	Grove Street	66	66	Minimum collector	0.38
	Honey Lake Road	66	66	Minimum collector	0.79
	Spring Prairie Road	66	66	Minimum collector	0.71
	Paul Street	66	66	Minimum collector	0.51
	Unnamed	--	66	Minimum collector	0.74
	Unnamed	--	80	Desirable collector	1.19
Subtotal	--	--	--	--	4.79
Minor Streets	Bridge Street	66	66	Minor street	0.08
	Cedar Drive	66	66	Minor street	0.10
	Congress Street	66	66	Minor street	0.38
	Crestwood Drive	66	66	Minor street	0.50
	Delaware Avenue	66	66	Minor street	0.05
	Elm Drive	66	66	Minor street	0.17
	Fox Street	66	66	Minor street	0.05
	Hickory Drive	66	66	Minor street	0.08
	Hillcrest Drive	66	66	Minor street	0.01
	Joan Street	66	66	Minor street	0.15
	Maryland Avenue	66	66	Minor street	0.35
	Michigan Avenue	66	66	Minor street	0.05
	Midwood Drive	66	66	Minor street	0.45
	Unnamed streets	--	66	Minor street	6.86
Subtotal	--	--	--	--	9.28
Total	--	--	--	--	16.44

[a] Typical cross-section dimensions are listed in Table 16 and are graphically represented in Figure 9.

Source: SEWRPC.

total area of the neighborhood. Single-family residential cluster-type development, as described under Alternative Plan B, would be located in the north-central and western portions of the neighborhood, in conjunction with certain natural open areas, and would occupy about 53 acres, or about 5 percent of the total area of the neighborhood.

Typical two-family residential subdivision development is proposed for an area contiguous to the proposed school site west of Honey Lake Road. Such development is also proposed for that area of the neighborhood which is bounded by the existing STH 36/STH 83 on the west and the proposed bypass on the east. The existing two-family residential area west of existing STH 36/STH 83 would be retained. Under Alternative Plan C, two-family residential uses would occupy about 39 acres, or about 4 percent of the total area of the neighborhood. Two-family residential cluster-type development uses, planned for the northwest part of the neighborhood, account for about 34 acres, or about 3 percent of the total area of the neighborhood. The overall density of these proposed two-family cluster developments, including developable open space, would not exceed the maximum two-family residential development density as determined by the underlying zoning district in which the development is located.

Multifamily residential development is proposed for the area north of the landfill site between the existing STH 36/STH 83 and the proposed bypass in the eastern part of the neighborhood. However, a detailed engineering study should be done prior to the location of any multifamily residential development on former landfill areas in order to determine the feasibility of such residential development. If such study shows that multifamily residential development in the landfill areas is not feasible, then these areas should remain as open space use. Multifamily residential land uses would occupy about 43 acres of land, or about 4 percent of the total area of the neighborhood.

Commercial: As under Alternative Plans A and B, commercial land uses, including community retail sales and service, under Alternative Plan C would be located in the vicinity of the existing STH 36/STH 83, with access to that highway, however, being restricted. However, unlike Alternative Plan A, the proposed commercial areas are located north of the area proposed for subdivision development under Alternative Plan A. A neighborhood shopping area is shown to be developed contiguous to and including the existing food store. Again, as under Alternative Plans A and B, no commercial land uses are proposed to be located in the central or western portions of the neighborhood.

Neighborhood retail sales and service commercial land uses would occupy about nine acres of land, or about 1 percent of the total area of the neighborhood. Community retail sales and service commercial land uses would occupy about 46 acres of land, or about 5 percent of the total area of the neighborhood.

Industrial: As under Alternative Plan B, industrial land uses are proposed to be developed at and contiguous to the former landfill site located between the existing STH 36/STH 83 and proposed bypass, as indicated on Map 24. These industrial land uses would be in addition to the existing industrial land uses in the area. Under Alternative Plan C, industrial land uses would occupy about 35 acres of land, or about 4 percent of the total area of the neighborhood.

Under the recommended plan, the existing Echo Lake Farm Produce Company plant located north of Grove Street in the central portion of the neighborhood would be retained, since the plant represents a considerable investment in buildings and support facilities, and contributes to the economic base of the community. Should this use, however, be discontinued by the owner of the property, an alternative residential use for the site would be appropriate. Figure 18 sets forth an alternative development proposal for that portion of the Echo Lake Neighborhood occupied by the Echo Lake Farm Produce Company.

Further site investigations should be conducted by the owners and developers of the former landfill site located east of STH 36/STH 83 at such time as development of this site becomes imminent and prior to full commitment of the site to industrial development. A final determination of the best use of the site should only be made based upon the results of such investigations.

Governmental and Institutional: Under Alternative Plan C, governmental and institutional land uses would occupy a total of about 25 acres of land, or about 2 percent of the total area of the neighborhood. These land uses would include the proposed neighborhood elementary school, fire station, and church, as well as the existing city garage site.

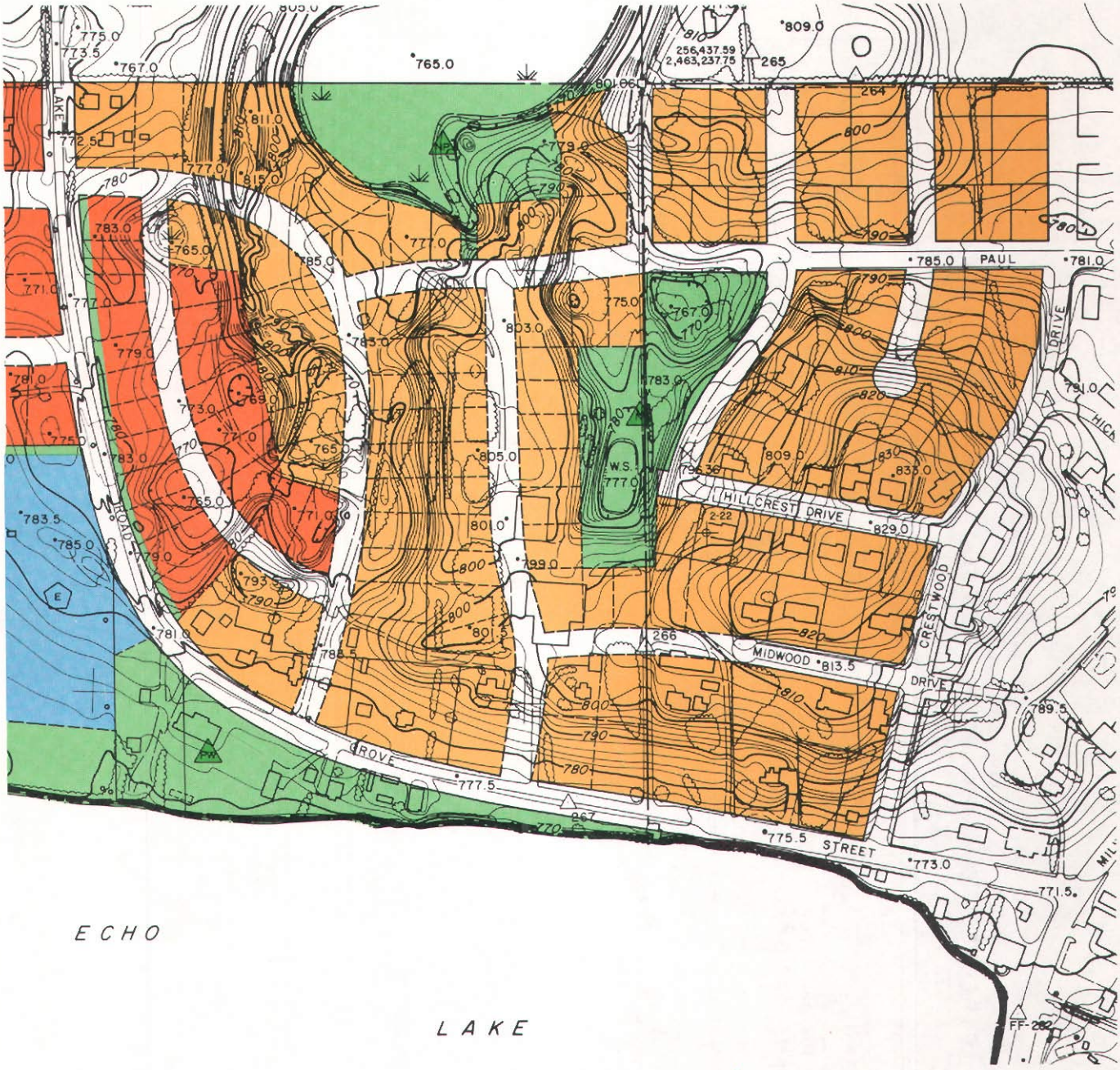
Park, Recreation, and Open Space: Alternative Plan C also proposes the development of a bicycle trail along the Fox River, Echo Lake, and Honey Creek, as shown on Map 24 and in Figure 13. Alternative Plan C proposes to retain all of the existing park facilities described in Chapter II. Community park and recreation land uses under Alternative Plan C would occupy a total of about 167 acres, or about 17 percent of the total area of the neighborhood. Neighborhood park and recreation land would occupy about 34 acres, or about 3 percent of the total area of the neighborhood. Privately owned parks within residential cluster developments would occupy about 18 acres, or about 2 percent of the total area of the neighborhood. The Wehmhoff Woodland Preserve, a public nature preserve, would be retained and would occupy about 87 acres, or about 9 percent of the total area of the neighborhood. Other open space areas, including delineated primary environmental corridors, would occupy about 132 acres of land, or about 13 percent of the total area of the neighborhood.

Streets and Circulation: Alternative Plan C, like Alternative Plans A and B, proposes the development of a street system for the neighborhood which would be organized on a functional basis, consisting of arterial, collector, and land access streets. Table 21 provides pertinent data for each proposed street type. The proposed bypass of STH 36/STH 83 would be accommodated on the abandoned electric interurban railway right-of-way located west of and parallel to the Fox River, as under Alternative Plans A and B. The existing STH 36/STH 83 would be retained as an arterial facility. These two arterial streets would together have a total length of 2.37 miles within the neighborhood.

The Racine County Planning Department has suggested, by letter to the Commission dated April 2, 1981, that the proposed bypass of STH 36/STH 83 be located west of, and immediately adjacent to, the abandoned electric interurban railway right-of-way, rather than on that right-of-way, which is currently used as a bicycle trail. The bypass, a proposed county trunk highway, would be a major arterial facility. Its location and construction would involve a major river crossing and a major intersection with STH 36/STH 83. Accordingly, its location should be determined on the basis of a preliminary engineering study, which should explore the costs and benefits of precise alternative locations

Figure 18

ALTERNATIVE SITE PLAN FOR A PORTION OF THE ECHO LAKE NEIGHBORHOOD OCCUPIED BY THE ECHO LAKE FARM PRODUCE COMPANY



LEGEND

- EXISTING PROPERTY BOUNDARY: 1979
- PROPOSED PROPERTY BOUNDARY LINE
- SINGLE FAMILY RESIDENTIAL
- TWO FAMILY RESIDENTIAL
- GOVERNMENTAL AND INSTITUTIONAL
- ELEMENTARY SCHOOL SITE
- PARK AND OPEN SPACE
- NEIGHBORHOOD PARK
- NATURE PRESERVE
- PARKWAY
- EXISTING PUBLIC STREET R.O.W.
- PROPOSED PUBLIC STREET R.O.W. (66' MINIMUM WIDTH)

GRAPHIC SCALE 0 400 800 1200 FEET

Source: SEWRPC.

Table 21

STREETS AND HIGHWAYS IN THE ECHO LAKE NEIGHBORHOOD: 1979 AND ALTERNATIVE PLAN C ULTIMATE DEVELOPMENT

Street Classification	Name	Existing Right-of-Way (feet)	Proposed Right-of-Way (feet)	Typical Cross-Section[a]	Length (miles)
Arterial Streets or Highways	Milwaukee Avenue (STH 36/STH 83)	66 to 300 (varies)	66 to 300 (varies)	Existing	1.36
	STH 36 bypass	--	130	Desirable four lane	1.01
Subtotal	--	--	--	--	2.37
Collector Streets	Cedar Drive	66	66	Minimum collector	0.47
	Grove Street	66	66	Minimum collector	0.38
	Honey Lake Road	66	66	Minimum collector	0.79
	Spring Prairie Road	66	66	Minimum collector	0.71
	Paul Street	66	66	Minimum collector	0.51
	Unnamed	--	66	Minimum collector	0.74
	Unnamed	--	80	Desirable collector	1.19
Subtotal	--	--	--	--	4.79
Minor Streets	Bridge Street	66	66	Minor street	0.08
	Cedar Drive	66	66	Minor street	0.10
	Congress Street	66	66	Minor street	0.38
	Crestwood Drive	66	66	Minor street	0.50
	Delaware Avenue	66	66	Minor street	0.05
	Elm Drive	66	66	Minor street	0.17
	Fox Street	66	66	Minor street	0.05
	Hickory Drive	66	66	Minor street	0.08
	Hillcrest Drive	66	66	Minor street	0.01
	Joan Street	66	66	Minor street	0.15
	Maryland Avenue	66	66	Minor street	0.35
	Michigan Avenue	66	66	Minor street	0.05
	Midwood Drive	66	66	Minor street	0.45
	Unnamed streets	--	66	Minor street	6.18
Subtotal	--	--	--	--	8.60
Total	--	--	--	--	15.76

[a] Typical cross-section dimensions are listed in Table 16 and are graphically represented in Figure 9.

Source: SEWRPC.

and alignments for the bypass. The Commission staff, in a series of meetings with the Racine County Jurisdictional Highway Planning Committee and the City of Burlington Plan Commission held during the spring of 1978, recommended that Racine County carry out the preliminary engineering study necessary to determine the best location for this highway, including the location of the river crossing and the configuration of the intersection with STH 36/STH 83. In response to the County Planning Department suggestion concerning the location of this bypass facility and the maintenance of the bicycle trail along that abandoned railway right-of-way, the Commission staff prepared an alternative development plan, as shown in Figure 19, for that part of the Echo Lake Neighborhood lying southeast of STH 36/STH 83 showing the location of the proposed county trunk highway west of, and immediately adjacent to, the abandoned railway right-of-way. Implementation of this alternative design would maintain maximum flexibility for the future location of the county trunk highway through this area, but would require the full cooperation of the City, the County, and the Town.

Grove Street, rustic Honey Lake Road, Spring Prairie Road, Paul Street, and an unnamed street which lies east of Honey Creek and another in the northeast portion of the neighborhood would function as collector streets under the recommended plan, as shown on Map 24, and would total 4.79 miles in length. Alternative Plan C also proposes the eventual development of a total of 8.60 miles of minor land access streets in the neighborhood. Again, as under Alternative Plans A and B, the orientation of the proposed land access streets would facilitate solar access, as suggested by Figure 10 and by the various solar access-related urban design criteria outlined in Chapter III.

Also, as under Alternative Plans A and B, in order to promote traffic safety and protect the capacity of the arterial street system, Alternative Plan C proposes to limit direct access of building sites to arterial streets and, in some cases, collector streets by backing lots against these street types and providing a landscaped planting strip a minimum of 20 feet in width along the arterials. Recommended landscape plant materials for this type of planting strip are shown in Appendix E.

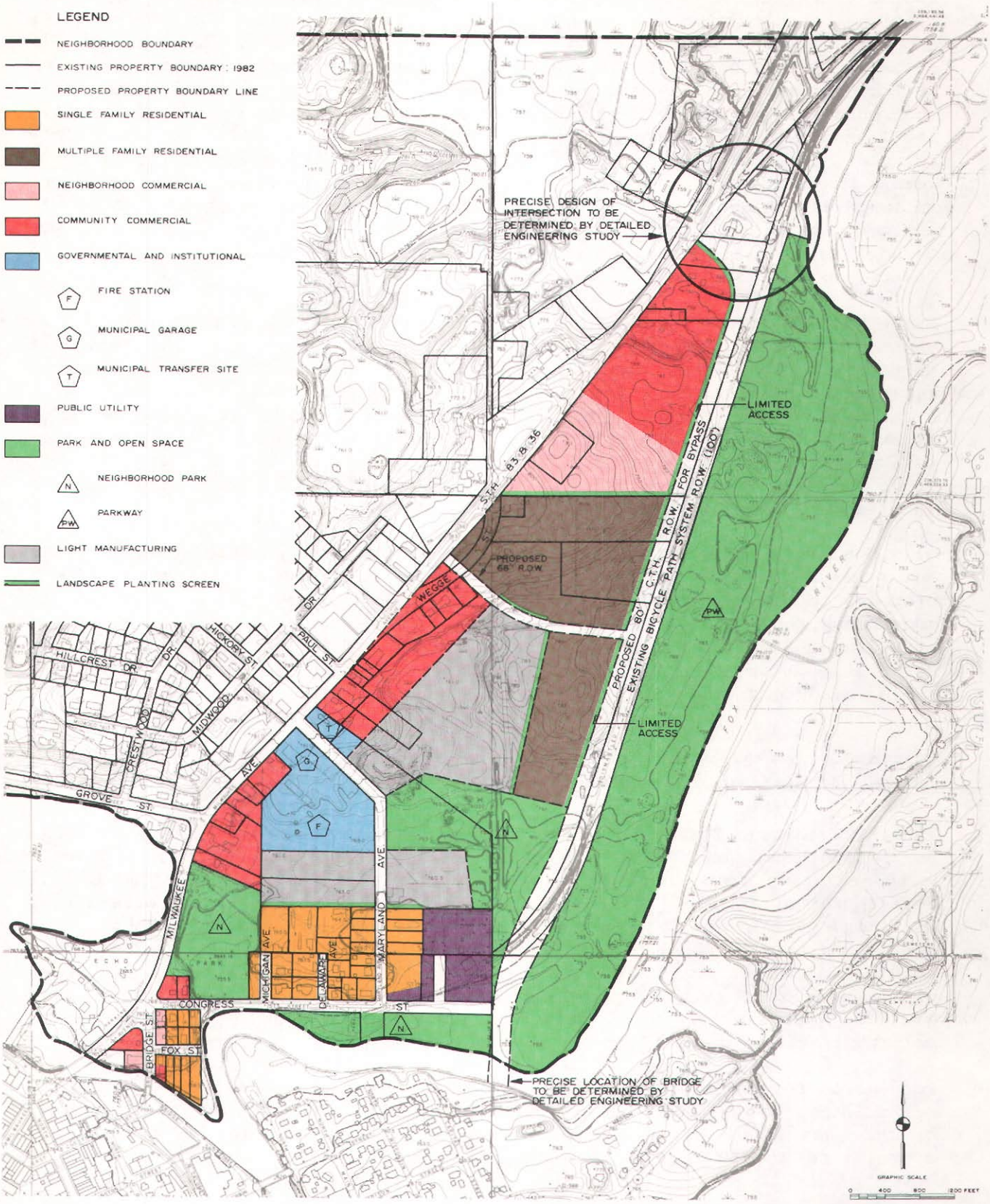
THE RELATIONSHIP OF POPULATION GROWTH TRENDS AND THE ALTERNATIVE AND RECOMMENDED NEIGHBORHOOD PLANS

Tables 22 through 25 summarize pertinent data on total population, school-age population, and population density within the Echo Lake Neighborhood unit under existing conditions for the base year 1979, and under ultimate full development of each of the alternative plans presented. The number of existing dwelling units in the Echo Lake Neighborhood in 1979 was 236, and the resident population totaled about 661. Upon ultimate full development of the neighborhood, in accordance with Alternative Plan C--the recommended plan--the number of dwelling units would be approximately 1,780 and the resident population would be approximately 4,700 persons, of which about 1,300 may be expected to be school-age children.

