



A LAKEFRONT RECREATIONAL USE AND WATERWAY PROTECTION PLAN FOR THE VILLAGE OF PEWAUKEE

WAUKESHA COUNTY WISCONSIN

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**MEMORANDUM REPORT
NUMBER 56**

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PROTECTION PLAN FOR THE VILLAGE OF PEWAUKEE**

WAUKESHA COUNTY, WISCONSIN

Prepared by the

**Southeastern Wisconsin Regional Planning Commission
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A LAKEFRONT RECREATIONAL USE AND WATERWAY PROTECTION PLAN FOR THE VILLAGE OF PEWAUKEE LAKE, WAUKESHA COUNTY, WISCONSIN

INTRODUCTION

Pewaukee Lake is a through-flow natural drainage lake which was impounded by a low-head dam in the early 1880s. This impoundment increased the surface area of the Lake two-fold, to about 2,450 acres. The Lake is the largest lake in Waukesha County and the second largest lake in the Southeastern Wisconsin Region. Pewaukee Lake is a valuable ecological resource offering a variety of aesthetic and recreational opportunities. The Lake is located within the civil division limits of the Village of Pewaukee and the Towns of Delafield and Pewaukee, all within Waukesha County, as shown on Map 1.

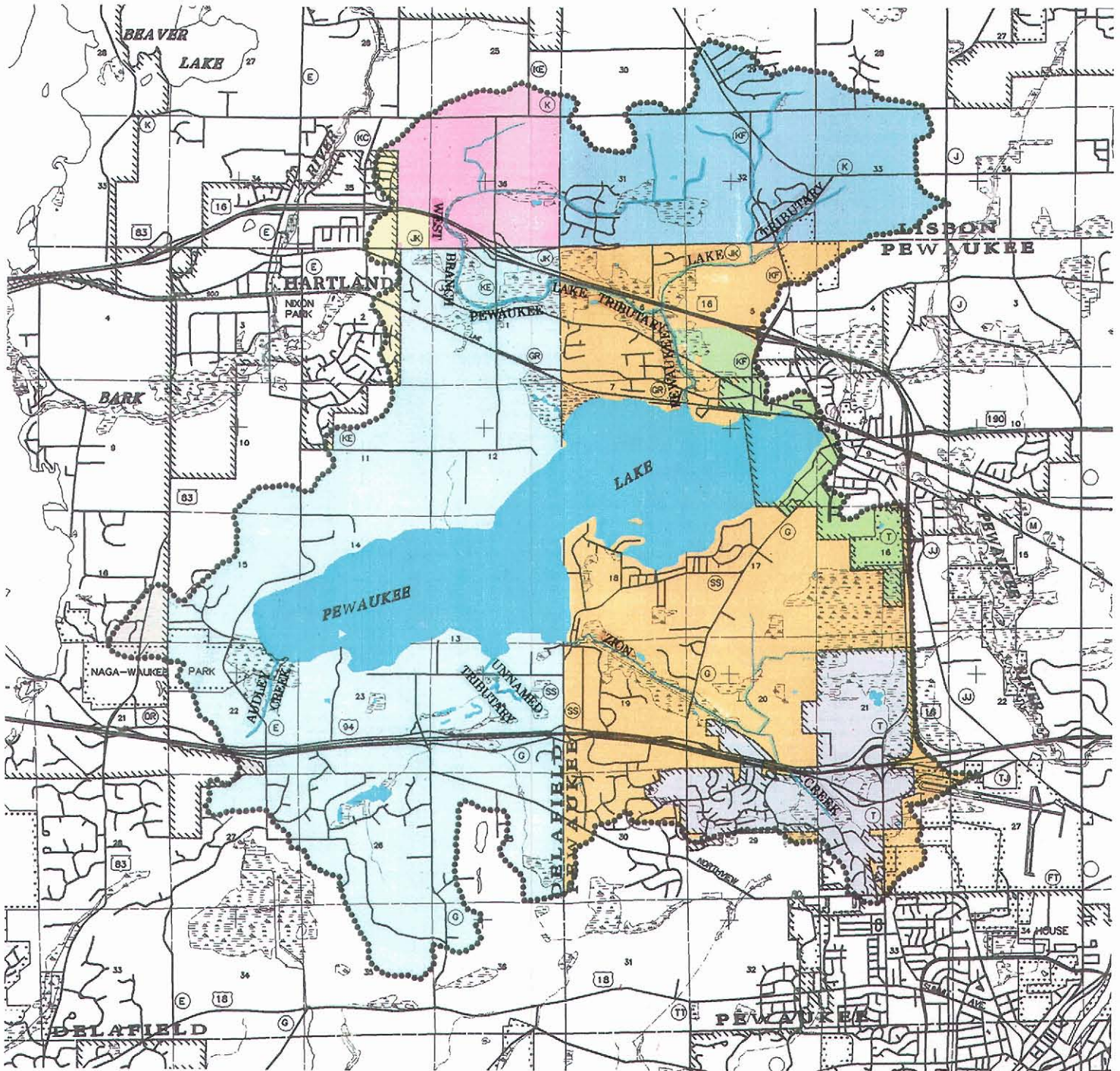
The Village of Pewaukee is located at the eastern end of the Lake. The Lake has been an important factor in the location and development of the Village. Because of its location on the Lake, the Village has been a center for lake-related recreation. The recreational value and scenic beauty of Pewaukee Lake have historically been impaired by excessive plant growth and degradation of water quality. The Lake has been subjected to recreational use pressures which have increased markedly since the mid-1900s. The increased recreational use of the Lake has been accompanied by intensification of urban land use and, particularly, urban residential uses in the Lake watershed. This urbanization of the lake watershed has been perceived as having a potentially negative impact on water quality and recreational use. This potentially negative impact is of particular concern since there has been an improvement in Lake water quality conditions resulting from the installation of a public sanitary sewer system around the Lake in 1979, as recommended in the regional water quality management plan.¹

The importance of the Pewaukee Lake area as an attractive setting for residential development within a reasonable commuting distance of major commercial and industrial centers in Southeastern Wisconsin has increased steadily since the 1920s. In addition, many summer cottages have, over the years, been converted into year-round homes. Neglected, overloaded, and failing onsite sewage disposal systems subsequently resulted in nutrient enrichment of the nearshore waters of the Lake and excessive growths of algae and aquatic plants that interfered with the recreational and scenic use of the water-body. Concern over the deterioration of the Lake prompted the formation of the Lake Pewaukee Sanitary District in 1944. As already noted, a public sanitary sewer service system was installed in 1979 to serve all of the then unserved urban development located around the Lake shoreline. Also, as already noted, the installation of sewers resulted in a marked improvement of the Lake water quality. In more recent years, the District and the Village and Towns in which the Lake shoreline lies have made concerted efforts to control and manage the effects of past neglect and restore the Lake to a full, multiple-use waterbody. Since 1991, these efforts have been marked by the active participation of the District and Village in the Wisconsin Department of Natural










¹*SEWRPC Planning Report No. 30, A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000, Volume Three, Recommended Plan, June 1979.*

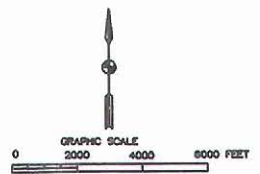
Map 1

CIVIL DIVISION BOUNDARIES IN THE PEWAUKEE LAKE WATERSHED: 1990



LEGEND

- | | | | |
|---|---------------------|---|-------------------|
|  | CITY of DELAFIELD |  | TOWN of DELAFIELD |
|  | CITY of WAUKESHA |  | TOWN of LISBON |
|  | VILLAGE of HARTLAND |  | TOWN of MERTON |
|  | VILLAGE of PEWAUKEE |  | TOWN of PEWAUKEE |
| | |  | SURFACE WATER |



Resources Self-Help and Aquatic Plant Monitoring Programs which participation provides an ongoing opportunity to initiate additional lake management actions.

This planning effort represents another step in a continuing lake management planning and implementation program being carried out for Pewaukee Lake. Previous planning and monitoring activities related to the lakefront recreational use and waterway protection have been carried out by the Wisconsin Department of Natural Resources,² the Lake Pewaukee Sanitary District,³ the Village and Town of Pewaukee and Waukesha County,⁴ and the Southeastern Wisconsin Regional Planning Commission.⁵ The current planning effort has been funded in part by a Wisconsin Department of Natural Resources Chapter NR 190 Lake Management Planning Grant awarded to the Village of Pewaukee and in part by the Village of Pewaukee.

The lakefront recreational use and waterway protection plan herein presented represents a refinement of the Pewaukee Lake management plan prepared in 1984,⁶ and represents an important element of the ongoing commitment of the Village of Pewaukee to sound environmental management of the Lake. The lakefront recreational use and waterway protection plan was prepared by the Southeastern Wisconsin Regional Planning Commission at the request of the Village, and incorporates the results of field surveys conducted by Regional Planning Commission and Wisconsin Department of Natural Resources staff during 1995. The plan report follows the format recommended by the Department for the documentation of boating access and waterway protection plans prepared pursuant to Section NR 1.91(6) of the Wisconsin Administrative Code. Its scope is limited to those management measures which can be effective in the management of recreational uses of the Lake; those measures which can be readily undertaken by the Village of Pewaukee in cooperation with the riparian residents; and those measures which directly affect the quality of Pewaukee Lake.

The objectives of the recreational use and waterway protection plan were developed in consultation with the Village of Pewaukee. Those objectives are to:

²*Wisconsin Department of Natural Resources, Pewaukee Lake, Waukesha County: Long-Term Trend Lake, 1986, 1986; Wisconsin Department of Natural Resources, Pewaukee Lake, Waukesha County: Long-Term Trend Lake, 1987, 1987; and E.R. Schumacher, Wisconsin Department of Natural Resources Fish Management Report No. 131, Creel Survey on Pewaukee and Nagawicka Lakes, Waukesha County, Summer 1982, February 1987.*

³*Lake Pewaukee Sanitary District, An Aquatic Plant Management Plan for Pewaukee Lake, Wisconsin, January 1992.*

⁴*SEWRPC Community Assistance Planning Report No. 42, A Park and Open Space Plan for the Town and Village of Pewaukee, Waukesha County, Wisconsin, October 1980.*

⁵*SEWRPC Community Assistance Planning Report No. 137, A Park and Open Space Plan for Waukesha County, Wisconsin, December 1989; and SEWRPC Community Assistance Planning Report No. 76, A Land Use Plan for the Town and Village of Pewaukee: 2000, Waukesha County, Wisconsin, December 1982.*

⁶*SEWRPC Community Assistance Planning Report No. 58, A Water Quality Management Plan for Pewaukee Lake, Waukesha County, Wisconsin, March 1984.*

1. Effectively facilitate the conduct of lakefront water-related recreation and improve the aesthetic value of Pewaukee Lake to the community; and,
2. Contribute to the overall conservation and wise use of the Lake through the environmentally sound management of water quality, vegetation, and biotic communities and habitats in and around Pewaukee Lake.

This report is comprised of six sections following the introduction: 1) a description of the Lake and its watershed; 2) a description and assessment of the current status of lake access and recreational uses and identification of related problems and needs; 3) an evaluation of alternative means of meeting the identified recreational use and related waterway protection needs; 4) a description of the recommended plan; 5) a discussion of plan implementation measures; and, 6) a summary of the findings and recommendations.

EXISTING AND PLANNED CONDITIONS IN PEWAUKEE LAKE AND ITS WATERSHED

Physical Characteristics

The physical characteristics of Pewaukee Lake are an important factor in an evaluation of current and probable future recreational uses. Accordingly, the following sections describe the most pertinent physical characteristics of the Lake and of its tributary watershed.

Watershed Characteristics: Pewaukee Lake is located to the west of the Village of Pewaukee in Waukesha County as shown on Map 1. Surface water enters the Lake through several tributary streams: Audley Creek which enters Pewaukee Lake from the southwest; an unnamed tributary which enters the Lake from the south; Zion Creek which enters the Lake from the southeast; and the unnamed Pewaukee Lake tributary which enters the Lake from the north. Water drains from Pewaukee Lake, over the low-head dam located within the Village of Pewaukee, into the Pewaukee River which flows in a southeasterly direction and ultimately discharges into the Fox River approximately 4.4 miles downstream of the Lake.

The watershed area draining to Pewaukee Lake has an area of about 23 square miles. Portions of the watershed lie in the Cities of Delafield and Waukesha, the Villages of Hartland and Pewaukee, and the Towns of Delafield, Lisbon, Merton and Pewaukee, as shown on Map 1.

Waterbody Characteristics: Pewaukee Lake has a surface area of about 2,450 acres. Significant hydrographic and geomorphological characteristics of the Lake are set forth in Table 1. The Lake is a drainage lake—having both a defined inflow and outflow—with two connected, yet distinct basins. The western basin, the original natural Lake, has a maximum depth of approximately 45 feet; while the eastern basin, originally a wetland, has a maximum depth of about 10 feet. The area of the natural Lake was augmented in 1838 when the outlet of the Lake was dammed, forming the eastern basin, and nearly doubling the surface area of the Lake. The Lake level is presently controlled artificially by the dam located at the Lake outlet. There are three islands on the Lake: one in the western basin and two in the eastern basin. A bathymetric map of the Lake is set forth as Map 2.

Lake bottom sediment types are described in the aforementioned 1984 water quality management plan. Muck is the predominant lake bottom material, covering approximately 83 percent of the total Lake basin.

Table 1

SIGNIFICANT HYDROGRAPHIC AND GEOMORPHOLOGICAL CHARACTERISTICS OF PEWAUKEE LAKE

Parameter	Measurement
Size (total)	
Surface Area (acres)	2,446
Volume (acre-feet)	37,400
Total Tributary Drainage Area (acres)	14,732
Shape	
Maximum Length of Lake (miles)	4.5
Maximum Width of Lake (miles)	1.4
Length of Shoreline (miles)	12.8
Depth	
Maximum Depth (feet)	45
Mean Depth (feet)	15

Source: SEWRPC.

Along the shoreline, however, the bottom consists primarily of sand and gravel sediment types which cover about 11 percent of the total Lake bottom. Silt and rubble cover the remaining 6 percent of the Lake bottom.

Population and Households

As indicated in Table 2, the resident population of the tributary drainage area to Pewaukee Lake has increased steadily between 1963 and 1990. The estimated 1990 resident population of the tributary drainage area, estimated at 14,500 persons, was nearly double the estimated 1963 population of 7,500 persons. Population forecasts prepared by the Regional Planning Commission, as a basis for the adopted regional land use plan,⁷ indicate, as shown in Table 2, that the population of the drainage area tributary to Pewaukee Lake may be expected to increase by about 41 percent over the 1990 level to 20,400 persons by the year 2010. As indicated in Table 2, the number of households in the tributary drainage area to Pewaukee Lake has increased steadily between 1963 and 1990. In 1990, the number of households in the tributary area was estimated to be about 5,000, or about 150 percent higher than the 1963 level of 1,960 households. In order to accommodate the increased population levels expected by the year 2010, it is estimated that the number of households in the drainage area tributary to Pewaukee Lake may be expected to increase by about 47 percent over the 1990 level to about 7,400 households.

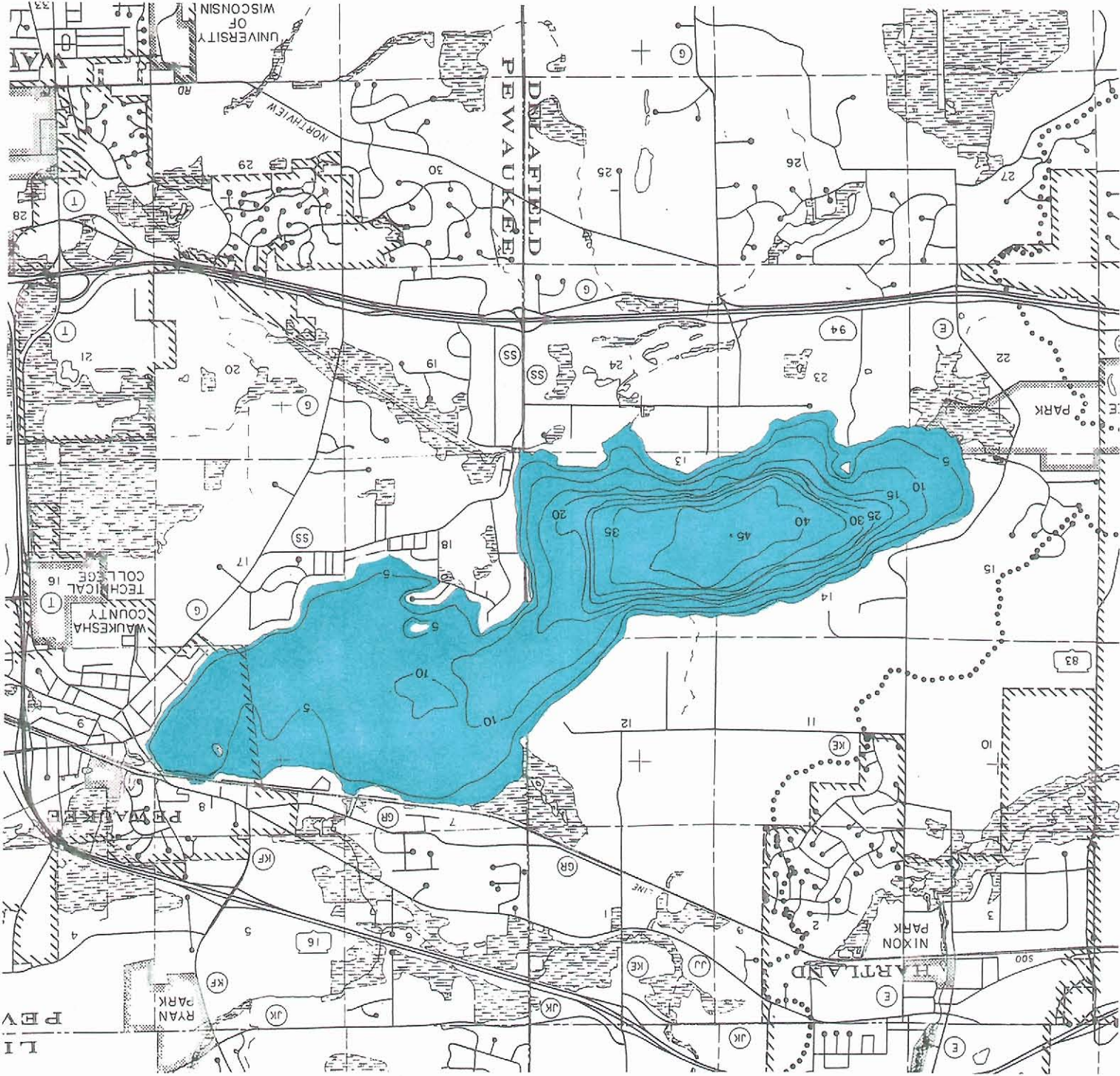
⁷SEWRPC Planning Report No. 40, A Regional Land Use Plan for Southeastern Wisconsin—2010, January 1992.

Note: Water depth contours based upon 1966 survey, documented in 1970 Lake Use Report No. Fx-2 prepared by the Wisconsin Department of Natural Resources and SEMRPC. Depth in the vicinity of the proposed Village of Pewaukee Lakefront facilities verified by SEMRPC January 1996 field survey.



LEGEND

WATER DEPTH CONTOUR IN FEET



BATHYMETRIC MAP OF PEWAUKEE LAKE

Map 2

Table 2

HISTORICAL AND FORECAST RESIDENT POPULATION AND HOUSEHOLD LEVELS OF THE PEWAUKEE LAKE TRIBUTARY DRAINAGE AREA: 1963-2010

Year	Number of Residents ^a	Number of Households
1963	7,530	1,960
1970	8,640	2,470
1980	12,800	3,960
1985	14,000	4,400
1990	14,500	4,990
2010 ^b	20,400	7,360

^aIncludes permanent residents only.

^bBased upon recommended year 2010 regional land use plan.

Source: SEWRPC.

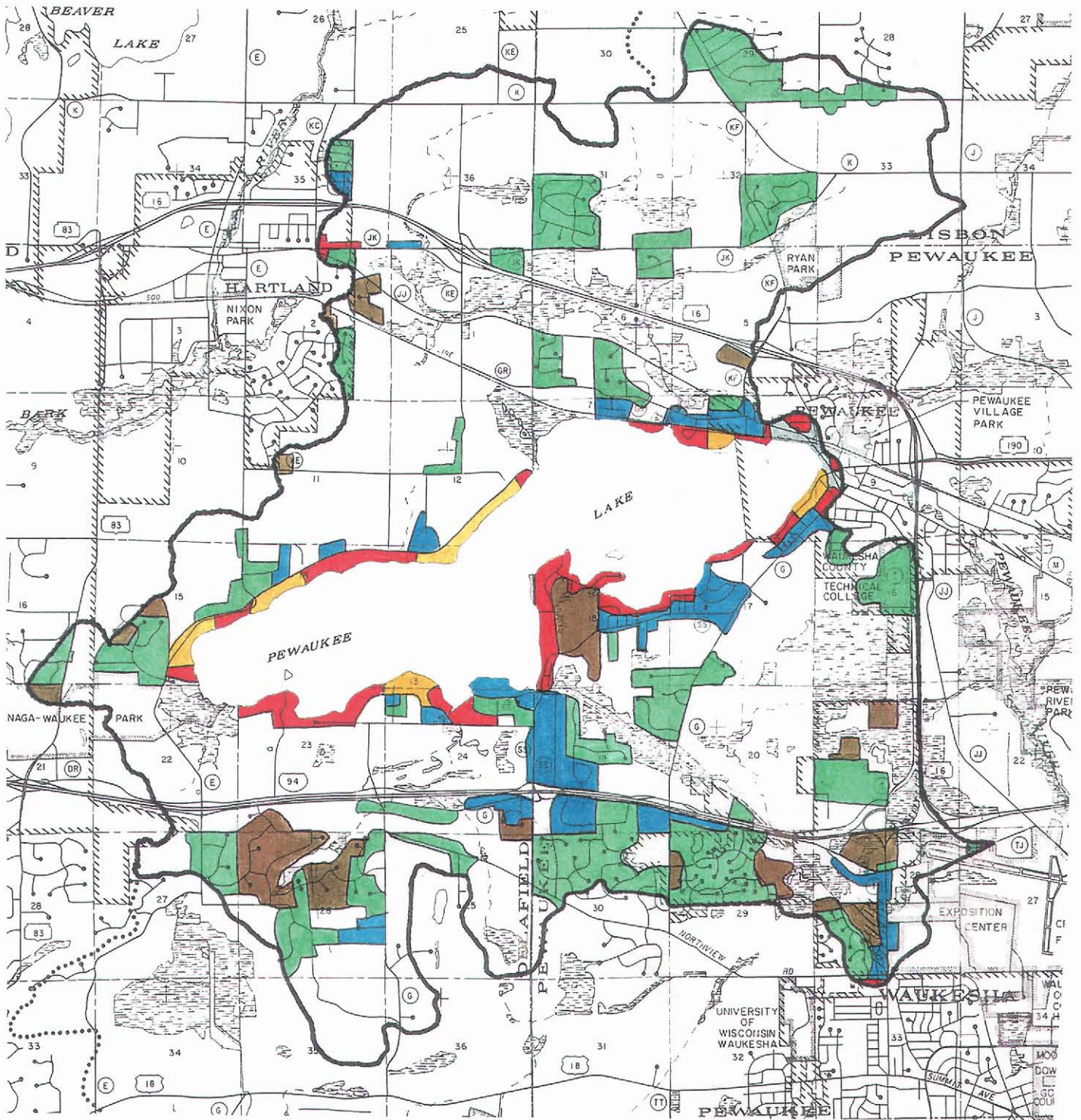
Land Use and Developmental Factors

Water pollution problems, recreational use conflicts, and the risk of damage to environmentally sensitive areas, as well as ultimate solutions to these problems, are largely a function of the human activities within the drainage area of a lake, and of the ability of the underlying natural resource base to sustain those activities. Accordingly, land uses in the direct drainage area of a lake are important considerations in any lake management planning effort.

Although the Village of Pewaukee area was settled shortly after the completion of the U.S. Public Land Surveys in the area in 1836 and the Village was incorporated in 1848, the most significant urban land use development in the drainage area tributary to Pewaukee Lake took place between 1920 and 1940, and from 1960 to 1990. The largest increases in urban land use in the tributary drainage area occurred between 1960 and 1990. Map 3 and Table 3 show the historical urban growth pattern in the total tributary drainage area of the Lake.

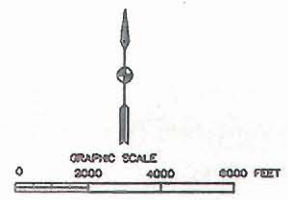
As shown on Map 4, by 1990, about 5,540 acres, or about 36 percent of the total tributary drainage area of the Lake, were in urban land uses, with residential uses being the dominant urban land use. As indicated in Table 4, residential land use encompassed 3,235 acres, or about 58 percent of the area in urban use. As of 1990, about 9,600 acres, or about 64 percent of the tributary drainage area to Pewaukee Lake study area, were still in rural land use. About 5,790 acres, or about 60 percent of the rural area, were in agricultural land uses. Woodlands and wetlands accounted for approximately 2,610 acres, or about 27 percent of the area in rural use. The shoreline of the Lake is generally fully developed, although some limited infilling and backlot development may be possible. In addition, redevelopment of properties and reconstructing of existing single-family homes may be expected to occur on lakeshore properties.

HISTORIC URBAN GROWTH IN THE PEWAUKEE LAKE WATERSHED: 1850-1990



LEGEND

- | | |
|--|---|
| 1850-1900 | 1940-1963 |
| 1900-1920 | 1963-1980 |
| 1920-1940 | 1980-1990 |



Source: SEWRPC.

Table 3

EXTENT OF HISTORIC URBAN GROWTH IN THE PEWAUKEE LAKE TRIBUTARY DRAINAGE AREA: 1850-1990

Period	Urban Development Occurring During Period (acres) ^a	Extent of Urban Development (acres) ^a
Up to 1900	34	34
1901 to 1920	166	224
1921 to 1940	399	589
1941 to 1963	533	1,748
1964 to 1980	1,346	3,759
1981 to 1990	2,799	5,267

^aUrban development, as defined for the purposes of this discussion, includes those areas within which houses or other buildings have been constructed in relatively compact groups, thereby indicating a concentration of urban land uses. Scattered residential developments were not considered in this analysis.

