Lake Use Report No. FX–12

CAMP LAKE

KENOSHA COUNTY, WISCONSIN

Department of Natural Resources
Madison, Wisconsin

1969

CAMP LAKE
Kenosha County

An Inventory With Planning Recommendations

This report is a product of the lake and stream classification activity pursued in accordance with Section 23.09 (7)(m), Wisconsin Statutes, and preparation of this report was financed in part through a planning grant to the Southeastern Wisconsin Regional Planning Commission from the U.S. Department of Housing and Urban Development under the provisions of Section 701 of the Housing Act of 1954 as amended.

Lake Use Report No. FX- 12

Prepared By
Wisconsin Department of Natural Resources

For the

Southeastern Wisconsin Regional Planning Commission

1969

Contributors

Ronald Poff, C. W. Threinen, Brian Belonger, Warren Churchill, Donald Mraz, Ronald Piening and Henry Schwenn -- for the Lake Classification Project, Bureau of Fish Management

D. John O'Donnell, Supervisor, Watershed Development Unit, and Ruth L. Hine, Editor -- Bureau of Research

(This report is No. 1 *(Rev.)* in the WCD series of the Lake Use Reports.)

CONTENTS

INTRODUCTION

Camp Lake is a medium-sized, shallow lake located in the Town of Salem, Kenosha County, Wisconsin. It has a surface area of 461 acres, and a water volume of 2,327.7 acre feet of water at a water elevation of 741.9 feet above mean sea level. Although most of the lake is quite shallow and weedy, a community of more than 2,000 summer residents on its shores attests to its recreational and economic value. Its high value for waterfowl is self-evident throughout the open water period. Provisions for the protection, development and wise use of this valuable resource are important to its proper management.

PHYSICAL DESCRIPTION

Lake Basin

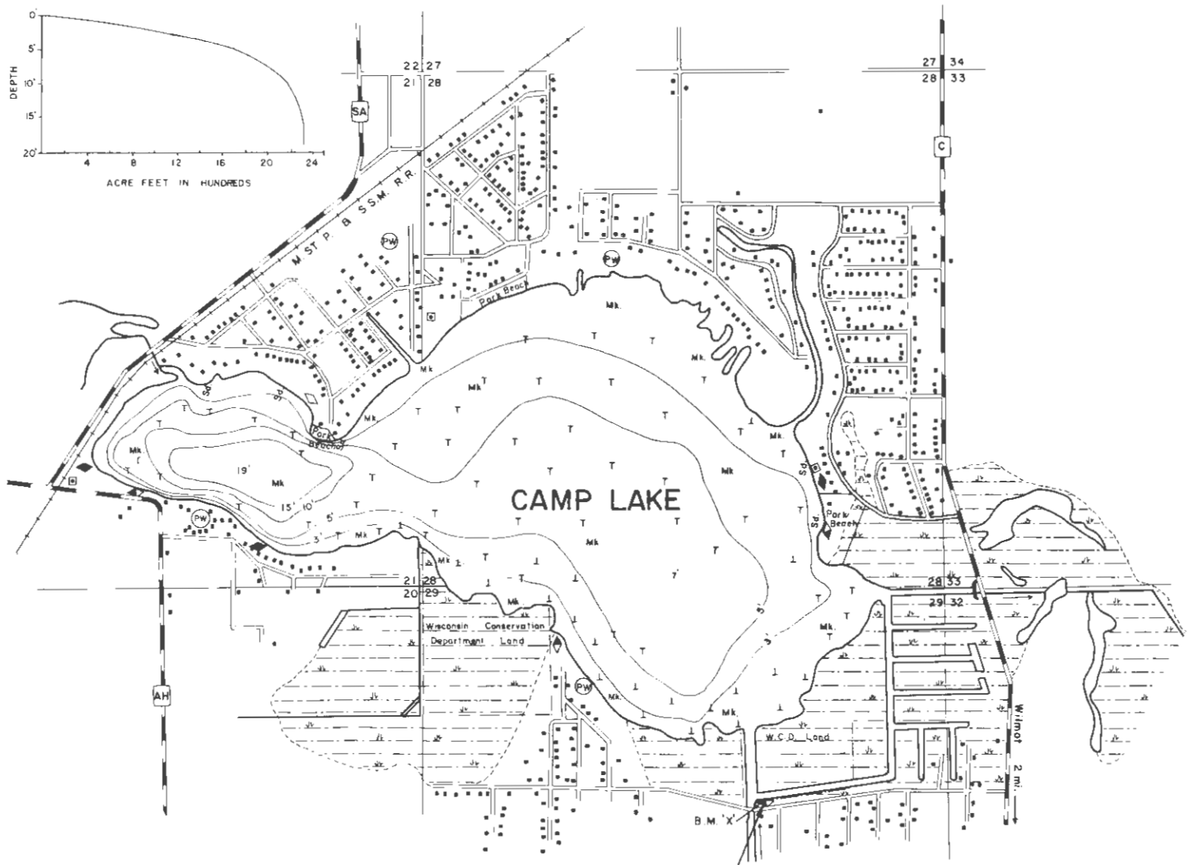
Camp Lake is a natural body of water, much of which is surrounded by marshland. A low-head dam at the outlet seasonally holds the level of the lake as it discharges to a dug channel in marshlands leading to the Fox River in Illinois. The surface drainage basin of the lake is 6,637 acres.