Population forecasts prepared by the Regional Planning Commission for the City of Burlington urban area, based upon the regional land use plan, indicate that by the year 2000, the resident population of that area may be expected to approximate 16,500 persons, an increase of about 72 percent over the 1970 level of 9,600 persons within the city sanitary sewer service area. These

Figure 19

ALTERNATIVE SITE PLAN FOR A PORTION OF THE ECHO LAKE NEIGHBORHOOD WITH THE PROPOSED BYPASS



Source: SEWRPC.

Table 22

EXISTING 1979 AND ULTIMATE POPULATION, DEVELOPED ACREAGES, AND RESIDENTIAL DENSITIES FOR ALTERNATIVE PLANS A, B, AND C FOR THE ECHO LAKE NEIGHBORHOOD

Category	Existing 1979	Alternative Plan A		Alternative Plan B		The Recommended Plan Alternative Plan C	
		Development Increment	Ultimate Development	Development Increment	Ultimate Development	Development Increment	Ultimate Development
Population	661	3,914	4,575	4,025	4,686	4,005	4,666
Dwelling Units	236[a]	1,482	1,718	1,535	1,771	1,547	1,783
Average Household Size	2.8	-0.1	2.7	-0.2	2.6	-0.2	2.6
Developed Residential Acres	91.9	190.3	282.2	191.8	283.7	188.8	280.7
Residential Density (persons per net acre)	7.2	20.5	16.2	21.0[b]	16.5[b]	21.2[b]	16.6[b]

[a] Of the total 236 existing dwelling units, there were 162 single-family units, 20 two-family units, and 54 multifamily dwelling units.

[b] Excluding private park areas in planned unit development (PUD) areas.

Source: SEWRPC.

Table 23

ECHO LAKE NEIGHBORHOOD ALTERNATIVE PLANS A, B, AND C ULTIMATE PRIMARY AND SECONDARY SCHOOL-AGE POPULATION BY GRADES AND BY SCHOOL AGE POPULATION

School Grades	Total Enrollment	Private School Enrollment		Public School Enrollment	
		Students	Percent of Total	Students	Percent of Total
Alternative Plan A					
K-5	591	148	25.0	443	75.0
6	110	27	25.0	83	75.0
7-8	210	42	20.0	168	80.0
9-12	430	43	10.0	387	90.0
Total	1,341	260	19.4	1,081	80.6
Alternative Plan B					
K-5	584	146	25.0	438	75.0
6	109	27	25.0	82	75.0
7-8	208	42	20.0	166	80.0
9-12	425	43	10.0	382	90.0
Total	1,326	258	19.5	1,068	80.5
Alternative Plan C					
K-5	582	145	25.0	437	75.0
6	108	27	25.0	81	75.0
7-8	207	41	20.0	166	80.0
9-12	424	42	10.0	382	90.0
Total	1,321	255	19.3	1,066	80.7

Source: SEWRPC.

Table 24

ESTIMATED POPULATION DISTRIBUTION BY AGE GROUP FOR 1979 EXISTING AND ALTERNATIVE PLANS A, B, AND C FOR THE ECHO LAKE NEIGHBORHOOD

Age Group	Estimated 1979		Alternative Plan A Ultimate Population		Alternative Plan B Ultimate Population		The Recommended Plan Alternative Plan C Ultimate Population	
	Persons	Percent of Total	Persons	Percent of Total	Persons	Percent of Total	Persons	Percent of Total
Under 5.....	56	8.5	389	8.5	398	8.5	397	8.5
5.....	13	2.0	92	2.0	94	2.0	93	2.0
6-10.....	72	10.9	499	10.9	511	10.9	509	10.9
11.....	16	2.4	110	2.4	112	2.4	112	2.4
12-13.....	30	4.6	210	4.6	216	4.6	215	4.6
14-17.....	62	9.4	430	9.4	440	9.4	439	9.4
18 and over....	412	62.2	2,845	62.2	2,915	62.2	2,902	62.2
Total	661	100.0	4,575	100.0	4,686	100.0	4,666	100.0

Source: SEWRPC.

forecasts indicate that it is highly unlikely that the Echo Lake Neighborhood, or any of the other delineated neighborhoods in the City of Burlington urban area, will be fully developed by the turn of the century. The neighborhood plans presented herein should thus be considered as "ultimate end stage" plans--plans intended to be used as a point of departure in making development decisions over the years in order to avoid mistakes that could create serious and costly developmental or environmental problems, and to guide actual piecemeal development over time into a coordinated and harmonious whole.

In this respect, it must be recognized that over long periods of time, socioeconomic and related cultural conditions, and, therefore, development standards and practices, may change, and such change may dictate changes in the adopted neighborhood plan. Officials must accordingly remain flexible in the use and application of the plan, and the plan itself should be updated on a periodic basis. Future changes in the primary means of transportation may alter the concepts embraced in the preparation of the Echo Lake Neighborhood plan. Similarly, significant socioeconomic changes could occur that would result in a public desire for housing types and styles different from those now prevalent, thus requiring a change in the plan. Alternative energy sources to fossil fuels and solar energy may also be developed in the future which may have a direct effect upon the design of the neighborhood plans presented herein.

Nevertheless, at present and for the near-term future, the proposed Echo Lake Neighborhood unit plan, as presented herein, offers a sound guide to the physical development of the delineated neighborhood. Proper utilization of the plan by city officials can provide the following benefits:

1. The plan provides a framework within which proposed land uses can be properly related to existing and other probable future land uses in the area, and to supporting transportation, utility, and storm water drainage facilities. The plan provides for the development of a basic street network able to efficiently and safely move traffic into and out of, as well as within, the neighborhood. The proposed street pattern also provides the basic public rights-of-way needed to efficiently accommodate utilities and storm water drainage.

Table 25

DISTRIBUTION OF ULTIMATE RESIDENTIAL DEVELOPMENT IN THE ECHO LAKE NEIGHBORHOOD FOR ALTERNATIVE PLANS A, B, AND C: CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

Dwelling Type	Developed Residential Acres	Dwelling Units	Net Density (dwelling units per acre)	School-Age Children per Dwelling Unit	Total School-Age Children	Population per Dwelling Unit	Total Population
Alternative Plan A							
Single Family.....	214.9	821	3.8	1.2	967	3.4	2,791
Two Family.....	13.3	114	8.6	0.6	67	2.6	296
Multifamily.....	54.0	783	14.5	0.4	307	1.9	1,488
Total	282.2	1,718	6.1	0.78	1,341	2.7	4,575
Alternative Plan B							
Single Family.....	176.7	644	3.6[a]	1.2	773	3.4	2,190
Two Family.....	64.3	508	7.9[a]	0.6	305	2.6	1,320
Multifamily.....	42.7	619	14.5	0.4	248	1.9	1,176
Total	283.7	1,771	6.2	0.75	1,326	2.6	4,686
Alternative Plan C							
Single Family.....	164.8	664	4.0[a]	1.2	773	3.4	2,190
Two Family.....	73.2	500	6.8[a]	0.6	300	2.6	1,300
Multifamily.....	42.7	619	14.5	0.4	248	1.9	1,176
Total	280.7	1,783	6.4	0.74	1,321	2.6	4,666

[a] Excluding privately owned parks in planned unit development (PUD) areas.

Source: SEWRPC.

2. The plan can accommodate a diversity of housing types and styles, as well as a wide range of land subdivision proposals.

3. The plan identifies areas containing significant natural resources which should be permanently preserved in essentially open, natural uses to protect the overall quality of the environment, and to enhance other land uses in the area.

4. The plan recognizes soil types and accommodates the associated limitations on development in order to avoid the creation of serious and costly developmental and environmental problems.

5. The plan presents staged proposals for zoning district changes, together with zoning text changes, which can assist in implementing the plan.

6. The plan provides for the identification and preservation of sites for such essential neighborhood facilities as parks and schools.

7. Finally, the plan would accommodate and foster the use of solar energy systems for residential, commercial, and industrial uses.

As already noted, the plan should be applied in a thoughtful, flexible manner, and the City Plan Commission must assume the final responsibility of determining when, where, and how future development is to take place in the neighborhood. The plan can, however, provide the Plan Commission with a broad view of how individual development proposals may be fit into the neighborhood as a whole without creating problems.

ALTERNATIVE PLAN EVALUATIONS IN TERMS OF LOT YIELD

One of the factors affecting the cost of improved building sites is the efficiency of the land subdivision design in terms of the number of lots per acre which can be obtained from a particular tract of land. This yield is affected by many factors. Some are direct--lot size, block length, and street width--and some indirect--street pattern, topography, the size and shape of the parcel to be subdivided, and the amount and location of common open space. The effect of these factors on lot yields for the various alternative neighborhood plans presented herein can only be determined through an in-depth analysis of each alternative neighborhood plan design.

Subdivision Lot Yield Efficiency Factors

The subdividing of land normally includes the creation of one or more series of blocks composed of lots, the size of both depending, in part, upon local zoning and land subdivision control regulations. The lot size is primarily determined by zoning regulations in the form of a minimum lot area and a minimum lot width, along with a corresponding minimum lot depth. As a part of the Southeastern Wisconsin Regional Planning Commission's study of historic land subdivision within the Region from 1920 through 1969, as documented in SEWRPC Technical Report No. 9, Residential Land Division in Southeastern Wisconsin, theoretical maximum lot yields were developed for a full range of urban lot widths and depths. These theoretical maximum lot yields per acre for each proposed single-family and two-family residential zoning district in the Echo Lake Neighborhood, as shown in Table 26, are based upon each proposed zoning district's lot size, lot width, and lot depth.

Table 26

ALTERNATIVE NEIGHBORHOOD DESIGN LOT YIELD EFFICIENCY FACTORS FOR THE ECHO LAKE NEIGHBORHOOD

Proposed Zoning Districts	Lot Size (square feet)	Lot Width (feet)	Lot Depth (feet)	Proposed Area Zoned in the Neighborhood (gross acres)		
				Alternative A	Alternative B[c]	Alternative C[c]
Rs-1	14,000	80	175	27.5	13.9	13.9
Rs-2	11,000	70	157	51.5	28.0	28.0
Rs-3	8,000	60	133	235.5	190.0	190.0
Rd-1	14,000	80	175	22.0	0.0	0.0
Rd-2	11,000	75	146	7.5	93.4	91.4
Total	--	--	--	344.0	325.3	323.3

Proposed Zoning Districts	Number of Lots			Actual Yield in Lots per Acre		
	Alternative A	Alternative B	Alternative C	Alternative A	Alternative B	Alternative C
Rs-1	34	11	11	1.26	0.79	0.79
Rs-2	127	53	53	2.47	1.89	1.89
Rs-3	660	600	600	2.80	3.16	3.16
Rd-1	46	--	--	2.09	--	--
Rd-2	11	254	250	1.47	2.72	2.74
Total	878	918	914	2.55	2.82	2.82

Proposed Zoning Districts	Theoretical Maximum Yield in Lots per Acre	Theoretical Maximum Number of Lots			Lot Yield Efficiency Factor[a] (percent)		
		Alternative A	Alternative B	Alternative C	Alternative A	Alternative B	Alternative C
Rs-1	2.53	69	35	35	49.3	31.4	31.4
Rs-2	3.14	161	87	87	78.9	60.9	60.9
Rs-3	4.24	998	805	805	66.1	74.5	74.5
Rd-1	2.53	55	--	--	83.6	--	--
Rd-2	3.06	22	285	279	50.0[b]	89.1	89.6
Total	--	1,305	1,212	1,206	67.3	75.7	75.8

[a] Many of the lots in the Rs-3 District are greater than 8,000 square feet, but less than 11,000 square feet; and many of the lots in the Rs-1 District are existing lots much greater than 14,000 square feet in size. Steep slope topography in the neighborhood also is a limiting factor in achieving a high efficiency factor since lot sizes must be increased somewhat in order for these lots to be developed.

[b] These lots are existing two-family lots.

[c] Including planned unit development (PUD) open space.

Source: SEWRPC.

Table 27

SELECTED CHARACTERISTICS OF ALTERNATIVE NEIGHBORHOOD PLANS FOR THE ECHO LAKE NEIGHBORHOOD

Comparative Characteristic	Alternative Plan A	Alternative Plan B	The Recommended Plan Alternative Plan C
Number of Single-Family Dwelling Units	821	644	664
Number of Two-Family Dwelling Units	114	508	500
Number of Multifamily Dwelling Units	783	619	619
Total	1,718	1,771	1,783
Total Population	4,575	4,686	4,666
Percent of Park/ Recreational Space	27.7	30.4	30.8
Miles of Streets (miles)	16.45	16.44	15.76
Total Street Right-of-Way Area (acres)	147.1	147.0	145.9

Source: SEWRPC.

Lot Yield Efficiency Analysis

After a neighborhood or subdivision is designed, the actual yield of lots per gross residential acre for each proposed zoning district, as well as for the entire tract of land, can be computed. The lot yield efficiency factor for the design can then be computed by dividing the actual lot yield by the theoretical maximum lot yield for the same size lot; the larger the efficiency factor, the more efficient the design. Studies indicate that a lot yield efficiency factor of about 85 percent is the maximum to be expected. It should be recognized that curvilinear street neighborhood designs may be expected to generally have lower efficiency factors than grid neighborhood designs, and that neighborhood areas with large minimum lot sizes may be expected to generally have higher efficiency factors than neighborhood areas with small minimum lot sizes. Too much significance should not be attached to reductions in design efficiency due to use of the curvilinear street pattern, since the use of such a pattern may serve to bring about, in other ways, reductions in improvement costs.

The theoretical maximum and actual lot yields per acre for each proposed zoning district were determined for the Echo Lake Neighborhood alternative plans and the efficiency factor was computed for each plan. In Table 26, these lot yield efficiency factors are compared with regional historic (1920-1969) lot yield design efficiency data.

SUMMARY

Table 27 summarizes the salient characteristics of each of the alternative neighborhood plans proposed for the Echo Lake Neighborhood. The table thus provides comparative data on the total number of single-family dwelling units, two-family dwelling units, multifamily dwelling units, ultimate population, land devoted to park and recreational uses, number of miles of streets, and total area of land devoted to public street rights-of-way, that could be accommodated under each alternative neighborhood plan.

Chapter V

PLAN IMPLEMENTATION

INTRODUCTION

The recommended neighborhood unit development plan described in Chapter IV provides a design for the attainment of the neighborhood development objectives set forth in this report for the Echo Lake Neighborhood. In a practical sense, however, the plan is not complete until the steps necessary to implement that plan are specified. After formal adoption of the neighborhood development plan (see Appendices F and G for suggested adopting resolutions), realization of the plan will require faithful, long-term dedication to the objectives on which the plan is based by the city officials concerned with its implementation. Thus, the adoption of the neighborhood plan is only the beginning of a series of actions necessary to achieve the objectives expressed in this report. The neighborhood plan is intended to be used as a guide in the making of land development decisions affecting the Echo Lake Neighborhood. Adjustments to the neighborhood plan should be made as required by changing conditions. Consequently, one of the important plan implementation tasks is the periodic reevaluation and reexamination of the neighborhood plan to ensure that it is properly reflective of current conditions.

Development requiring the draining and filling of wetlands or the grading of hilly, wooded sections should be avoided. This policy is central to a sound development strategy for the Echo Lake Neighborhood. In fact, the effectiveness of many of this report's more specific recommendations will be lost if this policy is ignored or greatly compromised. Development policies and practices which respect the limitations of the natural environment will do much in the long term to protect and preserve the overall quality of the environment in the Burlington area.

The design of a neighborhood unit development plan is only the first in a series of public and private actions required for the ultimate development of the neighborhood in accordance with the neighborhood plan. Attainment of the recommended Echo Lake Neighborhood plan for Burlington will require the application and modification of certain plan implement instruments. These include the careful review of all subdivisions for conformance with the neighborhood plan and plan objectives, the proper application of zoning districts and zoning district regulations in the neighborhood to assist in implementing the land use pattern envisioned in the neighborhood plan, and the adoption of an Official Map to implement the neighborhood plan with respect to the location of streets, highways, parkways, parks, and playgrounds.

PUBLIC INFORMATIONAL MEETINGS AND HEARING

Although the Wisconsin city planning enabling legislation does not require local plan commissions to hold public hearings on proposed plan elements prior to adoption of those elements, it is nevertheless recommended that, in order to provide for and promote active citizen participation in the planning

process, the city plan commission hold one or more public informational meetings and a formal public hearing to acquaint neighborhood residents and landowners with all details of the proposed plan and to solicit public reaction to the plan proposals. The plan should be modified to incorporate any desirable new ideas which may be advanced at the informational meetings and hearing.

On October 16, 1980 and January 22, 1981, joint meetings of the Town and City of Burlington Plan Commissions were held to discuss the Echo Lake Neighborhood plan. The Racine County Planning Department then carefully reviewed the alternative plans, and provided a series of thoughtful comments which were incorporated into Alternative Plan C--the recommended plan described herein.

NEIGHBORHOOD PLAN ADOPTION

An important step in plan implementation is the formal adoption of the neighborhood plan by the City Plan Commission, and certification of the adopted neighborhood plan, as documented herein, to the Common Council pursuant to state enabling legislation. Upon sucn adoption, the neighborhood plan becomes the official guide to the making of decisions concerning the development and redevelopment of the neighborhood by city officials. Sample resolutions of plan adoption and transmission are set forth in Appendices F and G.