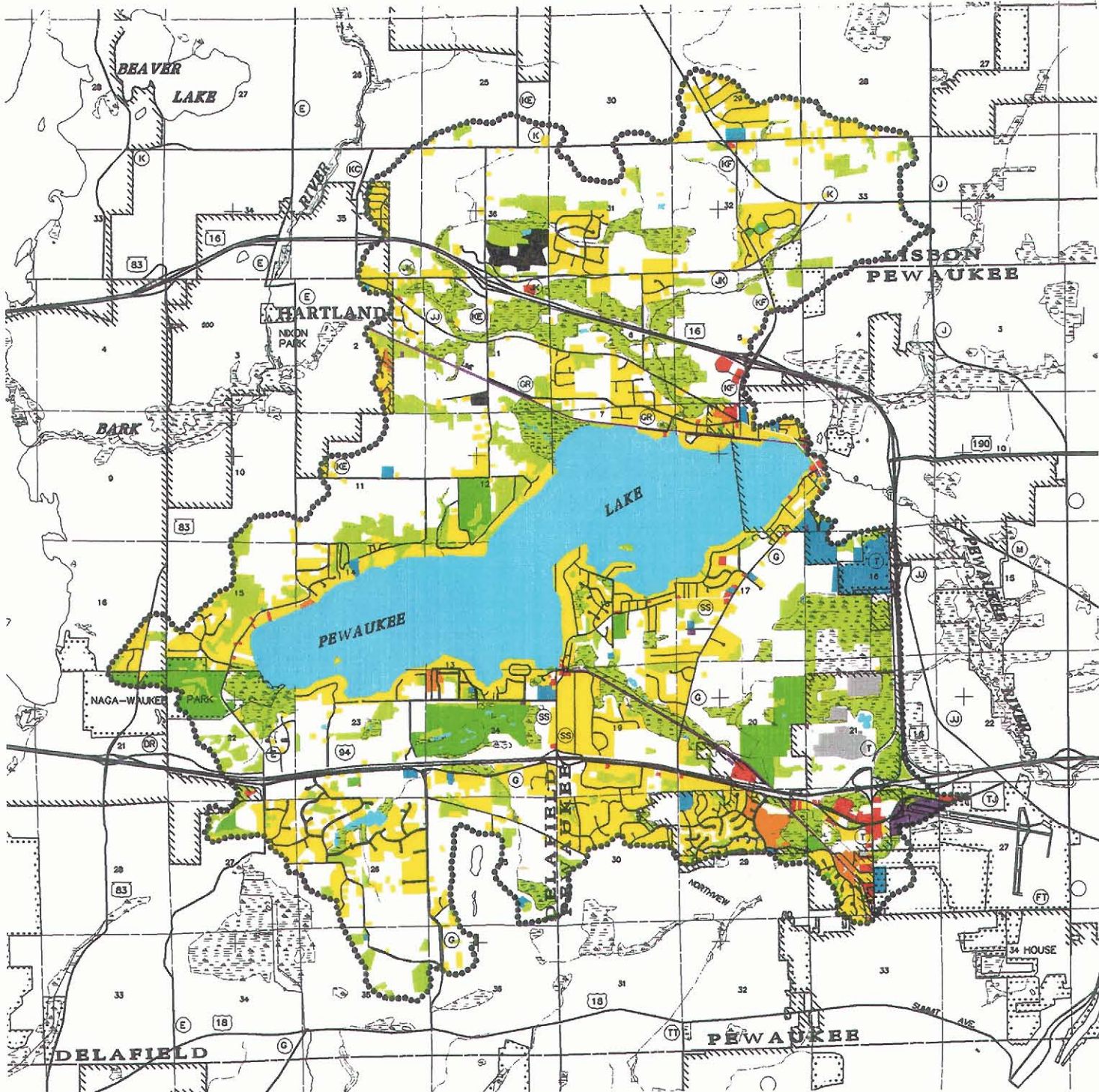
Source: SEWRPC.

As indicated in Table 3, urban development in the Pewaukee Lake tributary drainage area has more than doubled since 1980. The location of Pewaukee Lake within the greater Milwaukee metropolitan area, may be expected to contribute to a continued demand for further urban development, and particularly residential development, in the vicinity of the Lake. As shown in Table 4, urban development is envisioned to increase by about 1,050 acres, or by about 19 percent, in the tributary drainage area of the Lake from 1990 to the year 2010 in the adopted regional land use plan. This development may be expected to occur primarily in areas presently in agricultural and other open uses away from the lakeshore. While this development may not be riparian, the attendant population growth will increase the demand for lake access and open space areas placing additional pressures on the ability of Pewaukee Lake to satisfy the need for water-based recreation. The increased population, households, and urban development in the Lake watershed, and the attendant increased use of the Lake, may be expected to result in major changes in the character of the Village of Pewaukee. The need to provide for adequate lake-oriented recreational facilities within the Village should be considered. To obviate unrealistic public expectations concerning the nature and extent of water-based recreational opportunities at Pewaukee Lake, development of clearly articulated community development objectives for the lakefront in the Village of Pewaukee is desirable.

Water Quality

Pewaukee Lake has been subjected to relatively intensive water quality investigations. The results of these investigations conducted prior to 1984 are reported in the previously referenced 1984 water quality management plan. In 1986, Pewaukee Lake was selected as a long-term trend monitoring lake by the Wisconsin Department of Natural Resources, and the Lake has been subjected to ongoing seasonal water quality monitoring by the Department since that time. The data collected in 1986 and 1987 are reported

LAND USE IN THE PEWAUKEE LAKE WATERSHED: 1990



LEGEND

- | | |
|--|--|
| SINGLE-FAMILY RESIDENTIAL | GOVERNMENT and INSTITUTIONAL |
| MULTI-FAMILY RESIDENTIAL | RECREATION |
| COMMERCIAL | SURFACE WATER |
| INDUSTRIAL | WETLANDS and WOODLANDS |
| TRANSPORTATION, COMMUNICATIONS
and UTILITIES | AGRICULTURAL, UNUSED and
OTHER OPEN LANDS |
| EXTRACTIVE and LANDFILL | |

Source: SEWRPC.

Table 4

**EXISTING AND PLANNED LAND USE WITHIN THE TRIBUTARY
DRAINAGE AREA TO PEWAUKEE LAKE: 1990 AND 2010**

Land Use Category	Existing 1990		Planned Increment		Total 2010	
	Acres ^a	Percent of Total	Acres	Percent Change	Acres ^a	Percent of Total
Urban						
Residential	3,235	21.3	712	22	3,947	26.0
Commercial	112	0.7	49	44	161	1.0
Industrial	91	0.6	40	44	131	0.8
Governmental and Institutional	189	1.2	19	10	208	1.4
Transportation, Communication, and Utilities	1,320	8.7	197	15	1,517	10.0
Recreational	496	3.3	81	16	577	3.8
Unused Urban	97	0.6	-44	45	53	0.3
Subtotal	5,540	36.4	1,054	19	6,594	43.5
Rural						
Woodlands	1,103	7.3	-34	3	1,069	7.1
Wetlands	1,509	10.0	20	1	1,529	10.1
Surface Water	8	<0.1	--	--	8	<0.1
Agricultural and Other Open Lands	5,789	38.2	-429	7	5,360	35.4
Other Open Land	1,206	8.0	-611	51	595	3.4
Subtotal	9,615	63.6	-1,054	11	8,561	56.5
Total^a	15,155	100.0	--	--	15,155	100.0

^aAreal extent of land uses within the drainage area is approximated by summing the land uses within the U.S. Public Land Survey quarter-sections approximating the drainage area boundary.

Source: SEWRPC.

in Department reports;⁸ data collected since 1987 are contained in the U.S. Environmental Protection Agency data base and were reviewed for use in this study. The data are summarized in Table 5 and Figure 1. Applying the Secchi disk transparencies, the chlorophyll-*a* concentrations, and the total phosphorus data given in Table 5 to the Vollenweider-OECD open boundary trophic classification system⁹ results in

⁸Wisconsin Department of Natural Resources, *Pewaukee Lake, Waukesha County: Long-Term Trend Lake, 1986, 1986*; and Wisconsin Department of Natural Resources, *Pewaukee Lake, Waukesha County: Long-Term Trend Lake, 1987, 1987*.

⁹Organization for Economic Cooperation and Development (OECD), *Eutrophication of Waters: Monitoring, Assessment and Control*, Paris, 1982; S.O. Ryding and W. Rast, *The Control of Eutrophication in Lakes and Reservoirs*, UNESCO/MAB Series 1, Parthenon Press, 1989; and H. Olem and G. Flock, *The Lake and Reservoir Restoration Guidance Manual*, 2nd Edition, USEPA Report EPA-440/4-90-006, Office of Water (WH-553), Washington, D.C., August 1990.

Table 5

SEASONAL WATER QUALITY CONDITIONS IN PEWAUKEE LAKE: 1986 THROUGH 1994

Chemical Parameter ^a	Winter (mid-December to mid-March)		Spring (mid-April to mid-June)		Summer (mid-June to mid-September)	
	Shallow ^b	Deep ^c	Shallow ^b	Deep ^c	Shallow ^b	Deep ^c
Temperature (°F)						
Range	32.9-39.6	37.2-40.8	37.2-66.9	37.4-57.7	58.3-79.7	44.6-67.8
Mean ^d	34.8 (7)	38.7 (7)	50.8 (10)	46.4 (9)	71.3 (23)	55.6 (23)
Dissolved Oxygen						
Range	10.4-17.6	0-7.0	0.1-14.5	0.1-14.3	.1-15.7	0-8.2
Mean ^d	13.3 (6)	3.1 (6)	10.8 (10)	9.6 (9)	8.9 (24)	1 (23)
Conductivity (μ S/cm)						
Range	319-385	345-370	380-618	372-626	342-650	420-695
Mean ^d	359 (5)	413 (6)	488 (8)	489 (8)	511 (23)	577 (22)
pH (standard units)						
Range	7.6-8.3	7.6-8.2	7.2-11.5	7.2-10.8	7.4-8.8	7.2-8.6
Mean ^d	7.9 (7)	7.8 (7)	8.4 (7)	8.3 (9)	8.4 (24)	7.8 (23)
Secchi Disk (feet)						
Range	1.5-10.6	--	6.6-21.0	--	3.6-12.5	--
Mean ^d	6.3 (6)		10 (9)		7.0 (24)	
Chlorophyll-a (μ g/l)						
Range	2-16	--	3-26	--	5-11	--
Mean	6 (4)		11 (10)		9 (24)	
Total Phosphorus						
Range010-.030	.011-.075	.006-.077	.014-.040	.014-.03	.016-.360
Mean ^d021 (7)	.038 (7)	.025 (10)	.023 (9)	.022 (25)	.15 (23)

NOTE: Number in parentheses represents number of samples.

^aMilligrams per liter unless otherwise indicated.

^bDepth of sample approximately three feet.

^cDepth of sample approximately 45 feet.

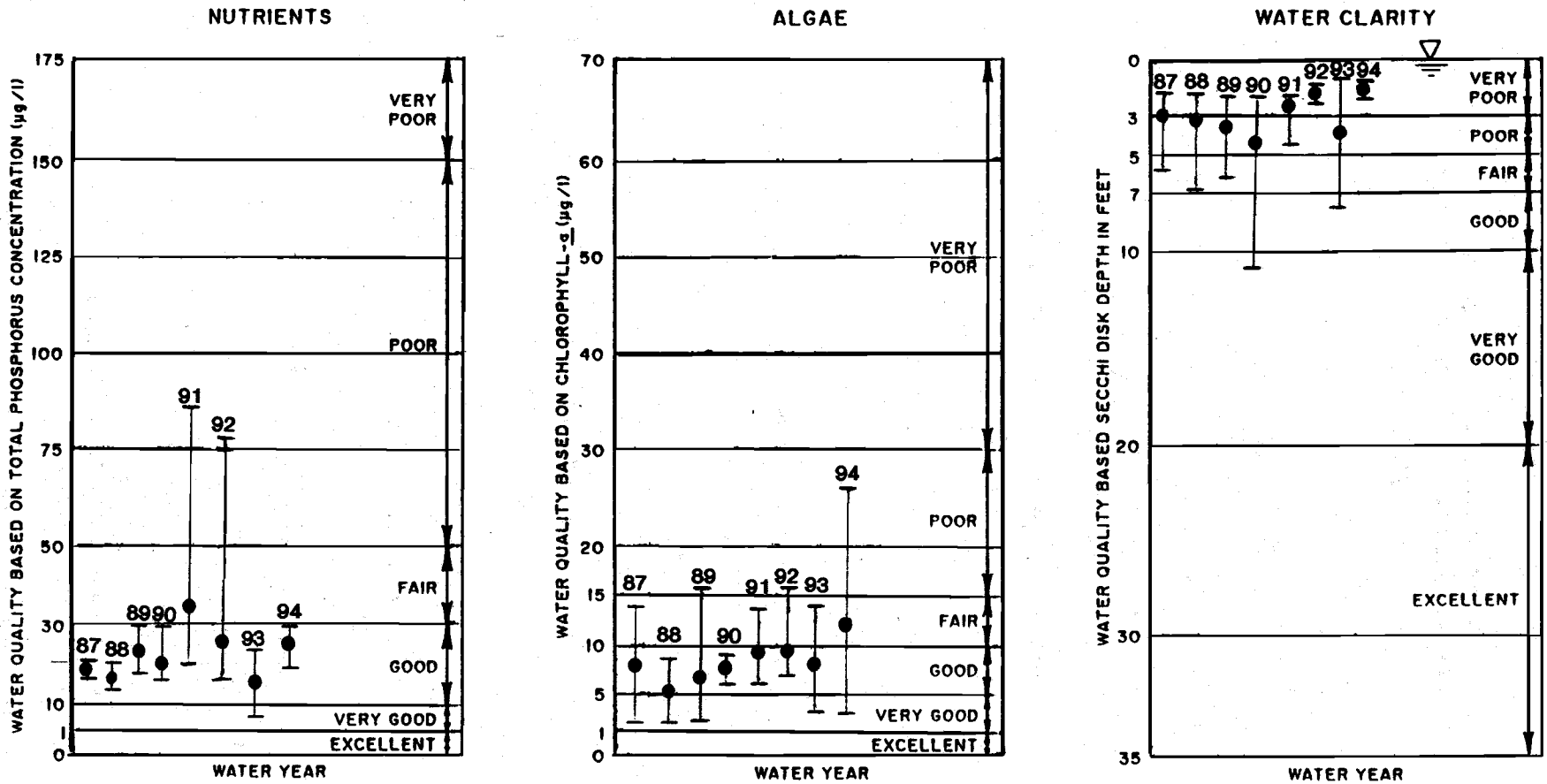
^dNumber of samples in parentheses.

Source: U. S. Geological Survey and SEWRPC.

a set of trophic boundary descriptors which are set forth in Figure 2. Based upon the total phosphorus concentration, the Lake has a 63 percent probability of being mesotrophic; 20 percent probability of being oligotrophic; and a 20 percent probability of being eutrophic. Based upon the chlorophyll-a concentration, the Lake has a 10 percent probability of being hypertrophic; a 58 percent probability of being eutrophic;

Figure 1

PEWAUKEE LAKE PRIMARY WATER QUALITY INDICATORS: 1988-1994



LEGEND



RANGE



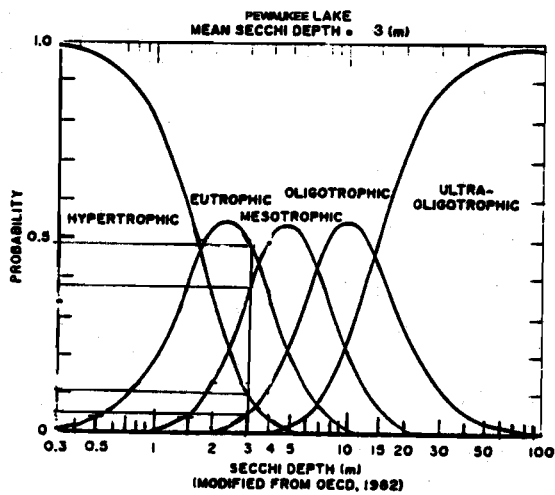
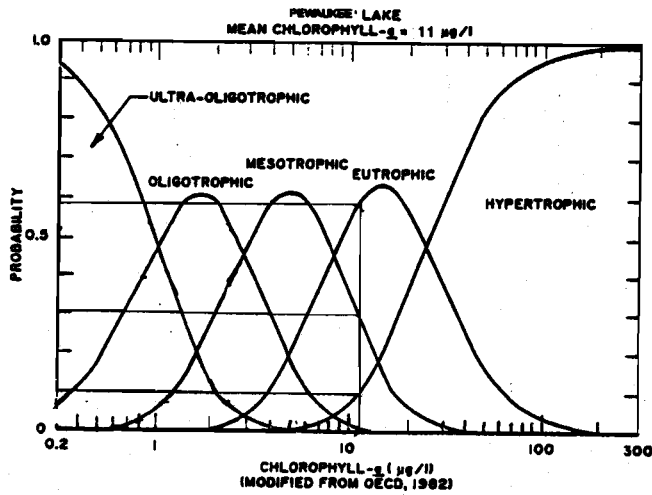
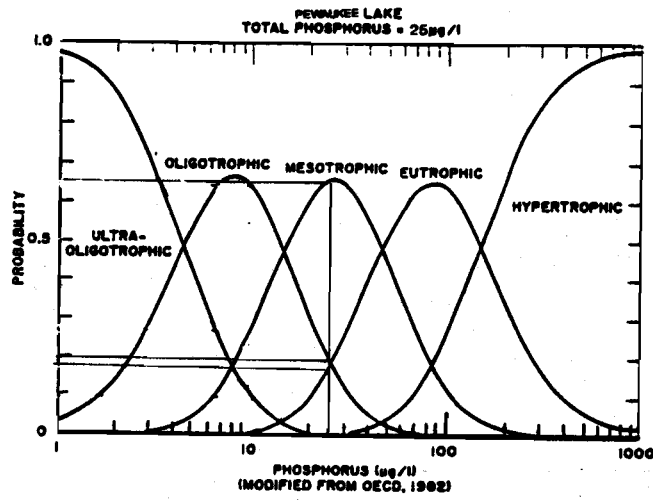
AVERAGE

1988

WATER YEAR

Figure 2

TROPHIC STATE CLASSIFICATION OF PEWAUKEE LAKE BASED ON THE VOLLENWEIDER MODEL



Source: S. Ryding and W. Rast, *The Control of Eutrophication of Lakes and Reservoirs*, Vol. 1, 1989, and SEWRPC.

and a 32 percent probability of being mesotrophic. Based upon the Secchi disk transparencies, the Lake has a 48 percent probability of being eutrophic; a 10 percent probability of being hypertrophic; a 37 percent probability of being mesotrophic; and a 5 percent probability of being oligotrophic. Based upon this set of data and analyses, it may be concluded that the Lake is in the eutrophic category, but closer to the mesotrophic range than to the hypertrophic range. This is consistent with the water quality rating of fair to good based on relationships developed by Lillie and Mason for natural lakes in the State of Wisconsin¹⁰ and is supported by the Wisconsin Trophic State Index value of about 53, indicative of a borderline eutrophic lake.

No clear trends were observed in the water quality data for Pewaukee Lake. The data do indicate the Lake water quality conditions are generally exceeding the phosphorus level associated with the full-recreation water-use objective as identified in the aforementioned regional water quality management plan and the 1984 Pewaukee Lake water quality management plan. However, in comparison to the phosphorus levels found in the years 1973 through 1975¹¹ the phosphorus levels have significantly decreased as is shown in Figure 3. This decrease in phosphorus levels may be attributed in large part to the installation of a public sanitary sewer system in 1979 to serve the urban development around the Lake. The improvement in water quality may also be attributed in part to the continued removal of phosphorus from the Lake through the ongoing aquatic plant management harvesting program carried out by the Lake Pewaukee Sanitary District. Notwithstanding, continued interventions such as aquatic plant management will be required to facilitate the intended recreational uses. The available data all indicate that the standards associated with the maintenance of a healthy warmwater sport fishery are generally met.

Environmentally Valuable Areas and Habitat Factors

Pewaukee Lake and its surrounding wetlands and other adjacent environmentally sensitive areas form an important part of the primary environmental corridor system in Southeastern Wisconsin. The inflake and adjacent environmentally sensitive areas can be impacted by recreational uses on the Lake and by urban development surrounding the Lake. The aquatic plant communities, wildlife habitat, fishery, and environmentally sensitive areas of the Lake and its watershed are important considerations in recreational use planning.

Aquatic Plant Communities: Several surveys of aquatic plant communities in Pewaukee Lake have been conducted, the most comprehensive being a 1992 survey conducted by the Lake Pewaukee Sanitary District.¹² A species list, compiled from the results of this aquatic plant survey, is set forth in Table 6. This survey identified 20 species of plants, a number of which were common to abundant. Species that interfere with the recreational and aesthetic use of the Lake, such as Myriophyllum spicatum, Potamogeton

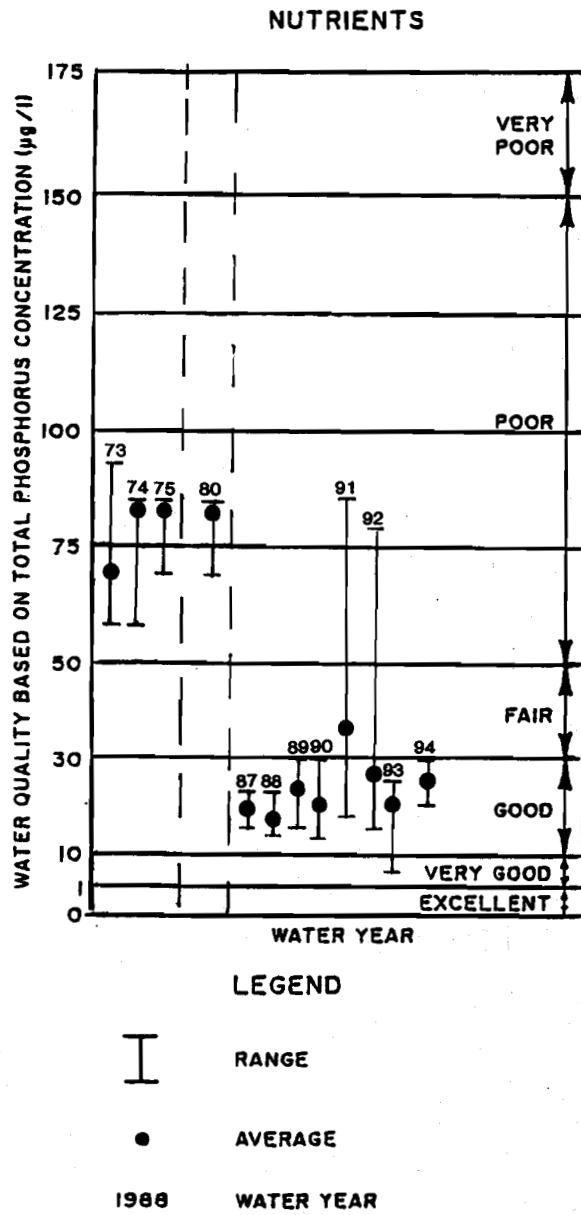
¹⁰R.A. Lillie and J.W. Mason, *Wisconsin Department of Natural Resources Technical Bulletin No. 138, Limnological Characteristics of Wisconsin Lakes, 1983.*

¹¹SEWRPC Community Assistance Planning Report No. 58, A Water Quality Management Plan for Pewaukee Lake, March 1984.

¹²Lake Pewaukee Sanitary District, An Aquatic Plant Management Plan for Pewaukee Lake, Wisconsin, January 1992.

Figure 3

PEWAUKEE LAKE WATER QUALITY BASED ON TOTAL PHOSPHORUS CONCENTRATION



Source: U. S. Geological Survey and SEWRPC.

Table 6

**AQUATIC PLANT SPECIES
PRESENT IN PEWAUKEE LAKE: 1992**

Emergent Plants <u>Typha</u> sp. (cattail)
Floating-Leaved Plants <u>Nuphar variegatum</u> (yellow water lily) <u>Nymphaea tuberosa</u> (white water lily)
Submerged Plants <u>Ceratophyllum demersum</u> (coontail) <u>Chara</u> sp. (stonewort) <u>Elodea canadensis</u> (waterweed) <u>Heteranthera dubia</u> (water stargrass) <u>Lemna minor</u> (duckweed) <u>Myriophyllum spicatum</u> (Eurasian water milfoil) <u>Najas flexilis</u> (Bushy pondweed) <u>Potamogeton</u> spp. (pondweed) <u>P. amplifolius</u> (large-leaf pondweed) <u>P. crispus</u> (curly-leaf pondweed) <u>P. natans</u> (floating-leaf pondweed) <u>P. pectinatus</u> (Sago pondweed) <u>P. richardsonii</u> (clasping leaf pondweed) <u>P. zosteriformis</u> (flat-stemmed pondweed) <u>Ranunculus</u> sp. (water buttercup) <u>Utricularia</u> sp. (bladderwort) <u>Vallisneria americana</u> (wild celery)

Source: Lake Pewaukee Sanitary District and SEWRPC.

pectinatus, and Ceratophyllum demersum, were found in the Lake. The Eurasian water milfoil, Myriophyllum spicatum, was the most widespread and abundant aquatic plant in Pewaukee Lake, occurring throughout the Lake and at all depths sampled to the maximum depth of colonization of 12.5 feet.

Plant growth can occur in water depths of up to about 20 feet, but is generally concentrated in those areas with a water depth of less than 10 to 15 feet.¹³ In the case of Pewaukee Lake, such depths substantially exceed the maximum depth of the east basin of the Lake; while, in the west basin, such depths occur over about 40 percent of the waterbody. The 1992 study found Myriophyllum spicatum was the dominant species found in Pewaukee Lake, occurring throughout the Lake basin to the 12-foot-depth contour. Potamogeton pectinatus was found to be more common in deeper water—about 12 feet in depth—while Ceratophyllum demersum was found to occur at intermediate depths—about 7.5 feet in depth. Najas flexilis and Chara vulgaris were found to be most common in shallow waters of less than five feet in depth.

Some of these aquatic plant species can rapidly colonize disturbed areas of lake bottom, and, while they may be expected to be found in shallow lakes, have the potential to markedly increase in biomass in artificially disturbed waters.¹⁴ In addition, the introduction of these species often follows human intrusion into previously undisturbed aquatic ecosystems. For example, the failure to remove plant materials from boats, trailers and outboard engines is a principle means of unintentional introductions of invasive species, especially the Eurasian water milfoil.¹⁵

Aquatic plant management in Pewaukee Lake is currently carried out by the Pewaukee Lake Management District using mechanical harvesting. Two aquatic plant harvesters and transporters are employed in this

¹³H. Olem and G. Flock, The Lake and Reservoir Restoration Guidance Manual, 2nd Edition, USEPA Report EPA-440/4-90-006, Office of Water (WH-553), Washington, D.C., August 1990.