The lake is an elongated basin aligned on a north-south axis with a broad south end. The topography of the basin and utilization of adjoining land are illustrated in Map 1.

Basic hydrographic and morphologic data for Camp Lake are presented in Table 1. The lake has a mean depth of only 5 feet, and in fact, 40 percent is less than 3 feet deep. Dug channels have nearly doubled the shoreline above that available to the lake proper. The open water exclusive of minor channels has 4.85 miles of shoreline and a shore development factor of 1.61 (high for a lake with moderately irregular natural configuration).

Shore Characteristics

Wind affects the character of the shoreline. Maximum fetch or length over which the wind can blow unobstructed is 1.54 miles directly north-south and 0.86 miles west-east. Under these conditions, maximum wave height might be 1-1.3 feet. Wind action will keep the entire shallow south end in turbulent motion with bottom sediments stirred up. Because the basin is so shallow, the normally encountered shoreline sorting and maintenance of sand beaches does not occur. Nearly all shoreline is marsh-edged and mucky. Sand bottom occurs on about 17 percent of the shoreline in areas with shores disciplined for either cottages or swimming beaches. There are no rocky or gravelly shores.



W.C.D.–B.M.– square chiseled in top of S.E. wingwall of bridge on Camp Lake Canal on 286th. ave.– elev. 747.43'
Elev. of spillway or outlet control 740.60'

0 700' 1400' 2100' 2800 FT.
GRAPHIC SCALE

LEGEND

TOPOGRAPHIC SYMBOLS

B	BRUSH		STEEP SLOPE
PW	PARTIALLY WOODED		INDEFINITE SHORELINE
W	WOODED		MARSH
C.	CLEARED		SPRING
P	PASTURED		INTERMITTENT STREAM
A	AGRICULTURAL		PERMANENT INLET
BM	BENCH MARK		PERMANENT OUTLET
■	DWELLING		DAM
▣	RESORT		

LAKE BOTTOM SYMBOLS

P	PEAT	R	RUBBLE
Mk.	MUCK	BR	BEDROCK
C	CLAY	T	SUBMERGENT VEGETATION
M	MARL	⊥	EMERGENT VEGETATION
Sd.	SAND		FLOATING VEGETATION
St.	SILT		STUMPS & SNAGS
Gr.	GRAVEL		

◇ ACCESS ONLY ◆ ACCESS WITH PARKING ◆ BOAT LIVERY

SPECIES OF FISH	ABUNDANT	COMMON	RARE
MUSKIE			
N. PIKE		X	
WALLEYE		X	
L.M. BASS		X	
S.M. BASS	X		
PANFISH		X	
TROUT			

WATER AREA 461 ACRES
UNDER 3 FT. DEPTH 40%
OVER 20 FT. DEPTH 0%
VOLUME 2327.7 ACRE FT.
TOTAL ALK. 177 P.P.M.
SHORELINE 4.85 MILES
MAXIMUM DEPTH 19 FT.