ZONING

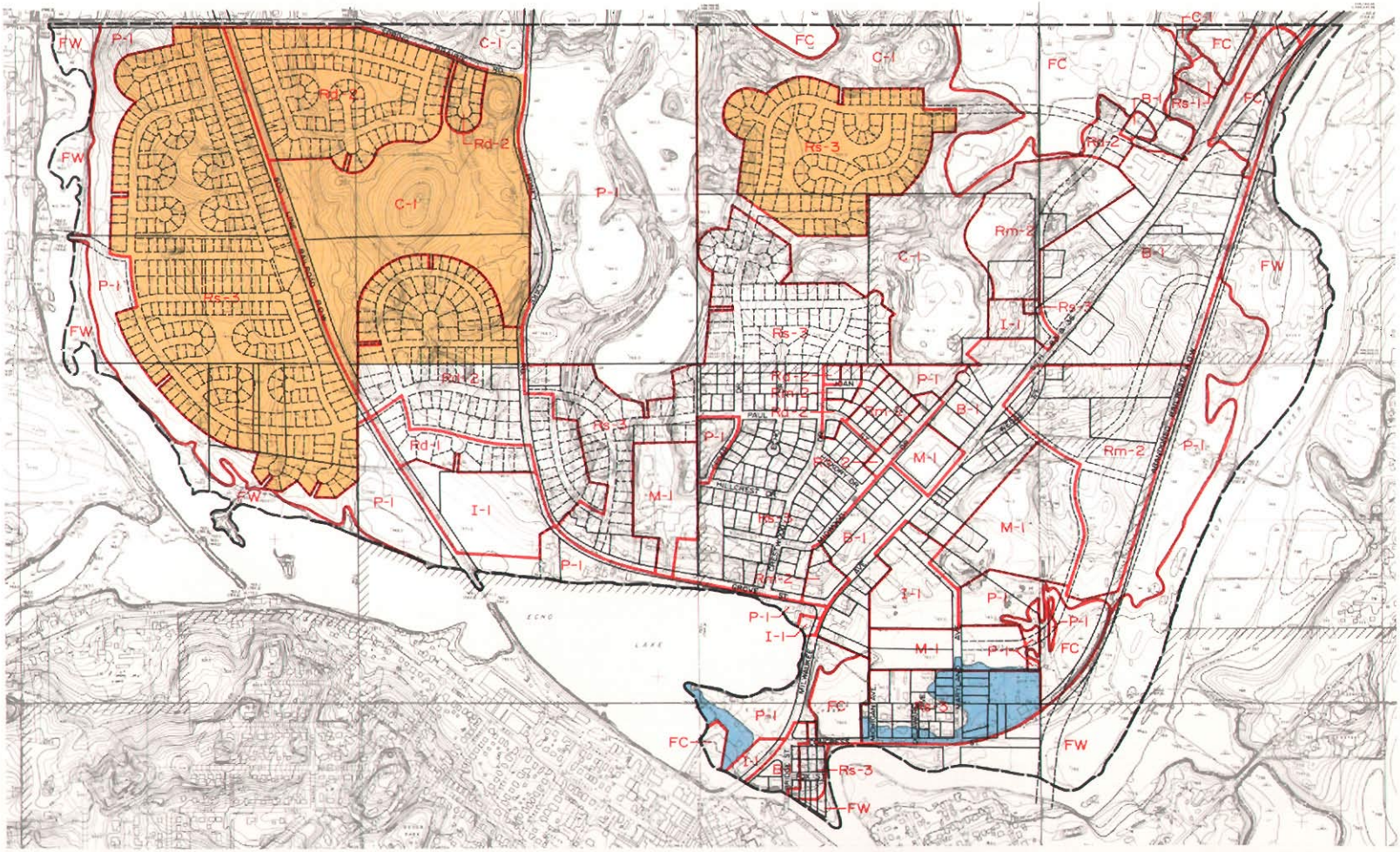
Following adoption of the plan by the City Plan Commission and certification to the Common Council, the City Plan Commission should initiate amendments to the city zoning district map to bring that map into conformance with the land use proposals advanced in the adopted neighborhood plan as presented herein. Map 25 shows the zoning district boundaries required to implement the neighborhood plan, and sets forth a zoning plan to follow in order to attain the necessary ultimate neighborhood plan implementation. Table 28 provides a chart summarizing the recommended zoning districts to be applied and the attendant regulations for each district within the neighborhood. Pursuant to state enabling legislation, the zoning changes recommended by the Plan Commission must be enacted by the Common Council after a formal public hearing. Each of the proposed zoning districts and attendant regulations that is directly applicable to implementation of the neighborhood plan is discussed briefly below.

Agricultural/Holding District

This district is intended to provide for the continuation of general farming and related uses in those areas of the City that are not yet committed to urban development. It is intended that this district be used to protect lands contained therein from urban development until their orderly rezoning into urban-oriented districts is required. The district provides for a minimum lot size of five acres.

Map 25

PROPOSED ULTIMATE ZONING MAP FOR THE ECHO LAKE NEIGHBORHOOD



LEGEND

- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE : 1982
- PROPOSED PROPERTY BOUNDARY LINE
- ZONING DISTRICT BOUNDARY LINE
- Rs-1 SINGLE-FAMILY RESIDENTIAL DISTRICT
- Rs-3 SINGLE-FAMILY RESIDENTIAL DISTRICT
- Rd-1 TWO-FAMILY RESIDENTIAL DISTRICT
- Rd-2 TWO-FAMILY RESIDENTIAL DISTRICT
- Rm-2 MULTIPLE-FAMILY RESIDENTIAL DISTRICT
- B-1 NEIGHBORHOOD BUSINESS DISTRICT
- M-1 LIGHT MANUFACTURING DISTRICT
- I-1 INSTITUTIONAL DISTRICT
- P-1 PARK DISTRICT
- C-1 CONSERVANCY DISTRICT
- FW FLOODWAY DISTRICT
- FC FLOODPLAIN CONSERVANCY DISTRICT
- FLOODPLAIN FRINGE OVERLAY DISTRICT
- PLANNED UNIT DEVELOPMENT (PUD) OVERLAY DISTRICT

GRAPHIC SCALE
0 400 800 1200 FEET

Source: SEWRPC.

Table 28

SUMMARY OF PROPOSED ZONING DISTRICTS FOR THE CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size			Minimum Yard Requirements			Maximum Building Height (feet)
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	
A-1 Agricultural/ Holding District	Crop production, livestock, orchards	Farm dwellings, and farm buildings	Fur farms, commercial egg production, airfields, animal clinics	0.2	217,800 (5 acres)	217,800 (5 acres)	300	25	25	50	60
Rs-1 Single-Family Residential District	Single-family dwellings	Home occupations	Utilities	3.1	14,000	14,000	80	25	8	25	35
Rs-2 Single-Family Residential District	Single-family dwellings	Home occupations	Utilities	3.9	11,000	11,000	70	25	8	25	35
Rs-3 Single-Family Residential District	Single-family dwellings	Home occupations	Utilities	7.2	8,000	8,000	60	25	8	25	35
Rd-1 Two-Family Residential District	Two-family dwellings	Home occupations	Utilities	6.2	14,000	7,000	80	25	8	25	35
Rd-2 Two-Family Residential District	Two-family dwellings	Home occupations	Utilities	7.9	11,000	5,500	75	25	8	25	35
Rm-1 Multifamily Residential District	Multifamily dwellings	Home occupations	Utilities	12.4	11,000	Efficiency and one bedroom: 3,500 Two bedroom: 4,000 Three bedroom or more: 6,000	120	25	8	25	35
Rm-2 Multifamily Residential District	Multifamily dwellings not to exceed eight units per structure	Home occupations	Utilities	17.4	11,000	Efficiency and one bedroom: 2,500 Two bedroom: 3,000 Three bedroom or more: 4,500	120	25	8	25	35

Table 28 (continued)

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size			Minimum Yard Requirements			Maximum Building Height (feet)
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	
B-1 Neighborhood Business District	Neighborhood shopping centers	Parking and loading areas	None	--	10,000	--	80	25	10	25	35
B-2 Central Business District	Retail establishments, office buildings	Parking and loading areas, residential units on a nonground floor	Automotive sales and service, radio and TV stations	--	4,800	--	40	--	--	25	35
B-3 Professional Office District	Professional offices, financial institutions, real estate offices, clinics, studios	Parking and loading areas	Funeral homes	--	10,000	--	80	25	10	25	35
M-1 Light Manufacturing District	Small manufacturers and processors, and warehousing	Parking and loading areas	Outside storage	--	7,200	--	60	15	9	25	40
M-2 General Manufacturing District	Heavy manufacturing	Parking and loading areas	Nuisance industries	--	7,200	--	60	15	9	25	50
Q-1 Quarrying/ Extractive District	None	None	Quarrying	--	--	--	80	200	200	200	75
I-1 Institutional District	Public office buildings, schools, churches	Parking and loading areas, related residential quarters	Airports, utilities, cemeteries, hospitals, rest homes, penal institutions	--	10,000	--	80	25	10	25	35
P-1 Park District	Parks, playgrounds and playfields	Parking and storage	Golf courses, campgrounds, marinas	--	--	--	--	40	40	40	35

Table 28 (continued)

Zoning District	Permitted Uses		Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size			Minimum Yard Requirements			Maximum Building Height (feet)
	Principal	Accessory			Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	
C-1 Conservancy District	Open space uses, not including structures	Parking	Golf courses, sportman's clubs, shooting ranges	--	--	--	--	--	--	--	--
FW Floodway District	Open space uses, not including structures	None	Navigational structures, bridges, utilities, bulkhead lines	--	--	--	--	--	--	--	--
FC Floodplain Conservancy District	Open space uses, not including structures	None	Navigational structures, bridges, utilities, bulkhead lines	--	--	--	--	--	--	--	--
FFO Floodplain Fringe Overlay District	Open space uses, not including structures	None	Filling, structures on fill	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]
PUD Planned Unit Development Overlay District	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]	--[a]

[a] As per underlying basic use district requirements.

Source: SEWRPC.

Single-Family Residential Districts

Three single-family residential districts are proposed for the zoning ordinance. The Rs-1 District provides for a minimum lot size of 14,000 square feet; the Rs-2 District for 11,000 square feet; and the Rs-3 District for 8,000 square feet. All single-family residential districts are intended to be served by public sanitary sewer and water supply facilities.

Two-Family Residential Districts

Two, two-family residential districts are proposed. One district, the Rd-1, provides for a minimum lot size of 14,000 square feet, and the other district, the Rd-2, provides for a minimum lot size of 11,000 square feet. Both districts are intended to be served by public sanitary sewer and public water supply facilities.

Multifamily Residential Districts

Two multifamily residential districts are proposed. The Rm-1 District is intended for multifamily dwellings not to exceed an overall density of 12.4 dwelling units per net acre; and the Rm-2 District is intended for multifamily dwellings not to exceed 17.4 dwelling units per net acre. Both districts are intended to be served by public sanitary sewer and water supply facilities.

Neighborhood Business District

The B-1 Neighborhood Business District is intended to provide for individual or small groups of retail and customer service establishments serving primarily the convenience of the neighborhood. The character, appearance, and operation of such businesses are to be compatible with the surrounding area.

Manufacturing Districts

The M-1 Light Manufacturing District is intended to provide for manufacturing, industrial, and related uses of a limited nature and size in situations where such uses are not located in basic industrial groupings and where their relative proximity to other uses requires more restrictive regulation.

The M-2 General Manufacturing District is intended to provide for manufacturing and industrial development of a more general and less restrictive nature than provided for by the M-1 Light Manufacturing District in those areas where the relationship to surrounding land use would create fewer problems of compatibility and would not normally abut residential districts.

Institutional District

The I-1 Institutional District is intended to eliminate the ambiguity of maintaining, in unrelated use districts, areas which are under public or quasi-public ownership and where the use for public purpose is anticipated to be permanent.

Park District

The P-1 Park District is used to provide for areas where the open space and recreational needs, both public and private, of the citizens can be met without undue disturbance of natural resources and adjacent uses.

Conservancy District

The conservancy district is intended to be used to prevent the destruction of valuable natural resources, including areas which are not adequately drained, which are subject to periodic flooding, or which contain woodlands or wildlife habitat, and areas where development would result in hazards to health or safety, or would deplete or destroy natural resources or be otherwise incompatible with the public welfare.

Floodway District

The FW-Floodway District is intended to preserve, in essentially open space land uses, the floodways of the Fox River, Honey Creek, Echo Lake, White River, and Spring Brook, such lands as have been found necessary to safely carry and discharge the 100-year recurrence interval flood. This district is further intended to be used to protect people and property from flood damage by prohibiting the erection of structures that would impede the flow of water during periodic flooding. Permitting use of the floodway would increase damages in the broader floodplain by increasing flood stages.

Floodplain Conservancy District

The FC-Floodplain Conservancy District is intended to preserve in essentially open space and natural uses lands which are unsuitable for intensive urban development purposes due to poor natural soil conditions and periodic flood inundation. The proper regulation of these areas will serve to store floodwaters and thereby avoid increases in flood flows, maintain and improve water quality, prevent flood damage, protect wildlife habitat, and prohibit the location of structures on soils which are generally not suitable for such use. The FC-Floodplain Conservancy District should apply to the floodplain fringe portion of the Burlington area navigable streams.

Floodplain Fringe Overlay District

The FFO-Floodplain Fringe Overlay District is intended to provide for and encourage the most appropriate use of land and water in areas subject to periodic flooding and to minimize flood damage to people and property. This district is an overlay district and shall be in addition to any regulations imposed by the underlying basic use district.

Planned Unit Development Overlay District

The PUD-Planned Unit Development Overlay District is intended to permit developments that will, over a period of time, be enhanced by coordinated area site

planning, diversified location of structures, and/or mixing of compatible uses. Such developments are intended to provide a safe and efficient system for pedestrian and vehicular traffic; to provide attractive recreation areas and open spaces as integral parts of the development; to enable economic design in the location of public and private utilities and community facilities; and to ensure adequate standards of construction and planning. The PUD Overlay District allows for flexibility of overall development design, with the benefits from such design flexibility intended to be derived by both the developer and the community, while at the same time maintaining, insofar as possible, the land use density and other standard or use requirements as set forth in the underlying basic zoning district.

OFFICIAL MAPPING

Following adoption of the Echo Lake Neighborhood development plan for the City of Burlington, existing and proposed streets, highways, parks, parkways, and playgrounds shown on the plan should be incorporated into an Official Map for the City and surrounding area. Section 62.23(6) of the Wisconsin Statutes provides that the Common Council of any city may establish an Official Map for the precise designation of right-of-way lines and site boundaries of streets, highways, parkways, parks, and playgrounds. Such a map has all the force of law and is deemed to be final and conclusive with respect to the location and width of both existing and proposed streets, highways, and parkways, and the location and extent of existing and proposed parks and playgrounds. The Statutes further provide that the Official Map may be extended to include areas beyond the corporate limits lines but within the extraterritorial plat approval jurisdiction of the municipality.

The Official Map is intended to be used as a precise planning tool to implement the neighborhood plan for streets, highways, parkways, parks, and playgrounds. One of the basic purposes of the Official Map is to prohibit the construction of buildings or structures and their associated improvements on land that has been designated for current or future public use. Furthermore, the Official Map is the only arterial street and highway system plan implementation device that operates on an areawide basis in advance of land development, and can thereby effectively assure the integrated development of the street and highway system. And, unlike subdivision control which operates on a plat-by-plat basis, the neighborhood plan, with the Official Map as one of its implementation instruments, can operate over a wide planning area well in advance of development proposals. The Official Map is a useful device to achieve public acceptance of long-range plans in that it serves legal notice of the government's intention to all parties concerned well in advance of any actual improvements. It thereby avoids the altogether too common situation of development being undertaken without knowledge or regard for the long-range plan, and thereby does much to avoid local resistance when plan implementation becomes imminent.

In 1967, by Resolution Number 1509(52), the City of Burlington adopted an "Official Street Map." The "Official Street Map" located existing and proposed streets and was drawn prior to the beginning of the neighborhood planning efforts of the City as well as prior to the availability of large-scale topographic mapping. As stated in Chapter I, the City of Burlington obtained

large-scale, 1" = 200' topographic maps prepared to Regional Planning Commission specifications, and real property boundaries were added to each neighborhood base map. These maps, prepared by the Regional Planning Commission, can serve as an adequate base upon which to create a new Official Map as neighborhood and land use planning progresses.

The City Plan Commission and Common Council should act to adopt a new Official Map after a public hearing. It should be noted that the Wisconsin Statutes specifically provide that the approval of a subdivision plat by the Common Council constitutes an amendment to the Official Map, thus providing flexibility in its administration. A suggested Official Map Ordinance was published in SEWRPC Community Assistance Planning Report No. 29, A Development Plan for the Quarry Ridge Neighborhood, City of Burlington, Racine County, Wisconsin.

SUBDIVISION PLAT REVIEW

Following adoption of the neighborhood unit plan, the plan should serve as a basis for the preparation of preliminary and final land subdivision plats within the neighborhood. In this respect, the neighborhood plan should be regarded as a point of departure against which to evaluate proposed subdivision plats. Developers should be required to fully justify any proposed departures from the plan, demonstrating that such departures are an improvement to, or a proper refinement of, the adopted neighborhood plan.

THE CAPITAL IMPROVEMENTS PROGRAM

A capital improvements program is simply a list of fundable major public improvements needed in a community over the next five years arranged in order of preference to assure that the improvements are carried out in priority of need and in accord with the community's ability to pay. Major public improvements in this respect include such items as streets, sanitary sewers, storm sewers, water mains, public buildings, and parks, which together form the "urban infrastructure" required to support urban land use development and redevelopment. A capital improvements program is intended to promote well-balanced community development without overemphasis on any particular phase of such development, and to promote coordinated development both in time and between functional areas. With such a program, required bond issues and tax revenues can be foreseen and provisions made. Needed land can be acquired in a timely fashion for projects and staged construction facilitated.

The general procedure for the preparation of a capital improvements program is as follows. An initial list of the improvements believed needed over the next five years is compiled. This list is then evaluated to determine the relative importance and desirability of each proposed improvement. This evaluation should initially be divorced completely from the issue of funding availability. Criteria which may be helpful in assigning an order of priority to the list of projects include: protection of life, maintenance of public health, protection of property, conservation of resources, maintenance of property, provision of essential public services, and reduction in operating costs.