¹⁴*Ibid.*

¹⁵Wisconsin Department of Natural Resources, Eurasian Water Milfoil in Wisconsin: A Report to the Legislature, July 1993.

process. Plants are harvested from the pierheads to a distance of about 250 feet offshore during the period from about May 10 through September 30, annually. In addition, the District utilizes a near shore cleanup crew to manually pick up floating and beached aquatic plants. Harvesting is carried out along about two-thirds of the northern shoreline, and about one-half of the southern shoreline. Along the shoreline within the Village of Pewaukee, harvesting is carried out by the Village of Pewaukee Department of Public Works which currently operates two weed harvesters, accompanied by a shore conveyer. Plants are harvested from Memorial Day to Labor Day from the lakeshore to a distance of about 200 feet out, extending on the southern shore the length of Park Avenue to the beach, and on the northern shore the length of Kopmeier Drive to the beach. Additional channels are harvested to the main basin of the Lake for navigational purposes. Three in-lake environmentally sensitive areas, where harvesting is not permitted, have been defined by the Wisconsin Department of Natural Resources and are shown on Map 5. A fourth area, where revegetation studies are being undertaken, was defined by the Lake Pewaukee Sanitary District, and is also shown on Map 5.

Fishery: Pewaukee Lake is well-known for its sportfishing. The Wisconsin Department of Natural Resources Publication No. FM-800-91, Wisconsin Lakes, 1991, indicates that muskellunge, large-mouth bass, northern pike and panfish are common and some walleyed pike are present. Because of the abundant muskellunge habitat present in the Lake, muskellunge fingerlings have been stocked annually since 1967. Walleyed pike are also stocked every other year.¹⁶

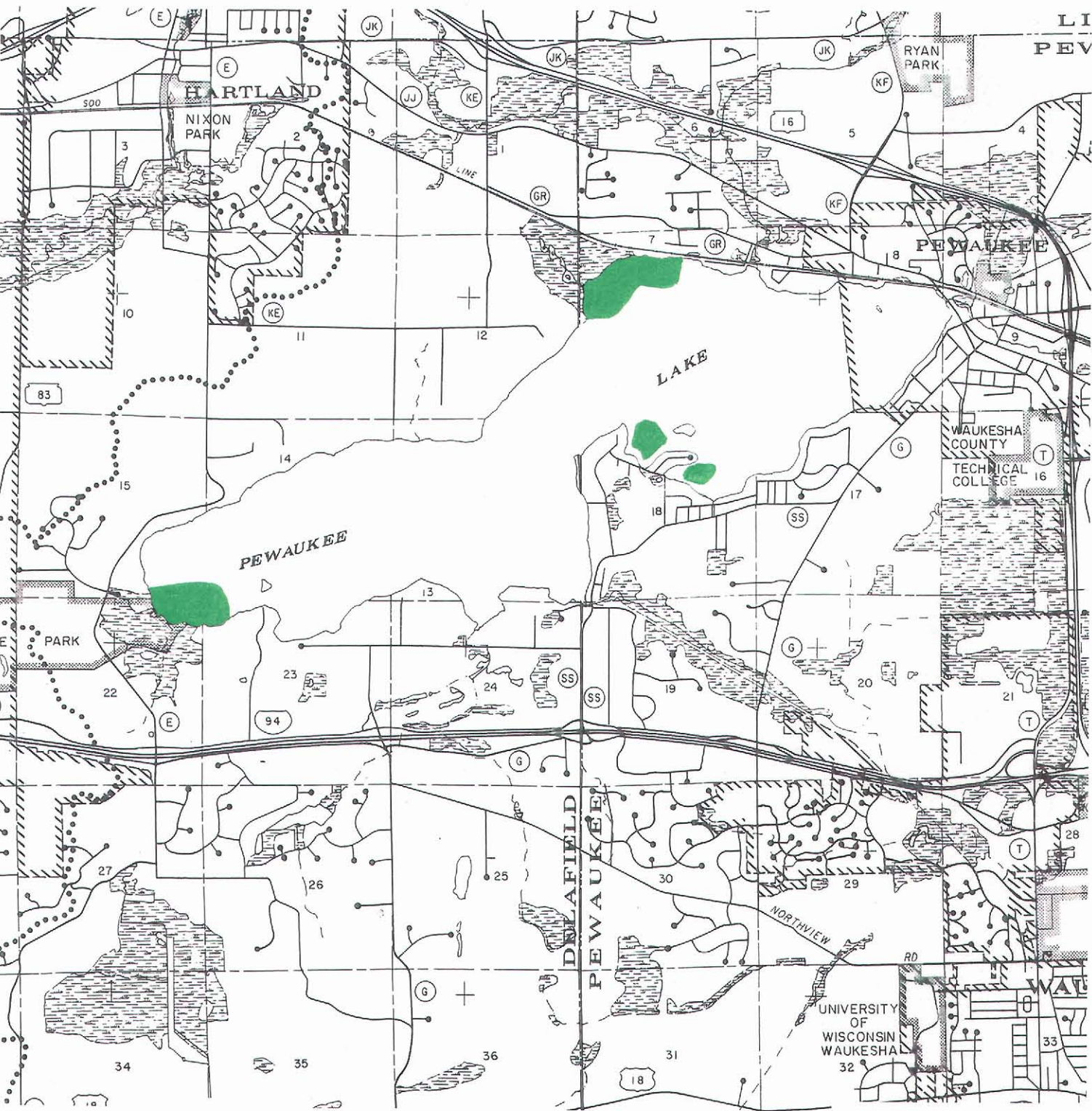
Wildlife Habitat: Given the urban nature of much of the shorelands of the Lake only smaller urban tolerant mammals are generally present. A somewhat more diverse animal community and greater number of waterfowl make use of the extensive outlying wetland and other habitat areas located throughout the tributary drainage area of Pewaukee Lake ranging from larger mammals, such as the white-tailed deer, to smaller furbearing mammals. As shown on Map 6, there is significant wildlife habitat in the tributary drainage area to Pewaukee Lake. Valuable wildlife areas, which consist primarily of woodlands and wetlands in the Pewaukee Lake tributary drainage area, cover approximately 4,100 acres, or about 28 percent of the drainage area. None of the identified valuable habitat areas are located along the shoreline in the Village of Pewaukee. In addition to these high-value wildlife areas, many wildlife species, particularly small game mammals, depend upon the presence of open agricultural land. In addition to wetland preservation and forest and woodlot management, the proper use of agricultural and other open lands is an important component of wildlife habitat management. Current land management practices that adversely affect wildlife include the excessive use of fertilizers and pesticides, road salting, heavy traffic which produces disruptive noises and damaging air pollution, the introduction of domestic animals, and the fragmentation and isolation of remaining habitat areas for urban and agricultural uses. It is therefore important to protect and preserve all of the remaining wildlife habitat in the planning area.

Wetlands: Wetlands form an important part of the landscape in and adjacent to Pewaukee Lake, important in that they perform an important set of natural functions that make them invaluable ecological and environmental resources. Wetlands contribute to clean water by reducing pollutant loadings in surface waters passing through the wetlands. In addition, wetlands reduce stormwater runoff and flooding and

¹⁶*E.R. Schumacher, Wisconsin Department of Natural Resources Fish Management Report No. 131, Creel Survey on Pewaukee and Nagawicka Lakes, Waukesha County, Summer 1982, February 1987.*

Map 5

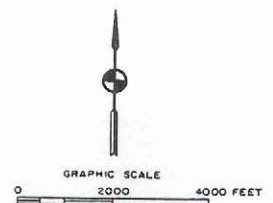
PEWAUKEE LAKE ENVIRONMENTALLY SENSITIVE AREAS: 1995



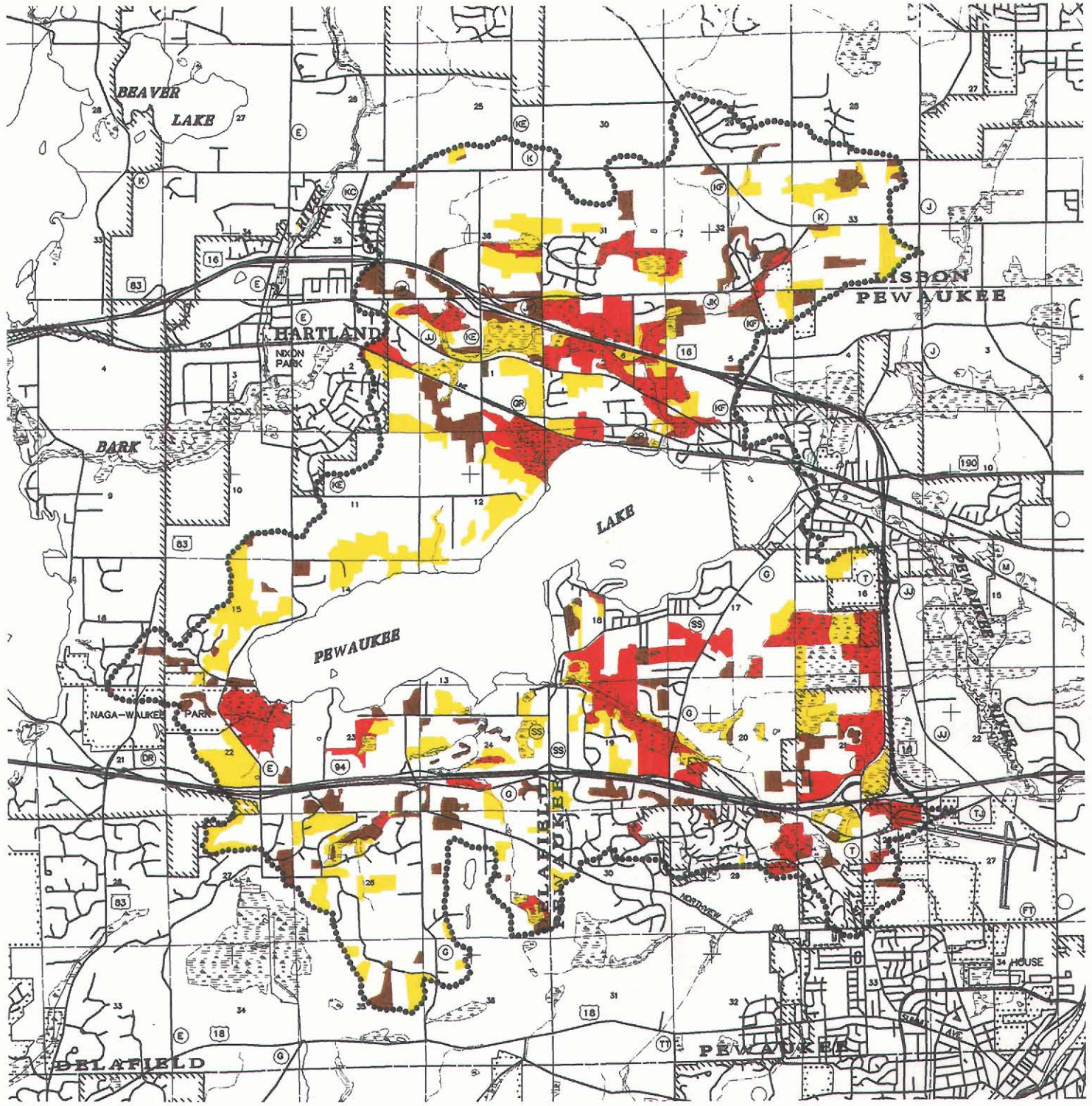
LEGEND

 ENVIRONMENTALLY SENSITIVE AREA

Source: Wisconsin Department of Natural Resources and SEWRPC.

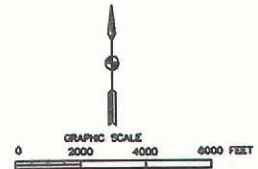


WILDLIFE HABITAT AREAS WITHIN THE PEWAUKEE LAKE WATERSHED: 1990



LEGEND

- CLASS I, high value habitat
- CLASS II, medium value habitat
- CLASS III, good value habitat



Source: SEWRPC.

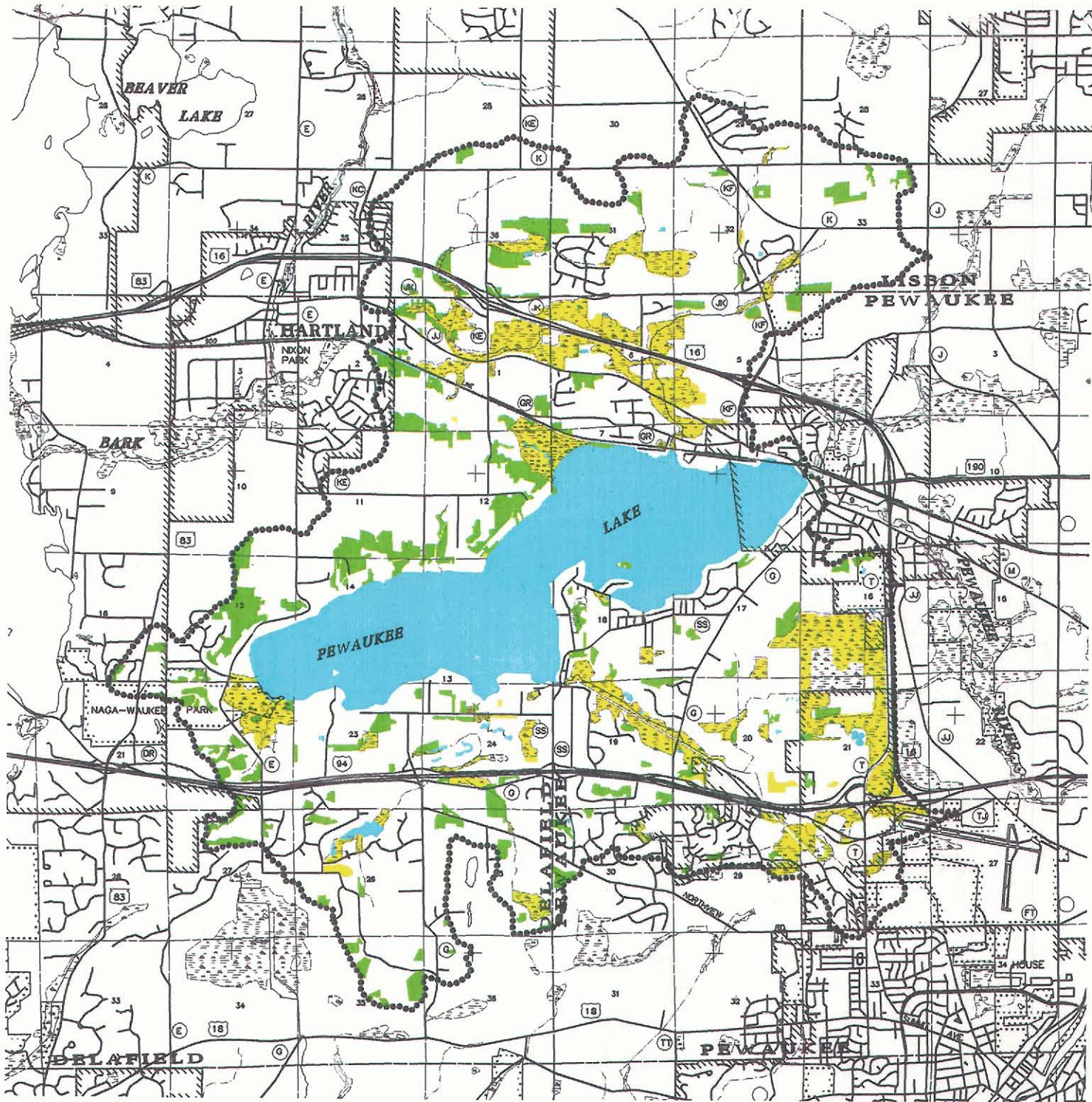
generally increase dry weather stream flow, promote groundwater recharge, as well as contribute to the maintenance of a diversity of plant and animal life in association with human life and can thereby provide important recreational and educational opportunities. The wetlands within the Pewaukee Lake tributary drainage area are shown on Map 7. In 1990, wetland areas covered about 1,510 acres, or about 10 percent of the Pewaukee Lake drainage area. There are no major wetland areas located in the vicinity of the Village of Pewaukee lakefront, as shown on Map 7. However, there are some small wetland areas located to the east of the lakeshore in the Village which should be protected while developing parking, recreational trail, and other facilities within the Village. The Lake Pewaukee Sanitary District has an ongoing program for acquiring and preserving wetlands deemed important to the protection of Pewaukee Lake.

Woodlands: Woodlands have both economic and ecologic value, and under good management practices, can serve a variety of uses. Located primarily on ridges and slopes and along streams and lakeshores, woodlands provide an attractive natural resource of immeasurable value. In addition to contributing to clean air and water, reducing stormwater runoff and flooding, and promoting groundwater recharge, woodlands contribute to the maintenance of a diversity of plant and animal life in association with human life and can thereby provide important recreational and educational opportunities. As shown on Map 7, in 1990, woodland areas covered about 1,100 acres, or about 7 percent of the tributary drainage area to Pewaukee Lake. None of these identified woodlands are located along the Village of Pewaukee lakefront.

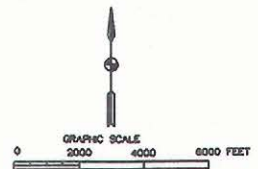
Environmental Corridors: One of the most important tasks undertaken by the Regional Planning Commission in its work program was the identification and delineation of those areas of the Region having concentrations of natural, recreational, historic, aesthetic, and scenic resources which should be preserved and protected in order to maintain the overall quality of the environment. These areas have been termed environmental corridors by the Regional Planning Commission. Such areas generally include one or more of the following elements of the natural resource base essential for maintaining both the ecological balance and natural beauty of the region: 1) soils and topography; 2) water resources, including watershed boundaries, rivers, streams, lakes and associated floodlands, and wetlands; 3) woodlands; 4) prairies; and 5) wildlife habitat areas. Elements that are closely related to the natural resource base include park and open space sites and scientific and natural areas. These environmental corridor areas have been categorized into "primary environmental corridors" and "secondary environmental corridors" based upon a system of point values assigned to each natural resource-related element, and with regard to length, width, and areal extent.

The primary environmental corridors remaining within the Pewaukee Lake tributary drainage area in 1990 are shown on Map 8. These corridors generally lie along major stream valleys, and around the Lake itself. As shown on Map 8, about 3.6 square miles, or about 16 percent of the total tributary drainage area, were identified as primary environmental corridor. The lakeshore in the Village of Pewaukee is included in the primary environmental corridor lands. Almost all of the remaining high-value woodlands, wetlands, and wildlife habitat areas and undeveloped floodlands and shorelands within the area tributary to Pewaukee Lake are contained in the primary corridors. Unplanned or poorly planned intrusion of urban development into these corridors not only tends to destroy the very resources and related amenities sought by the development, but tends to create severe environmental and development problems as well. These problems include, among others, water pollution, flooding, wet basements, failing foundations for roads and other structures, and excessive infiltration of clear water into sanitary sewerage systems. The preservation of

EXISTING WOODLANDS AND WETLANDS IN THE PEWAUKEE LAKE WATERSHED: 1990

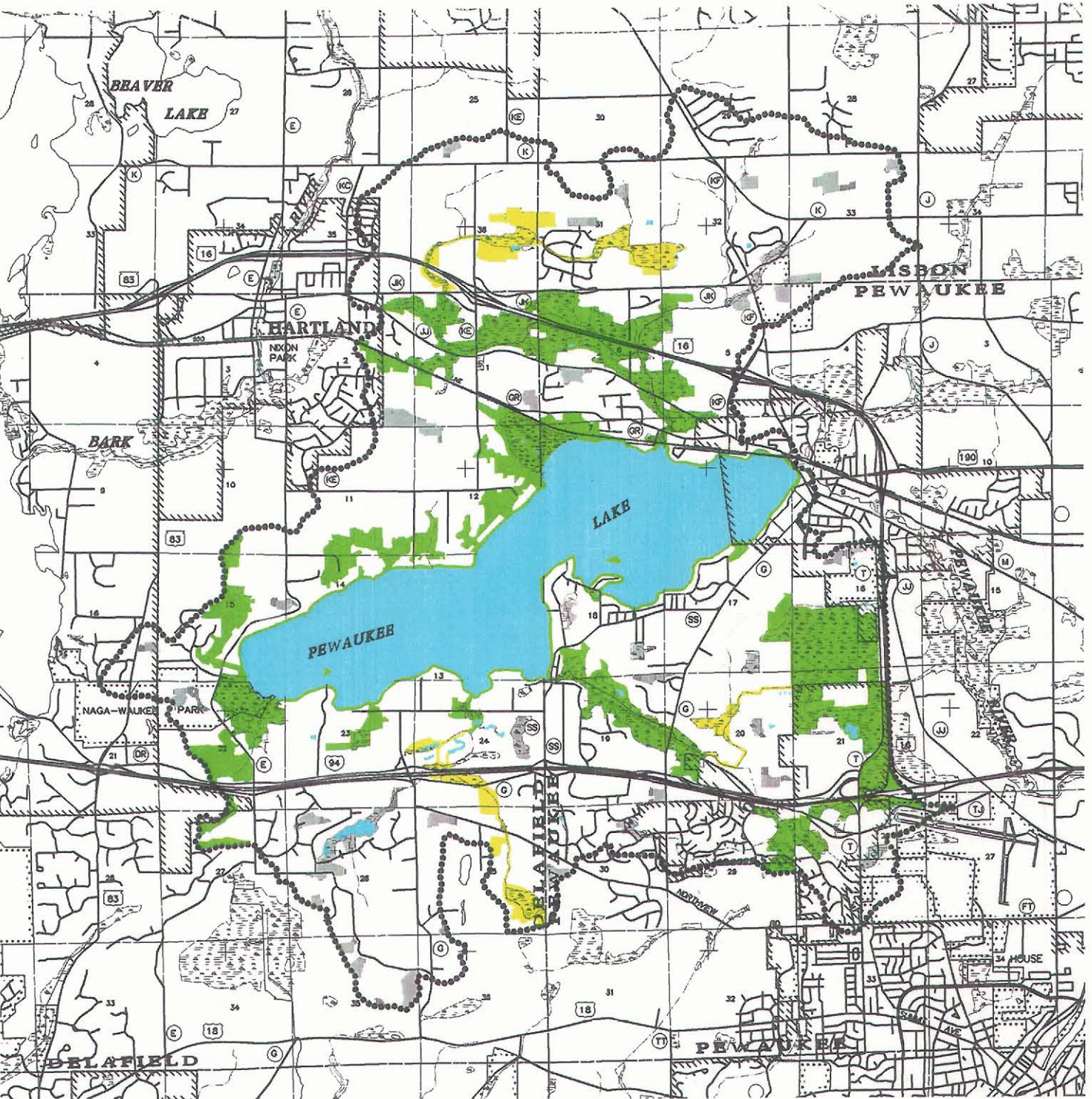


- LEGEND
- WETLANDS
 - WOODLANDS
 - SURFACE WATER

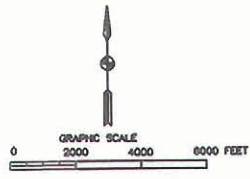


Source: SEWRPC.

ENVIRONMENTAL CORRIDORS AND ECOLOGICALLY VALUABLE
AREAS WITHIN THE PEWAUKEE LAKE WATERSHED: 1990



- LEGEND
- PRIMARY ENVIRONMENTAL CORRIDOR
 - SECONDARY ENVIRONMENTAL CORRIDOR
 - ISOLATED NATURAL RESOURCE AREA
 - SURFACE WATER



such corridors is, thus, one of the major ways in which the water quality of Pewaukee Lake can be maintained and perhaps improved.

As shown on Map 8, secondary environmental corridors are typically isolated along small perennial and intermittent streams within the Pewaukee Lake tributary drainage area. In 1990, about 0.6 square mile, or about 2 percent of the total drainage area to Pewaukee Lake, were identified as secondary environmental corridor. Secondary corridors, also contain a variety of resource elements with are often remnants of primary environmental corridors that have been partially converted to intensive urban or agricultural use. Secondary environmental corridors facilitate surface water drainage and maintain pockets of natural resource features. Such corridors, while not as significant as the primary environmental corridors in terms of overall resource values, should also be considered for preservation as the process of development proceeds within the watershed.

In addition to the primary and secondary environmental corridors, other small concentrations of natural resource base elements exist within the Pewaukee Lake tributary drainage area, as shown on Map 8. On 1990, about 0.7 square mile, or about 3 percent of the Pewaukee Lake tributary drainage area, were identified as isolated natural areas. These isolated natural features should also be considered for preservation in local development decisions.