MAPPED: SEPT. 1960
REVISED: JULY 1966
EQUIPMENT: ECHO SOUNDER
SURFACE WATER ELEVATION: 741.88'

MAP 1

HYDROGRAPHIC MAP

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T-1-N. R.-20-E.

D.N.R., OCT. 1968

TABLE 1

Hydrography and Morphology of Camp Lake, Kenosha County, Wisconsin, 1967

Area = 0.72 sq. miles	461 acres
Shore length = 4.85 miles	25,608 feet
Shore development factor* = 1.61	
Ratio of area (sq. miles) to shore length = 0.148:1	
Maximum depth = 19 feet	
Mean depth = 5 feet	
Volume = 2,327.7 acre feet	
Percent of area less than 3 feet deep = 40%	
Percent of area more than 20 feet deep = 0%	
Maximum length = 8,169 feet	
Maximum width = 4,529 feet	
Watershed area = 6,637 acres	
Ratio of watershed area to lake area = 14.4:1	
Exchange time = 0.65 yrs.	
Public frontage	
Intensive use (beach, boat launching) = 270 feet	
Wild frontage = 4,680 feet	
Open space frontage = 335 feet	

* Shore development factor is defined as the ratio of shoreline to the circumference of a circle with the same area as the lake, channels excluded.

Source: Wis. Dept. of Natural Resources

Drainage Characteristics

Camp Lake has a fairly large watershed of about 6,637 acres. Direct drainage is about 2,778 acres of the total. Much of the watershed is flat and marshy. The lake does not suffer rapid fluctuations in level and the maximum fluctuation is about one foot. Differences in elevation between the surface of Center Lake and Camp Lake are slight and range from 0.5 to 1.0 feet. Flow from Center Lake to Camp Lake in midsummer is negligible, and Camp Lake has no surface discharge under base flow conditions. Camp Lake exhibits effluent groundwater conditions in that it receives contributions from the groundwater table, but does not discharge to the groundwater.

Climate and Hydrology

Climatological data for Lake Geneva approximate conditions at Camp Lake. These data and corroborating material from other stations in the area appear in Table 2. About 53 percent of the average annual precipitation falls as rain from May through September, when vegetative growth occurs. As much of the watershed is marsh and open water; loss by evapotranspiration is appreciable during this period. The entire watershed, including the lake surface receives 17,920 acre feet of precipitation per year. Lake surfaces and wetlands lose by evaporation about 2,000 acre feet per year. The remainder presumably runs off. Approximately 7 inches (3,601 acre feet) will run off the watershed and constitute the discharge of Camp Lake to the Fox River in Illinois.

Soils

With very few exceptions, the soils bordering Camp Lake and extending some distance inland have severe limitations for use as cottage sites though this is their present use. Extensive muck areas border the south and west shores as wetlands. Navan silt loam, with a high water table resulting in slow permeability, borders the east shore of the southern basin. This soil has severe limitations for all recreational uses. The border of the north basin consists of filled or made land of loamy texture, with moderate to severe limitations for cottage sites.

The land immediately adjoining Camp Lake is not suited in general for cottage-type development. Such use poses a definite threat to Camp Lake through inoperative sanitary systems which contribute to nuisance conditions and can be considered as a pollutional hazard. The basic soil pattern as related to fish and game values is depicted in Map 2.

WATER QUALITY

Selected chemical analyses for spring and midsummer of 1966 (Table 3) are the basis for evaluation of the present water quality of Camp Lake. Data related to nutrient content of plant tissues have also been considered.