When the relative need or desirability of the various proposed projects has been determined--that is, when the list of projects has been arranged in

order of priority--the available financial resources of the community can be analyzed, and the funds which may be expected to become available for the proposed improvements over the five-year period determined. The projects can then be selected and scheduled for construction in accordance with their priority and the funds available. The first year of the five-year schedule is recommended as the capital budget for the ensuing year, and the recommended program given legislative consideration. At the end of the first year, the program is again reviewed. Any new projects which appear to be needed are added to the list. Projects no longer justified are eliminated; others are shifted in position in the schedule as new information may dictate. An additional year is added to replace the year completed, and the revised list of projects is again scheduled over the full period of the program. Thus, a carefully conceived public improvement program is always available and in readiness for use, but with only one year of the program being actually committed at any time. Since, as the process becomes established, proposed projects are evaluated year after year before ultimately reaching actual authorization, a safeguard is provided against hasty or ill-conceived actions.

The comprehensive plan for the physical development of the community should be the primary source of projects to be included in the initial list. However, this list may also include projects suggested by department heads, as well as by community and neighborhood groups. The Plan Commission is a logical agency to prepare the capital improvement program with the assistance of the community's finance officer.

The capital improvement program should be presented in a well-arranged tabular form listing projects in the proposed order of construction and in the order of year scheduled. The estimated cost of the proposed projects, together with resulting changes in operating and maintenance costs and financial charges, should be shown. Where a project extends over more than one year, costs should be distributed accordingly. Proposed methods of financing should be indicated, and explanations regarding urgency of need provided. A financial summary sheet should be prepared showing the effect of the proposed program upon the finances of the community, and particularly upon taxes.

A public hearing should be held on the program at which all interested parties can express their views, after which the governing body of the community should formally adopt the program, amending it as necessary to reflect useful suggestions made at the public hearing.

SOLAR ACCESS IMPLEMENTATION

In newly developing areas, such as the Echo Lake Neighborhood, commonly used legal principles and instruments can be modified to take into consideration the need to protect solar access for solar energy utilization. In this respect, two aspects of solar access must be considered: 1) access to solar radiation from above the lot, and 2) access to solar radiation over other lots near the subject property. Access to solar radiation from above the lot is, typically, the easiest to protect and maintain through the use of nuisance law when violations occur.

Access to solar radiation over other lots near the subject property, while difficult to ensure, can be attained through the use of easements and zoning.

Easements can be secured for access to direct sunlight from neighboring landowners, as shown in Figure 20. Solar access easements, as suggested by Figure 20, should indicate the solar altitude and the solar azimuth at the winter solstice between the hours of 9 a.m. and 3 p.m. local time (see Appendix A); restrictions on the height of vegetation, buildings, and other objects which would obstruct the passage of sunlight through the easement; and the terms and conditions, if any, under which the solar access easement may be revised or terminated.

The zoning ordinance can also be used to place restrictions concerning access to sunlight into the height, setback, and lot size areas of the ordinance, possibly empowering a special board to review particular applications relating to the access to solar radiation. However, great care should be exercised before mandating any solar access easements for new subdivisions. More importantly, publicly mandating solar access may not necessarily achieve the goal of community energy conservation, since such mandated solar access may severely hamper the use of other, more passive forms of energy conservation which take advantage of local microclimate characteristics, such as those described in Chapters II and III. The mandating of solar access easements through public regulation may also cause energy conservation inequities between neighboring property owners--particularly between those property owners who wish to use active solar energy systems and those who wish to conserve energy through passive means. The latter property owners may have their rights to conserve energy severely compromised by solar access easements imposed for the benefit of other property owners. Severe degradation of both existing flora and topography could also be a result of government-imposed solar access requirements, with an attendant overall decline in the value and quality of a neighborhood. Accordingly, it may be best to provide for solar access on an individual lot-by-lot basis through the negotiation of easements between private owners. Such negotiations can be facilitated through land subdivision design which considers solar energy needs in the base block and lot arrangement. For these reasons, the City may wish to simply encourage solar access in the Echo Lake Neighborhood through private easements. The recommended neighborhood plan, by its design, encourages and increases solar access potential for this area of Burlington. Other passive energy-conserving practices should also be followed, as prescribed in the various urban design criteria outlined in Chapter III.

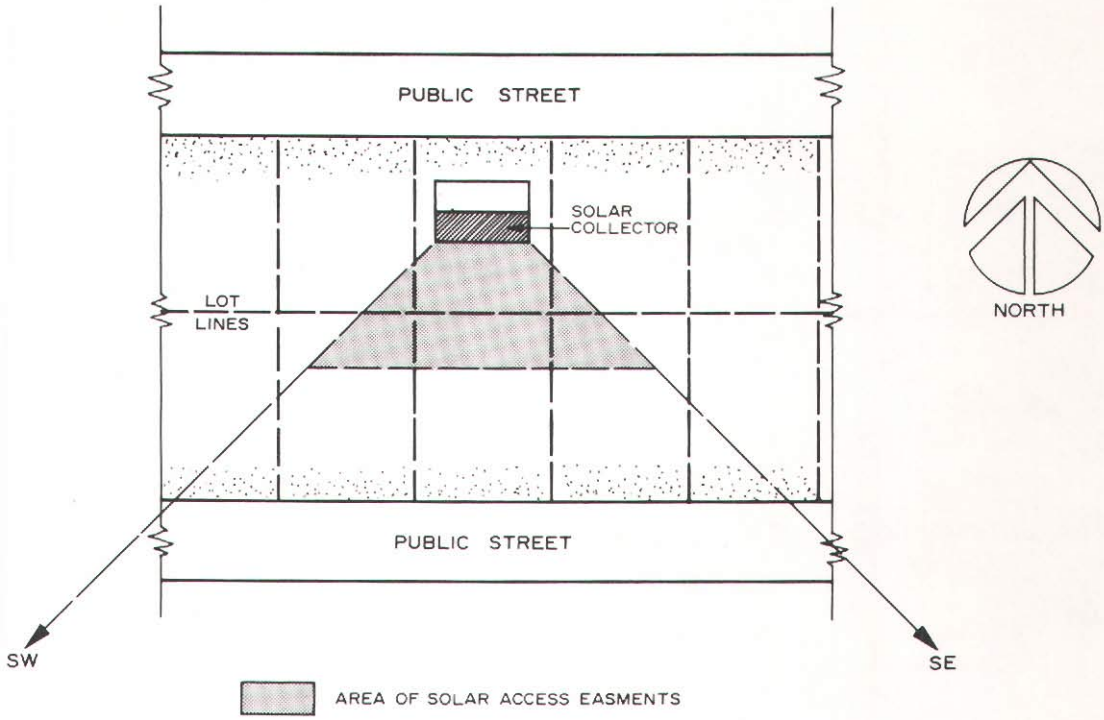
CONCLUSION

The recommended neighborhood plan, together with supporting zoning, official mapping, and subdivision control ordinances, and a capital improvements program, provides the basic means for accomplishing orderly growth and development of the Echo Lake Neighborhood area. However, if the plan is not properly and consistently utilized over time in the evaluation of proposed zoning changes, the review of proposed land subdivisions, and the consideration of other physical development proposals, such orderly growth and development may be negated, and the City may face difficult and costly future problems in the area and thus never achieve its full development potential. Consistent application of the neighborhood plan will assure that individual physical development proposals will be channeled toward the sound development of the neighborhood. The staff of the Regional Planning Commission is available on a continuing basis to provide the City with assistance in administering and implementing the Echo Lake Neighborhood plan.

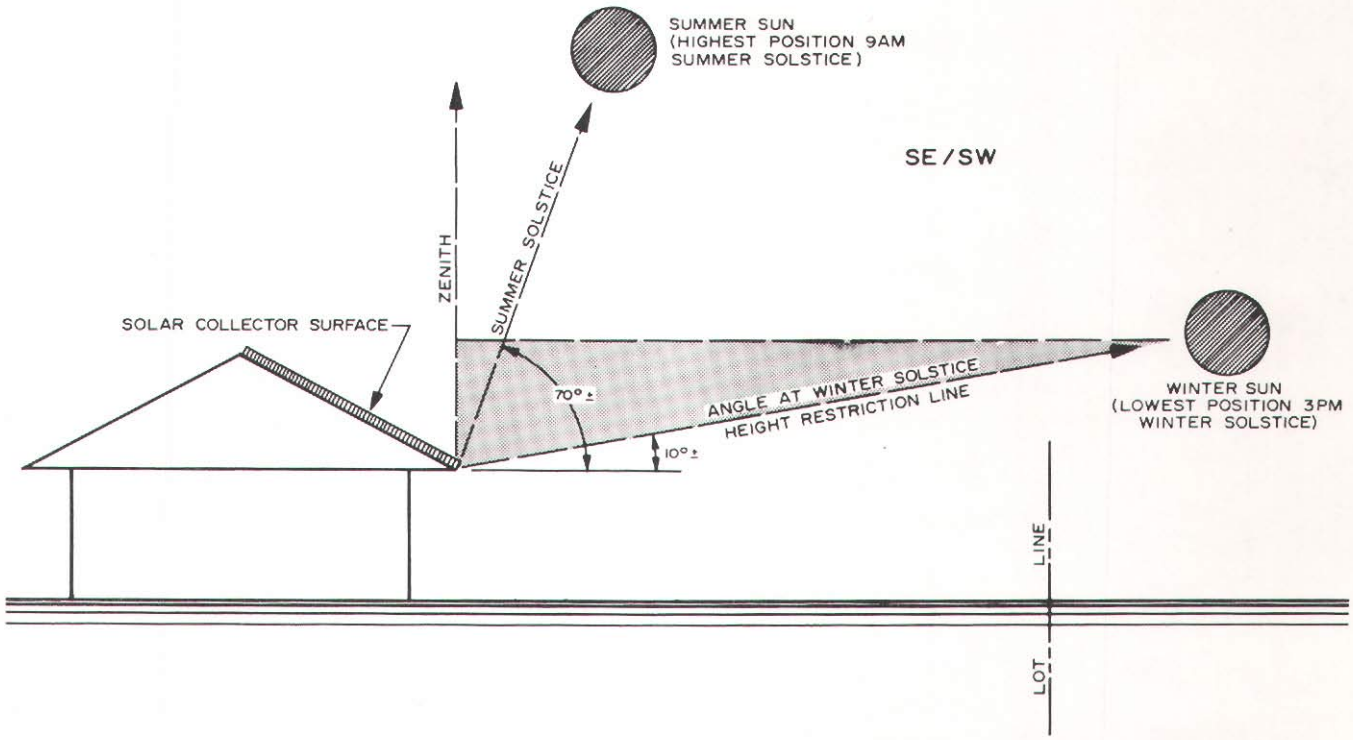
Figure 20

SOLAR ACCESS EASEMENTS

PLAN



ELEVATION



Source: SEWRPC.

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Chapter VI

POST-PUBLIC HEARING REVISED NEIGHBORHOOD DEVELOPMENT PLAN

INTRODUCTION

A preliminary draft of the Echo Lake Neighborhood unit development plan was presented at a public hearing held before the City of Burlington Common Council on February 19, 1983. While the preliminary plan was generally favorably received, some landowners and residents of the neighborhood expressed concerns over several recommendations contained in the preliminary plan as shown on Map 23 in Chapter IV, and requested that some modifications be made to that plan prior to formal adoption by the City Plan Commission and Common Council. Mr. Arnold L. Clement, Racine County Planning Director and Zoning Administrator, by letter to the Regional Planning Commission dated February 23, 1983, also expressed concern over several recommendations contained in the preliminary plan. Following the public hearing, the Common Council referred the plan back to the City Plan Commission for further study and refinement, taking into consideration the comments made at the public hearing and the comments made in Mr. Clement's letter. Based upon City Plan Commission review of the testimony given at the public hearing and the comments contained in Mr. Clement's letter, a revised neighborhood plan was prepared and recommended for adoption. A formal public hearing on the revised recommended neighborhood plan as presented in this chapter was held by the City of Burlington Common Council on July 3, 1984, and no objections to the plan were raised.

THE REVISED RECOMMENDED PLAN

The revised recommended plan for the Echo Lake Neighborhood is presented in summary form on Map 26. Tables 29, 30 and 31 provide pertinent quantitative data relating to the plan.

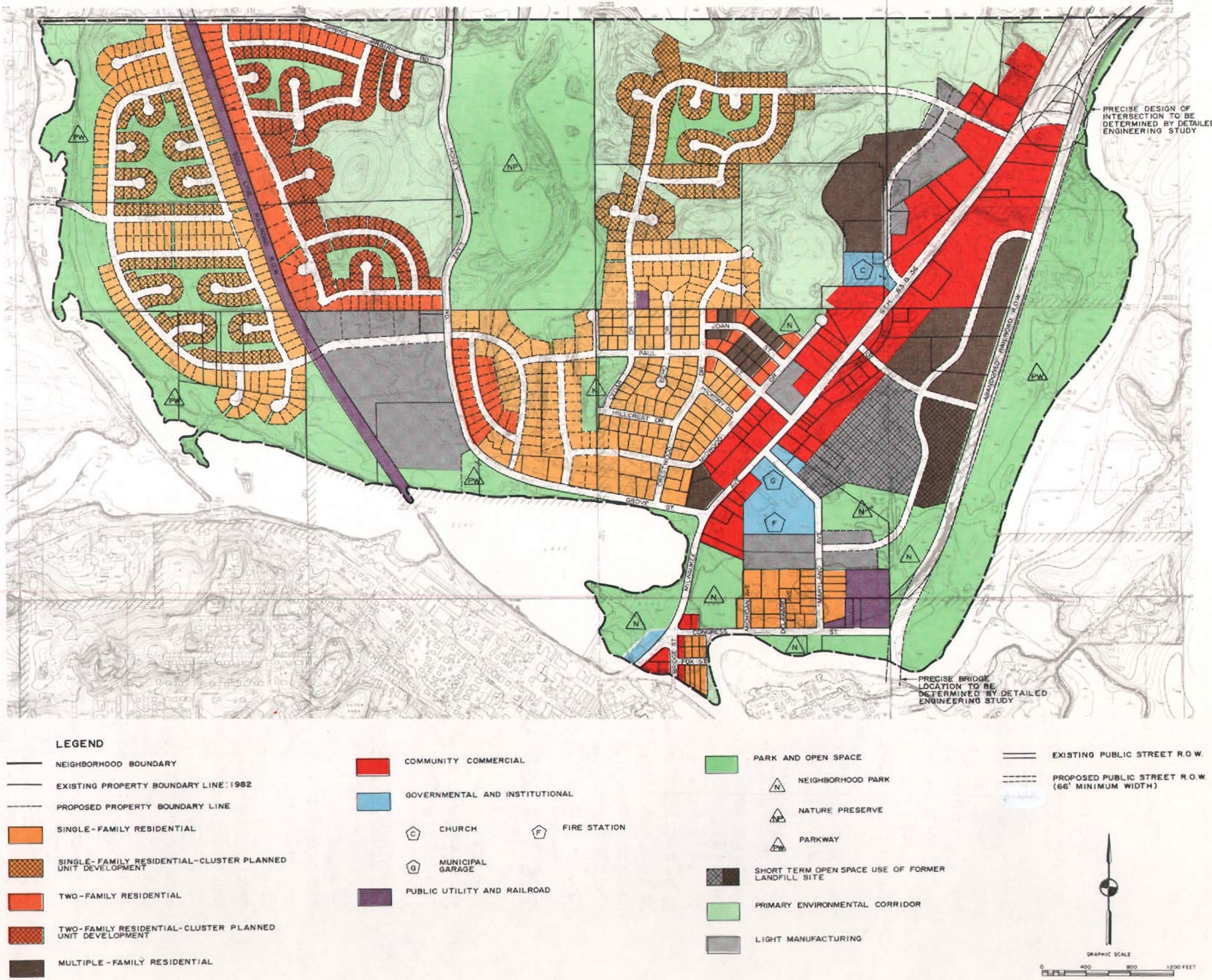
Residential Use

The revised recommended plan, as shown on Map 26, proposes conventional, single-family residential development in the central and western portions of the neighborhood. This conventional development would occupy about 112 acres, or about 11 percent of the total area of the neighborhood. Cluster-type single-family residential development, as described in Chapter IV, would be located in the north-central and western portions of the neighborhood, in conjunction with certain open space areas, and would occupy about 62 acres, or about 6 percent of the total area of the neighborhood. A total of about 650 single-family residential dwelling units would be provided, providing housing for about 2,220 persons under the revised plan.

The revised recommended plan proposes conventional two-family residential subdivision development for an area located adjacent to the Soo Line Railroad right-of-way, as well as for an area located east of Honey Lake Road. The existing two-family residential area located west of STH 36 and STH 83 would be retained. Under the revised recommended plan, conventional two-family residential uses would occupy about 34 acres, or about 3 percent of the total

Map 26

REVISED RECOMMENDED PRECISE NEIGHBORHOOD UNIT DEVELOPMENT PLAN FOR THE ECHO LAKE NEIGHBORHOOD



Source: SEWRPC.

Table 29

EXISTING AND REVISED RECOMMENDED PLAN DESIGN LAND USES IN THE ECHO LAKE NEIGHBORHOOD, CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

Land Use Category	Existing Land Use (1979)		Revised Recommended Plan	
	Acres	Percent of Total	Acres	Percent of Total
Residential				
Single Family	82.5	8.3	112.4	11.3
Single Family (cluster planned unit development)	--	--	61.8	6.2
Two Family	2.8	0.3	33.8	3.4
Two Family (cluster planned unit development)	--	--	32.8	3.3
Multiple Family	6.6	0.7	43.7	4.4
Subtotal	91.6	9.3	284.5	28.6
Commercial				
Neighborhood Retail and Service	2.5	0.3	--	--
Community Retail and Service	35.4	3.6	66.9	6.7
Subtotal	37.9	3.9	66.9	6.7
Industrial	17.0	1.7	63.8	6.4
Governmental and Institutional				
Public	6.9	0.7	8.1	0.8
Private	0.7	0.1	3.9	0.4
Subtotal	7.6	0.8	12.0	1.2
Park and Recreational				
Neighborhood Parks	10.5	1.1	36.2	3.6
Community Parks	50.0	5.0	167.3	16.8
Private Parks	3.0	0.3	18.5	1.9
Other Recreational	87.0	8.7	87.0	8.7
Subtotal	150.5	15.1	309.0	31.0
Streets, Public Ways, and Utilities				
Arterial Streets	12.9	1.3	32.4	3.3
Collector Streets	15.0	1.5	38.0	3.8
Minor Land Access Streets	21.7	2.2	59.2	5.9
Railroad Rights-of-Way	13.2	1.3	11.2	1.1
Utilities	2.3	0.2	4.1	0.5
Subtotal	65.1	6.5	144.9	14.6
Natural Areas	159.2	16.0	114.4	11.5
Agricultural Lands, Open Lands, Unused Lands, and Other Lands	466.3	46.7	--	--
Total	995.5	100.0	995.5	100.0

Source: SEWRPC.