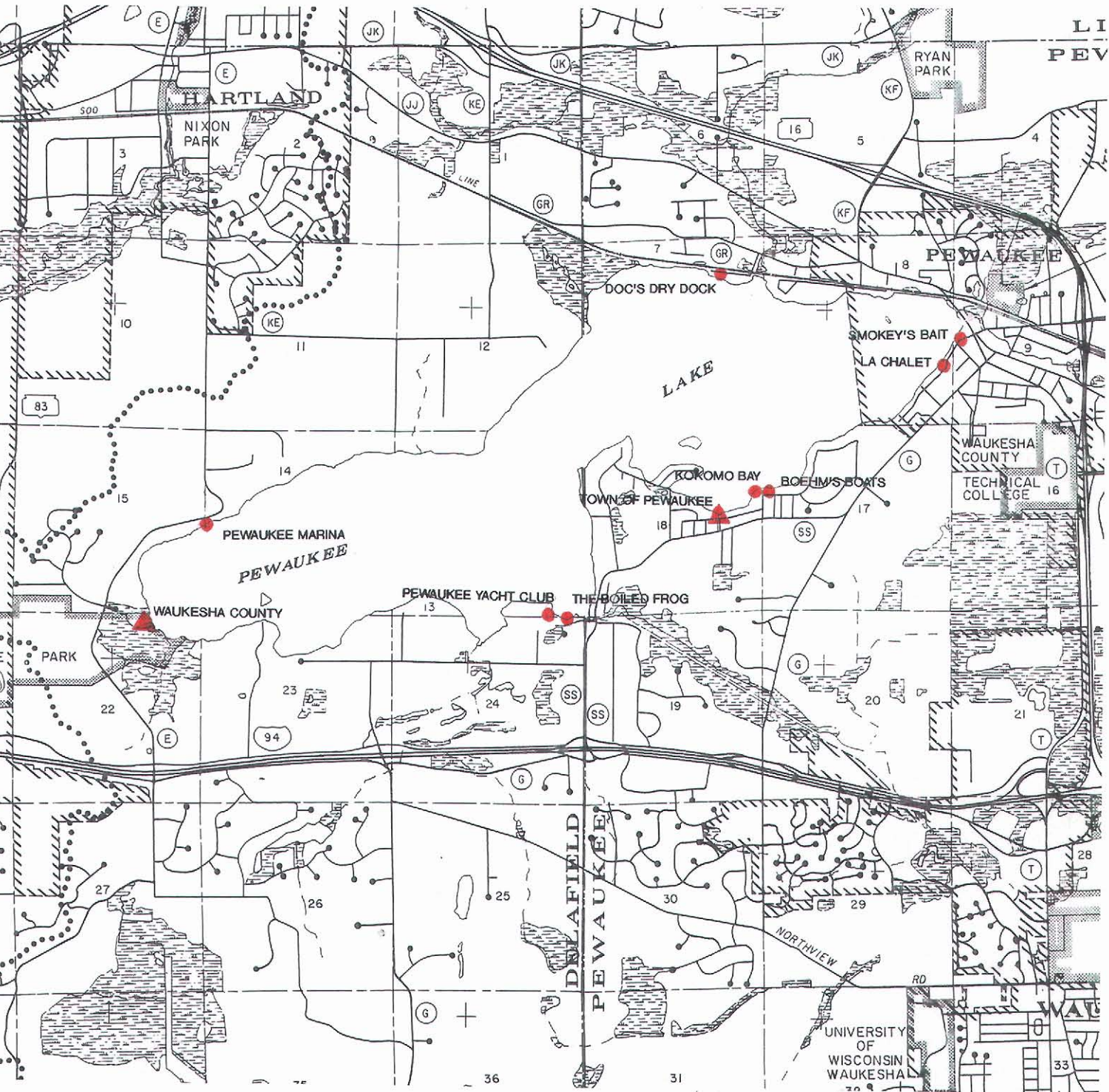
Recreational Uses and Facilities

Pewaukee Lake serves many forms of recreation, including boating, swimming and year-round fishing. The sport of waterskiing is practiced extensively primarily in the deeper water areas of the western bay. Sail boating is also a prominent activity on the Lake. Winter activities include ice fishing, ice boating, and snowmobiling. The Lake is also enjoyed year round as a visual amenity— walking, birdwatching, and picnicking being popular recreational pastimes in season.

The Village of Pewaukee supports many of these water-based recreational activities. For example, Village Beach Park provides a major recreational venue not only for Village residents but also for visitors to the Village. The beach is about 300 feet long. Of this, only 100 feet are utilized for swimming. The 200 feet of the beach to the north of the swimming area are furnished with park benches and form a common area suited to the enjoyment of the aesthetic aspects of the Lake, such as watching waterfowl, and fishing from the shore. The entire beachfront forms a promenade, sparsely populated with shops and service businesses at present, and is heavily used by pedestrians during the summer months.

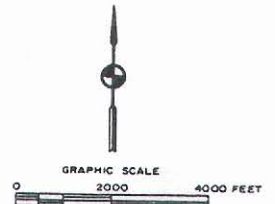
As shown on Map 9, there are two public boating access sites located on Pewaukee Lake, one at Naga-Waukee County Park, located east of STH 83 on the west shore of the Lake, and the other at a site owned by the Town of Pewaukee and located on the southern shore of the Lake. The Naga-Waukee County Park site has 70 car-trailer, 14 cartop, and two handicap parking spaces. The Town of Pewaukee access site does not have any parking facilities. The current public access sites are adequate to meet the criteria set forth in Section NR 1.91(11) of the Wisconsin Administrative Code which require the provision of between 49 and 82 car-trailer parking spaces. In addition, in 1995 there were five private recreational facilities, shown on Map 9, offering boating access to the general public on Pewaukee Lake. These private boating access sites included: Pewaukee Marina at the northwestern end of Pewaukee Lake; Pewaukee Yacht Club on the western shore; the Boiled Frog Tavern at the southeast end of the west basin; La Chalet on the eastern

ACCESS SITE LOCATIONS ON PEWAUKEE LAKE: 1990



LEGEND

- ▲ PUBLIC BOATING ACCESS SITES
- PRIVATE RECREATIONAL FACILITIES



shore; and Smokey's Bait Shop also on the eastern shore. There were also two other facilities which provided boat rentals without offering launching access to private boat owners. None of these private facilities met the requirements of private providers which are included in the determinations of access availability under Section NR 1.91(7) of the Wisconsin Administrative Code.

Several local retail outlets presently exist within the Village in proximity to the Lake. The Village Board has indicated that more effective use of the waterfront within the Village as a recreational amenity should be pursued, including the establishment of food emporia and similar businesses providing patios for viewing the Lake. Local retailers specializing in sporting goods, and angling and boating supplies, currently are situated in the immediate vicinity of the Lake and may be expected to remain.

In 1995, both public and private recreational boating access opportunities were limited at the eastern end of the Lake. The Village of Pewaukee is currently investigating ways and means of upgrading the amenities at the waterfront to better provide increased access for the conduct of the traditional swimming and angling, as well as for boating.

A lake user survey was conducted by the Commission during one weekend day and one weekday during the summer of 1995. A total of 72 persons were interviewed. Such a survey is not conducted in a manner to develop a scientific basis for considering survey findings which are considered statistically valid. However, the survey results are considered to provide information which can be used along with other data to assess recreational facility user patterns and preferences. The objective of the survey was to assess the demand for various types of water-based recreation on and around Pewaukee Lake, and the degree to which this demand is being met. The respondents were interviewed at the existing public boat launch on Pewaukee Lake located in Naga-Wauke County Park and at the existing Village Beach Park. The structure of the survey and the findings are summarized in Appendix A.

Of the respondents, almost half had commuted from locations in the Milwaukee metropolitan area and almost all were at Pewaukee Lake with family and friends. Fishing was the most common activity, followed by swimming, boating and waterskiing. A majority of the respondents rated the Naga-Wauke boat launch parking facilities as being nearly full on the weekdays, and as being full on weekends, with midday being the most common time of use. Almost 80 percent of the respondents indicated that they would use a new boat launch and recreational facility at the eastern end of the Lake, if one were available.

Local Plans and Ordinances

The previously cited local park and open space and lake management plans do not specifically identify a need for additional public boating access sites on Pewaukee Lake. However, the plans do recommend that local units and agencies of government provide local park and open space sites and facilities as needed within their areas of jurisdiction. The park and open space plan for the Town and Village of Pewaukee, as amended, includes specific recommendations for public boat docking and fishing facilities on the Lakeshore and for public restroom facilities. This local plan also recommends retaining designated primary environmental corridor lands in essentially natural, open space uses. In addition, the plans recommend that the secondary environmental corridors and isolated natural areas be considered for preservation based upon local plans and objectives.

The current general zoning districts as provided under the Village of Pewaukee Zoning ¹⁷ ordinance in 1995, are shown on Map 10. Zoning districts established in the vicinity of the Village of Pewaukee lakefront include a recreation (P-2) district that encompasses the lakeshore north of the outlet; a community business (B-2) district that encompasses the lands along the eastern side of Wisconsin Avenue; and a downtown multi-use (B-6) district south of the beach. The principal permitted uses of the P-2 district include parkland, river bank protection, swimming, fishing, diving and skin diving which are consistent with the present usage of these lands. The principal permitted uses of the business districts (B-2 and B-6) include a variety of commercial enterprises such as financial institutions, churches, and variety stores. While the present land use in the areas designated as business districts generally conform to these permitted uses, pursuant to the provisions of sections 17.23, 17.31 and 17.33 of the Village of Pewaukee Zoning Code, drive-in and take-out restaurants may be permitted as a conditional use, however, full-service restaurants are not listed as a principal permitted or a conditional use in the B-2 and B-6 districts.

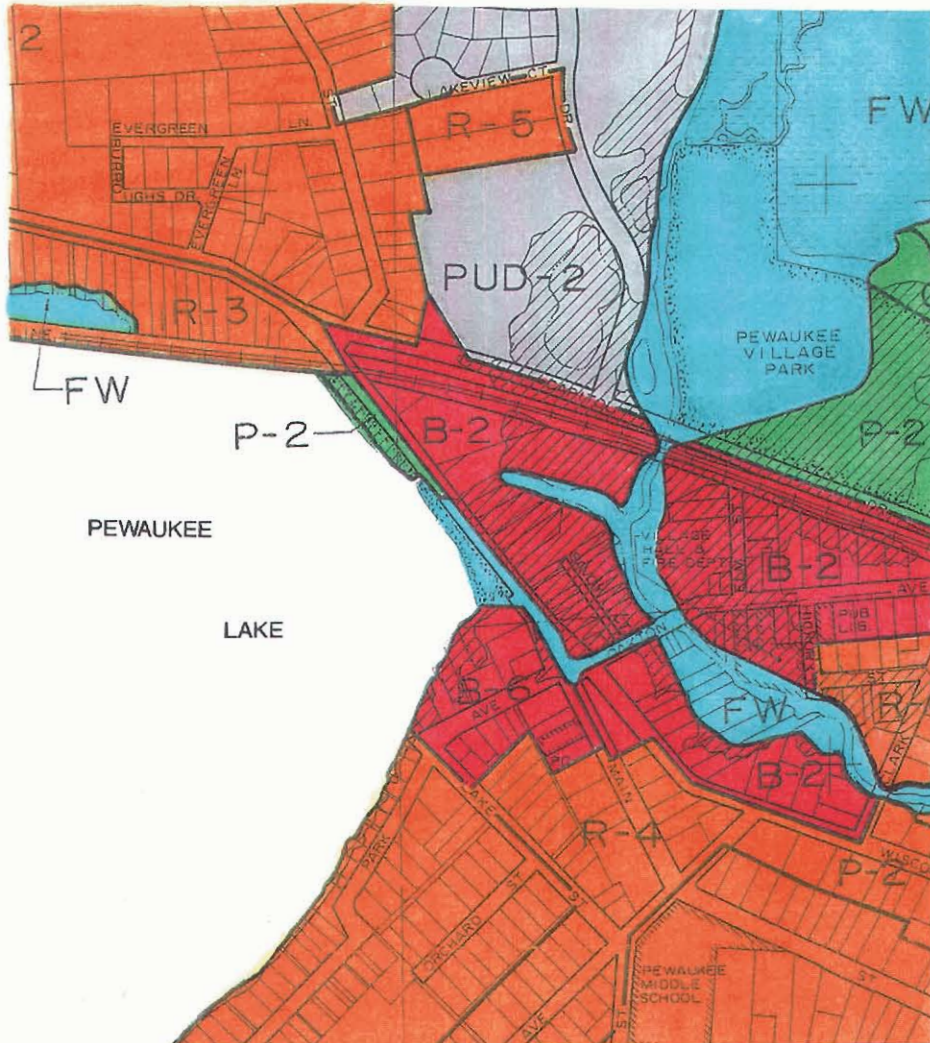
The Village of Pewaukee has also adopted and implemented a Shoreland and Floodplain Protection Zoning Ordinance in accordance with Chapter NR 117 of the Wisconsin Administrative Code. The low-lying lands along the Pewaukee River, south of the lake outlet and west of Wisconsin Avenue, and downstream from the Lake outlet, are zoned as a floodway (FW) district, which restricts the use of such lands to passive activities that will not interfere with the passage of floodwater through the district. Drainage, navigation, fishing, stream bank protection, floodwater overflow storage, wildlife preservation, and recreational uses are among the principal uses allowed within such lands. Use of the portion of the lakeshore south of the outlet as a beach and recreation area is consistent with this zoning. Proposed beachfront improvements set forth in this plan provide for approximately 100 feet of openings along the southern portion of Wisconsin Avenue to provide for the passage of flood waters along this floodway. The flood fringe overlay district is shown as the cross-hatched area on Map 10.

In addition, the Village of Pewaukee and the Towns of Pewaukee and Delafield have promulgated joint ordinances concerning the use of Pewaukee Lake waters during both summer and winter. These ordinances adopt State of Wisconsin boating and water safety laws as set forth in Chapter 30 of the Wisconsin Statutes, for the summer boating period; and traffic laws as set forth in Chapters 23, 86, 125, 161, 350, and 938 through 948, Wisconsin Statutes, for the winter period. During summer, the shore zone extends out from the shoreline ordinary high water mark for a distance of 200 feet from the ordinary high water mark; during winter, this zone is extended out to 500 feet from the ordinary high water mark. Boat operation within the shore zone is restricted to slow-no-wake operation; operation of motorized vehicles on the ice during winter is restricted to 10 miles per hour (mph). A maximum speed limit of 50 mph applies to the nonshore zone areas of the Lake. The provisions of the municipal ordinances provides for the establishment of swimming zones, public access, and navigation lanes consistent with the proposed uses of the Village of Pewaukee lake frontage.

¹⁷*Village of Pewaukee, Zoning Code: Village of Pewaukee, Pewaukee, Wisconsin, September 1963 as amended.*

Map 10

GENERAL ZONING DISTRICTS IN VILLAGE OF PEWAUKEE LAKEFRONT AREA: 1991



LEGEND

ZONING DISTRICT CLASSIFICATION

- MEDIUM DENSITY URBAN RESIDENTIAL (CONTAINS DISTRICTS PERMITTING FROM 2.3 TO 6.9 DWELLING UNITS PER NET ACRE)
- BUSINESS (CONTAINS DISTRICTS PERMITTING NEIGHBORHOOD-ORIENTED, COMMUNITY-ORIENTED, HIGHWAY-ORIENTED AND OFFICE DEVELOPMENT)
- PARK (CONTAINS DISTRICTS PERMITTING PUBLIC AND PRIVATE RECREATIONAL AND RELATED OPEN SPACE DEVELOPMENT)
- FLOODLAND (CONTAINS DISTRICTS WHICH PRESERVE IN ESSENTIALLY OPEN SPACE AND NATURAL USE, LANDS WHICH ARE PERIODICALLY INUNDATED BY FLOODWATERS)
- PLANNED UNIT DEVELOPMENT AREA

Source: SEWRPC.

ACCESS AND RECREATIONAL USE RESTRICTIONS, PROBLEMS, AND NEEDS

Pewaukee Lake has historically accommodated large numbers of recreational users. Heavy plant growth throughout the eastern basin of Pewaukee Lake has historically limited boating traffic resulting in water-based recreation being primarily carried out in small areas of open water located toward the center of the waterbody and in access lanes in which frequent harvesting is needed. This excessive plant growth is encouraged by the relatively shallow depth of the Lake. Navigation of motorized watercraft was significantly impeded by these conditions and has resulted in reduced recreational aesthetic enjoyment of the Lake users and the aesthetic enjoyment of visitors to the Village of Pewaukee. On the other hand, the western basin of Pewaukee Lake provided conditions conducive to waterskiing and high-speed boating. This condition effectively zoned the Lake for recreational use and underscored the multiple recreational use character of the Lake.

Presently, much of the aquatic plant growth that historically interfered with recreational pursuits in the eastern lobe of the Lake has been controlled by vigorous aquatic plant management measures carried out by the Village of Pewaukee—within waters off the Village—and the Lake Pewaukee Sanitary District—elsewhere. As already noted, water quality conditions have improved significantly over the last 15 years since the installation of a public sanitary sewer system to serve the urban development surrounding the Lake. This factor has also contributed to a more suitable environment for recreational uses. The accessibility of the eastern lobe of the Lake to motorized boating and shoreline recreationalists provides motivation for the development of an integrated boating, recreational use and waterway protection plan for the waters of the eastern basin in general, and for the waters within the jurisdiction of the Village of Pewaukee in particular.

An important issue to be considered is the demand for additional recreational use, and the capacity of the Lake to meet this demand. The primary concern in this respect relates to the boating capacity of the Lake relative to the current and future use. As previously noted, the existing public access sites provide 70 car-trailer, 14 cartop, and two handicap parking spaces, all at the Naga-Waukee launch site. In addition, there are seven other private facilities where boats can be launched or rented. Chapter NR 1.91 of the Wisconsin Administrative Code establishes standards which provide for a minimum of 49 and a maximum of 82 car-trailer parking spaces for a waterbody the size of Pewaukee Lake. Thus, the currently available access parking is near the upper end of the range of sites provided for in the Wisconsin Administrative Code. The Code indicates that,

“The department has determined that granting permits for boating access on bodies of water where the maximum access standards are exceeded will materially impair navigation and is detrimental to the public interest. The department may not pursue public boating access development nor may it approve permits or provide financial assistance for public boating access beyond the levels described in this subsection unless greater levels are established in a plan...”

Standards set forth in the previously referenced local and Waukesha County park and open space plans and the regional¹⁸ park and open space plan would provide for the use of a maximum of 130 fast boats on

¹⁸SEWRPC Planning Report No. 27, *A Regional Park and Open Space Plan for Southeastern Wisconsin*, November 1977.

Pewaukee Lake. The optimum number of parking spaces for Pewaukee Lake can be estimated by the number of fast boats which the Lake can accommodate reduced by the number of fast boats in use at any one time by owners of property with Lake frontage. Assuming the latter figure at 10 percent of the number of dwelling units on the Lake, this would equate to about 75 car-trailer parking spaces. Given the existing public-access site parking capacity of 70 car-trailer spaces, plus the private site capacity, the estimated optimum number of parking spaces using the standards set forth in the local, county, and regional park and open space plans is currently exceeded.

A survey of the number of boats utilizing Pewaukee Lake was conducted by the Commission on a weekend day and a weekday during the 1995 summer study period. The structure of the survey and the findings are summarized in Appendix B. The survey indicated that a maximum of 239 boats were on the Lake during the weekend day, of which about 225 boats were utilized for motorboating, sailing, or waterskiing. A maximum of 95 boats were on the Lake during the weekday survey, of which 77 were utilized for motorboating, sailing, or waterskiing. Based upon these surveys, it may be concluded that the number of boats using the Lake on weekends exceeds the maximum number which should be accommodated based upon the standards set forth in the aforementioned park and open space plans. During the weekdays, the number of boats using the Lake is less than the calculated maximum number.

As already noted, of the recreational users interviewed by Commission staff during the Lake users survey conducted in 1995, about two-thirds rated the Naga-Waukee launch site as usually nearly full on weekdays and as being usually full on weekends. Despite this indication of apparent crowding, only about 10 percent of interviewees commented that further publicly owned launch facilities were necessary. These latter figures might suggest that few current users are seriously inconvenienced in their use of the Lake. Additionally, almost 80 percent of interviewees indicated that they would use a new boat launch and recreational facility at the eastern end of the Lake, if one were available. These survey findings reflect the views of people using the public facilities and not the views of riparian owners. Based upon past experience, however, it may be expected that riparian lake owners would probably be of the opinion that Pewaukee Lake is currently over utilized on summer weekends. Additionally, the data on current usage suggest that it is likely that the public will begin to perceive problems with respect to Lake access and use in the foreseeable future. In this regard, it should be noted that the resident population of the Lake Pewaukee watershed is anticipated to increase significantly in the near future, placing additional stress on the existing launch facilities.

Notwithstanding, data provided by the Wisconsin Department of Natural Resources and the Lake Pewaukee Sanitary District staffs would suggest that the total number of parking spaces for car-trailer units that are available at Pewaukee Lake is diminishing. In 1976, when the Naga-Waukee launch site was created, there was parking provided for in excess of 200 car-trailer units around the Lake, the majority of these parking spaces being supplied by private operators. A number of these private operations have since ceased operations or have stopped launching boats as part of their ongoing operations. Available data indicate that about half of the private access operators providing launching facilities in the 1980s have ceased operations,¹⁹ the majority of these operators having been located in the eastern basin of the Lake.

¹⁹SEWRPC Community Assistance Planning Report No. 137, *op. cit.*, lists approximately nine private access sites in Table B-1; five sites currently remain.

Nevertheless, based upon the above findings, there are no compelling arguments which can be made to add significant additional public boating access capacity. Thus, the focus of the current lakefront planning program for the Village of Pewaukee should be directed toward the development of other types of lakefront facilities which will enhance the recreational and aesthetic uses of the lakefront area.

Review of the recreational user response to the 1995 survey, indicates that other types of lakefront recreational needs include: restaurant facilities, speciality shops, and sporting goods shops located within the beachfront area. About half of the respondents reported purchasing fuel and bait in the Pewaukee area, with three-quarters of respondents noting that this was primarily for convenience. Forty percent of the respondents reported spending between \$10 and \$25 per outing; with most respondents reporting visiting Pewaukee Lake between one and three times per year.

While the data herein presented indicate that significant increases in boat access and parking facilities are not warranted, some additional recreational boating development would appear to be appropriate. The Lake Pewaukee Sanitary District staff has reported that the District frequently receives requests for information on boat mooring and docking facilities along the Pewaukee waterfront. The desire for loading and off-loading areas is consistent with the results of the 1995 survey in which respondents indicated a desire to purchase goods and services in the Pewaukee area. The provision of a public boat boarding dock within the Village, together with the development of speciality shops and restaurants along the waterfront, could provide a convenient means of servicing this public demand. Provision of a public boarding dock would also provide access to an area where persons could shop at existing establishments within the Village.

ALTERNATIVE BOATING ACCESS AND RECREATIONAL USE PLANS

Historic Boating Access Patterns and Waterway Protection Efforts

Community commitment to manage the Pewaukee Lake system is reflected in the creation of the Lake Pewaukee Sanitary District in 1944. This commitment has been consistently reaffirmed since that time. By 1946, the District had purchased and was operating an aquatic plant harvester on the Lake; and, by 1976, had installed sanitary sewers around the Lake.²⁰ A water quality management plan was prepared for the Lake in 1984.²¹ Since 1991, the active participation of the District in the Wisconsin Department of Natural Resources Self-Help and Aquatic Plant Monitoring Programs has continued this commitment, and provides an ongoing opportunity to initiate and monitor additional management actions.

Planning for the recreational use of lands within the direct drainage area of the Lake, and within that portion falling within the jurisdiction of the Village of Pewaukee, is documented in the County²² and Town and

²⁰SEWRPC Community Assistance Planning Report No. 113, Sanitary Sewer Service Area for the Town of Pewaukee Sanitary District No. 3, Lake Pewaukee Sanitary District, and Village of Pewaukee, Waukesha County, Wisconsin, June 1985.

²¹SEWRPC Community Assistance Planning Report No. 58, A Water Quality Management Plan for Pewaukee Lake, March 1984.

²²SEWRPC Community Assistance Planning Report No. 137, A Park and Open Space Plan for Waukesha County, Wisconsin, December 1989.

Village²³ park and open space plans prepared by the Regional Planning Commission at the request of the County and local units of government concerned. None of these plans specifically identify a need for additional public boating access sites on Pewaukee Lake. However, the plans do recommend that local units and agencies of government provide local park and open space sites and facilities as needed within their areas of jurisdiction. The park and open space plan for the Town and Village of Pewaukee, as amended, includes specific recommendations for public boat docking and fishing facilities on the Lakeshore and for public restroom facilities.

Public use of Pewaukee Lake is relatively high. During a typical year—1992—Waukesha County Park and Planning Department personnel estimated that more than 17,500 boat launchings were made at the Naga-Waukee County Park launch site. This translates to nearly 100 launch and recovery operations at this site each day assuming the majority occur during a six-month period. The weekend recreational use survey conducted in July 1995 by Commission staff observed that, during both the morning and afternoon survey periods, power boating was the third most popular activity, behind both fishing and swimming, underscoring the intensity of Lake usage experienced.

The intensity and popularity of current recreational uses of Pewaukee Lake, supports the need for improved recreational-related facilities along the Village of Pewaukee lakefront.

Alternative Boat Access Plans

As already noted, in 1995, Pewaukee Lake had two public boat access sites. One was at Naga-Waukee County Park located at the west end of the Lake, and the other owned and operated by the Town of Pewaukee and located on the southern shore. The capacity of this latter site is severely limited. In addition, five private access sites existed, as previously described. Nevertheless, the Lake is deemed to have adequate public access in accordance with the guidelines set forth in Section NR 1.91 of the Wisconsin Administrative Code. Conformance with these guidelines is required for a lake to be eligible for any natural resource enhancement services offered through the DNR.²⁴ As already noted, the public access standards established under Sections NR 1.91 (4) and (5) of the Wisconsin Administrative Code, Pewaukee Lake would require the provision of one or more access sites which, in total, provide parking for between 49 and 82 car-trailer units, plus additional parking to permit access by handicapped individuals. Ideally, such parking should be provided as an integral part of the launch sites. The existing County launch site provides parking spaces for 70 car-trailer units, 14 car-top units and two handicapped accessible units. Also as already noted, the currently available access closely approximates the desirable number of access facilities estimated to be required in the adopted regional, county, and local park and open space plans.

Because the Lake is in compliance with the provisions of NR 1.90, and is deemed to have adequate public access based upon standards set forth in adopted regional, county, and local park and open space plans, only

²³*SEWRPC Community Assistance Planning Report No. 42, A Park and Open Space Plan for the Town and Village of Pewaukee, Waukesha County, Wisconsin, October 1980.*

²⁴*“Natural resource enhancement services” are defined in Section NR 1.91 (2) (d) of the Wisconsin Administrative Code as including fish stocking, removal or other population management; habitat development; financial assistance for aquatic plant harvesting; and lake restoration grants.*

two options for providing alternative public boating access to Pewaukee Lake in the Village of Pewaukee lakefront area were considered. The first option would limit public access opportunities to those already provided for at the Naga-Waukee Park and Town of Pewaukee sites; while the second would provide additional access opportunity to the maximum amount of parking recommended under Section NR 1.91 (4) of the Wisconsin Administrative Code—or an additional 12 car-trailer unit parking places, plus one additional handicapped accessible space.

Alternative 1: No New Access: Under this alternative, the public access on Pewaukee Lake would continue to be provided at the two existing access sites; those being the Naga-Waukee County Park and Town of Pewaukee sites. These two sites provide for a total of 70 car-trailer, 14 cartop, and two handicap parking spaces, all at the Naga-Waukee County Park. This alternative would also assume continued reliance on private providers to meet needs not met through the public access sites.

Alternative 2: Maximum Recommended Access: Under this alternative, a public boating access site would be created at the northern end of Village Beach Park, adjacent to the CP Rail System railway line, the former Chicago, Milwaukee St. Paul & Pacific railway line, with parking facilities for up to 12 car-trailer units being provided. A conceptual design for the boat launch area is shown on Figure 4. Other layouts of the launch site are also possible. This alternative also includes continued reliance on the existing private providers.