TABLE 2

Climatological Data for the Camp Lake Area, Kenosha County, Wisconsin, 1945-1961

Lake Geneva

	Ja	Fe	Mr	Ap	My	Jn	Jl	Au	Se	Oc	No	De	Yr
Temperature (F)													
Mean monthly	21.6	24.8	33.5	47.6	58.1	68.4	73.2	72.1	63.3	53.5	36.8	24.3	48.1
Precipitation (inches)													
Mean monthly	1.7	1.3	2.6	3.2	3.4	4.3	4.4	3.5	2.0	2.2	2.1	2.2	32.9
Days with rain*	4	4	6	6	7	7	6	6	4	4	5	6	65

Waukesha

	Ja	Fe	Mr	Ap	My	Ju	Jl	Au	Se	Oc	No	De	Yr
Temperature (F)													
Mean monthly	20.7	23.1	32.1	45.4	56.5	66.9	72.1	70.8	62.4	51.3	36.4	24.9	46.9
Precipitation (inches)													
Mean monthly	1.7	1.3	2.2	2.5	3.5	3.7	3.3	3.1	2.9	2.1	2.3	1.6	30.2
Days with rain*	4	4	5	6	7	7	5	6	5	4	5	4	62

Racine

	Ja	Fe	Mr	Ap	My	Ju	Jl	Au	Se	Oc	No	De	Yr
Temperature (F)													
Mean monthly	24.2	26.2	34.5	45.9	56.1	67.0	73.1	72.3	64.7	53.4	39.0	27.9	48.7
Precipitation (inches)													
Mean monthly	2.0	1.5	2.7	2.8	3.8	3.5	3.1	3.2	3.0	2.0	2.4	2.0	31.9
Days with rain*	5	4	6	6	7	7	5	6	5	4	6	5	66

* Precip. 0.10 inch or more

Source: Wis. Climatological Data, U. S. Weather Bureau, 1961.

Monthly Average Runoff in Inches

Station	Ja	Fe	Mr	Ap	My	Jn	Jl	Au	Se	Oc	No	De	Totals
Fox River, Wilmot	0.52	0.48	1.43	1.10	0.74	0.58	0.39	0.33	0.27	0.40	0.51	0.44	7.19

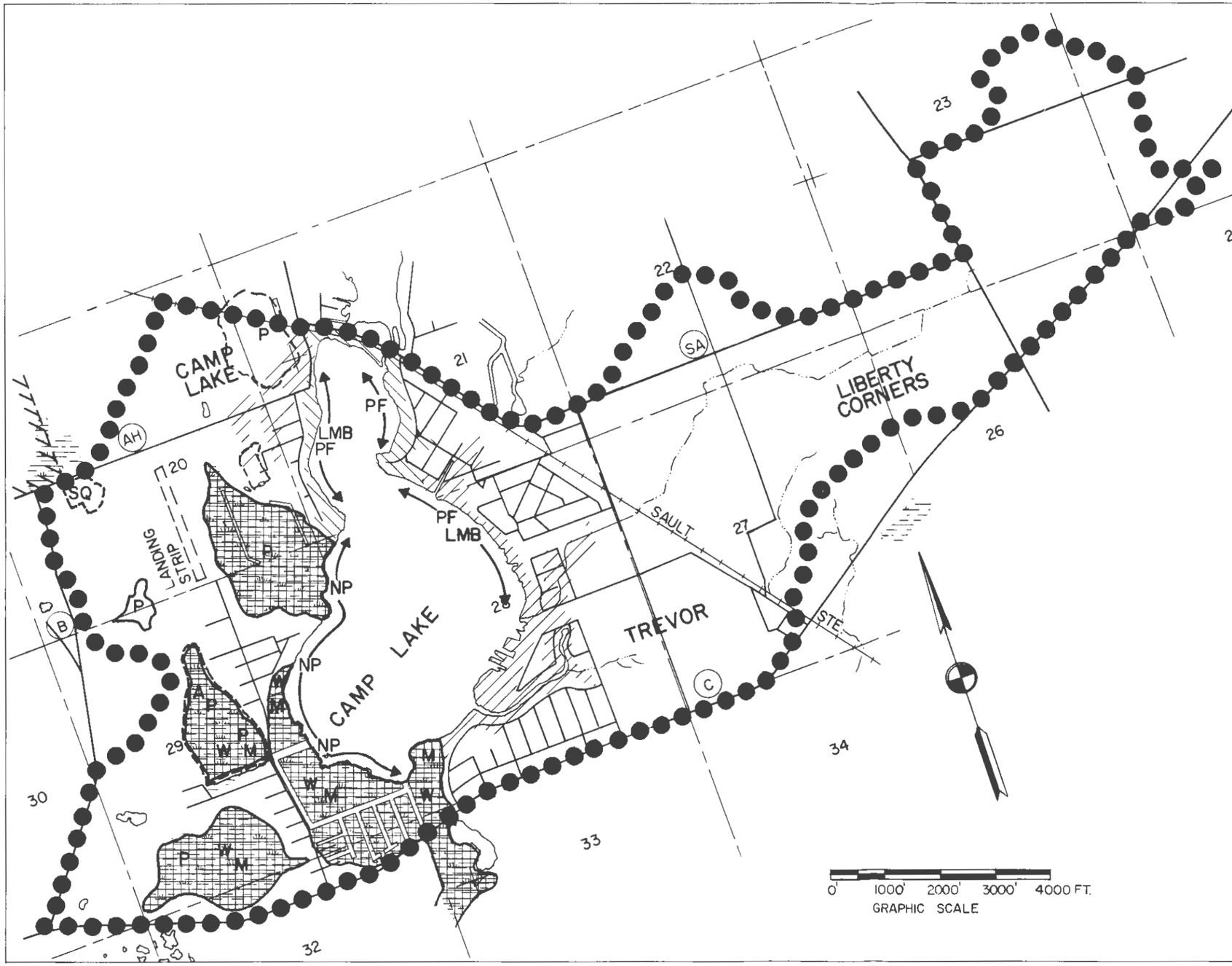
Ratio of Runoff to Rainfall, Fox River, Waukesha