Table 30

DISTRIBUTION OF ULTIMATE RESIDENTIAL DEVELOPMENT FOR THE REVISED RECOMMENDED ECHO LAKE NEIGHBORHOOD PLAN, CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

Dwelling Type	Developed Residential Acres	Dwelling Units	Net Density (dwelling units per acre)	School-Age Children per Dwelling Unit	Total School-Age Children	Population per Dwelling Unit	Total Population
Single Family.....	174.2	654	3.8[a]	1.2	785	3.4	2,224
Two Family.....	66.6	440	6.6[a]	0.6	264	2.6	1,144
Multiple Family...	43.7	633	14.5	0.4	253	1.9	1,203
Total	284.5	1,727	6.1	0.75	1,302	2.6	4,571

[a] Excluding privately owned parks in planned unit development (PUD) areas.

Source: SEWRPC.

Table 31

STREETS AND HIGHWAYS IN THE ECHO LAKE NEIGHBORHOOD 1979 AND REVISED RECOMMENDED PLAN ULTIMATE DEVELOPMENT

Street Classification	Name	Existing Right-of-Way (feet)	Proposed Right-of-Way (feet)	Typical Cross-Section[a]	Length (miles)
Arterial Streets or Highways	Milwaukee Avenue..... (STH 36/STH 83)	66 to 300 (varies)	66 to 300 (varies)	Existing	1.36
	STH 36 Bypass.....	--	--	Desirable four lane	1.01
Subtotal	--	--	--	--	2.37
Collector Streets	Cedar Drive.....	66	66	Minimum collector	0.47
	Grove Street.....	66	66	Minimum collector	0.38
	Honey Lake Road.....	66	66	Minimum collector	0.79
	Spring Prairie Road...	66	66	Minimum collector	0.71
	Paul Street.....	66	66	Minimum collector	0.51
	Unnamed	--	66	Minimum collector	0.74
	Unnamed.....	--	80	Desirable collector	1.19
Subtotal	--	--	--	--	4.79
Minor Streets	Bridge Street.....	66	66	Minor street	0.08
	Cedar Drive.....	66	66	Minor street	0.10
	Congress Street.....	66	66	Minor street	0.38
	Crestwood Drive.....	66	66	Minor street	0.50
	Delaware Avenue.....	66	66	Minor street	0.05
	Elm Drive.....	66	66	Minor street	0.17
	Fox Street.....	66	66	Minor street	0.05
	Hickory Drive.....	66	66	Minor street	0.08
	Hillcrest Drive.....	66	66	Minor street	0.01
	Joan Street	66	66	Minor street	0.15
	Maryland Avenue.....	66	66	Minor street	0.35
	Michigan Avenue.....	66	66	Minor street	0.05
	Midwood Drive.....	66	66	Minor street	0.53
	Unnamed streets	--	--	Minor street	6.42
Subtotal	--	--	--	--	8.92
Total	--	--	--	--	16.08

[a] Typical cross-section dimensions are listed in Table 16, and are graphically presented in Figure 9, of Chapter III.

Source: SEWRPC.

area of the neighborhood. Cluster-type two-family residential development would be provided for in the western part of the neighborhood, and would account for about 33 acres, or 3 percent of the total area of the neighborhood. The overall density of these proposed two-family cluster developments, including developable open space, would not exceed the maximum two-family residential development density as determined by the underlying zoning district in which the development is located. A total of about 440 two-family residential dwelling units would be provided under the revised plan, providing housing for about 1,140 persons.

The revised recommended plan proposes multiple-family residential development for the area located between STH 36 and STH 83 and the proposed highway bypass located in the eastern part of the neighborhood, as well as in an area located west of STH 36 and STH 83. It is recommended, however, that prior to the location of any residential uses in those areas proposed for multiple-family development which are occupied by the former landfill site, an engineering study be conducted in order to determine the stability and safety of such development. If such a study shows that multiple-family residential development on the landfill site is not feasible, then the area should remain in open space use. Upon ultimate development of the neighborhood, multiple-family residential land uses would occupy about 44 acres of land, or about 4 percent of the total area of the neighborhood, and would provide a total of about 630 dwelling units, housing about 1,200 persons.

About 4,570 dwelling units are provided for in the revised recommended neighborhood plan. The total resident population would approximate 4,600 persons, as shown in Table 30. Upon ultimate development, the total school-age population of the neighborhood would be about 1,300, as indicated in Tables 30 and 32.

Commercial Use

As under Alternative Plans A, B, and C as described in Chapter IV, the revised recommended plan proposes commercial land uses, including community retail sales and service land uses, in the vicinity of STH 36 and STH 83, with access to that arterial highway, however, being controlled. All commercial areas in the neighborhood are proposed to be located along this arterial, and a total of about 67 acres, or about 7 percent of the area of the neighborhood, are proposed to be devoted to commercial use.

Industrial Use

As under Alternative Plans B and C as described in Chapter IV, the revised recommended plan proposes industrial land uses on and contiguous to the former landfill site located between STH 36 and STH 83 and the proposed highway bypass. However, it is recommended that an engineering study be conducted prior to locating any industrial development on the former landfill site in order to determine the feasibility of such development. In the interim, the former landfill site should be kept in open space use. Other industrial lands in the neighborhood are shown located in the central area of the neighborhood lying between the Soo Line Railroad right-of-way and Honey Lake Road. Under the revised recommended neighborhood plan, industrial land uses would occupy about 64 acres of land, or about 6 percent of the total area of the neighborhood.

Table 32

ULTIMATE PRIMARY AND SECONDARY SCHOOL-AGE POPULATION BY GRADES FOR THE REVISED RECOMMENDED PLAN

Grades	Private School Enrollment		Public School Enrollment		Total Enrollment
	Students	Percent of Total	Students	Percent of Total	
K-5	144	25.0	430	75.0	574
6	27	25.0	79	75.0	106
7-8	51	20.0	153	80.0	204
9-12	42	10.0	376	90.0	418
Total	264	20.2	1,038	79.7	1,302

Source: SEWRPC.

Under the revised recommended plan, the Echo Lake Farm Produce Company plant north of Grove Street in the central portion of the neighborhood would eventually be relocated. The development proposed for this site is shown in Figure 18 in Chapter IV, as well as on Map 26.

Governmental and Institutional Use

Under the revised recommended plan, governmental and institutional land uses would occupy about 12 acres of land, or about 1 percent of the total area of the neighborhood. These land uses would include a proposed fire station, a church, and the existing city garage site.

Park, Recreation, and Open Space Use

The revised recommended plan proposes the development of a bicycle trail along the Fox River, Echo Lake, and Honey Creek, as shown on Map 24 and in Figure 13 of Chapter IV. The revised recommended plan also proposes to retain all of the existing park facilities described in Chapter II. Community-type park and recreation land uses would occupy a total of about 167 acres under the revised recommended plan, or about 17 percent of the total area of the neighborhood. Neighborhood-type park and recreation land would occupy about 36 acres of land, or about 4 percent of the total area of the neighborhood. Privately owned parks within residential cluster developments would occupy about 19 acres, or about 2 percent of the total area of the neighborhood. The Wehmhoff Woodland Preserve would be retained and would occupy about 87 acres, or about 9 percent of the total area of the neighborhood. Other open space areas, including delineated primary environmental corridors, would occupy about 114 acres of land, or about 12 percent of the total area of the neighborhood.

Streets and Circulation

The revised recommended plan, like Alternative Plans A, B and C described in Chapter IV, proposes that the street system of the neighborhood be organized on a functional basis, consisting of arterial, collector, and land access streets. Table 31 provides pertinent data for each proposed street type.

The proposed bypass for STH 36 and STH 83 would be accommodated on the abandoned electric interurban railway right-of-way located west of and parallel to the Fox River. STH 36/STH 83 would be retained as an arterial facility. These two arterial streets would together have a length of 2.37 miles within the neighborhood.

As noted in Chapter IV, the Racine County Planning Department has suggested, in a letter dated April 2, 1981, that consideration be given to locating the proposed bypass for STH 36 and STH 83 west of, and immediately adjacent to, the abandoned electric interurban railway right-of-way, rather than directly on that right-of-way, which is currently used as a bicycle trail. The bypass, proposed as a county trunk highway, would be a major arterial facility. Its location and construction would involve a major river crossing and a major intersection with STH 36 and STH 83. Accordingly, its location should be determined on the basis of a preliminary engineering study, which should explore the costs and benefits of alternative locations and alignments for the bypass. The Commission staff, in a series of meetings with the Racine County Jurisdictional Highway Planning Committee and the City of Burlington Plan Commission held during the spring of 1978, recommended that Racine County carry out the preliminary engineering study necessary to determine the best location for this highway, including the location of the river crossing and the configuration of the intersection with STH 36 and STH 83. In response to the County Planning Department suggestion concerning the location of this bypass facility and the maintenance of the bicycle trail along the abandoned railway right-of-way, the Commission staff prepared an alternative development plan, shown in Figure 19 in Chapter IV, for that part of the Echo Lake Neighborhood lying southeast of STH 36 and STH 83 which proposes the location of the bypass west of, and immediately adjacent to, the abandoned railway right-of-way. Reservation of land for this alternative design would maintain maximum flexibility for the future location of the county trunk highway through this area, but would require the full cooperation of the City, the County, and the Town.

Grove Street, Honey Lake Road, Spring Prairie Road, Paul Street, and a proposed street located east of Honey Creek and another in the northeast portion of the neighborhood would function as collector streets under the revised recommended plan, as shown on Map 26, and would total 4.79 miles in length. In addition, a second collector street crossing is proposed to transverse Honey Creek south of the proposed collector street bridge shown on Map 26 pursuant to a request made by the City of Burlington Plan Commission on July 11, 1984. The revised recommended plan also proposes the eventual development of a total of 8.92 miles of minor land access streets in the neighborhood. Again, as under Alternative Plans A, B, and C, the orientation of the proposed land access streets would facilitate solar access, as suggested in Figure 10 in Chapter III and by the various solar access-related urban design criteria outlined in Chapter III.

As under Alternative Plans A, B, and C, in order to promote traffic safety and protect the capacity of the arterial street system, the revised recommended plan proposes that direct access of building sites to arterial streets and, in some cases, collector streets be controlled by backing lots against these street types and providing a landscaped planting strip a minimum of 20 feet wide along the arterials. Recommended landscape plant materials for this type of planting strip are shown in Appendix E.

PLAN IMPLEMENTATION

As noted in Chapter V, an important step in plan implementation is the formal adoption of the neighborhood plan by the City Plan Commission, and certification of the adopted neighborhood plan, as documented herein, to the Common Council pursuant to state enabling legislation. Upon such adoption, the revised recommended neighborhood plan with its supporting data becomes the official guide for the making of decisions concerning the development and redevelopment of the neighborhood by city officials.

The neighborhood development plan, while precise, must also be flexible. The revised recommended plan is intended to be used as a standard for evaluating development proposals of both the private and public sectors. It should not be presumed that private developers cannot present development plans harmonious with sound development standards, nor that any development plans that are privately advanced and at variance in some respect with the adopted revised recommended plan or the alternative plan maps contained in this report are unacceptable. Local officials should remain receptive to proposed plan changes that can be shown to be better than the adopted plan or its alternative plan maps described herein, and that are compatible with the overall objectives for the development of the neighborhood and the community as a whole.

Of all the neighborhood plan implementation devices presently available, perhaps the most important and most versatile is zoning. As discussed in Chapter II, land use regulation in the Echo Lake Neighborhood is under the jurisdiction of both the Racine County Zoning Ordinance (for those portions of the neighborhood lying within the Town of Burlington) and the City of Burlington Zoning Ordinance (for those portions of the neighborhood lying within the City of Burlington). Zoning districts applicable to those portions of the Echo Lake Neighborhood lying within the jurisdiction of the City of Burlington Zoning Ordinance are described in Table 28 of Chapter V, and to those portions lying within the jurisdiction of the Racine County Zoning Ordinance in Table 33.

In order to implement the neighborhood plan, an initial or short-term zoning map should be created which fosters the type of growth planned for the neighborhood, along with an ultimate zoning map which represents zoning for the ultimate planned development of the neighborhood area. Map 27 shows the proposed initial zoning map for the neighborhood utilizing both the City of Burlington Zoning Ordinance districts--for those areas in the City--and the Racine County Zoning Ordinance districts--for those areas in the Town of Burlington. Since at the present time it is uncertain whether or not those areas in the Echo Lake Neighborhood which are within the Town of Burlington will become a part of the City of Burlington, two ultimate zoning maps for the neighborhood are provided: a zoning map using city zoning districts for areas in the City and county districts for areas in the Town (Map 28); and a zoning map using the city zoning districts exclusively (Map 29).

In order to assure the necessary intergovernmental coordination in the development of the neighborhood, it is recommended that the City Plan Commission request adoption of the revised plan by the Town of Burlington Plan Commission and Town Board. It is further recommended that the City Plan Commission request that the Town, following adoption of the neighborhood plan, review the zoning

Table 33

SUMMARY OF RACINE COUNTY ZONING DISTRICT PROPOSED FOR THE ECHO LAKE NEIGHBORHOOD

Zoning District	Principal Permitted Uses	Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size			Minimum Yard Requirements			Maximum Building Height (feet)
				Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	
A-2 General Farming and Residential District II	Apiculture, dairying, grazing, raising of cash grain crops, greenhouses, one- and two-family dwellings, etc.	Mobile home parks, animal hospitals, airports, commercial egg production, commercial raising of animals, sod farming, etc.	1.0	Farm: 10 acres; dwelling lot (public sewer) 40,000 per family; dwelling lot (septic tank) 40,000 per family plus such acreage as required	40,000	Farm: 300; dwelling lot: 150	100	25 for one-story building and 35 for two-story building	75	35 or 2 1/2 stories
A-3 General Farming District III Holding District	Apiculture, dairying, grazing, raising of grain crops, greenhouses, farm dwellings for resident owners and laborers	Mobile home parks, animal hospitals, airports, commercial egg production, commercial raising of animals, sod farming, etc.	--	40 acres	--	--	100	100	100	50
R-2 Suburban Residential District (unsewered)	One-family dwellings on lots not served by public sanitary sewer	Governmental and cultural uses, utilities, schools, clubs or fraternities, home occupations, professional offices	1.08	40,000	40,000	150	50	15	50	35
R-5 Urban Residential District II (sewered)	One-family dwellings on lots served by public sanitary sewer	Governmental and cultural uses, utilities, schools, etc.	6.05	7,200	7,200	60	25	10	25	35
R-6 Two-Family Residential District (sewered)	Two-family dwellings on lots served by public sanitary sewer	Governmental and cultural uses, utilities, schools, etc.	4.36	10,000	5,000	100	25	10 for 1 1/2-story building and 15 for two-story building	25	35

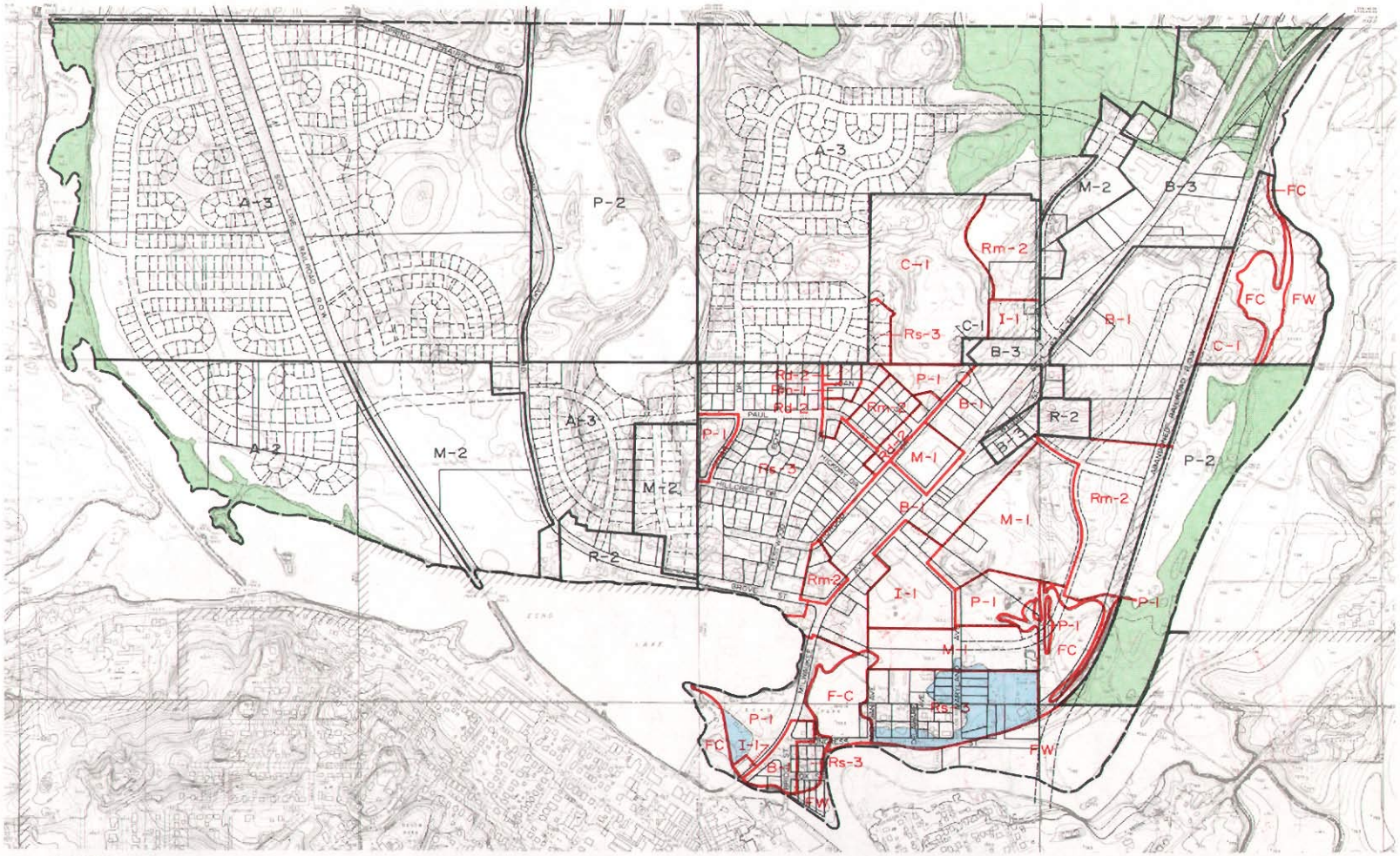
Table 33 (continued)

Zoning District	Principal Permitted Uses	Conditional Uses	Maximum Residential Density (dwelling units per net acre)	Minimum Lot Size			Minimum Yard Requirements			Maximum Building Height (feet)
				Total Area (square feet)	Area per Family (square feet)	Width at Setback (feet)	Front Yard (feet)	Side Yard (feet)	Rear Yard (feet)	
R-7 Multi-Family Residential District (sewered)	Multiple family dwellings not to exceed eight dwelling units per structure	Governmental and cultural uses, utilities, schools, etc.	2.9	15,000	No less than: 2,000--efficiency unit; 2,500--one bedroom unit; 3,000--two or more bedroom unit	120	35	20	50	35
R-8 Planned Residential District (sewered)	Two-family dwellings, multiple-family dwellings, and clustered one-family lot developments	Structures and improvements which serve the principal use	10.89	10 acres in one ownership; 4,000 per row-house; 8,000 per one-family dwelling	4,000	120 for 1 1/2-story rowhouse; 65 for one-family dwelling	30	30	25	35
B-3 Commercial Service District	Retail establishments, home occupations, professional offices, restaurants, supermarkets, churches, radio and television studios, animal hospitals, etc.	Governmental and cultural uses, utilities, transportation terminals	--	15,000	--	75	25 (with sewer)	10	25	35
M-2 General Industrial District	All M-1 permitted uses; manufacture of products from furs, glass, leather, metal, plastic, and foods; printing, publishing, etc.	All structures and improvements for principal uses, airstrips, governmental and cultural uses, animal hospitals	--	--	--	--	50	20	25	45
P-2 Recreational Park District	Public and existing private recreational uses such as arboretums, bathing, boating, nature trails, etc.	Extension of existing or creation of new private recreational uses, golf courses, campgrounds, swimming pools, etc.	--	10 acres	--	--	100	100	100	35
C-1 Resource Conservation District	Fishing, flood overflow and floodwater storage, hunting, historic and scientific areas	Boating, game farms, grazing, orchards, swimming, wild crop harvesting	--	--	--	--	--	--	--	--
GFO General Floodplain Overlay District	Hunting, fishing, drainage, flood overflows, stream bank protection, grazing, horticulture, etc.	Navigational structures, bridges, marinas, utility poles, park and recreational areas, etc.	--	--	--	--	--	--	--	--

Source: SEWRPC.