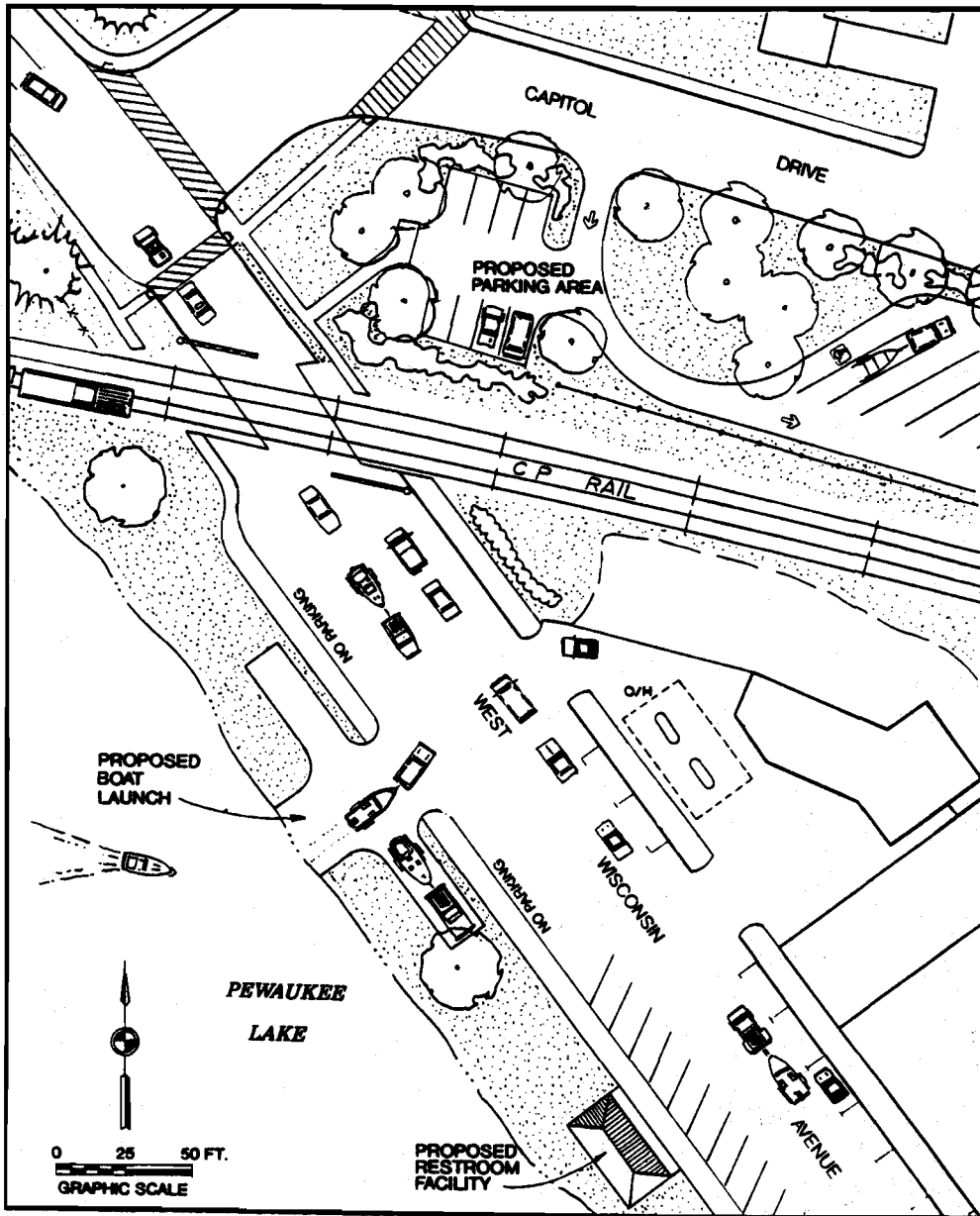
An alternative site for the additional boat launch facility at the south end of the Village Beach Park adjacent to the Pewaukee Shores Condominiums, was also considered. While providing improved site geometry and concentrating boating activity in this area of the Village waterfront, this alternative site has the disadvantage of intruding into a residential area as well as lying in close proximity to the Wisconsin Avenue-Park Avenue intersection. This site is also more distant from the parking area at Wisconsin Avenue and Capitol Drive. Displacement and possible reestablishment of the traditional swimming beach to establish this launch site would be a costly and involve potential negative environmental impacts. Accordingly, this alternative assumes the use of the site for parking purposes near Capitol Drive, on property presently owned by the CP Rail System railway line.

The parking area considered is located across Wisconsin Avenue near its intersection with Capitol Drive on lands currently owned by the CP Rail System. This site has the advantage of being removed from the existing swimming area and can be further separated from the swimming area by the construction of a fishing pier or other facilities. However, this site suffers from a location adjacent to an important arterial street and proximity to a major street intersection. The site also has width restrictions, as measured from roadway curb to edge of railway right-of-way and additional land within the right-of-way may be required for parking purposes.

Evaluation of Access Alternatives: The first alternative—maintenance of the status quo—may be expected to limit the use of Pewaukee Lake to a level somewhat below possible demands. The existing sites are located on the south shore of the Lake in an area lacking parking facilities and at the west end of Pewaukee Lake which is farther from the Milwaukee metropolitan area—the origin of a significant number of users—than the site being considered under Alternative 2. However, the existing Naga-Waukee Park site is readily accessible from IH 94. The site being considered under Alternative 2 is not readily accessible

Figure 4

CONCEPTUAL DESIGN FOR BOAT LAUNCH SITE
AT THE VILLAGE OF PEWAUKEE LAKEFRONT



Source: SEWRPC.

from IH 94. In addition, that site requires maneuvering a car-trailer unit within the Village and along a major urban thoroughfare, which could pose difficulties, especially at peak times. The existing site at Naga-Waukee County Park also has an advantage in that it is integrated into a larger public park that caters to diverse public usage, including golfing and aesthetic enjoyment.

As part of the evaluation of alternative boat access sites, geometry and use patterns of the launch site were evaluated. This evaluation indicated the following problems with a launch site within the Village at the location identified under Alternative 2.

1. The site geometry provides limited width between the lakeshore and Wisconsin Avenue. Thus, vehicle drivers unfamiliar with the site may have to back trailers back out onto Wisconsin Avenue in order to make the proper turning movements in the launch area. Alternatively, drivers may stop on Wisconsin Avenue to examine options and make decisions on how to best enter the launch site, thereby backing up traffic and interrupting traffic flow along Wisconsin Avenue.
2. Because of the lack of storage area for launching vehicles within the site, vehicles and trailers may be parked on Wisconsin Avenue while awaiting access to the launch site.
3. Potential traffic problems on Wisconsin Avenue are of particular concern due to the proximity of the site to the CP Rail System tracks which carries high-speed train traffic.
4. Visibility in exiting the launch site, particularly if backing out, is a potential problem if parking is allowed along Wisconsin Avenue on the Lake side.

The provision of some additional access opportunities at the eastern end of the Lake would appear to be consistent with expected use and locational demands. However, the provision of additional access is expected to potentially result in increased user conflicts and increased over use of the Lake at some times. Furthermore, locating such access within the Village of Pewaukee lakefront is not the most advantageous location with respect to traffic safety and site geometry. Thus, continued reliance on the existing access sites as set forth under Alternative 1 is recommended.

Alternative Lakefront Recreational Development Plans

A number of recreational facilities, both public and private, are located within the Pewaukee Lake watershed, many in close proximity to the Lake.²⁵ A number of these facilities offer or support lake-related recreational activities. Those facilities located at the eastern end of the Lake, within the jurisdiction of the Village of Pewaukee are described in the park and open space plan for the Town and Village of Pewaukee,²⁶ and include marinas, resorts, school grounds and public parks.

²⁵SEWRPC Community Assistance Planning Report No. 137, A Park and Open Space Plan for Waukesha County, Wisconsin, December 1989.

²⁶SEWRPC Community Assistance Planning Report No. 42, A Park and Open Space Plan for the Town and Village of Pewaukee, Waukesha County, Wisconsin, October 1980.

The most prominent recreational facility on the Village of Pewaukee waterfront is the Village Beach. Few other areas of the Lake have been developed as swimming areas. Village Beach is the only public swimming beach on the Lake. This fact, combined with the location of the beach in the metropolitan area, would suggest that this amenity will retain its popularity for the foreseeable future. It is, accordingly, recommended that the swimming area be retained in its traditional location south of the Lake outlet control dam.

The area north of the Village Beach to the lake outlet has been used traditionally for angling. Historic photographs and anecdotal evidence suggests that this area of the Village, between the dam and the railway embankment, has been used for recreational fishing for decades. It is also clear from this evidence that the conflict between anglers and the railway is long-standing. To resolve this conflict, the Village of Pewaukee has proposed the construction of a fishing pier to be located on the waterfront north of the Lake outlet control dam. The pier should be located a sufficient distance from the swimming area to avoid conflicts between swimmers and anglers, and to avoid the hydraulic influence of the dam spillway.

As already noted, in addition to these traditional lakefront uses, respondents, interviewed by Commission staff in July 1995, suggested that the lakefront business district should include more commercial enterprises that service the water-related recreational seeker; namely, respondents identified the need for restaurant facilities, speciality shops, and other sporting goods shops within the beachfront area.

Based upon consideration of the recreational needs identified in the previous section, three alternative lakefront recreational development plans were formulated. Each of the three plans incorporates continued use of the existing Village Beach. In addition, although the development of a public boat launch is not recommended for the Village of Pewaukee waterfront, additional recreational boating developments appear to be appropriate and are included in each alternative lakefront development plan, as a boat boarding dock and a fishing pier.

Parking for cars and car-trailer units is proposed to be provided through the acquisition of the "old depot site" lands adjacent to the CP Rail line at the intersection of Capitol Drive and Wisconsin Avenue. This site would permit parking of 12 car-trailer units, including one handicapped-accessible space, and could include several car parking spaces, in addition. Also, limited parking for cars, for loading and unloading purposes, is retained along the waterfront of Wisconsin Avenue. These spaces would be parallel to the curb instead of diagonal, as at the present. These same spaces could serve to encourage scenic viewing of the Lake at times other than when being used to load and unload passengers.

A bell tower, adopted as a proposed waterfront landscape feature by the Village Board when it accepted the donation of a ring of bells from a donor in June 1995, is an unusual feature included in each alternative lakefront development plan. This distinctive feature may be expected to attract people to the waterfront area and encourage people to remain in the waterfront area for a longer period, increasing exposure to local businesses. For example, people that presently visit the beach might be enticed to make the visit an all-day outing rather than a shorter single-purpose trip. The bells, being produced by the Whitechapel Bell Foundry, Ltd., London, England, are reputed to be the first of their type erected in the United States, could form the focus for the formation of a community bell-ringing group, and provide an unusual attraction for the Village waterfront. The bells are designed to be rung by instructed bell-ringers. The art of such bell-

ringing, which has been previously confined to Europe where the art of bell ringing is centuries old, is analogous to hand bell choirs which are popular in the mid-West. The presence of the bell tower and bell ringers could potentially extend the recreational season of the Lake Pewaukee waterfront into the winter months. This would require that consideration be given in the urban design of the waterfront amenities to wind shelters and other features that would provide shelter to pedestrians during the winter months when cold winds blow off of the Lake.

A further feature proposed to be sited at the southern end of the waterfront, in the pocket parklands created by the intersections of Wisconsin and Park Avenues and Main Street, is a clock tower.

Each of the alternative lakefront development plans presents different combinations of fishing pier and boarding dock facilities, as well as options relating to streetscaping and supporting facilities. Cost data are provided for the fishing pier and boarding dock and for facilities directly supporting those facilities; namely, the restrooms, parking area, and lighting. Other facilities, such as streetscaping, changing facilities²⁷ near the beach, and the bell tower, are considered components which are assumed to have similar costs under all alternatives. Thus, the cost of these components are not presented for each alternative.

Alternative A: Under this alternative, the existing beach would be enhanced by the construction of changing facilities, plantings, lighting, and low-level walls, to separate the beach from a new pedestrian walkway, as shown on Map 11. Gaps in the walls must be sufficient to allow the passage of flood waters along the Wisconsin Avenue floodway. The bell tower would be constructed just north of the lake outlet. A combination fishing pier and boat boarding dock would be constructed with adjacent restroom facilities, landscaping, and streetscaping. The lands to the north of the fishing pier-boarding dock would be landscaped for passive recreational uses, such as picnicking and scenic viewing. Parking would be provided at the "old depot site" at the intersection of Wisconsin Avenue and Capitol Drive. The capital cost for construction of the fishing pier, boarding dock, and for the supporting facilities, including lighting and restroom facilities, as proposed under Alternative A is estimated at \$115,000. The capital cost of parking area acquisition, grading, surfacing, and landscaping is estimated at \$110,000.

Alternative B: Under this alternative, the existing beach would be enhanced in the same manner as under Alternative A, but with modifications to the type of streetscaping used, as shown on Map 12. The bell tower would again be constructed just north of the lake outlet. A fishing pier and separate boat boarding dock would be constructed with adjacent restroom facilities, landscaping, and streetscaping. The lands to the north of the fishing pier and boarding dock would be landscaped for passive recreational use, such as picnicking and scenic viewing. Parking would be provided at the "old depot site" at the intersection of Wisconsin Avenue and Capitol Drive. The capital cost for construction of the fishing pier, boarding dock, and for the supporting facilities, including lighting and restroom facilities, as proposed under Alternative B is also estimated at \$115,000. The capital cost of parking area development would be the same as under Alternative A, and is estimated at \$110,000.

²⁷ Changing facilities are included in the restroom facilities, but for recreational boating facility grant purposes, are separated into the component elements.

Alternative C: Alternative C is similar to Alternative B, as shown on Map 13, with the exception of the type of boarding dock and the use of refined streetscaping. Under this alternative the boarding dock would be constructed utilizing a section of the shore which would be filled. Parking would be provided at the "old depot site" at the intersection of Wisconsin Avenue and Capitol Drive. The capital cost for construction of the fishing pier, boarding dock, and for the supporting facilities, including lighting and restroom facilities, as proposed under Alternative C is estimated at \$160,000. The capital cost of parking area development would be the same as under Alternatives A and B, and is estimated at \$110,000.

Evaluation of Alternatives

Each of the three alternatives meets the Village objectives for waterfront development. Both Alternatives A and B could be readily constructed in phases and could be expanded to meet longer-term future needs.

Alternative A has the disadvantage of combining fishing and boat boarding dock facilities and their uses in one facility. Fishing and boat boarding and docking are best kept separate for safety and amenity reasons. Combined fishing and boating piers are not grant-eligible constructs under the State Recreational Boating Facilities and Federal Sport Fish Restoration Grant Programs administered by the Wisconsin Department of Natural Resources .

Alternative B incorporates formal recognition of the present informal recreational use zoning along the Village Beach Park waterfront. As such, it best satisfies the public's use of this portion of the lakeshore. A variant of Alternative B, placing the boarding dock parallel to the railway right-of-way at the northern end of Village Beach Park, was considered, but is not recommended due to safety considerations inherent in such close proximity to high-speed railway traffic. Alternative B would be grant-eligible under the State Recreational Boating Facilities and Federal Sport Fish Restoration Grant Programs.

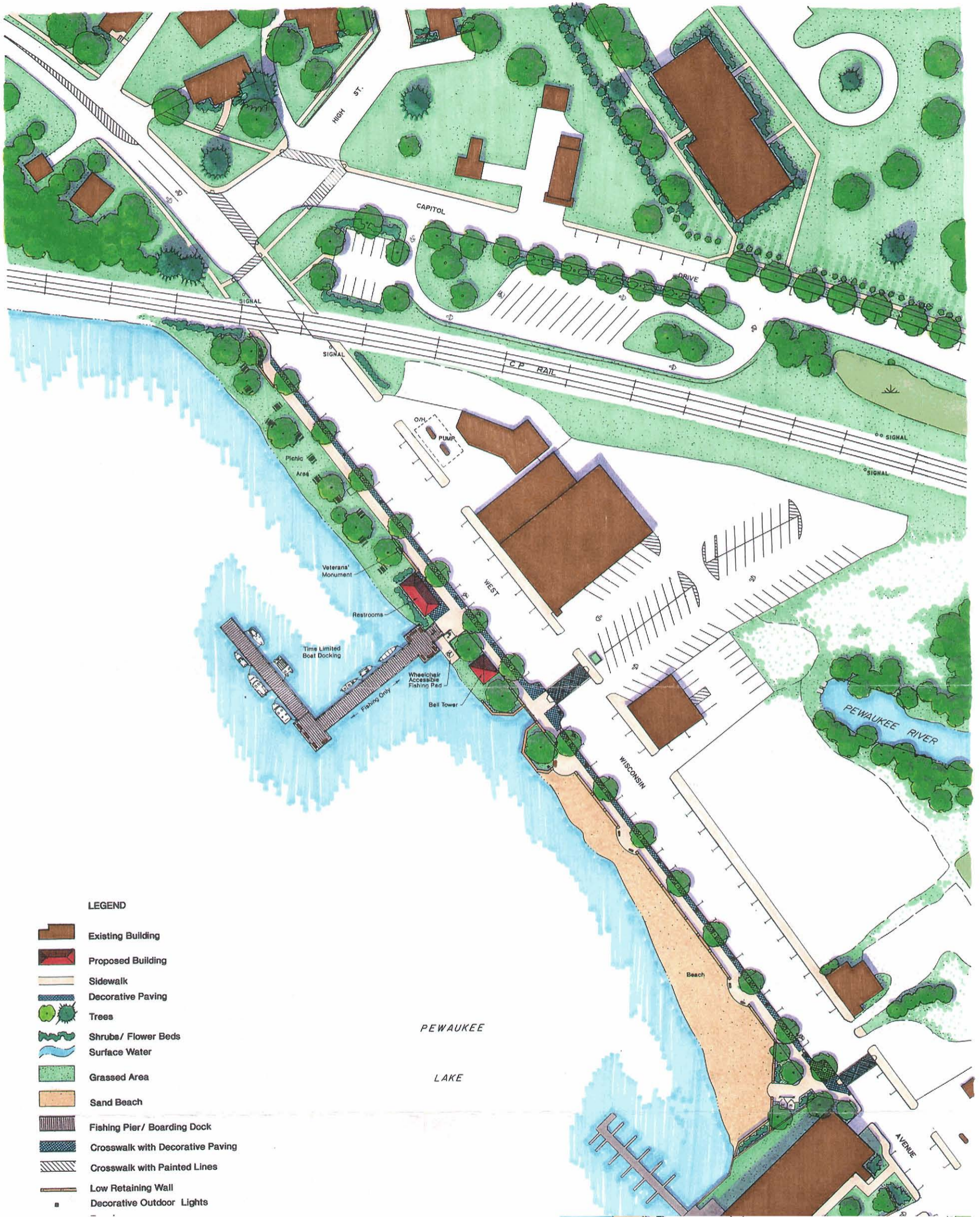
Alternative C would be the most costly to construct and would have the most significant potential environmental impacts due to the need for filling of the nearshore Lake bed. Alternative C would also be grant-eligible under the State Recreational Boating Facilities and Federal Sport Fish Restoration Grant Programs; however, significant State permitting requirements would have to be met prior to any grant award and subsequent construction.

Based upon a review of the alternatives, it is recommended that Alternative Plan B be selected as the recommended plan and combined with needed commercial facilities in the vicinity of the Village lakefront area. Figure 5 graphically illustrates potential improvements to the lakefront area based on the aforementioned recommended plan.

Alternative Supporting Development Plans

It is important that the lakefront development in the Village be properly supported by adjacent development and facilities, and integrated with the public open space system and downstream area of the Village. The later could be accomplished by a recreational trail system extending along the Pewaukee River from the parking areas located to the east of Village Beach Park to the Village Hall and Waukesha County Pewaukee River Parkway further downstream. For the most part, this proposed trail system, set forth schematically on Map 14, would be comprised of a riverside walk. Although a few areas presently seem inimical to this development—particularly the residential areas to the south of the Village Hall—there is great potential for

ALTERNATIVE A – PEWAUKEE LAKEFRONT DEVELOPMENT PLAN:
COMBINATION FISHING PIER–BOARDING DOCK



LEGEND

- Existing Building
- Proposed Building
- Sidewalk
- Decorative Paving
- Trees
- Shrubs/ Flower Beds
- Surface Water
- Grassed Area
- Sand Beach
- Fishing Pier/ Boarding Dock
- Crosswalk with Decorative Paving
- Crosswalk with Painted Lines
- Low Retaining Wall
- Decorative Outdoor Lights

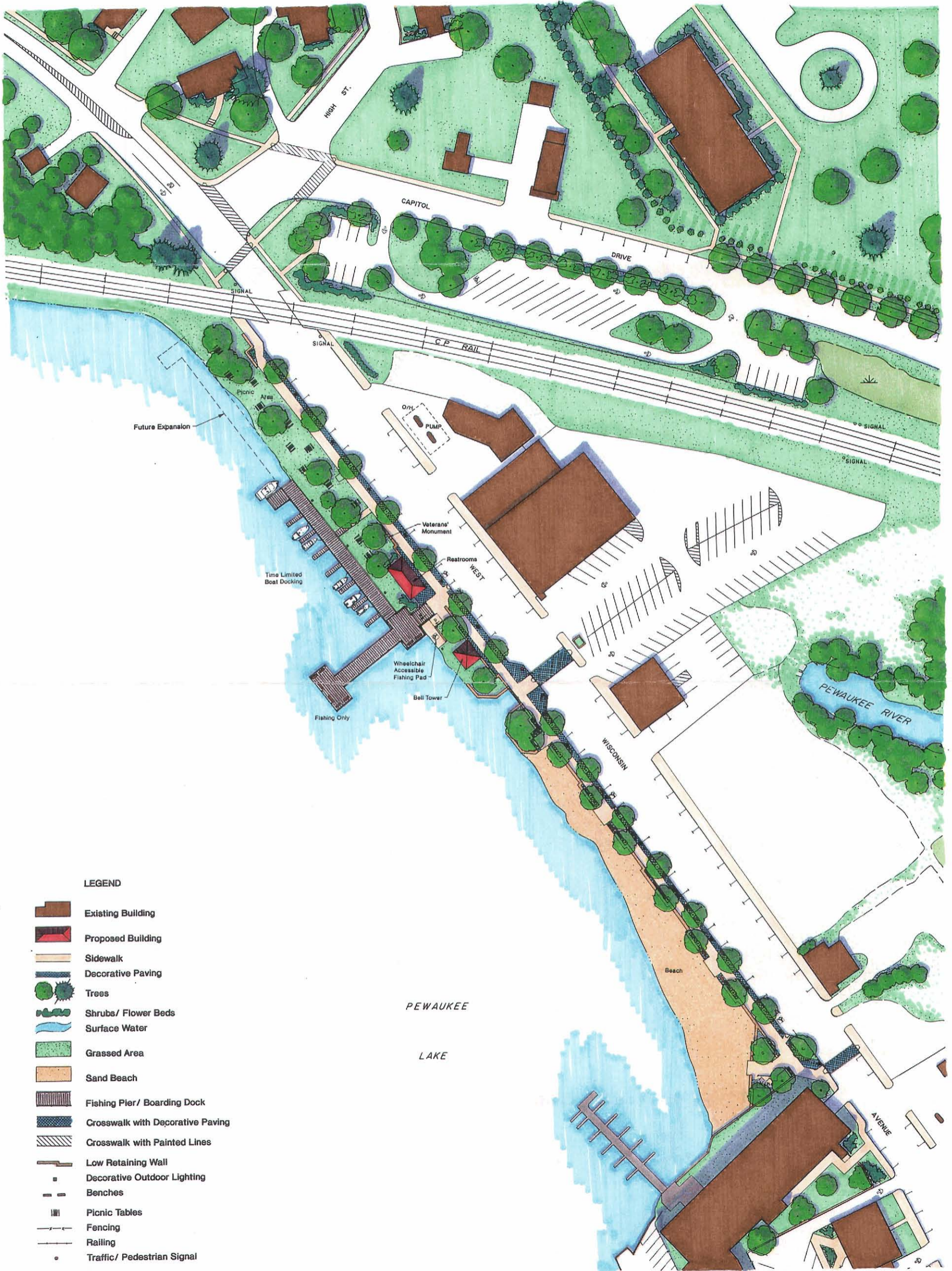
LEGEND

- Existing Building
- Proposed Building
- Sidewalk
- Decorative Paving
- Trees
- Shrubs/ Flower Beds
- Surface Water
- Grassed Area
- Sand Beach
- Fishing Pier/ Boarding Dock
- Crosswalk with Decorative Paving
- Crosswalk with Painted Lines





















Map 12

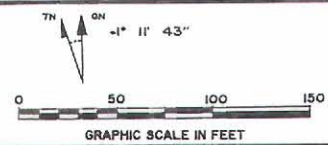
ALTERNATIVE B – PEWAUKEE LAKEFRONT DEVELOPMENT PLAN:
FISHING PIER AND SEPARATE BOARDING DOCK



LEGEND

-  Existing Building
-  Proposed Building
-  Sidewalk
-  Decorative Paving
-  Trees
-  Shrubs/ Flower Beds
-  Surface Water
-  Grassed Area
-  Sand Beach
-  Fishing Pier/ Boarding Dock
-  Crosswalk with Decorative Paving
-  Crosswalk with Painted Lines
-  Low Retaining Wall
-  Decorative Outdoor Lighting
-  Benches
-  Picnic Tables
-  Fencing
-  Railing
-  Traffic/ Pedestrian Signal

Source: SEWRPC.