Ja	Fe	Mr	Ap	My	Jn	Jl	Au	Se	Oc	No	De	Annual
.35	.38	.66	.43	.21	.16	.12	.11	.09	.19	.22	.28	.24

Lake Evaporation in Inches, Rockford, Illinois

Ja	Fe	Mr	Ap	My	Jn	Jl	Au	Se	Oc	No	De	Total
.31	.57	1.75	2.90	4.03	4.37	5.09	4.05	2.95	2.15	.89	.34	29.40

Source: Roberts, W. J. and J. B. Stall. 1967, Lake evaporation in Illinois. Report of investigation No. 57, State of Illinois.



LEGEND

FISH AND WILDLIFE VALUES

- PRIME IMPORTANCE
- LESSER IMPORTANCE
- W WATERFOWL
- M MUSKRAT
- P PHEASANT
- SQ SQUIRREL
- D DEER

SPAWNING AREAS

- LMB LARGEMOUTH BASS
- NP NORTHERN PIKE
- PF PANFISH
- WE WALLEYE

WOODLAND VALUES

- WELL STOCKED
- MEDIUM-POORLY STOCKED
- A AESTHETIC
- C-A COMMERCIAL-AESTHETIC

GENERAL SOIL TYPES

- LOAM
- SILT LOAM
- SANDY LOAM
- SAND
- MARSH
- MUCK
- MARL
- ALLUVIAL SOIL

- OPEN VISTAS
- WATERSHED BOUNDARY

MAP 2

FISH, WILDLIFE AND WOODLAND VALUES AND BASIC SOIL TYPES

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T.-1-N. R.-20-E.

D.N.R., OCT. 1968

TABLE 3

Selected Water Quality Parameters of Camp Lake, Kenosha County, Wisconsin, Spring and Fall, 1966

Parameter*	Depth: Date:	1 ft. 4-20-66	6 ft. 4-20-66	5 ft. 8-24-66
pH (units)		8.2	8.1	8.1
Tot. Alk.		188.0	189.0	153.0
Sp. Cond. (micromhos/ cm @ 25° C.)		395.0	411.0	466.0
Ca		40.0	44.2	18.6
Mg		31.1	33.0	28.9
Na		6.8	6.9	8.5
K		2.7	2.7	2.5
Fe (T)		0.05	0.07	0.14
PO_4 (T)		0.24	0.28	0.05
PO_4 (D)		0.13	0.05	0.05
Cl		15.5	15.0	18.4
SO_4		50.0	52.0	73.0

* All parameters expressed as milligrams per liter unless otherwise noted.