Map 27

INITIAL ZONING MAP FOR THE ECHO LAKE NEIGHBORHOOD USING BOTH THE CITY OF BURLINGTON ZONING DISTRICTS (FOR CITY AREAS) AND THE RACINE COUNTY ZONING DISTRICTS (FOR TOWN AREAS)



LEGEND

- CITY LIMITS BOUNDARY: 1982
- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE: 1982
- CITY OF BURLINGTON ZONING DISTRICT BOUNDARY LINE
- RACINE COUNTY ZONING DISTRICT BOUNDARY LINE

CITY OF BURLINGTON

- Rs-3 SINGLE-FAMILY RESIDENTIAL DISTRICT
- Rd-2 TWO-FAMILY RESIDENTIAL DISTRICT
- Rm-1 MULTIPLE-FAMILY RESIDENTIAL DISTRICT
- Rm-2 MULTIPLE-FAMILY RESIDENTIAL DISTRICT
- B-1 NEIGHBORHOOD BUSINESS DISTRICT
- M-1 LIGHT MANUFACTURING DISTRICT
- I-1 INSTITUTIONAL DISTRICT
- P-1 PARK DISTRICT
- C-1 CONSERVANCY DISTRICT
- FW FLOODWAY DISTRICT
- FC FLOODPLAIN CONSERVANCY DISTRICT
- FLOODPLAIN FRINGE OVERLAY DISTRICT

RACINE COUNTY

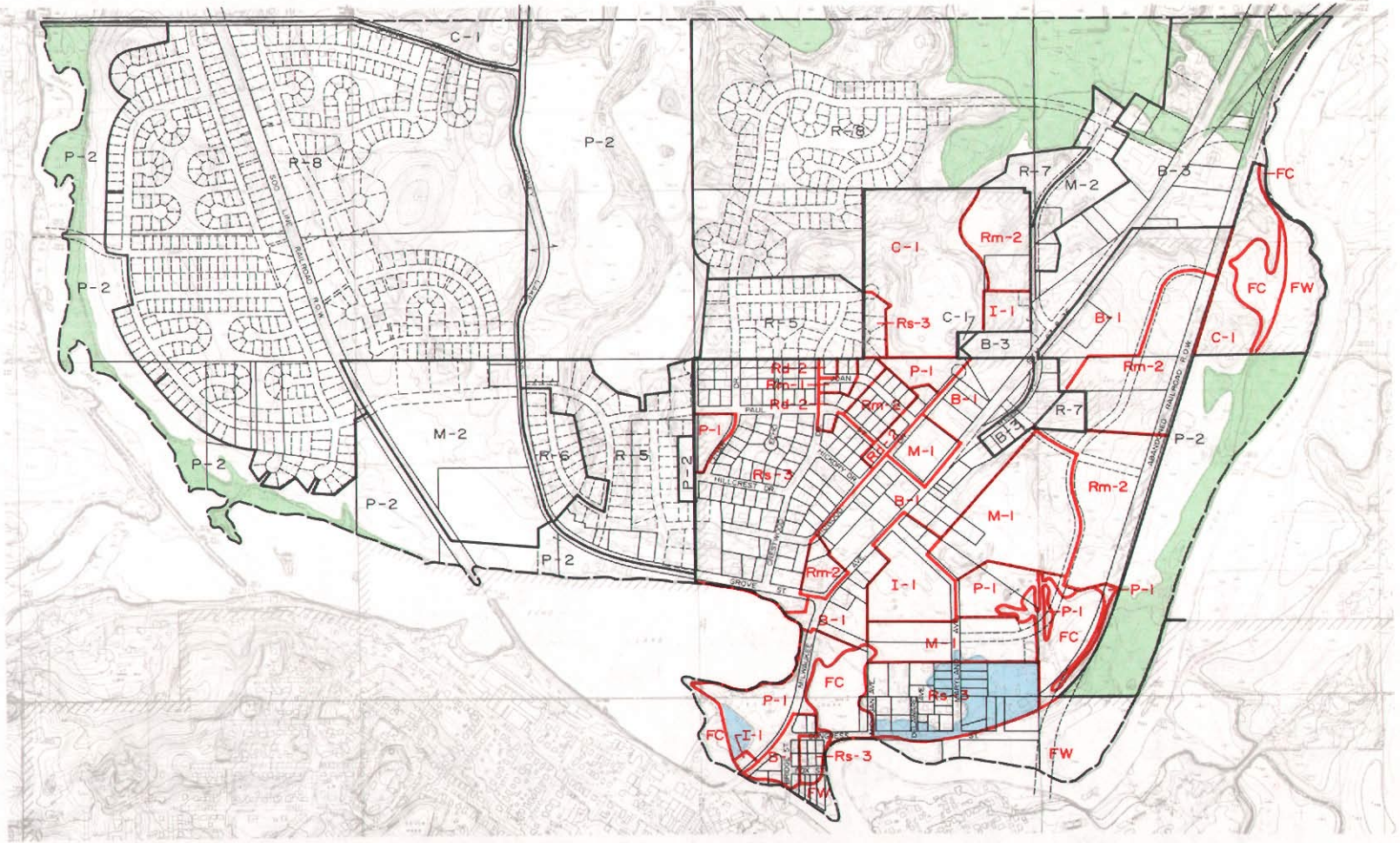
- R-2 SUBURBAN RESIDENTIAL DISTRICT (UNSEWERED)
- P-2 RECREATIONAL PARK DISTRICT
- C-1 RESOURCE CONSERVANCY DISTRICT
- B-3 COMMERICAL SERVICE DISTRICT
- A-2 GENERAL FARMING AND RESIDENTIAL DISTRICT II
- A-3 GENERAL FARMING AND RESIDENTIAL DISTRICT III
- M-2 GENERAL INDUSTRIAL DISTRICT
- GENERAL FLOODPLAIN OVERLAY DISTRICT

GRAPHIC SCALE 0 400 800 1200 FEET

Source: SEWRPC.

Map 28

PROPOSED ULTIMATE ZONING MAP FOR THE ECHO LAKE NEIGHBORHOOD USING BOTH THE CITY OF BURLINGTON ZONING DISTRICTS (FOR CITY AREAS) AND THE RACINE COUNTY ZONING DISTRICTS (FOR TOWN AREAS)



LEGEND

- CITY LIMITS BOUNDARY: 1982
- NEIGHBORHOOD BOUNDARY
- EXISTING PROPERTY BOUNDARY LINE: 1982
- CITY OF BURLINGTON ZONING DISTRICT BOUNDARY LINE
- RACINE COUNTY ZONING DISTRICT BOUNDARY LINE

CITY OF BURLINGTON

- Rs-3 SINGLE-FAMILY RESIDENTIAL DISTRICT
- Rd-2 TWO-FAMILY RESIDENTIAL DISTRICT
- Rm-1 MULTIPLE-FAMILY RESIDENTIAL DISTRICT
- Rm-2 MULTIPLE-FAMILY RESIDENTIAL DISTRICT
- B-1 NEIGHBORHOOD BUSINESS DISTRICT
- M-1 LIGHT MANUFACTURING DISTRICT
- I-1 INSTITUTIONAL DISTRICT
- P-1 PARK DISTRICT
- C-1 CONSERVANCY DISTRICT
- FW FLOODWAY DISTRICT
- FC FLOODPLAIN CONSERVANCY DISTRICT
- FLOODPLAIN FRINGE OVERLAY DISTRICT

RACINE COUNTY

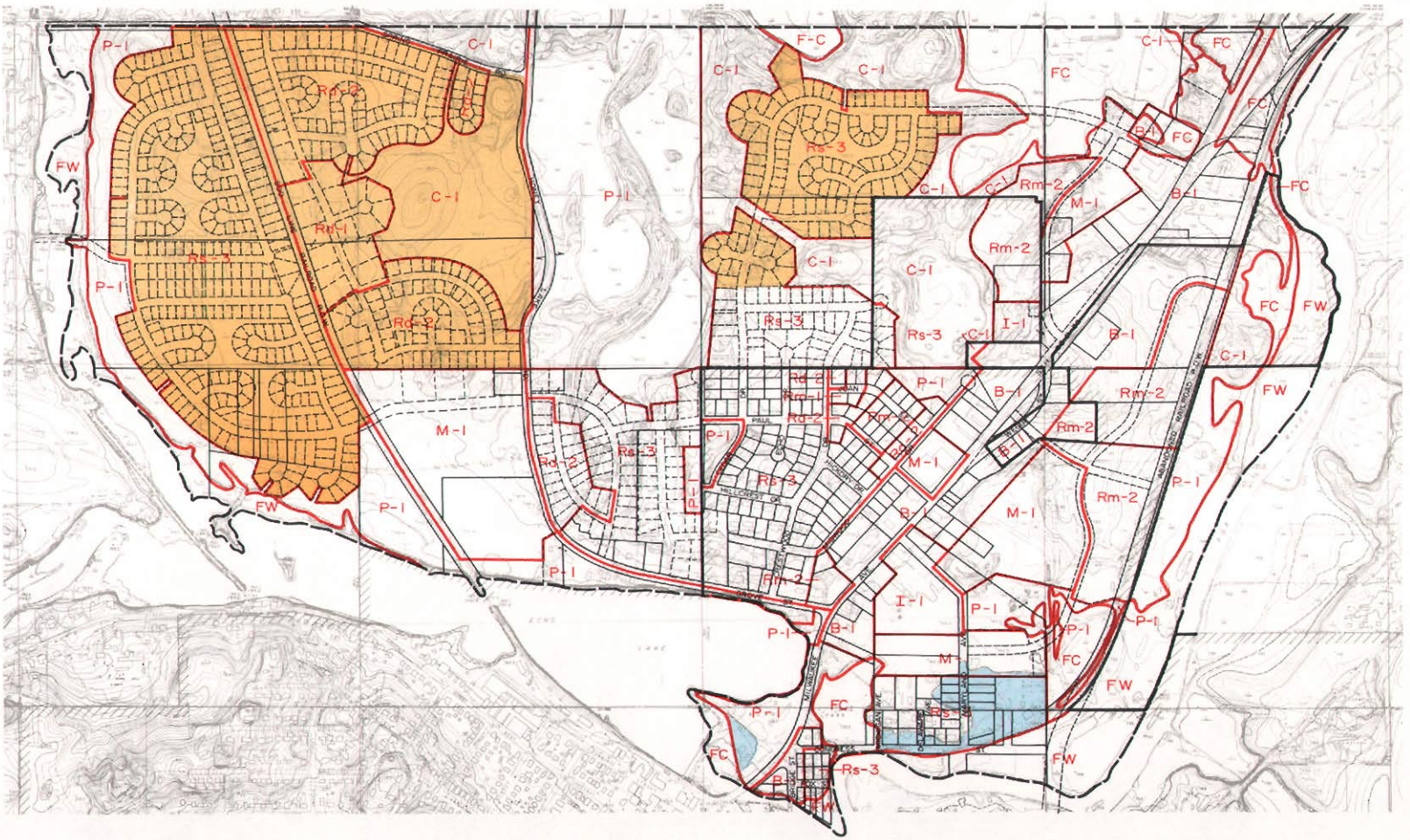
- R-5 URBAN RESIDENTIAL DISTRICT (1)
- R-6 TWO-FAMILY RESIDENTIAL DISTRICT
- R-7 MULTI-FAMILY RESIDENTIAL DISTRICT
- R-8 PLANNED RESIDENTIAL DISTRICT
- P-2 RECREATIONAL PARK DISTRICT
- C-1 RESOURCE CONSERVANCY DISTRICT
- B-3 COMMERICAL SERVICE DISTRICT
- M-2 GENERAL INDUSTRIAL DISTRICT
- GENERAL FLOODPLAIN OVERLAY DISTRICT

GRAPHIC SCALE 0 400 800 1200 FEET

Source: SEWRPC.

Map 29

PROPOSED ULTIMATE ZONING MAP FOR THE ECHO LAKE NEIGHBORHOOD USING CITY OF BURLINGTON ZONING DISTRICTS



LEGEND

	CITY LIMIT LINE: 1982	Rm-1	MULTIPLE-FAMILY RESIDENTIAL DISTRICT	FC	FLOODPLAIN CONSERVANCY DISTRICT
	NEIGHBORHOOD BOUNDARY	Rm-2	MULTIPLE-FAMILY RESIDENTIAL DISTRICT		FLOODPLAIN FRINGE OVERLAY DISTRICT
	EXISTING PROPERTY BOUNDARY LINE: 1982	B-1	NEIGHBORHOOD BUSINESS DISTRICT		PLANNED UNIT DEVELOPMENT OVERLAY DISTRICT
	PROPOSED PROPERTY BOUNDARY LINE	M-1	LIGHT MANUFACTURING DISTRICT		
	CITY ZONING DISTRICT BOUNDARY LINE	I-1	INSTITUTIONAL DISTRICT		
Rs-3	SINGLE-FAMILY RESIDENTIAL DISTRICT	P-1	PARK DISTRICT		
Rd-1	TWO-FAMILY RESIDENTIAL DISTRICT	C-1	CONSERVANCY DISTRICT		
Rd-2	TWO-FAMILY RESIDENTIAL DISTRICT	FW	FLOODWAY DISTRICT		

GRAPHIC SCALE
0 400 800 1200 FEET

Source: SEWRPC.

of those portions of the neighborhood in the Town and that following such review, the Town petition the Racine County Board to amend the town zoning district map in the manner shown on Map 27 for town areas.

Other neighborhood plan implementation measures, such as official mapping and subdivision plat review, are discussed in Chapter V, and should be fully utilized to assist in plan implementation.

APPENDICES

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Appendix A

SUN PATH DIAGRAM FOR 44° NORTH LATITUDE[1]

A Sun Path Diagram is a useful aid in achieving the more efficient use of solar energy through the design of land subdivisions and building orientations. Such a diagram depicts the path of the sun within the sky vault, as projected onto a horizontal plane. The horizon is represented as a circle with the observation point in the center. The position of the sun at any date and hour can be determined from the diagram in terms of its altitude (a) and bearing angle (b). The altitude angles are represented on the diagram at 10° intervals by equally spaced concentric circles ranging from 0° at the outer circle (horizon) to 90° at the center point. These intervals are graduated along the meridian. Bearing angles are represented on the diagram at 10° intervals by equally spaced radii ranging from 0° at the south meridian to 180° at the north meridian. These intervals are graduated along the periphery of the diagram. The sun's bearing will be to the east during morning hours and to the west during afternoon hours. The earth's axis is inclined approximately 23°27' to the plane of its orbit around the sun, and the earth rotates on its axis approximately 15 degrees every hour. Thus, from all points on the earth, the sun appears to move across the sky vault on various parallel circular paths, with the paths spanning a maximum declination of about 23°27', the declination changing cyclically between the extremes of the summer solstice and winter solstice. Thus, the sun follows essentially the same path on corresponding dates of each year. Data defining these paths are tabulated below.

Date	Declination at Local High Noon	Corresponding Date	Declination at Local High Noon	Unified Approximation
June 21	+23°27'	--	--	+23°27'
May 21	+20°09'	July 21	+20°31'	+20°20'
April 21	+11°48'	August 21	+12°12'	+12°00'
March 21	+0°10'	September 21	+0°47'	+0°28'
February 21	-10°37'	October 21	-10°38'	-10°38'
January 21	-19°57'	November 21	-19°53'	-19°55'
December 21	-23°27'	--	--	-23°27'

The elliptical curves in the diagram represent the horizontal projections of the sun's path. They are given for the twenty-first day of each month. Roman numerals on the diagram designate the months, beginning with January as Roman numeral I. A cross grid of curves graduates the hours indicated in Arabic numerals.