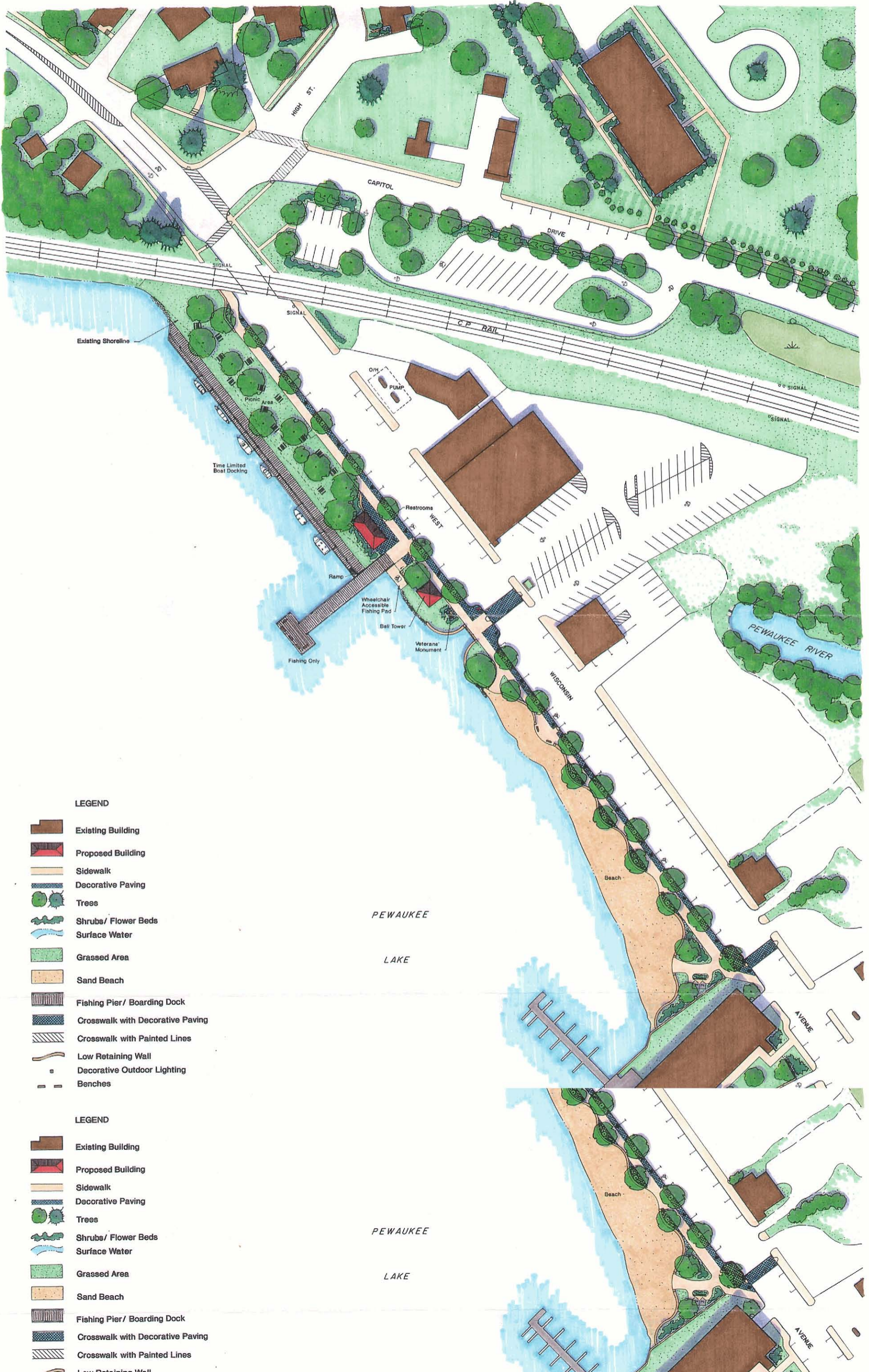
LAKEFRONT DEVELOPMENT AREA
VILLAGE OF PEWAUKEE
WAUKESHA COUNTY WISCONSIN

Map 12
ALTERNATIVE B

ORIGINAL MAP	DATE: JAN. 1983
REVISED BY: TJD	DATE: NOV. 1995
PROJECT DESIGN: RRK	DATE: JAN. 1996
DRAWN BY: TJD	DATE: FEB. 1996

40

**ALTERNATIVE C – PEWAUKEE LAKEFRONT DEVELOPMENT PLAN:
FISHING PIER AND SEPARATE ALTERED BOARDING DOCK WITH LAKE FILL**



LEGEND

- Existing Building
- Proposed Building
- Sidewalk
- Decorative Paving
- Trees
- Shrubs/ Flower Beds
- Surface Water
- Grassed Area
- Sand Beach
- Fishing Pier/ Boarding Dock
- Crosswalk with Decorative Paving
- Crosswalk with Painted Lines
- Low Retaining Wall
- Decorative Outdoor Lighting
- Benches

LEGEND

- Existing Building
- Proposed Building
- Sidewalk
- Decorative Paving
- Trees
- Shrubs/ Flower Beds
- Surface Water
- Grassed Area
- Sand Beach
- Fishing Pier/ Boarding Dock
- Crosswalk with Decorative Paving
- Crosswalk with Painted Lines
- Low Retaining Wall

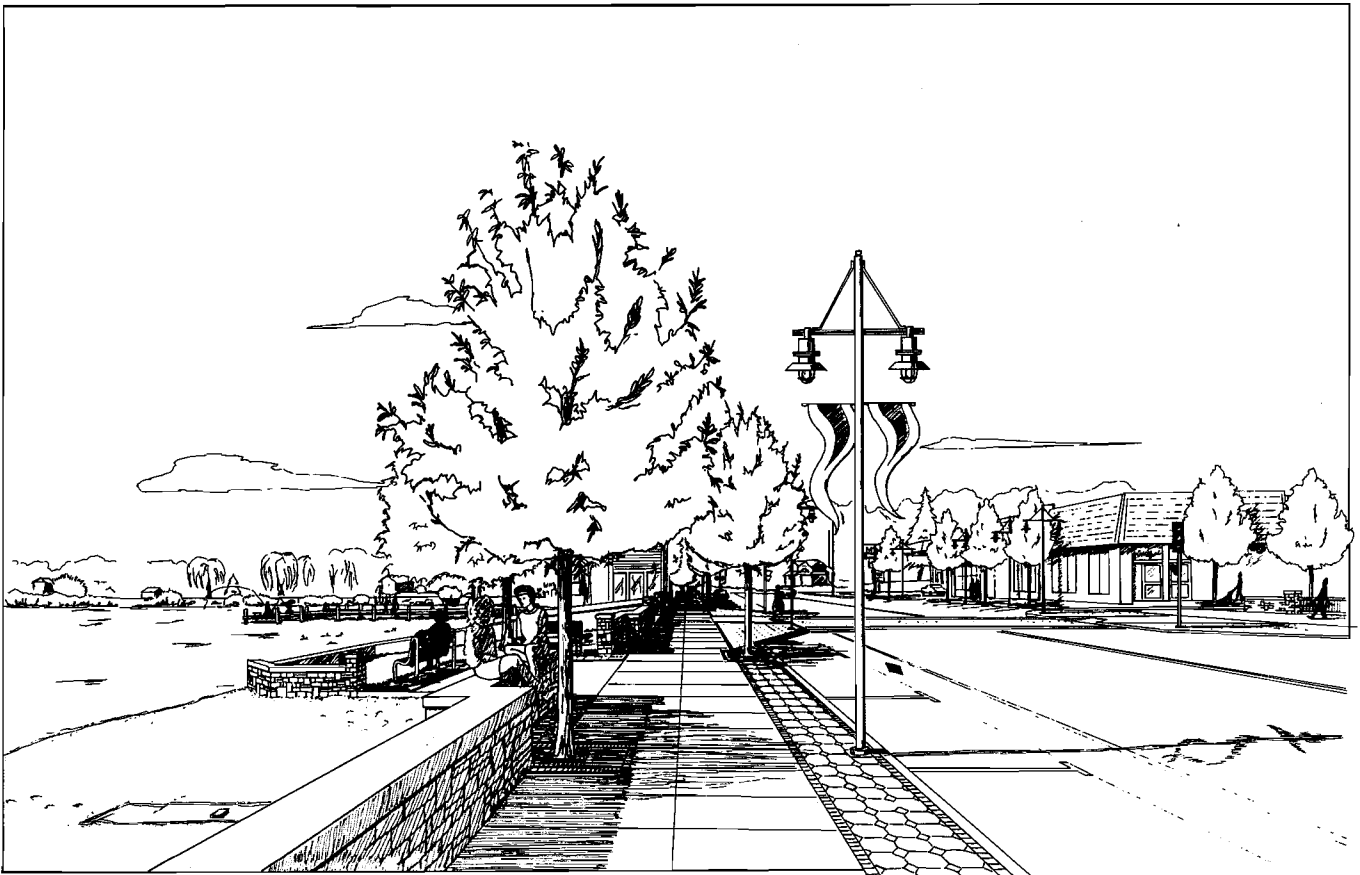
Figure 5

POTENTIAL IMPROVEMENTS APPLIED TO THE VILLAGE OF PEWAUKEE LAKEFRONT AREA

A. WISCONSIN AVENUE LOOKING NORTHWEST FROM THE SOUTHEAST END OF THE LAKEFRONT



1995 VIEW



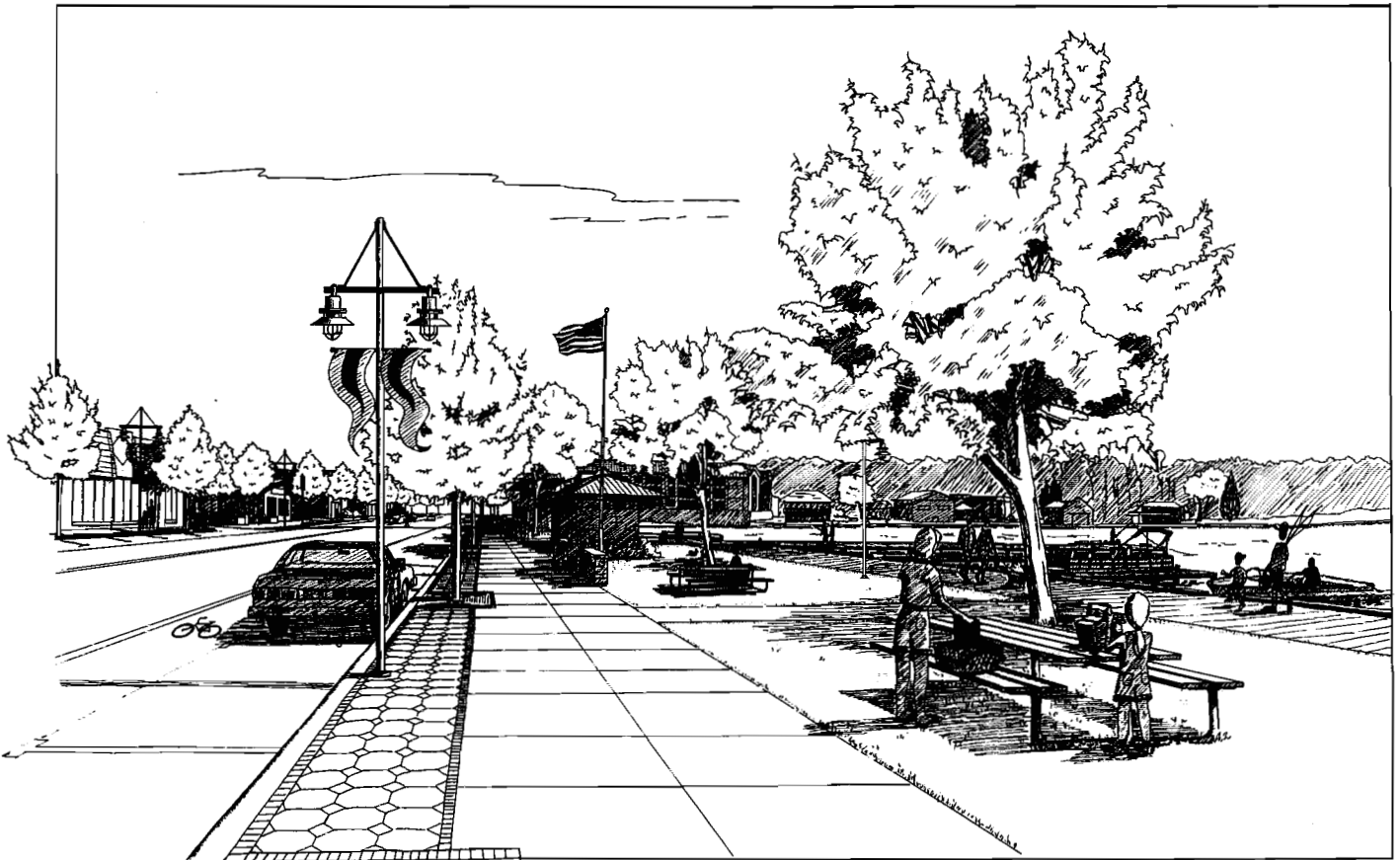
POTENTIAL VIEW AFTER IMPROVEMENTS

Figure 5 (continued)

B. WISCONSIN AVENUE LOOKING SOUTHEAST FROM THE NORTHWEST END OF THE LAKEFRONT



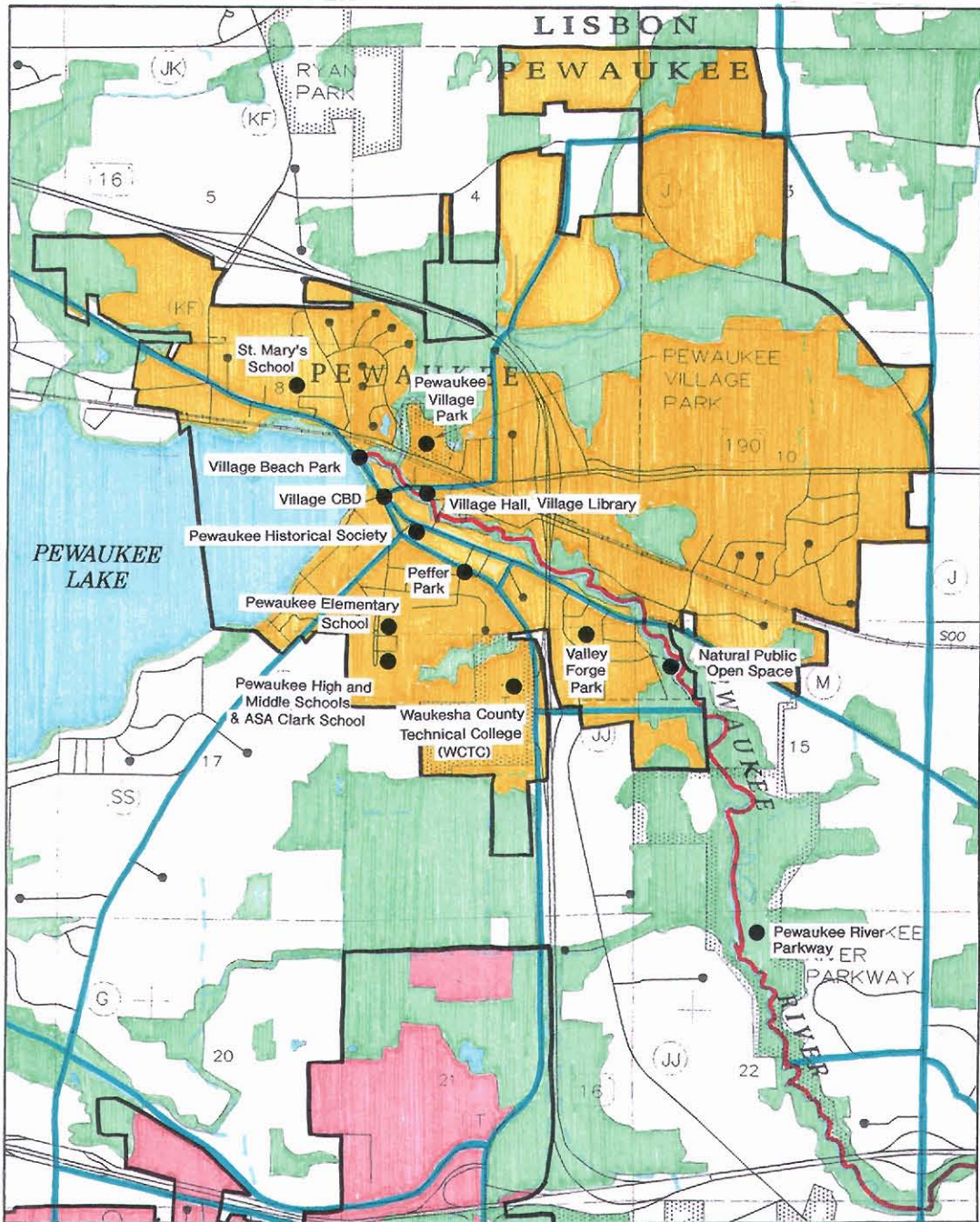
1995 VIEW



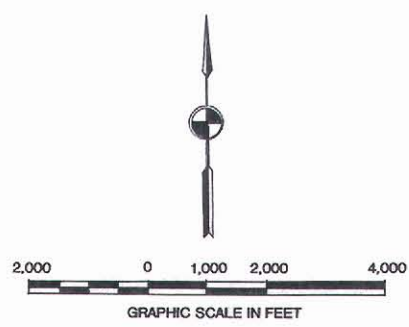
POTENTIAL VIEW AFTER IMPROVEMENTS

Map 14

PROPOSED VILLAGE OF PEWAUKEE TRAIL SYSTEM



- LEGEND**
- Village of Pewaukee
 - City of Waukesha
 - Rural Area
 - Significant Natural Areas
 - Surface Water
 - Selected Nodes
 - Recommended Bicycle Ways
 - Recommended Recreation Trail



NOTE: Significant Natural Areas consists of existing 1990 environmental corridors and isolated natural resource areas.

Source: SEWRPC.

such a trail that might eventually connect to the Fox River Parkway which passes within proximity of the Village limits.

With regard to the supporting facilities including parking areas in the vicinity of the lakefront area, two different general development plans are shown on Maps 15 and 16, along with the recommended lakefront development plan described in the previous section. These two broader area general development plans each include generalized parking and potential building layout arrangements, as well as connection points to a recreational trail system. Either of these two supporting development plans are considered to be practicable. As shown on Maps 15 and 16, these plans provide a framework system encompassing a nautical design theme as illustrated in Figure 6. The design should be refined as the Village proceeds with more detailed plan development and as businesses and developers make decisions regarding specific development projects.

RECOMMENDED RECREATIONAL USE AND WATERWAY PROTECTION PLAN

In recognition of both the demand for a high-quality recreational experience on and around Pewaukee Lake and the unique environmental value of the Lake, an integrated recreational use and waterway protection plan is recommended for the Village of Pewaukee lakefront area, as shown on Maps 15 and 16. The recommended plan consists of five principle components; namely, 1) the development of separate public boat boarding dock and fishing pier, consistent with the standards set forth under NR 1.91; 2) the development of multi-purpose lakefront recreation facilities, including continued use of the swimming beach, and construction of a bell tower, streetscaping and clock tower, and supporting facilities on the Village Beach waterfront; 3) the placement of suitable buoyage and signage; 4) the inclusion of appropriate pollution control and habitat protection measures; and 5) the conduct of a public information and education campaign. Adoption and implementation of this plan will contribute to the protection of the Lake and the maintenance of its public recreational value in a manner consistent with the intent of Chapter NR 1.91 of the Wisconsin Administrative Code and adopted regional, County, and Village park plans. The recommended plan is consistent with recommendations set forth in SEWRPC Community Assistance Planning Report No. 42, A Park and Open Space Plan for the Town and Village of Pewaukee, Waukesha County, Wisconsin, published in October 1980, and its Addendum and Extension which was published in 1994 by the Village of Pewaukee.

Provision of Public Boat Boarding Dock and Fishing Pier

The boat boarding dock is recommended to be situated at the northern end of Village Beach Park as a component of the Village lakefront recreational development plan, as shown on Maps 15 and 16. The acquisition by the Village of Pewaukee of the approximately one-acre parcel of land on the north side of the CP Rail System railway tracks—the former depot site²⁸—is recommended to provide for the development of parking areas to be used in conjunction with the boarding dock. It should be noted that some additional area within the right-of-way may be required for parking purposes. No new provision for the launching of watercraft is recommended at the Village lakefront park area. The site geometry of the property between Wisconsin Avenue and the Lake does not allow sufficient turning and maneuvering space nor space for

²⁸*This site is in the general location of a potential future location for a commuter railway passenger railway train service station site, as identified in the new adopted regional transportation system plan. Thus, at some future date the site may have to be expanded and modified to accommodate such use.*

Figure 6

POTENTIAL URBAN DESIGN IMPROVEMENTS
APPLIED TO THE VILLAGE OF PEWAUKEE LAKEFRONT AREA

WISCONSIN AVENUE LOOKING NORTHWEST FROM THE SOUTHEAST END OF THE LAKEFRONT



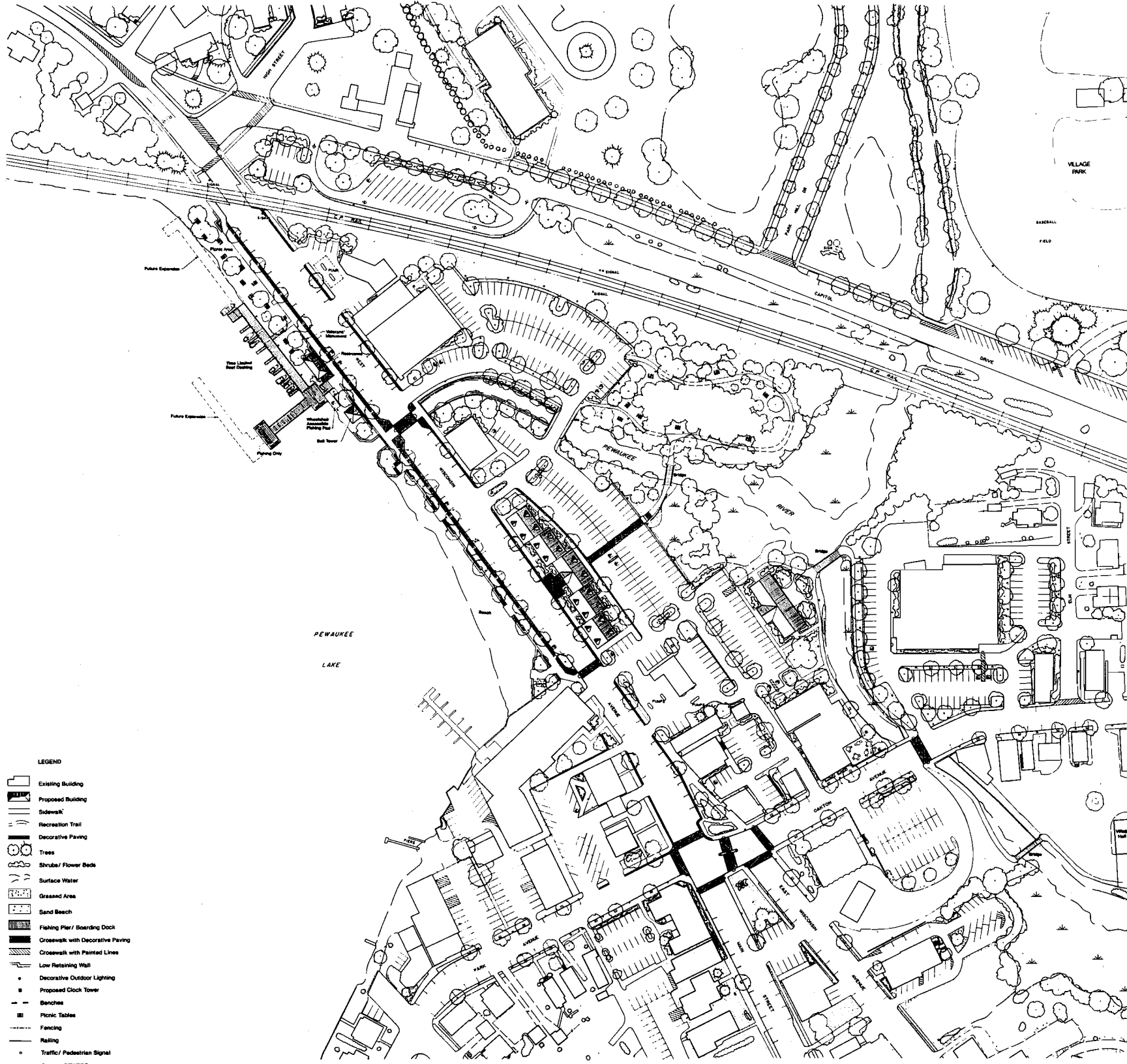
1995 VIEW



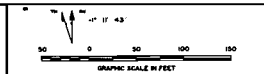
POTENTIAL VIEW AFTER IMPROVEMENTS

Source: SEWRPC.

VILLAGE OF PEWAUKEE LAKEFRONT GENERAL DEVELOPMENT PLAN A



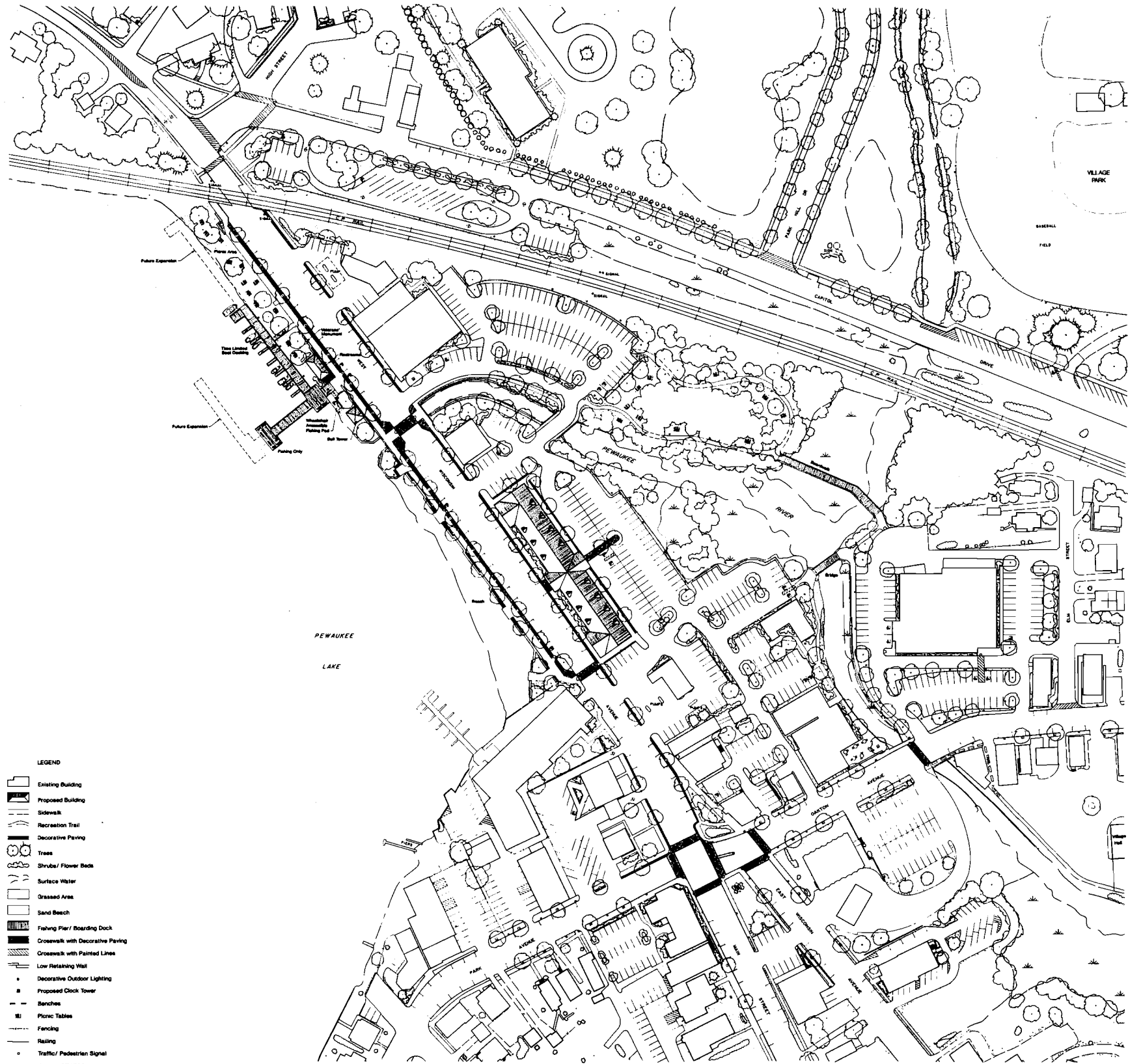
- LEGEND**
- Existing Building
 - Proposed Building
 - Sidewalk
 - Recreation Trail
 - Decorative Paving
 - Trees
 - Shrub/Flower Beds
 - Surface Water
 - Grass Area
 - Sand Beach
 - Fishing Pier/Boarding Dock
 - Boardwalk with Decorative Paving
 - Boardwalk with Painted Lines
 - Low Retaining Wall
 - Decorative Outdoor Lighting
 - Proposed Clock Tower
 - Benches
 - Picnic Tables
 - Fencing
 - Railing
 - Traffic/Pedestrian Signal
- Source: DEWRPC.