Plant Tissue Analysis of Camp Lake, June 23, 1967

Species	Percent Phosphorus	Percent Nitrogen
Ceratophyllum sp.	0.19	2.77
Elodea sp.	0.25	
Potamogeton crispus	0.46	

Source: Wis. Dept. of Natural Resources

The lake is moderately alkaline being about average in total alkalinity. On the basis of alkalinity, the lake is classed as moderately fertile. Nutrient levels are average for lakes in this region. Phosphate concentrations appear at times low enough in midsummer that algal growth may be limited; however, it is more practical to assume that at that time phosphorus is being rapidly cycled through plant growth and is in fact available in excess. Plant tissues from Camp Lake samples contain more than twice what is considered the essential phosphorus for optimum growth. On this basis, the lake may be considered excessively fertile. The lake has a medium aquatic nuisance hazard when chloride content is used as an index. The mean chloride content here is 1.5 times the regional mean.

As the lake is shallow, it is doubtful there is much anoxic water in midsummer. Fish kills have been experienced in winter because of this shallowness and high biochemical oxygen demand derived from the dense vegetative growth.

RESOURCES

Aquatic Plants

Aerial surveys and intensive ground reconnaissance revealed the extent of rooted aquatic vegetation growth. The general distribution of submergent, emergent and floating-leaved vegetation is illustrated in Map 1, the hydrographic map. Aquatic vegetation has been noted growing to depths of 13 feet, resulting in a continuous mat of plants in the southern two-thirds of the lake. The dominant species was Ruppia maritima, widgeon grass. Pondweeds, Potamogeton spp. were scattered throughout the basin in no discernible pattern of distribution. Myriophyllum, water milfoil, choked the surface on the east shore; Nuphar advena, yellow pond lily, was the dominant floating-leaved plant, occurring in extensive beds. Narrow-leaf cattail, Typha angustifolia, dominated the shoreline. Dominant species and the general extent of their growth in the basin are listed in Table 4.

Aquatic vegetation has been removed mechanically at several times in the past; however, because the lake is so shallow and fertile, the effect was not lasting.

Fish Resources

Surveys indicate that Camp Lake's fishery is diverse with good populations of panfish and game fish. Recent age-growth data indicates that the bluegills, the principal panfish, have a growth rate slightly lower than that of most southern Wisconsin waters. The black crappie, which is the other principal panfish, exhibits a better growth rate but is not considered better than average.

Game fish in the fishery are largemouth bass, northern pike and walleyes. Catfish are also present and a fair population of white bass also exists. Nearly all species have been stocked in the past. Largemouth bass and northern

TABLE 4

Dominant Species of Aquatic Vegetation in Camp Lake, Kenosha County, Wisconsin, 1967*

Scientific Name	Common Name	Growth Character	Extent in Basin
Ruppia maritima	Widgeon grass	Submerged	Abundant to 13 ft.
Nuphar advena	Yellow pond lily	Floating	Abundant scattered
Myriophyllum sp.	Water milfoil	Submerged	Common scattered
Typha angustifolia	Narrow-leaf cattail	Emergent	Abundant, shore
Potamogeton amplifolius	Large-leaf pondweed	Submerged-floating	Scattered patches
P. crispus	Curly-leaf pondweed	Submerged	Common near shore
Elodea sp.	Waterweed	Submerged	Common near shore

*Results of an intensive survey conducted June 12, 1967.

Source: Wis. Dept. of Natural Resources

pike have not been stocked for many years and walleyes have been stocked consistently since 1961. A recent survey showed that both northern pike and walleyes are reproducing naturally to some extent. Good largemouth bass reproduction is assumed to have occurred perennially.

Turbid water conditions are attributed to the overabundant population of carp which hinder the reproduction and maintenance of the more desirable fishes. Rough fish seine hauls made in the past have done little to control their numbers.

Summerkills have been known in the past, due to the high biological oxygen demand of decaying algae blooms.

The lake is also subject to partial winterkill. The last major winterkill occurred in 1955. Snow was removed on 100 acres of ice in 1959 to prevent oxygen depletion by encouraging photosynthesis.