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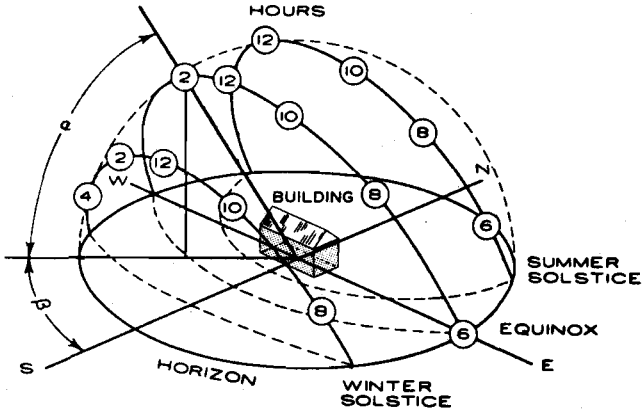
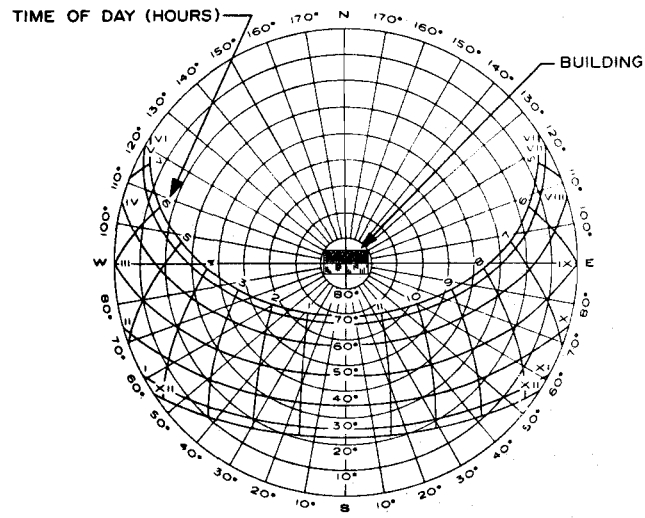
[1]Charles G. Ramsey and Harold R. Sleepler, Architectural Graphic Standards - Sixth Edition, New York: John Wiley and Sons, Inc., 1970, pp. 70-71.



α = ALTITUDE ANGLE

β = BEARING ANGLE



RADIAL LINES ARE BEARING ANGLES
CONCENTRIC CIRCLES ARE ALTITUDE ANGLES
ROMAN NUMERALS ARE MONTHS

Example:

Find the sun's position on February 21 at 2:00 p.m. (local time)

Step I - Select the February path marked with II and locate the two-hour line. Where these two lines cross is the position of the sun.

Step 2 - Read the altitude angle from the concentric circles as about 28°.

Step 3 - Read the bearing angle along the outer circle as about 34° West.

NOTE: Although the Echo Lake Neighborhood is located at 42°41' north latitude, for the purposes of this study and for the use of either passive or active solar design concepts and systems within the neighborhood, a sun path diagram for 44° north latitude may be used.

Appendix B

EQUATION FOR DETERMINING AVERAGE ANNUAL HEAT LOSS FOR A BUILDING IN THE ECHO LAKE NEIGHBORHOOD, CITY OF BURLINGTON, RACINE COUNTY, WISCONSIN

The following equation may be used for calculating the total heat loss (BTU) in one year for a building in the Echo Lake Neighborhood with a total yearly average of 7,165 heating degree days.

$$H = \frac{24hd\ (T_i - T_a)}{T_i - T_o}$$

where:

H = Total annual heat loss in BTU.

h = Hourly heat loss from the building for the design conditions in BTU's; these calculations are required by the Wisconsin building code.

T_i = Inside design temperature in degrees Fahrenheit.

T_o = Outside design temperature in degrees Fahrenheit.

24 = Total number of hours in one day.

d = Average total annual number of heating degree days. For the Echo Lake Neighborhood, this number is 7,165.

T_a = Average outside temperature for the heating season.

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Appendix C

LANDSCAPE TREE PLANTING GUIDE FOR SOILS FOUND IN THE ECHO LAKE NEIGHBORHOOD

SEWRPC Soil Type[a]		Woodland Suitability Group[b]	Brief Description of Soils	Suggested Trees for Landscape Planting[c]			
Soil Number	Soil Name			Shade Trees	Street Trees	Lawn Trees	Hedges, Screens, and Windbreaks
21 72Z 324 361	Hebron Loam Hebron Loam Ionia Loam Miami Loam	1	Moderately deep to deep, moderately well- to well-drained, medium-textured upland soils	For Sunny Sites			
				American beech (LO) Sugar maple (LO) Red maple (MO) Red oak (LR) White oak (LR) Basswood (LO) Hackberry (MR) White ash (LO) Sycamore (LO) Bur oak (LR) Norway maple (MR) Silver maple (LO) Thornless honey locust (MO)	Norway maple (MR) Southern pin oak (MP) Thornless honey locust (MO) Basswood (LO) White ash (LO) Sugar maple (LO) Hackberry (MR) Red maple (MO)	Flowering crab apple (SR) Mountain ash (SO) Blue beech (SR) Paper birch (MO) River birch (MO) Russian olive (SR) Southern pin oak (MP) Serviceberry (SR) Horse chestnut (LR) Norway spruce (LP) Red pine (LP) White pine (LP) White spruce (MP) Black cherry (LO) Blue spruce (LP) Hawthorn (SR)	Red cedar (SP) White cedar (MC,P) White pine (LP) White spruce (MP) Lombardy poplar (LC) Russian olive (SR) Upright yew (SP)
				For Partially Shaded Sites			
				American beech (LO) Sugar maple (LO) Red maple (MO) Red oak (LR) Hackberry (MR) White ash (LO) Basswood (LO)	Norway maple (MP) White ash (LO) Basswood (LO) Sugar maple (LO)	Blue beech (SP) Serviceberry (SR) White pine (LP) White spruce (MP) Blue spruce (LP) Norway spruce (LP)	White cedar (MC) White pine (LP) White spruce (MP) Upright yew (SP)
40	Saylesville Loam	2	Moderately deep to deep, moderately well- to well-drained, fine-textured soils	For Sunny Sites			
				Sugar maple (LO) Red maple (MO) Basswood (LO) American beech (LO) White oak (LR) White ash (LO) Bur oak (LR) Sycamore (LO) Hackberry (MR) Silver maple (LO)	Southern pin oak (MP) Thornless honey locust (MO) Norway maple (MR) Hackberry (MR) White ash (LO) Sugar maple (LO) Red maple (MO) Basswood (LO)	Flowering crab apple (SR) Paper birch (MO) Blue beech (SR) Mountain ash (SO) Black cherry (LO) White pine (LP) White cedar (MC) Southern pin oak (MP) White spruce (MP) Russian olive (SR)	White cedar (MC) Red cedar (SP) Lombardy poplar (LC) White spruce (MP) Russian olive (SR) Upright yew (SP)
				For Partially Shaded Sites			
				American beech (LO) Sugar maple (LO) Red maple (MO) Basswood (LO) White ash (LO) Hackberry (MR)	White ash (LO) Norway maple (MP) Sugar maple (LO) Basswood (LO)	Blue beech (SR) White pine (LP) White spruce (MP) Blue spruce (MP) Mountain ash (SO)	White cedar (MC) White spruce (MP) Upright yew (SP)

Appendix C (continued)

SEWRPC Soil Type[a]		Woodland Suitability Group[b]	Brief Description of Soils	Suggested Trees for Landscape Planting[c]			
Soil Number	Soil Name			Shade Trees	Street Trees	Lawn Trees	Hedges, Screens, and Windbreaks
72 73	Fox Sandy Loam	3	Moderately deep to deep, moderately coarse-textured soils somewhat excessively drained	**For Sunny Sites**			
				Scarlet oak (MO) Bur oak (LR) Hackberry (MR) Black oak (LR) Silver maple (LO) Green ash (MO) Thornless honey locust (MO)	Green ash (MO) White ash (LO) Hackberry (MR) Southern pin oak (MP) Thornless honey locust (MO)	Flowering crab apple (SR) Paper birch (MO) Red cedar (SP) White pine (LP) White spruce (MP) Red pine (LP) Russian olive (SR)	Red cedar (SP) Russian olive (SR) Red pine (LP) White pine (LP) Upright yew (SP) White spruce (MP)
				For Partially Shaded Sites			
				Hackberry (MR)	Hackberry (MR)	White Pine (LP) White spruce (MP)	Upright yew (SP) White pine (LP) White spruce (MP)
172 282	Casco Loam Casco-Rodman Loam (Casco portion)	5	Thin (12 inches to 24 inches) somewhat excessively drained, medium- to moderately coarse-textured soils	**For Sunny Sites**			
				Northern red oak (MO) White oak (LR) Bur oak (LR) Sugar maple (LO) Red maple (MO) Silver maple (LO)	Norway maple (MR) Green ash (MO) Red maple (MO) Sugar maple (LO) Thornless honey locust (MO)	White pine (LP) Paper birch (MO) Russian olive (SR) Flowering crab apple (SR)	Red cedar (SP) White pine (LP) White cedar (MC) White spruce (MP) Russian olive (SR)
				For Partially Shaded Sites			
				Red oak (LR) Sugar maple (LO) American beech (LO) Red maple (MO)	Norway maple (MP) Sugar maple (LO) Red maple (MO)	White pine (LP) Blue beech (SR)	White pine (LP) White cedar (MC) White spruce (MP)
75 282	Rodman Gravelly Loam Casco-Rodman Loam (Rodman portion)	6	Very thin (0 inches to 12 inches) drouthy soils	**For Sunny Sites**			
				None	None	None	Red cedar (SP)
76 176 213 217 233 369	Sebewa Silt Loam Mussey Loam Ehler Silt Loam Bono Silty Clay Loam Matherton Silt Loam Mosel Silt Loam	7	Somewhat poorly to very poorly drained upland mineral soils, medium textured	**For Sunny Sites**			
				Swamp white oak (LR) Hackberry (MR) Red maple (MO) Basswood (LO) Green ash (MO) White ash (LO) Silver maple (LO) Cottonwood (LO)	Green ash (MO) Basswood (LO) Red maple (MO) Southern pin oak (MP)	White spruce (MP) Paper birch (MO) Mountain ash (SO) Weeping willow (MPe) White cedar (MP) River birch (MO)	White cedar (MC) White spruce (MP) Lombardy poplar (LC) Laurel willow (MO)
				For Partially Shaded Sites			
				Swamp white oak (LR) Hackberry (MR) Red maple (MO) Basswood (LO) Green ash (MO) White ash (LO)	Green ash (MO) Basswood (LO) Red maple (MO)	White spruce (MP) Mountain ash (SO)	White cedar (MC) White spruce (MP)

Appendix C (continued)

SEWRPC Soil Type[a]		Woodland Suitability Group[b]	Brief Description of Soils	Suggested Trees for Landscape Planting[c]			
Soil Number	Soil Name			Shade Trees	Street Trees	Lawn Trees	Hedges, Screens, and Windbreaks
450	Houghton Mucky Peat	10	Organic soils, peats, and mucks	For Sunny Sites			
				Silver maple (LO) Red maple (MO)	Red maple (MO) Laurel willow (MO)	White cedar (MC) White spruce (MP) Weeping willow (MPe)	White cedar (MC) Laurel willow (MO)
				For Partially Shaded Sites			
				Red maple (MO)	None	White cedar (MC) White spruce (MP)	White cedar (MC)

[a] The Marsh, Abington Silt Loam, and Kane Silt Loam soils are omitted from this table because they are not suitable soils for tree planting.

[b] Woodland suitability groupings have been numbered according to a statewide classification system. In this classification system, soils which respond similarly to use and management and are suitable for the same tree species have been grouped together.

[c] Following the common name of the suggested tree species, the first letter in parentheses indicates height at maturity: S = less than 30 feet; M = 30 feet to 60 feet; and L = more than 60 feet. The second letter in parentheses indicates the general shape of the tree foliage at maturity: C = columnar form; O = oval form; P = pyramidal form; Pe = pendulus form; R = round form; and U = umbrella form.

Source: SEWRPC.

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Appendix D

SPECIES CHARACTERISTICS OF SELECTED TREES FOR LANDSCAPE PLANTING IN THE ECHO LAKE NEIGHBORHOOD

Common Name	Scientific Name	Height at Maturity (feet)	Spread at Maturity (feet)	General Shape/Form of Tree Foliage at Maturity	Fall Color	Remarks
American Beech	Fagus grandfolia	80-100	50-70	Oval	Bronze	Long lived; striking gray bark; cannot withstand compaction of soil
Basswood (or American Linden)	Tilia americana	100	50	Oval	--	Large size; a stately tree
Black Cherry	Prunus cerasus	20-30	15-20	Oval	--	Tolerant of shade; blossoms pink or white in spring
Black Oak	Quercus coccinea	60+	40-50	Round	--	Slow growing; difficult to transplant
Blue Spruce	Picea Pungens glauca	100	--	Pyramidal	--	--
Bur Oak	Quercus Macrocarpa	60+	--	Round	--	--
Cottonwood	Populus varieties	90	--	Oval	--	--
European Larch	Larix decidua	70-80	30	Pyramidal	Yellow	Light foliage permits cultivation of grass in shadow of foliage
Flowering Crab Apple	Malus floribunda	15-25	12-20	Round	Yellow, orange	No special maintenance; few pests; responds well to pruning
Green Ash	Fraxinus pennsylvanica lanceolata	30-60	40-50	Oval	--	Narrow leaflets and fine texture
Hackberry	Celtis occidentalis	30-60	--	Round	--	Interesting pebbled bark; hard black fruits; sensitive to salt spray
Hawthorn	Crataegus varieties	25	20	Round	Bronze to red	--
Horse Chestnut	Aesculus hippocastanum baumanni	60+	30-40	Round to Oval	--	Slow growing
Laurel Willow	Salix pentandra	30-60	30-40	Oval	--	Destroys sewer pipes
Lombardy Poplar	Populus italica nigra	50-100	10-15	Columnar	Strong yellow	Can destroy sewage or drainage pipes unless proper precaution is taken
Mountain Ash	Sorbus decora	20-30	--	Oval	--	Slow growing

Appendix D (continued)

Common Name	Scientific Name	Height at Maturity (feet)	Spread at Maturity (feet)	General Shape/Form of Tree Foliage at Maturity	Fall Color	Remarks
Norway Maple	Acer platanoides	50	40	Pyramidal (columnar form also available)	Yellow	Dense shade tree; feeding roots close to surface, making turf planting within spread difficult
Norway Spruce	Picea abies	60+	--	Pyramidal	--	--
Paper Birch (or Canoe Birch or White Birch)	Betula papyrifera	75	35	Oval	Yellow	Light, open foliage
Red Cedar	Juniperus virginiana	Less than 30	--	Pyramidal	--	--
Red Maple (or Swamp Maple or Water Maple)	Acer rubrum	50-70	40	Oval	Scarlet, orange, yellow	No special maintenance requirements; brilliant fall colors
Red Oak	Quercus rubra	60+	60	Round	Brilliant red	Grows faster than any other oak (two feet per year)
Red Pine	Pinus resinosa	60+	--	Pyramidal	--	--
River Birch	Betula negra	75+	--	Oval	--	--
Russian Olive	Elaeagnus angustifolia	Less than 30	--	Round	--	--
Scarlet Oak	Quercus borealis	70	40	Oval	Scarlet	Rapid growth
Serviceberry	Amelanchier canadensis	Less than 30	12-15	Round	Subdued orange	Requires generous moisture and prefers shady site
Silver Maple	Acer saccharinum	100	60-70	Oval	Red and yellow-orange	Rapid growth rate
Southern Pin Oak	Quercus palustris	30-60	--	Pyramidal	--	--
Sugar Maple	Acer saccharum	75	40-50	Oval	Brilliant yellow, orange, scarlet	Requires full sun
Swamp White Oak	Quercus bicolor	90	50-90	Round	--	Rugged appearance; tolerant of wet soils
Sycamore	Platanus occidentalis	80-100	50-75	Oval	--	Tolerant to city environment

Appendix D (continued)

Common Name	Scientific Name	Height at Maturity (feet)	Spread at Maturity (feet)	General Shape/Form of Tree Foliage at Maturity	Fall Color	Remarks
Thornless Honey Locust	Gleditsia triacanthos inermis	70-80	30-40	Oval	Weak yellow	Drought resistant; tolerant of city conditions
Upright Yew	Taxus varieties	Less than 30	--	Pyramidal	--	--
Weeping Willow	Salix babylonica	30-40	30-40	Pendulus	Yellow	Destroys sewer pipes
White Ash	Fraxinus americana	75+	--	Oval	Yellow to purple	Diamond-shaped fissures in bark
White Cedar	Thuja occidentalis	30-60	--	Columnar	--	--
White Oak	Quercus alba	80-100	50-80	Round	--	Slow growth; no special maintenance requirements
White Pine	Pinus strobus	60-100	40	Pyramidal	--	--
White Spruce	Picea glauca	30-60	--	Pyramidal	--	--

Source: Robert C. Zion, Trees for Architecture and the Landscape, New York: Van Nostrand Reinhold Company, 1968; and SEWRPC.