PEWAUKEE LAKEFRONT AND VICINITY
 VILLAGE OF PEWAUKEE
 WALKESHA COUNTY
 WISCONSIN

ORIGINAL MAP	DATE, JAN. 1983
REVISED BY, T. DAME	DATE, NOV. 1988
PROJECT DESIGN BY, R. HANNA	DATE, JAN. 1988
DRAWN BY, T. DAME	DATE, FEB. 1988

VILLAGE OF PEWAUKEE LAKEFRONT GENERAL DEVELOPMENT PLAN B



temporary storage of vehicles to permit a launch site to be safely developed. Furthermore, the studies conducted as part of this planning effort indicates that there is adequate public launch access capacity currently available on Pewaukee Lake. The related parking, to be situated on the lands east of the intersection of Wisconsin Avenue and Capitol Drive, across the street from the proposed boarding dock, should be designed so as to permit the parking of vehicles, a proportion of which should be capable of accommodating car-trailer units. The provision of at least one additional parking space accessible to handicapped individuals is also recommended pursuant to Section NR 1.91(8) of the Wisconsin Administrative Code.

The recommended boarding dock and fishing pier would provide short-term docking for about 15 boats. The proposed location of the dock is such that it could be expanded to the north to meet future demands. Both facilities would be provided with appropriate ramps to allow access for handicapped individuals.

Development of Multi-Purpose Lakefront Facilities

It is recommended that the current multiple usage of the Village Beach area of Pewaukee Lake be maintained and enhanced. Based on the user survey conducted by Commission staff, demand should exist for restaurant and shopping facilities that would complement the water-based recreational opportunities already offered by the Village of Pewaukee downtown and that would encourage visitors to extend their stays within the Village center. In this regard, future development of the Village Beach Park area should facilitate inclusion of those businesses offering goods and services coincident with year round recreational use of the waterfront area. Examples of such businesses would include restaurant facilities and speciality shops that would be used by visitors not only during the summer but also during the winter. The proposed development of a bell tower on the waterfront would be consistent with this approach to urban redevelopment along the Wisconsin Avenue corridor.

The recommended development of a public boat boarding dock and fishing pier north of the Lake outlet dam, recognizes the multiple uses made of the waterfront. One of the summer attractions offered by the Village is a waterski show. In order to promote multiple use, the design of the proposed boat boarding dock and fishing pier should be such that deck chairs could be used to view lake activities, such as the ski show, which take place periodically. Similarly, the design should encourage casual visitors to walk along the waterfront and enjoy the ambience of their proximity to this large lake.

Components of the recommended lakefront development plan include maintaining and enhancing the Village beach by landscaping and streetscaping; the development of a landscaped area north of the proposed fishing pier and boarding dock for passive recreation, such as picnicking and observing lake-oriented activities; the development of restroom and changing facilities; and streetscaping of the entire lakefront area, as illustrated in Figures 5 and 6.

While Wisconsin Avenue is likely to remain an important arterial street within the Village—given the lack of a convenient bypass around the waterfront—efforts should be made to recognize and manage vehicular traffic so as not to endanger pedestrians. For this reason, it is recommended that the present on-street parking be revised and limited to the use of parallel parking at selected areas. Recommendations for off-street parking to support the lakefront area, as well as local businesses in the area, are generally shown on

Maps 15 and 16. Provision of pedestrian cross-walks and connections between the beach/waterfront and shopping area is also recommended, as shown on Maps 15 and 16 and in Figure 5.

It is further recommended that a recreational trail system, providing a linkage between elements of the Town and Village of Pewaukee park and open space system, be developed in accordance with the preliminary concepts set forth on Map 14. This trail system could also form a valuable element of the public information and outreach effort. The Pewaukee School District, the Village of Pewaukee, and the Pewaukee Lake Sanitary District are presently cooperating in the use of that reach of the Pewaukee River downstream of Pewaukee Lake as an outdoor classroom. Development of this trail system could be subvented through the use of State grant funds provided through the Chapter NR 50/51 Stewardship Grants Program and, potentially, of Federal funds allocated under the Intermodal Surface Transportation Efficiency Act (ISTEA).

Buoyage and Signage

Marker buoys may be used to direct boating operations on the Lake by marking navigation lanes, areas to be closed to motorized watercraft, and areas of slow-no-wake navigation. The buoyed areas should include the swimming and fishing areas within the ambit of the Village lakefront area. Boating operations should be supervised by Village staff and enforced by law enforcement personnel. Appropriate signage at the public and private launch sites, located elsewhere on the Lake, and at the proposed boat boarding dock, should be erected to inform or remind boaters of the restrictions. Section 30.77(4), Wisconsin Statutes requires such signage to be displayed at public access sites. Even though a new access site is not recommended, it is recommended that such signage be placed at the proposed boat boarding dock to remind boaters and passengers of the lake-related ordinances.

Buoyage can be expensive to obtain, install and maintain. However, buoyage has the advantage of being readily visible to recreational users and of clearly demarcating affected areas. Given the extensive usage of Pewaukee Lake for mixed recreational purposes, consideration should be given to the deployment of buoys. Deployment of buoys to demarcate the Village Beach swimming and fishing areas would be consistent with the present practices of the Village of Pewaukee.

In addition, consideration should be given to the development of a fact sheet that can be provided to riparian residents and casual users informing them of the regulations and ordinances in effect on Pewaukee Lake, in general, and, specifically, those in effect on the Village of Pewaukee waterfront. Development of educational and informational materials relating to the enforcement of boating ordinances is cost-sharable under the State Chapter NR 190 Lake Protection Grant Program. Placement of buoys may be cost-shared under the State Chapter NR 7 Recreational Boating Facilities Grant Program of the Wisconsin Waterways Commission administered by the Wisconsin Department of Natural Resources Bureau of Community Assistance. Placement of buoyage is subject to an approved ordinance and State permit requirements.

Pollution Control and Protection of Environmentally Valuable Areas

The protection of ecologically valuable areas of Pewaukee Lake can be achieved through several mechanisms. The waterfront recreational facilities recommended in this plan should require minimal modification of the beachfront and should result in less potential impact than a paved public boating access ramp. The enforcement of local boating ordinances designed to control the operation of watercraft in the lake basin, especially in the vicinity of the Village Beach Park, will also limit the impacts on the Lake.

Presently, a general boating ordinance is in effect within the Towns and Village riparian to the Lake, with provisions relating to both summer and winter usage of the Lake. This ordinance is set forth in Appendix C. Boating ordinances enacted in conformity with State law must be clearly posted at public boarding docks as provided for in Section 30.77(4) of the Wisconsin Statutes.

There are few obvious sources of water pollution within the Village of Pewaukee lakefront area. Sources such as stormwater runoff which presently drains, in part, to the Lake; litter from public and private facilities located along the waterfront; and potential spillages from service businesses located in the lakefront area should be recognized and, insofar as possible, managed during and following the beachfront redevelopment project. In particular, it is recommended that the Village develop a rapid response plan for petroleum product spills from the petroleum product stations or from tanker trucks servicing these stations. Finally, the redevelopment of the Village lakefront area provides an opportunity to consider measures to reduce nonpoint source pollutant loadings to Pewaukee Lake and the Pewaukee River. It is recommended that a stormwater management plan be prepared for the area to determine the best measure to be incorporated into the development plan to reduce nonpoint source pollutant loadings.

The location of the Village Beach Park, at the eastern end of Pewaukee Lake, results in accumulating floating plant materials. Similarly, the shallow nature of the eastern basin of Pewaukee Lake makes this portion of the waterbody more susceptible to aquatic plant growth than other, western basin areas. Thus, the design of the waterfront facilities should also include consideration of the need to conduct aquatic plant management operations. Sufficient space should be provided between the pier and boarding dock structures to permit access by aquatic plant harvesters to the nearshore waters. As a general principle, the use of aquatic herbicides should be limited in favor of manual and mechanical harvesting techniques, as set forth in the approved aquatic plant management plan.

Public Information and Education

It is the policy of the Pewaukee Village Board to maintain an active dialogue with the citizens of the community. This dialogue is carried out through the medium of the public press, and in public fora facilitated by various Village Committees, public informational meetings and public hearings. In addition, informational materials can be provided to other units of government around the Lake, including the Lake Pewaukee Sanitary District and Towns of Delafield and Pewaukee, and to nongovernmental organizations, such as sporting clubs and other organizations that make use of the lakeshore. Where necessary, personal contacts with homeowners can be made by Village staff. Consideration should be given by the Village, in cooperation with the Pewaukee Lake Sanitary District and other governmental units operating within the Lake watershed, to publishing a Pewaukee Lake newsletter or other periodic informational media as a further means of disseminating information of interest to visitors and residents. As already noted, a component of this public information and education program should disseminate information on boating ordinance regulations. Another component should disseminate information on yard maintenance practices to reduce nonpoint sources of pollution. Certain costs incurred in the conduct of the recommended public information campaign may be eligible for reimbursement under the State Chapter NR 191 Lake Protection Grant Program.

Cost of the Recommended Recreational Use Plan

The recommended plan includes development of the northern portion of the Village Beach Park site into an accessible publicly owned fishing pier and boat boarding dock, with an attendant parking area located on

property to be acquired from the CP Rail System. The plan also includes placement of bouyage and signage which would be directly related to the use of the boarding dock and fishing pier. The actual cost of site acquisition and development will be dependent on the particular parcels involved and the detailed design of the facilities. Preliminary cost estimates for the facilities are as follows:

Site Acquisition:

Acquisition of CP Rail Site By the Village \$ 35,000^a

Site Development:

Boarding Dock \$ 40,000^a

Fishing Pier 35,000^b

Parking Area 75,000^a

Restroom Facilities 25,000^{a,b}

Lighting and Streetscaping* 15,000^{a,b,c}

\$225,000

^aState cost-share funds may be available through the Recreation Boating Fund administered by the Wisconsin Department of Natural Resources.

^bFederal cost-share funds may be available through the Sport Fish Restoration Program administered by the Wisconsin Department of Natural Resources.

^cLighting and streetscaping only immediately adjacent to the fishing pier, boarding dock, and parking area are included; re-use of lighting standards presently situated along E. Wisconsin Avenue, if replaced during the proposed redevelopment of this thoroughfare, could reduce the cost of lighting required in the parking area.

A portion of these costs relating to the construction of the boarding dock and associated supporting facilities are eligible for State cost-share funding under the Recreational Boating Fund administered by the Wisconsin Waterways Commission. Costs relating to the construction of the fishing pier and associated supporting facilities are eligible for Federal cost-share funding under the Sport Fish Restoration program administered by the Wisconsin Department of Natural Resources.

Placement of buoyage, and the posting of signage, recommended in this plan will also entail some costs. In addition, law enforcement action may also be necessary to ensure compliance with the Lake ordinance by lake users. Estimated costs are dependent on the number and type of buoys and signs placed or erected, and the amount of time and the number of possible additional staff needed to carry out the law enforcement duties attendant thereto. Such measures, including the production of informational materials associated with the amended ordinances, are eligible for cost-share funds under the State Chapter NR 191 Lake Protection Grant Program administered by the Wisconsin Department of Natural Resources. Assuming that part-time law enforcement services are required, the additional annual costs associated with the development and implementation of this plan could approach \$20,000 to \$25,000 per year over an initial three year period.

Routine maintenance of the facilities included in the plan will be performed by the Village of Pewaukee, with the assistance, as appropriate, of the Lake Pewaukee Sanitary District. Maintenance costs will generally be borne by the Village. Depending on the nature of the site design, boarding dock construction

and parking surface selected, maintenance costs are expected to be low. A portion of these costs could potentially be recouped through the imposition of a parking fee as provided under Section NR 1.91(11). Boat boarding dock fees are subject to State approval. The collection of such fees will require an associated cost for monitoring and collection.

Insurance coverage on the access site should be incorporated into the policy held by the Village of Pewaukee. Liability insurance costs will also be borne by the Village. The relevant certificates of insurance will be held by the Village of Pewaukee.

Day-to-day supervision of the launch site and parking area should be by the Village staff, with oversight by Director of Public Works.

PLAN IMPLEMENTATION

The recommended lakefront recreational use plan described in the previous section of this report provides a design for a lakefront and waterway protection plan consistent with the attainment of the community development objectives established for the plan preparation. Adoption of the plan by the Village of Pewaukee Plan Commission and the Lake Pewaukee Sanitary District Board of Commissioners is recommended. It is also recommended that the Village transmit copies of this plan document to the Wisconsin Department of Natural Resources as part of the grant funding requirements and seek the Department's concurrence in the recommendations contained therein. In addition to plan adoption, the following plan implementation actions are recommended.

It is recommended that the Village of Pewaukee proceed with the detailed design of the recommended lakefront facilities development plan to refine and detail the concept plans recommended in this report as a guide. Once agreement is achieved on the overall framework plan for the lakefront area and the downtown Village area as set forth herein, or as subsequently refined, the Village planning can be directed toward providing detailed development plans for subareas or for site-specific development or redevelopment recommendations. As noted in the previous section, State cost-share funding for the proposed boarding dock is potentially available through the Recreation Boating Fund administered by the Wisconsin Waterways Commission, while Federal cost-share funding for the fishing pier is potentially available through the Sport Fish Restoration Program administered by the Wisconsin Department of Natural Resources. Other State cost-share funds under the Urban Rivers Grant Program and the Urban Green Space Program administered by the Wisconsin Department of Natural Resources under Chapter NR 50, and Federal ISTEA funds, may be available for development of the proposed recreational trail system being considered for the Village. The Village should consider applying for such funds as an initial step in the plan implementation process. The level of detail provided herein is considered adequate for preparing the initial application materials.

It is also recommended that the Village review its current general zoning ordinance and make whatever revisions are necessary to allow for the establishment of restaurant facilities as a permitted use in the vicinity of the lakefront.

It is recommended that the Village of Pewaukee undertake a periodic, formal review of the recreational use and waterway protection plan as set forth herein. To support such periodic review, it is recommended that

the Village maintain records of public use of the access, recording such data as the type of fee paid—daily or seasonal, trailered or nontrailered parking—and the status of the user—resident, State resident or out-of-state resident. Such information can be gathered by periodical license plate surveys or through information provided by users should an “honor system” of payment be implemented. Additional information regarding recreational use of the waterfront can be gathered by public works or other Village staff employed during the summer season. This additional information should include the number of bathers, anglers and persons using the Village Beach Park.

SUMMARY

Introduction

This report documents a lakefront recreational use and waterway protection plan for the Village of Pewaukee. The plan was prepared by the Southeastern Wisconsin Regional Planning Commission at the request of the Village of Pewaukee. The plan preparation effort represents another element of the continuing lake management planning and implementation program being carried out for Pewaukee Lake and was prepared within the planning framework of a lakewide management plan; local, County, and regional park and open space plans; and local and regional land use plans. Funding for the plan preparation was provided by the Wisconsin Department of Natural Resources Lake Management Program and the Village of Pewaukee.

Existing and Planned Conditions in Pewaukee Lake and Its Watershed

Pewaukee Lake is a 2,450-acre waterbody comprised of two diverse basins; a deep-water western lobe, and a shallow-water eastern basin. The Lake, therefore, provides the opportunity for a variety of recreational pursuits suited to both shallow and deeper waters. Foremost among the recreational activities documented on this Lake are swimming, angling, and boating; and related activities, such as waterskiing.

Water quality conditions in Pewaukee Lake have improved significantly since the 1970s. This improvement may be attributed in large part to the installation of a public sanitary sewer system in 1979 to serve the urban development around the Lake and to the continued removal of phosphorus from the Lake through the ongoing aquatic plant management harvesting programs. The available data indicate that the standards associated with the maintenance of a healthy warmwater sport fishery are generally met. Notwithstanding, the Lake is considered to be borderline eutrophic and continued interventions such as aquatic plant management will be required to facilitate the intended recreational uses.

Surveys of aquatic plant communities in Pewaukee Lake have identified 20 species of plants, a number of which were common to abundant. Species that interfere with the recreational and aesthetic use of the Lake, such as Myriophyllum spicatum, Potamogeton pectinatus, and Ceratophyllum demersum, were found in the Lake. The Eurasian water milfoil, Myriophyllum spicatum, was the most widespread and abundant aquatic plant in Pewaukee Lake, occurring throughout the Lake and at all depths sampled to the maximum depth of colonization of 12.5 feet.

Aquatic plant management in Pewaukee Lake is currently carried out by the Pewaukee Lake Management District and the Village of Pewaukee using mechanical harvesting. Harvesting is carried out along about two-thirds of the northern shoreline, and about one-half of the southern shoreline by the District. Along

the shoreline within the Village of Pewaukee, harvesting is carried out by the Village of Pewaukee Department of Public Works.

Environmental corridors contain most of the remaining woodlands, wetlands, and high-value wildlife areas in the vicinity of Pewaukee Lake. These areas are recommended to be preserved and protected in order to maintain the overall quality of the environment. The primary environmental corridors remaining within the Pewaukee Lake tributary drainage area generally lie along major stream valleys, and around the Lake itself. About 3.6 square miles, or about 16 percent of the total tributary drainage area to Pewaukee Lake, were identified as primary environmental corridor. The lakeshore in the Village of Pewaukee is included in the primary environmental corridor lands.

The resident population of the tributary drainage area to Pewaukee Lake has been increased steadily with the 1990 level of 14,500 persons being nearly double the 1963 level. The adopted regional land use plan envisions a further increase in the population of the tributary area of about 40 percent between 1990 and the year 2010. Urban land uses within the tributary drainage area to Pewaukee Lake have increased by more than 200 percent between 1963 and 1990. As of 1995, the shoreline of Pewaukee Lake was fully developed, although some infilling and backlot development may occur. In addition, redevelopment of properties and reconstruction of existing single-family homes is expected to continue. Urban land uses within the tributary drainage area to the Lake are envisioned to increase by about 19 percent between 1990 and the year 2010 under the adopted regional land use plan.

Pewaukee Lake serves many forms of recreation, including boating, swimming and year-round fishing. Waterskiing is carried out extensively, but is generally confined to the deeper water areas of the western bay. Sail boating is also a prominent activity on the Lake. Winter activities include ice fishing, ice boating, and snowmobiling; and the Lake is also enjoyed year round as a visual amenity. The Village of Pewaukee supports many of these water-based recreational activities. For example, Village Beach Park provides a major recreational venue not only for Village residents but also for visitors to the Village.

Traditionally, public boating access to Pewaukee Lake has been through launching facilities maintained by private owners at several sites along the northern, western and southern shores of the Lake. More recently, construction of a public access site at Naga-Waukee County Park has provided additional access opportunities to Pewaukee Lake. Of the traditional sites, approximately five private operations remain as of 1995, providing public boating access for fees. Local park and open space plans and the lake management plans, prepared in 1984 for the Lake, do not specifically identify a need for additional public boating access sites on Pewaukee Lake. However, the plans do recommend that local units and agencies of government provide local park and open space sites and facilities as needed within their areas of jurisdiction. The park and open space plan for the Town and Village of Pewaukee, as amended, includes specific recommendations for public boat docking and fishing facilities on the Lakeshore and for public restroom facilities.

Access and Recreational Use Restrictions, Problems, and Needs

Pewaukee Lake has historically accommodated large numbers of recreational users. Heavy plant growth throughout the eastern basin of Pewaukee Lake has historically limited boating traffic resulting in water-based recreation being primarily carried out in small areas of open water located toward the center of the waterbody and in access lanes in which frequent harvesting is needed. Navigation of motorized watercraft

was significantly impeded by these conditions and has resulted in reduced recreational aesthetic enjoyment of the Lake users and the aesthetic enjoyment of visitors to the Village of Pewaukee. On the other hand, the western basin of Pewaukee Lake provided conditions conducive to waterskiing and high-speed boating. This condition effectively zoned the Lake for recreational use and underscored the multiple recreational use character of the Lake.

Presently, much of the aquatic plant growth that historically interfered with recreational pursuits in the eastern lobe of the Lake has been controlled by vigorous aquatic plant management measures carried out by the Village of Pewaukee and the Lake Pewaukee Sanitary District and to a degree by improved water quality conditions. The accessibility of the eastern lobe of the Lake to motorized boating and shoreline recreationalists provides motivation for the development of an integrated recreational use and waterway protection plan for the waters of the eastern basin, including the waters within the jurisdiction of the Village of Pewaukee.

In considering the potential for increasing recreational boating use opportunities on Pewaukee Lake, it is important to consider the capacity of the Lake to safely meet this increased usage. The primary concern in this respect relates to the boating capacity of the Lake relative to the current and future use. Based upon the inventory data on current access capacity and boating uses, it appears that Pewaukee Lake currently has available access parking capacity which is near the upper limit of the recommended range of access parking capacity standards used by the Wisconsin Department of Natural Resources. In addition, the current boating uses presently exceed on weekends the maximum number of boats recommended in standards set forth in the local, Waukesha County, and regional park and open space plans. Given the findings relating to current access and uses, there are no compelling arguments which can be made to add significant additional public boating access capacity. Thus, the focus of the current lakefront planning program for the Village of Pewaukee was directed toward the development of other types of lakefront facilities which will enhance the recreational and aesthetic uses of the lakefront area.

Alternative Boating Access and Recreational Use Plans

Because the Lake is in compliance with the Wisconsin Department of Natural Resources Administrative Code provisions for access, and is deemed to have adequate public access based upon standards set forth in adopted regional, county, and local park and open space plans, only two alternatives for providing alternative public boating access to Pewaukee Lake in the Village of Pewaukee lakefront area were considered. The first alternative considered would limit public access opportunities to those already provided for at the Naga-Waukee Park and Town of Pewaukee sites. The second alternative considered would provide additional access opportunity up to the maximum amount of parking provided for under the provisions of the Wisconsin Administrative Code—or an additional 12 car-trailer unit parking places, plus one additional handicapped accessible space.

Based upon the evaluation of advantages and disadvantages of the two alternatives and considering the geometry and locational limitations of the launch sites available in the Village of Pewaukee, continued reliance on the existing access sites as set forth under the first alternative is recommended.

Three alternative lakefront development plans were also developed and evaluated. Each alternative plan included continued use of the existing beach area at its current location after consideration of optional beach locations. In addition, each of the three alternatives included other facilities, such as streetscaping and clock

tower, changing facilities near the beach, and a bell tower facility currently being planned for by the Village, as components under all alternatives. The alternative plans vary with regard to the location and configuration of the fishing pier and boarding dock facilities, as well as options relating to streetscaping and supporting facilities. Based upon the costs and the advantages and disadvantages of the three alternative plans, the alternative providing for separate fishing pier and boat boarding dock facilities with the boarding dock being constructed entirely with pier structures rather than using lake fill is recommended.

It is important that the lakefront development in the Village be properly supported by adjacent development and facilities, and integrated with the public open space system of the Village. Thus, two optional means of providing for the needed supporting facilities and for connection to the recreational trail system of the Village are also described in the plan. These options are both considered viable and are recommended to be reviewed and refined as part of the Village's overall planning program.

Summary of Recommended Recreational Use and Waterway Protection Plan

Based upon the inventories and analyses and the evaluation of alternative plans conducted, an integrated recreational use and waterway protection plan is recommended for the Village of Pewaukee lakefront area, as shown on Maps 15 and 16. The recommended plan consists of five principle components; namely, 1) the development of public boat boarding dock and separate fishing pier; 2) the development of multi-purpose lakefront recreation facilities, including continued use of the swimming beach, and construction of a bell tower, streetscaping and clock tower, and supporting facilities on the Village Beach waterfront; 3) the placement of suitable buoyage and signage; 4) the inclusion of appropriate pollution control and habitat protection measures; and 5) the conduct of a public information and education program.

The actual cost of site acquisition and facility development will be dependent on the particular parcels involved and the detailed design of the facilities. The capital cost for the publicly owned fishing pier and boat boarding dock, with attendant parking and supporting facilities is estimated to be \$225,000.

A portion of these costs relating to the construction of the boarding dock and associated supporting facilities are eligible for State cost-share funding under the Recreational Boating Fund administered by the Wisconsin Waterways Commission. Costs relating to the construction of the fishing pier and associated supporting facilities are eligible for Federal cost-share funding under the Sport Fish Restoration Program administered by the Wisconsin Department of Natural Resources.

Placement of buoyage, and the posting of signage, and the associated maintenance and enforcement recommended in this plan will also entail some costs. Estimated costs are \$20,000 to \$25,000 per year. Such actions, including the production of informational materials associated with the amended ordinances, are eligible for cost-share funds under the State Chapter NR 191 Lake Protection Grant Program administered by the Wisconsin Department of Natural Resources. Additional costs may be incurred for annual maintenance of the fishing pier, boarding dock, and parking areas; and for insurance and record-keeping.

Adoption and implementation of the recommended plan is expected to contribute to the enhancement of the public recreational value of Pewaukee Lake, while continuing to provide for water quality and environmental resource protection. The recommended plan for the lakefront area also will compliment and enhance development and recreation and resource protection plans for the entire Village and environs.

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APPENDICES

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Appendix A

PUBLIC OPINION OF POTENTIAL RECREATIONAL FACILITY ON PEWAUKEE LAKE, PEWAUKEE, WISCONSIN, WAUKESHA COUNTY DRAFT SUMMARY OF DATA AND RESULTS

I. METHODOLOGY

- A. Questionnaire survey implemented in person at public boat launch and at a beach in the Village of Pewaukee in the vicinity of a potential area of new recreational facility.
- B. Analysis based upon 72 responses.
- C. Surveys taken on June 24, and July 3, 1995 between 8 to 10 a.m. and 1 to 4 p.m.

II. RESPONDENT PROFILE

- A. Majority (95 percent) of respondents used Lake Wisconsin and friends.
- B. Majority of the respondents were between the ages of 31 and 45 (36 percent) with the next age group being between 19 and 30 (29 percent).
- C. Majority of the respondents held professional occupations (36 percent) closely followed by skilled occupations (30 percent) with the remainder being students (12 percent), housewives (8 percent), retired (6 percent), unskilled (6 percent), and disabled persons (2 percent).
- D. Milwaukee was the most common residence of the respondents (44 percent), followed by Pewaukee (15 percent), Waukesha (11 percent), and Brookfield (6 percent).

III. LAKE USE

A. Categories of Use

1. Recreational use was the most common reason respondents engaged in lake activities (89 percent).
2. The average amount of hours spent per visit on power boating, picnicking, waterskiing, and birdwatching was approximately six hours, closely followed by fishing at five hours, swimming/scuba/diving at four hours, and sailing at three hours.

B. Intensity of Use

1. Majority of the respondents rated the boat launch as being moderately full during the weekday (63 percent) and full on the weekends (68 percent).

C. Frequency of Use

1. Fishing was the most common activity participated in (37 percent), followed by swimming (27 percent) and then by boating (12 percent) and waterskiing (10 percent).

2. During the summer recreational season the majority of the respondents used Pewaukee Lake one to three times (96 percent).
3. Majority of the respondents used the Lake during the midday (33 percent) closely followed by the late morning (21 percent), the early morning (20 percent) and the early afternoon (19 percent).
4. Majority of the respondents utilized additional lakes in Southeastern Wisconsin in addition to using Pewaukee Lake (62 percent), others did not (38 percent).

IV. SHORELINE FACILITY USE

- A. Majority of the respondents prefer fastfood restaurants (23 percent) or family diners (16 percent), as opposed to cafe dining (11 percent) and supper clubs (5 percent).
- B. Majority of the respondents felt they would make use of area specialty shops if available (67 percent) while others did not (33 percent).
- C. Majority of the respondents would encourage family and friends to use the specialty shops if available (93 percent).
- D. Majority of the respondents purchased their fuel and/or bait from the Pewaukee area (50 percent)—most chose convenience (77 percent) over quality (23 percent).
- E. Waxworms were the most commonly chosen bait among the respondents (39 percent), with the next most common choices being minnows (24 percent), redworms (17 percent) and night crawlers (15 percent).
- F. Majority of the respondents spend between \$10 and \$25 on an average outing with their family or group (40 percent) while others spend between \$0 and \$10 (28 percent) or between \$25 and \$50 (25 percent).
- G. Majority of the respondents with boats did not have onboard toilets (78 percent) nor did they feel they would make use of a pumping facility if available (90 percent).
- H. Majority of the respondents felt they would make use of a new boat launch and recreational facility if available (79 percent).

V. OTHER ISSUES

- A. Respondents commented that they felt more facilities were needed (11 percent).
- B. Suggestions that paddle boats should be available for renting (11 percent).
- C. Respondents commented that another boat launch was necessary (11 percent).
- D. Respondents felt that the location of the launch\Lake was in a very enjoyable area and was easy to get to (14 percent).

Appendix B

RECREATIONAL USE SURVEY RESULTS

Pewaukee Lake Survey: Weekday (July 3, 1995)						
Recreation Type	Morning Count		Afternoon Count		Totals for Day	
	Number ^a	Percent	Number ^a	Percent	Number ^a	Percent
Fishing from Shore (people) . . .	16	18	9	9	25	14
Fishing (boats)	45	51	13	13	48	26
Boating	15	17	37	36	52	28
Skiing	3	3	11	10	14	8
Jetskiing	2	2	3	3	5	3
Sailboating	0	0	2	2	2	1
Swimming	8	9	24	22	32	17
Windsurfing	0	0	5	5	5	3
Total	89	100	104	100	183	100

Pewaukee Lake Survey: Weekend Counts (June 24, 1995)						
Recreation Type	Morning Count		Afternoon Count		Totals for Day	
	Number ^a	Percent	Number ^a	Percent	Number ^a	Percent
Fishing from Shore (people) . . .	40	17	25	9.0	65	13.0
Fishing (boats)	55	23	13	5.0	68	13.0
Boating	44	18	83	31.0	127	25.0
Skiing	22	9	14	5.0	36	7.0
Jetskiing	2	1	4	2.0	6	1.0
Sailboating	15	6	23	9.0	38	8.0
Swimming	60	25	99	38.0	159	32.0
Windsurfing	0	0	2	0.7	2	0.4
Canoeing	2	1	1	0.3	3	0.6
Total	240	100	264	100.0	504	100.0

Pewaukee Recreational Use Survey: Boat Count (July 3, 1995)		
Boat Type	Number of Boats Docked, Stored, or In Use on Pewaukee Lake	Percent
Fishing	230	19
Canoe	25	2
Pontoon	212	17
Ski/power	472	39
Paddleboat	56	4
Sailboat	178	15
Jetski	49	4
Total	1,222	100

^aIndicates number of boats, except for category "Fishing from Shore," which indicates number of people.

Source: SEWRPC.

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Appendix C

BOATING ORDINANCES APPLICABLE TO PEWAUKEE LAKE

CAUTION - CHECK ICE CONDITIONS BEFORE GOING UPON FROZEN LAKE SURFACE.

WINTER REGULATIONS FOR PEWAUKEE LAKE

(1) **INTENT.** It is the intent of these regulations to provide the basic guidelines and parameters for the safe and healthful use of and conduct of activities on Pewaukee Lake during periods when the lake is frozen or partially frozen subject to the grant of authority under Section 30.81 of Wisconsin Statutes.

(2) **COMPLIANCE WITH STATE LAWS.** Except as otherwise specifically provided in this Section, the current and future statutory provisions of Section 23.33, 86.192, 161.47, and Chapters 125, 350, 938 through 948 of the Wisconsin Statutes, described and defining regulations generally with respect to vehicles and traffic conduct, snowmobiles; signage and all terrain vehicles; exclusive of any provisions therein relating to penalties to be imposed and exclusive of any regulations for which the statutory penalty is a term of imprisonment, are adopted and by reference made a part of this code as if fully set forth herein. Any act, required to be performed or prohibited by any current or future statute incorporated herein by reference is required or prohibited by this Section. Any future additions, amendments, revisions or modifications of the current or future statutes incorporated herein are intended to be made part of this Code in order to secure uniform statewide regulation.

(3) DEFINITION OF SELECTED WORDS AND TERMS

- a. **ATV - All-Terrain Vehicle** means any engine driven device as defined as Section 340.01(2g), Wisconsin Statutes, and any other multi-axle, two, three and four wheeled vehicles, or combination wheel and track (runner) vehicles, not otherwise defined herein, powered by a small motor(s) or fan and designed to be operated on snow, ice, grass, dirt, gravel, sand and wetland whether required to be licensed by State Law.
- b. **SNOWMOBILE** - means any engine driven vehicle as defined in Section 340.01(58a), Wisconsin Statutes.
- c. **AUTOMOBILE** - means any motor vehicle as defined by 340.01(4), Wisconsin Statutes, and including mini-vans.
- d. **MOTOR TRUCK** - means any motor vehicle as defined by 340.01(34) and including pickup trucks, regular size vans and combination automobile/trucks.
- e. **RV'S** - means any Recreational Vehicles as defined by 340.01(29), (6m), (33m) designed or constructed to operate either under their own power or towed, and designed to be used for temporary habitation
- f. **MOTORCYCLE** - means any motorized vehicles as defined by 3340.01(32) and including motorized bicycles and scooters.
- g. **ICEBOAT** - A sailboat-like structure with runners or wheels intended to be wind powered on a solid surface.
- h. **VEHICLES** - Includes all the above vehicles plus any other vehicle powered by motor or wind.

- i. **ICE SHANTIES** - Those structures parked or erected on the ice for use as warming buildings and ice fishing shelters, and not including RV's, trucks and automobiles.
- j. **ACTIVITIES AND EVENTS** shall include, but not be limited to, sporting events, fisheries, iceboat races, exhibitions, and vehicle races.

(4) **DESIGNATION OF PEWAUKEE LAKE ZONES.** There shall, hence-forth be designated two zones on Pewaukee Lake; namely, a SHORE ZONE and LAKE ZONE, defined as follows:

- a. **SHORE ZONE** - All area of the lake between the lake shore and a point 500 feet distance from the lake shore.
- b. **LAKE ZONE** - All area of the lake more than 500 feet from each and all shores of Pewaukee Lake.

(5) REGULATION WITHIN THE SHORE ZONE

- a. **MAXIMUM SPEED LIMIT** within the SHORE ZONE shall be 10 MPH for all vehicles.
- b. **ACTIVITIES AND EVENTS** within the SHORE ZONE are limited to those requiring no motor or wind powered vehicle.
- c. **PARKING** All vehicles, except iceboats, are prohibited from parking within the SHORE ZONE between 1:30 AM and dawn. Iceboats shall be securely tethered at a dock or at the shore and outside of traveled lanes.

(6) REGULATION WITHIN THE LAKE ZONE

- a. **MAXIMUM SPEED LIMIT** within the LAKE ZONE shall be as follows:
 1. Iceboats - No iceboat shall be operated at a speed greater than is reasonable and prudent under the conditions and having regard for the actual and potential hazards then existing.
 2. Snowmobiles - 50 MPH in daylight and 25 MPH at night.
 3. ATVs - 35 MPH in daylight and 25 MPH at night.
 4. All other vehicles including but not limited to automobiles, motor trucks, RV's and motorcycles other than iceboats, snowmobiles, or ATVs - 20 MPH.
 5. No vehicle may be operated anywhere on Pewaukee Lake over the speed of 10 MPH within 200 feet of an ice shanty, parked vehicle or person.
- b. **ACTIVITIES AND EVENTS** within the LAKE ZONE featuring motorized vehicles of any type are prohibited.
- c. **PARKING** of all vehicles is prohibited within the LAKE ZONE between the hours of 1:30 AM and dawn. In addition, no vehicle may be parked unattended within the LAKE ZONE.

(7) GENERAL REGULATIONS OF VEHICLE OPERATION IN BOTH SHORE AND LAKE ZONES

- a. No vehicle may be operated anywhere on Pewaukee Lake between the hours of 1:30 AM and dawn.
- b. All vehicles shall avoid and may not operate on cleared skating areas and in areas where authorized events are being held.

Appendix C (continued)

- c. No person shall use or operate any vehicle in any manner so as to endanger persons on the ice.
- d. No person while operating a vehicle shall push, pull, or tow any person on skates or skis.
- e. No person while operating a vehicle shall push, pull, or tow any device whether occupied or unoccupied unless such device is attached by a rigid tow bar to the frame of the towing vehicle. Such devices shall include but not be limited to sleds, toboggans, and inner tubes.
- f. No person shall operate any motorized vehicle in an erratic, free wheeling manner, all maneuvers including but not limited to "wheelies", "donuts", "skating" the vehicle, "spinning out" and wheel spinning are specifically prohibited on Pewaukee Lake.
- g. Excluding municipal and emergency personnel, no person shall operate any propeller or fan driven surface vehicle on Pewaukee Lake.
- h. No person shall operate any internal combustion powered vehicle which is not properly equipped with a muffler, and shall, generally, operate in a manner so as not to create excessive noise.
- i. No person shall operate any motorized vehicle during the period beginning one half-hour after sunset and ending at dawn unless equipped with and using adequate, operating head light(s) and tail light(s).
- j. No person shall throw, place or permit to remain on or below the surface of Pewaukee Lake any glass, earth, stones, grass, brush, leaves, petroleum product, garbage, excrement, refuse, waste, filth or other litter.
- k. Ice shanties
 - 1) No ice shanty may be placed or left on the ice after March 5 or before December 1 unless a shorter period is ordered by the Chief of the Lake Patrol. Any ice shanty placed or left in violation of this regulation shall be impounded and the owner fined as stipulated herein.
 - 2) Ice shanties shall at all times display a red light reflective material of at least nine (9) square inches in size on all sides approximately 3-1/2 feet from the bottom of the shanty and visible from 100 feet away.
 - 3) Ice shanties or shelters left on the lake overnight shall display the name, address and phone number of the owner on or near the door or entryway on the exterior of the shanty.
 - 4) Ice shanties shall be constructed of materials which will not be destroyed or quickly deteriorated by wind and rain.
- l. Ice cutting
 - 1) Holes cut, augured, or chiseled in the ice for purposes of fishing shall be no larger than 12 inches in the largest dimension.
 - 2) Holes cut, augured or chiseled in the ice for purposes of diving, may be larger than 12 inches in the largest dimension but such holes must be clearly marked with light-reflective markers and when not in use the ice replaced in the hole and markers placed until the hole freezes solid and is not a hazard.

(8) WINTER LAKE PATROL DESIGNATED

- a. There is hereby designated a Pewaukee Winter Lake Patrol which shall be administered, operated, equipped and manned as set forth in

inter-municipal agreements between or among those units of government having local lake jurisdiction.

- b. Winter Lake Patrol officers shall be authorized police officers and shall have the duty to patrol the lake to ensure safe conduct and operations on the lake, to assist in emergencies, to enforce these regulations, and to be visible and helpful to persons using the lake.
- c. It shall be unlawful to fail or refuse to comply with any lawful order, signal, or direction of a Lake Patrol Officer, and no operator of a vehicle, after having received a visual or audible signal from an officer, or marked Police vehicle shall flee or attempt to elude any officer by wilful or wanton disregard of such signal so as to interfere with or endanger the operation of the Police vehicle, or the Officer, or other vehicles or pedestrians, nor shall such operator increase the speed of the vehicle or extinguish the lights of the vehicle in an attempt to elude or flee apprehension.
- d. The cost of maintaining and operating the Winter Lake Patrol shall be borne by the units of government abutting that part of the lake being patrolled with the total costs and responsibilities being apportioned between or among the participants as set forth in an inter-municipal agreement(s) separate from these regulations.

(9) SPECIAL EVENTS, RISKS AND LIABILITIES

- a. No specific sporting event, fishery, iceboat race, or exhibition shall be conducted on Pewaukee Lake unless permission for such activity or event has been provided, in writing, by the Chief of the Lake Patrol.
- b. If at any time the Chief of the Lake Patrol observes that the lake is unsafe for vehicle operation or other activity, he may officially declare the lake unsafe and order it closed to traffic and/or activity.
- c. All traffic and activity on Pewaukee Lake shall be at the risk of the operator of the vehicle or pedestrian as set forth in Section 30.81(3) of Wisconsin Statutes and nothing in this ordinance shall be construed as shifting or placing such risk or liability to other parties, or units or agencies of government.

SEVERABILITY.

The several sections of this ordinance are declared to be severable. If any section or portion thereof shall be declared by a decision of a court of competent jurisdiction to be invalid, unlawful, or unenforceable, such decision shall apply only to the specific section or portion thereof directly specified in the decision and not affect the validity of all other provisions, sections, or portions thereof of the ordinance which shall remain in full force and effect. Any other ordinances whose terms are in conflict with the provisions of this ordinance are hereby repealed as to those terms that conflict.

TOWN BOARD, TOWN OF PEWAUKEE
TOWN BOARD, TOWN OF DELAFIELD
VILLAGE BOARD, VILLAGE OF PEWAUKEE

Appendix C (continued)

PEWAUKEE LAKE Summer Regulations

21.01 WATER TRAFFIC, BOATING AND WATER SPORTS.

(1) **INTENT.** The intent of this Ordinance is to provide safe and healthful conditions for the enjoyment of aquatic recreation consistent with public rights and interest and the capability of the water resource.

(2) **APPLICABILITY AND ENFORCEMENT.** The provisions of this Ordinance shall apply to the water of Pewaukee Lake within the jurisdiction of the Town of Delafield, the Town of Pewaukee, and the Village of Pewaukee. The provisions of this Ordinance shall be enforced by the officers of the Water Safety Patrol Unit of the joint jurisdiction of the Town of Delafield, the Town of Pewaukee and the Village of Pewaukee.

(3) **STATE BOATING AND WATER SAFETY LAWS ADOPTED.** The statutory provisions describing and defining regulations with respect to water traffic, boats, boating and related water activities in the following enumerated Sections of the Wisconsin Statutes, exclusive of any provisions therein relating to the penalties to be imposed or the punishment for violation of said statutes, are hereby adopted and by reference made a part of this Ordinance as if fully set forth herein. Any act required to be performed or prohibited by the provisions of any statute incorporated by reference herein is required or prohibited by this Ordinance.

- 30.50 Definitions
- 30.501 Capacity plates on boats
- 30.51 Operation of unnumbered boats prohibited
- 30.52 Certificate of number
- 30.53 Identification number to be displayed on boat, certificate to be carried
- 30.54 Transfer of ownership of numbered boat
- 30.55 Notice of abandonment or destruction of boat or change of address
- 30.60 Classification of motorboats
- 30.61 Lighting equipment
- 30.62 Other equipment
- 30.64 Patrol boats exempt from certain traffic regulations
- 30.65 Traffic rules
- 30.66 Speed restrictions, paragraph 1, 2(b), and 3
- 30.67 Accidents and accident reports
- 30.675 Distress signal flag
- 30.68 Prohibited operation
- 30.69 Water skiing
- 30.70 Skin diving
- 30.71 Boats equipped with toilets

(4) **DEFINITIONS.** (a) Shore Zone. All surface water within two hundred (200) feet of any shore. (b) Swimming Zone. An authorized area marked by regulatory markers to designate a swimming area. (c) Designated Anchorages. An area of water established and marked as an anchorage by lawful authority. (d) Public Access. Any access to the water by means of public property. (e) Navigation Lane. An area designated by authorized aids to navigation. (f) Slow-No-Wake. The slowest possible speed so as to maintain steerage. (g) Personal Flotation Devices. 1. Type I-life preserver (jacket type). 2. Type II-buoyant vest (horse collar type). 3. Type III-special purpose type (ski-vests, fisherman's vests, or float coats). 4. Type IV-buoyant cushions and ring buoys (throwable devices not designed to be worn).

(5) **SPEED RESTRICTIONS.** (a) General limits. No person shall operate a motor boat at a speed in excess of 10 mph between the hours of one-half hour after sunset and one-half hour before sunrise on all waters; provided that this provision shall not apply to boats participating in duly authorized races over a course laid out plainly marked and adequately patrolled. (b) Special limits. No person shall at any time operate a motor boat in excess of slow-no-wake within two hundred (200) feet of any shore, swimmer not in a designated swimming area, marked public swimming area, diving flag, canoe, rowboat, sailboat, non-operating motor boat, bridge, public access, or designated anchorage. (c) Speed limit. No person shall operate a boat at a speed in excess of 50 mph.

(6) **CAPACITY RESTRICTIONS.** No person shall operate or loan, rent or permit a boat to leave the place where it is customarily kept for operation on the waters by this Ordinance with more passengers or cargo than a safe load.

(7) **ADDITIONAL TRAFFIC RULES.** In addition to the traffic rules in S 30.65 of the Wisconsin Statutes adopted in sub.(3) of this Ordinance, the following rules shall apply to boats using the waters covered by this Ordinance: (a) Right-of-way at docks, piers and wharves. Boats leaving or departing from a pier, dock, or wharf, shall have the right-of-way over all other watercraft approaching such dock, pier, or wharf. (b) Right-of-way of sailboats. Boats propelled entirely by muscular power shall yield the right-of-way to sailboats when necessary to avoid risk of collision. (c) Houseboats. Prolonged anchoring, mooring, or nesting of houseboats, live-aboard cruisers, boat campers, or other boats with living or camping facilities are hereby declared to be in conflict with the intent and purpose of this Ordinance and is hereby prohibited. Anchoring, drifting, or mooring of houseboats is prohibited from twelve o'clock midnight to sunrise; however, unoccupied houseboats may be anchored in designated anchorages or moored to shore during this period with written permission of the property owner. An exception may be granted by the Chief of the Water Safety Patrol for a period not to exceed twenty-four (24) hours, provided such houseboat is moored to shore with written permission of the property owner and where suitable on shore sanitary facilities are available for use.

(8) **INTOXICATION AND INTOXICATING LIQUORS.** (a) Intoxicated persons not to ride in boats. No person shall permit a person who is intoxicated or under the influence of a controlled substance so as to be unable to provide for his own safety to be a passenger in a boat operated by him, except in cases of an emergency.

(9) **ANCHORAGES AND STATIONARY OBJECTS.** (a) Moored and anchored objects. No person shall erect or maintain any raft, ski jump, stationary platform, or any other obstacles to navigation more than two hundred (200) feet from the shore at any time unless a permit is obtained from the Chief of the Water Safety Patrol. All rafts and/or obstacles herein described shall be so constructed or anchored so that it has at least six (6) inches of free board above the water line, painted white, and has attached thereto not less than twelve (12) inches from each corner or projection a red reflector not less than three (3) inches in diameter. All rafts shall be inscribed with the name and address of the owner. (b) Designated anchorages. The shore zone is designated an anchorage except in areas of heavy traffic where anchoring may be prohibited by order of the Chief of the Water Safety Patrol. Anchoring or mooring of a boat other than an emergency craft is prohibited in swimming zones.

Appendix C (continued)

Anchoring or mooring for more than twenty-four (24) hours is prohibited elsewhere on the lake. (c) Public accesses. Mooring or anchoring of boats at public accesses other than at piers, as designated by the controlling governmental agency, is prohibited. (d) Mooring lights required. No person shall moor or anchor any unoccupied boat, raft, buoy, or other floating object more than two hundred (200) feet from the shoreline between sunset and sunrise unless a permit has been obtained from the Chief of the Water Safety Patrol and there is prominently displayed thereon a white light of sufficient size and brightness to be visible from any direction for a distance of two (2) miles on a dark night with a clear atmosphere except as provided in Section (e). This provision shall not apply to the shore zone or objects moored or anchored in designated anchorages. (e) Buoys marking race courses. Such buoys may be set without lighting provided that a permit has been obtained from the Chief of the Water Safety Patrol and that they are a bright color and are made of materials which will not damage a boat if struck. (f) Mooring buoys. All mooring buoys placed on the waters of the lake must comply with regulations of the Department of Natural Resources. Special permits shall be issued by the Chief of the Water Safety Patrol for temporary non-conforming buoys necessary during regattas and sporting events.

(10) **SAFE OPERATION REQUIRED.** No person shall operate, direct, or handle a boat in such a manner as to unreasonably annoy, unnecessarily frighten, or endanger the occupants of his or other boats.

(11) **SWIMMING REGULATIONS.** (a) No person shall swim from any unmanned boat unless such boat is anchored. (b) Distance from shore. No person shall swim more than two hundred (200) feet from the shore unless in a designated swimming zone or when accompanied by a competent person in a boat. (c) Hours limited. No person shall swim more than two hundred (200) feet from the shoreline between sunset and sunrise.

(12) **WATER SKIING.** (a) Persons in a boat. No person shall operate a boat for the purpose of towing a person on water skis, aquaplane, glider, kite, parachute, or similar device or permit himself to be towed for such purpose, unless there are two (2) or more competent persons in such boat. (b) Hours. No person shall operate a boat for the purpose of towing a person on water skis, aquaplane, glider, kite, parachute, or similar device or permit himself to be towed for such purpose between the hours of sunset and 10:00 A.M. (c) Distance from shore, public accesses, and beaches. No person shall operate a boat for the purpose of towing a person on water skis, aquaplane, glider, kite, parachute, or similar device or permit himself to be towed for such purpose within two hundred (200) feet of the shoreline, outside limits of any swimming zone, other watercraft, any swimmer not in designated swimming area, diving flag, or within two hundred (200) feet of any public access. (d) Personal flotation device. No person shall operate a boat for the purpose of towing a person on water skis, aquaplane, glider, kite, parachute, or similar device or permit himself to be towed for such purpose unless the person being towed is wearing a type I, II, or III personal flotation device. (e) Length of Tow. The maximum length of any tow rope for towing a person water skiing, aquaplaning, gliding, kite flying, parachuting, or similar device shall be seventy-five (75) feet. (f) Exceptions. The limitations of this Section shall not apply to participants in ski meets or exhibitions authorized and conducted as provided in subsection (14).

(13) **LITTERING WATERS PROHIBITED.** No person shall deposit, place, or throw from any boat, raft, pier, platform, or similar structure any cans, paper, debris, refuse, garbage, solid or liquid waste into the water.

(14) **RACES, REGATTAS, SPORTING EVENTS AND EXHIBITIONS.** (a) Permit required. No person shall direct or participate in any boat race, regatta, water ski meet, or other water sporting event or exhibition unless such event has been authorized and a permit issued therefor by the Chief of the Water Safety Patrol. (b) Permit. A permit issued under this Section shall specify the course or area of water to be used by participants in such events and the permittee shall be required to place markers, flags, or buoys approved by the Chief of the Water Safety Patrol designating the specific area. Permits shall be issued only if in the opinion of the Chief the proposed use of the water can be carried out safely and without danger to or substantial obstruction of other watercraft or persons using the lake. Permits shall be valid only for the hours and areas specified thereon. (c) Right-of-way of participants. Boats and participants in any such permitted event shall have the right-of-way on the marked area and no other person shall obstruct such area during the race or event or interfere therewith.

(15) **MARKER AND NAVIGATION AIDS, POSTING ORDINANCE.** (a) Duty of Chief. The Chief of the Water Safety Patrol unit is authorized and directed to place authorized markers, navigation aids and signs in such water areas as shall be appropriate to advise the public of the provisions of this Ordinance and to post and maintain a copy of this Ordinance at all public access points within the jurisdiction of the Village of Pewaukee, the Towns of Delafield and Pewaukee, and the County of Waukesha. (b) Standard markers. All markers placed by the Chief of the Water Safety Patrol or any other person upon the waters of the lake shall comply with the regulations of the Department of Natural Resources. (c) Interference with markers prohibited. No person shall without authority remove, damage, or destroy or moor or attach any watercraft to any buoy, beacon, or marker placed in the waters of the lake by the authority of the United States, state, county, town, village, or by any private person pursuant to the provisions of this Ordinance.

(16) **PENALTIES AND DEPOSITS.** (a) Any officer arresting a person for violation of a provision of this Ordinance who is unable to bring the person arrested before the Justice of the Peace for County Court without unnecessary delay shall permit such person to make a money deposit as provided in State Statute 30.76 of the Wisconsin Statutes. Such deposit shall be made to the Village of Pewaukee Police Headquarters or other offices designated for collections.

Town of Pewaukee
Town of Delafield
Village of Pewaukee