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Appendix E

SELECTED SHRUBS AND VINES FOR LANDSCAPE PLANTING IN THE ECHO LAKE NEIGHBORHOOD

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
21 40 72 72Z 73 324 361	Arborvitae (shrub types) (*Thuja* species)	Some	X	X	--	3-7	Shrub	--	--	--	--	X	Conifer
	Barberry, Japanese (*Berberis thunbergi*)	X	X	X	--	6	Shrub	X	--	--	X	X	Colorful
	*Bittersweet (*Celastrus scandens*)	X	Some	--	X	Climbs	Vine	--	--	--	X	X	Male and female plants, can injure trees
	*Blackberry, dewberry, blackcap, raspberry (*Rubus* species)	--	--	--	X	1-5	Bramble	X	X	X	X	X	Many species are edible
	*Chokeberry, black (*Aronia melanocarpa*)	X	X	--	X	1-3	Shrub	--	X	--	X	X	--
	Cotoneaster (*Cotoneaster* species)	--	X	X	--	4-8	Shrub	--	--	--	X	X	Usually glossy foliage, sun lovers
	Crab Apple (*Malus* species)	--	X	X	--	Up to 25	Shrub	--	--	X	X	X	Much used large shrub
	Current, Alpine (*Ribes alpinum*)	X	X	X	--	6-7	Foliage shrub	--	--	X	--	--	Leafs out early, especially good hedge plant
	*Dogwood, gray (*Cornus racemosa*)	X	--	--	--	6-10	Shrub	--	--	X	X	X	--
	*Dogwood, Pagoda (*Cornus alternifolia*)	X	--	--	--	10-15	Shrub	--	--	X	X	X	--
	*Dogwood, red osier (*Cornus stolonifera*)	X	Some	--	--	3-9	Shrub	--	X	X	X	X	Attractive red twigs
	*Dogwood, roundleaf (*Cornus rugosa*)	X	--	--	X	3-9	Shrub	--	--	X	X	X	--
	*Dogwood, silky (*Cornus amomum*)	X	--	X	--	6-10	Shrub	--	--	X	X	X	--
	*Elder, American (*Sambucus canadensis*)	--	--	--	--	3-10	Shrub	--	X	X	X	--	--
	*Filbert (hazelnut) (*Corylus americana*)	X	--	--	--	5-8	Shrub	--	X	--	X	X	Bears edible nuts
	Forsythia (*Forsythia* species)	X	X	--	--	4-8	Shrub	--	--	X	--	--	Early yellow blooms

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	*Grape, wild (Vitis species)	X	--	--	X	Climbs	Vine	--	--	--	X	X	--
	*Hawthorn or thornapple (Crataegus species)	X	X	--	--	5-15	Shrub	X	--	--	X	X	Many types
	Honeysuckle (shrub types) (Lonicera species)	X	X	X	--	6-12	Shrub	--	--	X	X	X	Many shrub types, spreads by seed
	*Juniper, creeping	--	X	--	X	1-2	Shrub	To touch	--	--	X	X	Conifer
	*Juniper, Pfitzer (J. chinensis pfitz eriana)	--	X	--	--	8-10	Shrub	--	--	--	--	X	Ornamental-type conifer
	Lilac (Syringa species)	--	X	X	--	8-10	Shrub	--	Some are	X	--	--	Many varieties
	Maple, Amur (Acer ginnala)	--	X	X	--	15+ Shrub	Tall	--	--	--	--	X	Low-growing trees, can be pruned to hedge
	Mock Orange (Philadelphus species)	--	X	X	--	6-9	Shrub	--	--	X	--	--	Sweet scented flowers, several varieties
	Myrtle or periwinkle (Vinca minor)	X	X	--	X	1	Short vine	--	Forms mat	X	--	--	Excellent ground cover in sun or shade
	Ninebark, common (Physocarpus opulifolius)	X	X	X	--	6-9	Shrub	--	X	X	--	X	--
	Olive, Autumn (Elaeagnus umbellata)	X	X	X	--	10-15	Shrub	--	--	--	X	X	Attractive to birds
	Peashrub, Siberian (Caragana arborescens)	--	--	X	--	10-15	Shrub	--	--	--	X	X	--
	Pine, mugho (Pinus mugo mughus)	--	X	--	--	6-9	Shrub	--	--	--	--	X	Conifer
	*Plum, American (Prunus americana and species)	X	--	--	--	10-15	Shrub	Some	X	X	X	X	Hardy and spreads
	Privet, amur (Ligustrum amurense)	X	Some	X	--	10	Shrub	--	--	X	X	X	Good hedge
	Privet, Regels border (Lobtusifolium regelianum)	X	Some	X	--	6-9	Shrub	--	--	--	X	X	--

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	*Redcedar, eastern (Juniperous virginiana)	--	--	X	--	10-20	Shrub	To touch	--	--	X	X	Conifer-shrub to tree
	Rose, rugosa and hort var. (Rosa species)	--	X	--	--	2-6	Shrub	--	--	X	X	--	Many types, use adapted species
	Russian olive (Elaeagnus angustifolia)	--	X	X	--	15+	Shrub	X	--	--	X	X	Outstanding gray foliage
	*Snowberry (Symphoricarpos species)	X	X	--	X	3-4	Shrub	--	X	--	X	X	--
	Spirea, anthony waterer (Spirea bumalda)	--	X	--	--	2-3	Shrub	--	--	X	--	X	Good border plant
	Spirea, van houtte (Spirea vanhouttei)	X	X	X	--	5-6	Shrub	--	--	X	--	--	--
	*Sumac, fragrant (Rhus aromatica)	X	X	--	X	3	Shrub	--	X	--	X	X	Brilliant foliage
	*Sumac, smooth (Rhus grabra)	--	--	--	--	6-10	Shrub	--	--	--	X	X	--
	*Sumac, staghorn (Rhus typhina)	X	Some	--	--	10-15	Shrub	--	X	X	X	X	--
	*Viburnum, American cranberry bush (Viburnum trilobum)	X	X	X	--	7-9	Shrub	--	--	X	X	X	Versatile but slow growing
	Viburnum, arrowwood (Viburnum dentatum)	X	X	X	--	10-12	Shrub	--	--	X	X	X	Slow growing, rich red in fall
	*Viburnum, blackhaw (Viburnum prunifolium)	X	--	X	--	8-10	Shrub	--	--	X	X	X	--
	*Viburnum, mapleleaf (Viburnum acerifolium)	X	--	--	--	3-5	Shrub	--	--	X	X	X	--
	*Viburnum, nannyberry (Viburnum lentago)	X	--	X	--	9-12	Shrub	--	--	X	X	X	Slow growing
	*Viburnum, rafinesque (Viburnum rafinesquianum)	X	--	--	--	2-4	Shrub	--	--	X	--	X	--
	*Viburnum, wayfaringtree (Viburnum lantana)	X	X	--	--	4-9	Shrub	--	--	X	X	X	Winter food for birds

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	*Virginia Creeper (Parthenocissus quinquefolia)	X	Some	--	X	Climbs	Vine	--	--	--	X	X	Also creeps
	*Wahoo, eastern (Euonymus atropurpureus)	X	X	--	--	4-9	Shrub	--	--	--	X	X	Brilliant red in fall
	Weigela (Weigela species)	--	X	X	--	4-8	Shrub	--	--	X	--	--	Showy blossoms
	*Willows, shrubby types including pussywillow (Salix species)	--	X	X	--	2-8	Shrub	--	--	--	--	--	Pussy willow especially attractive in early spring
	*Winterberry, common (Ilex verticulata)	X	--	--	--	6-9	Shrub	--	--	--	X	X	Colorful fruit
	Yew (shrub types) (Taxus species)	X	X	--	--	3-10	Shrub	--	--	--	X	X	Best conifer for shade
75 172 282	Arborvitae (shrub type) (Thuja species)	Some	X	X	--	3-7	Shrub	--	--	--	--	X	Conifer
	Barberry, Japanese (Barberis thunbergi)	X	X	X	--	6	Shrub	X	--	--	X	X	Colorful
	Bayberry or Wax Myrtle (Myrica pennsylvanica)	X	X	--	X	5-9	Shrub	--	--	--	X	X	Aromatic--semi-evergreen leaves, noted for waxy berries
	*Bittersweet (Celastrus scandens)	X	Some	--	X	Climbs	Vine	--	--	--	X	X	Male and female, can injure trees
	Blackberry and dewberry, blackcap and raspberry (Rubus species)	--	--	--	X	1-5	Bramble	X	X	X	X	X	Many species are edible
	Cotoneaster (Cotoneaster species)	--	X	X	--	4-8	Shrub	--	--	--	X	X	Usually glossy foliage, sun lovers
	Crab Apple (Malus species)	--	X	X	--	Up to 25	Shrub	--	--	X	X	X	--
	Current, Alpine (Ribes alpinum)	X	X	X	--	6-7	Foliage shrub	--	--	X	--	--	Leafs out early, especially good hedge plant
	*Dogwood, gray (Cornus racemosa)	X	--	--	--	6-10	Shrub	--	--	X	X	X	Best dogwood for dry sites
	*Filbert (hazelnut) (Corylus americana)	X	--	--	--	5-8	Shrub	--	X	--	X	X	Bears edible nuts

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	Forsythia (Forsythia species)	X	X	--	--	4-8	Shrub	--	--	X	--	--	Early yellow blooms
	*Grape (Vitis species)	X	--	--	X	Climbs	Vine	--	--	--	X	X	--
	Hawthorn (Crataegus species)	X	X	--	--	5-15	Shrubs	X	--	--	X	X	Many types
	Honeysuckle (shrub types) (Lonicera species)	X	X	X	--	6-12	Shrubs	--	--	X	X	X	Many shrub types, spreads by seed
	*Juniper, creeping (Juniperus species)	--	X	--	X	1-2	Shrubs	To touch	--	--	X	X	Conifer
	Juniper, Pfitzer (Juniperus chinensis pfitzeriana)	--	X	--	--	8-10	Shrub	--	Some	--	--	X	Ornamental conifer
	Lilac (Syringa species)	--	X	X	--	8-10	Shrub	--	Some	X	--	X	Many varieties, not all good for dry sites
	Maple, Amur (Acer ginnala)	--	X	X	--	15 plus	Tall shrub	--	--	--	--	X	Low-growing tree--can be pruned into hedge
	Mock Orange variety (Philadelphus species)	--	X	X	--	6-9	Shrub	--	--	X	--	--	Sweet scented flowers, several varieties
	Myrtle or periwinkle (Vinca minor)	X	X	--	X	1	Short vine	--	Forms mat	X	--	--	Excellent ground cover for sun or shade
	Ninebark, common (Physocarpus opulifolius)	X	X	X	--	6-9	Shrub	--	--	X	--	X	--
	Olive, Autumn (Elaeagnus umbrellata)	X	X	X	--	10-15	Shrub	--	--	--	X	X	Attracts birds
	Peashrub, Siberian (Caragana arborescens)	--	--	X	--	10-15	Shrub	--	--	--	X	X	--
	Pine, mugho (Pinus mugo mughus)	--	X	--	--	6-9	Shrub	--	--	--	--	X	Conifer
	*Plum, American (Prunus americana)	X	--	--	--	10-15	Shrub	Some	X	X	X	X	Hardy and spreads
	Privet, Amur (Ligustrum amurense)	X	Some	X	--	6-9	Shrub	--	--	--	X	X	Good hedge

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	Privet, Regels Border (Ligustrum obtusifolium regelianum)	X	Some	X	--	6-9	Shrub	--	--	--	X	X	--
	Red Cedar, Eastern (Juniperous virginiana)	--	--	X	--	10-20	Shrub	To touch	--	--	X	X	Shrub or small tree
	Russian Olive (Elacagnus angustifolia)	--	X	X	--	15 plus	Shrub	X	--	--	X	X	Outstanding gray foliage
	Snowberry (Symphoricarpo species)	X	X	--	X	3-4	Shrub	--	X	--	X	X	--
	Spirea, anthony waterer (Spirea bumalda)	--	X	--	--	2-3	Shrub	--	--	X	--	X	Good border plant
	Spirea, van houtte (Spirea vanhouttei)	X	X	X	--	5-6	Shrub	--	--	X	--	--	--
	*Sumac, fragrant (Rhus aromatica)	X	X	--	X	3	Shrub	--	X	--	X	X	Brilliant foliage
	*Sumac, smooth (Rhus grabra)	--	--	--	--	6-10	Shrub	--	--	--	X	X	--
	*Sumac, staghorn (Rhus typhina)	X	Some	--	--	10-15	Shrub	--	--	X	X	X	--
	*Viburnum, blackhaw (Viburnum prunifolium)	X	--	X	--	8-10	Shrub	--	--	X	X	X	--
	*Viburnum, nannyberry (Viburnum lentago)	X	--	X	--	9-12	Shrub	--	--	X	X	X	Slow growing
	*Viburnum rafinesque (Viburnum rafinesquianum)	X	--	--	--	2-4	Shrub	--	--	X	X	X	--
	*Viburnum, wayfaringtree (Viburnum lantana)	X	X	--	--	4-9	Shrub	--	--	X	X	X	One of best viburnums for dry soil
	*Virginia creeper (Partnenocissus quinquefolia)	X	Some	--	X	Climbs	Vine	--	--	--	X	X	Also creeps
	*Willows, (shrubby types) (Salix species)	--	--	--	--	2-4	Shrub	--	--	--	--	--	Native dry land willows

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
76 176 213 217 233 369 450	Arborvitae (shrub types) (Thuja species)	Some	X	X	--	3-7	Shrub	--	--	--	X	X	On poorly drained sands, noted for waxy grey berries
	Bayberry or Wax Myrtle (Myrica pensylvanica)	X	X	--	--	5-9	Shrub	--	--	--	X	X	On poorly drained sands only, noted for waxy gray berries
	*Chokeberry, black (Aronia melanocarpa)	X	--	--	X	1-3	Shrub	--	--	--	X	X	--
	*Dogwood, gray (Cornus racemosa)	X	--	--	X	6-10	Shrub	--	--	X	X	X	--
	*Dogwood, Pagoda (Cornus alternifolia)	X	--	--	--	10-15	Shrub	--	--	X	X	X	--
	*Dogwood, red osier (Cornus stolonifera)	X	Some	--	--	3-9	Shrub	--	--	X	X	X	Attractive red twigs
	*Dogwood, roundleaf (Cornus rugosa)	X	--	--	--	3-9	Shrub	--	--	X	X	X	--
	*Dogwood, silky (Cornus amonum)	X	--	X	--	6-10	Shrub	--	--	--	X	X	--
	*Elder, American (Sambucus canadensis)	--	--	--	--	3-10	Shrub	--	--	X	X	--	--
	Hawthorn (Crataegus species)	X	--	--	--	5-15	Shrub	--	--	--	X	X	Many types
	Honeysuckle (shrub types) (Lonicera species)	X	X	X	--	6-12	Shrub	--	--	X	X	X	Spreads by seed
	Ninebark, common (Physocarpus opulifolius)	X	X	X	--	6-9	Shrub	--	--	X	--	X	--
	Olive, Autumn (Elaegnus umbellata)	X	--	X	--	10-15	Shrub	--	--	--	X	X	Attractive to birds
	*Plum, American (Prunus americana)	X	--	--	--	10-15	Shrub	X	X	X	X	X	Hardy and spreads
	Russian Olive (Elaegnus angustifolia)	--	X	X	--	15 plus	Shrub	X	--	--	X	X	Outstanding gray foliage
	*Spirea, narrow leaf-meadow (Spiraea alba)	--	--	--	--	3-4	Shrub	--	--	X	--	X	Native, found on wet meadow borders

Appendix E (continued)

Soil Type	Plant Species	Shade Tolerance	Uses			Growth Form				Aesthetic Value			Remarks
			Landscape	Hedges, Screens, Windbreaks	Ground Cover	Height (feet)	Type	Thorny	Thicket former	Flower	Fruit or Berry	Fall Color	
	Spirea van houtte (Spirea vanhouttei)	X	X	X	--	5-6	Shrub	--	--	X	--	X	--
	*Viburnum, American cranberry bush (Viburnum trilobum)	X	X	X	--	7-9	Shrub	--	--	X	X	X	Versatile, slow growing
	*Viburnum, maple leaf (Viburnum acerifolium)	X	--	--	--	3-4	Shrub	--	--	X	X	X	Native, good roadside plant
	*Viburnum, nannyberry (Viburnum lentago)	X	--	X	--	9-12	Shrub	--	--	X	X	X	Slow growing
	*Viburnum, wayfaringtree (Viburnum lantana)	X	--	X	--	8-10	Shrub	--	--	X	X	X	Good winter food for birds
	*Willows (shrubby types including pussywillows) (Salix species)	--	--	X	--	2-8	Shrub	--	--	--	--	--	Pussywillow especially attractive in early spring
	*Winterberry, common (Ilex verticillata)	X	--	--	--	6-9	Shrub	--	--	--	X	X	Colorful fruit

* Natives--have good display of fall color.

X Use, growth, form, or aesthetic value that applies to a specific plant species.

Source: SEWRPC.

Appendix F

CITY OF BURLINGTON PLAN COMMISSION RESOLUTION ADOPTING THE ECHO LAKE NEIGHBORHOOD DEVELOPMENT PLAN

WHEREAS, the City of Burlington Plan Commission, pursuant to the provisions of Section 62.23 of the Wisconsin Statutes, has the function and duty of making and adopting a master plan for the physical development of the City; and

WHEREAS, the City of Burlington Plan Commission has:

1. Adopted the regional land use and transportation plans for southeastern Wisconsin, as prepared by the Southeastern Wisconsin Regional Planning Commission;

2. Prepared and adopted a zoning district map for the City of Burlington;

3. Prepared and adopted an official map ordinance for the City of Burlington; and

4. Adopted a plan for the delineation of residential neighborhoods for the City of Burlington; and

WHEREAS, the City of Burlington Plan Commission, with the assistance of the staff of the Southeastern Wisconsin Regional Planning Commission, has proceeded to prepare precise plans to guide the future development of one of the 10 delineated neighborhoods within the City, known as the Echo Lake Neighborhood, a neighborhood generally bounded by portions of the north section lines of U. S. Public Land Survey Sections 28, 29, and 30 of Township 3 North, Range 19 East of Racine County on the north; on the south by Echo Lake and the Fox River; on the east by the Fox River; and on the west by Honey Creek; and

WHEREAS, the City of Burlington Plan Commission has held a public informational meeting to acquaint residents and owners within the Echo Lake Neighborhood with the recommendations contained in the plan as described in SEWRPC Community Assistance Planning Report No. 63; and

WHEREAS, the City of Burlington Plan Commission has considered the plan, together with the statements and requests of individual landowners within the neighborhood, and has proceeded to incorporate, where deemed advisable, their requests in the plan;

NOW, THEREFORE, BE IT RESOLVED THAT:

Pursuant to Section 62.23 of the Wisconsin Statutes, the City Plan Commission on the _____ day of _____, 1982, hereby adopts the precise neighborhood unit development plan described in SEWRPC Community Assistance Planning Report No. 63 as a guide for future development of the Echo Lake Neighborhood; this plan shall be further amended to be a part of the master plan of the City of Burlington.

BE IT FURTHER RESOLVED:

That the Secretary of the Plan Commisison transmit a certified copy of this Resolution to the Common Council of the City of Burlington and the Southeastern Wisconsin Regional Planning Commission.

_____

Chairman, City of Burlington Plan Commission

ATTESTATION:

_____

Secretary, City of Burlington Plan Commission

Appendix G

A SUGGESTED COMMON COUNCIL RESOLUTION FOR ADOPTING THE ECHO LAKE NEIGHBORHOOD PLAN

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

WHEREAS, the City Plan Commission has prepared, with the assistance of the Southeastern Wisconsin Regional Planning Commission, a plan for the physical development of the Echo Lake Neighborhood, said plan embodied in SEWRPC Community Assitance Planning Report No. 63, A Development Plan for the Echo Lake Neighborhood, City of Burlington, Racine County, Wisconsin; and

WHEREAS, the City Plan Commission on the _____ of _____, 1982, adopts SEWRPC Community Assistance Planning Report No. 63 and has submitted a certified copy of that resolution to the Common Council of the City of Burlington; and

WHEREAS, the Common Council of the City of Burlington concurs with the City Plan Commission and the objectives and policies set forth in SEWRPC Community Assistance Planning Report No. 63.

NOW, THEREFORE, BE IT RESOLVED that the Common Council of the City of Burlington, on the _____ day of _____, 1982, hereby adopts the development plan of the Echo Lake Neighborhood; and

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

_____

Mayor
City of Burlington

ATTESTATION:

_____

Clerk
City of Burlington