Pleasure Boating

The lake is large enough to support limited high-speed boating. Dense vegetation is a deterrent, however, and for this reason pleasure boating is not as popular as would be expected. Public launching is provided for small craft and there are 4 boat liveries; however, other services are not available. Vegetation control in the past was intended to improve the lake for pleasure boating. A use conflict exists in that pleasure boating in the vicinity of the west shore detracts from wildlife values and fish spawning values for which that area was placed in public ownership.

Game Resources

Waterfowl and marsh furbearers find Camp Lake an ideal haven. Broods of mallard, teal and wood duck have been observed. Each spring and fall this is an important stopping and feeding point for waterfowl. Numbers averaged around 2,500 during previous instantaneous waterfowl counts. In addition, it is an interesting focal point for various marsh birds. Herons and bitterns are commonly present. Depths of the lake are ideal for waterfowl utilization of plant food. Game values are depicted in Map 2.

Aesthetic Features

Much of the shoreline has not been improved and buildings are normally not close to the shore because of its marshy character. The marshes provide most of the aesthetic uniqueness and interest. Woodlands and high open vistas are not found to liven this setting; however, views from the water are excellent and marsh frontage gives the impression of unaltered native beauty. Old channels in the cattails provide opportunity for close investigation by water of the marsh community.

LAKE USE

Fishing

Aerial observations and an intensive creel census are the basis for evaluation of the fishing pressure on Camp Lake. The average instantaneous count of fishing on weekdays has been 4.3, while weekends averaged 10.8 fishing boats at any one time. As many as 24 fishing boats have been observed; however, 10-15 are more commonly encountered peaks. It is estimated on the basis of these data that over 20,000 fishing man-hours are utilized during the summer months each year. Winter fishing accounts for one-fourth as much pressure as summer fishing. The lake receives over the year about 60 hours of fishing pressure per acre, a little less than average for lakes in this watershed. Because of the low fishing pressure and the poor growth characteristics of the panfish population, the average annual harvest is estimated at about 35 fish per acre, also below the watershed average.

Hunting, Trapping, Wildlife Observation

Presently, 76 acres of marsh and lowland are publicly owned and managed for wildlife. There are usually 5-10 duck blinds located around the south basin among the rushes, and in addition there are blinds in the marsh edge and along the channels within the marsh.

The ditches, as well as most of the wet marsh, offer good muskrat habitat. Records from other sites suggest that one muskrat is produced for every 40 feet of ditching; perhaps a thousand muskrats could be harvested from the Camp Lake marsh and ditches annually. Hunting on the marsh edge has been hampered in the past by blinds constructed out in the south basin in stands of rushes some distance from shore. An additional user conflict exists with the operation of outboard motorboats throughout the basin during the waterfowl season.

Swimming

Weeds, turbidity and lack of suitable bottom detract from swimming in the lake and because of this use pressures are modest. Existing beaches are not intensively managed; however, there are efforts to keep them free of rooted aquatic vegetation,and sand blanketing is a common practice.

Cottages and Homesites

There are a number of homes on the low ground surrounding the lake. The sewage disposal problems associated with homes in areas with high water tables are well documented. The best cottage sites, places with sufficient elevation where no problems exist, are located on the north end, and as is expected this area is entirely developed. The only remaining sites are back from the lake; these will probably not be developed unless public beaches and landings are made available.

Boating

Camp Lake has less boating activity than most lakes its size, due largely to the weedy character of the south basin and the small size of the north basin. Speedboats can only be operated in a strip of open water down the center of the south basin and in the north basin. On a summer weekend, there were commonly 2-3 motorboats at any one time and on weekdays only 1-2 boats. Seldom were more than 8 speedboats seen on the lake, and rarely was more than one of these water skiing.

RECREATIONAL RATING

It is advantageous to rate the lake on the basis of its value for primary recreational uses. This has been provided in Table 5. The lake has significant aesthetic values and high values for fishing, though modest problems exist. Limited firm shore and frequent weed problems restrict its value for swimming, and weeds and inadequate depths limit its boating value. With 47 out of a possible 72 points, the lake can best be described as having some outstanding values and some naturally limited values.

EXISTING LAND USE

Land use in the watershed has been summarized for 1963 (Table 6). Agricultural cropland encompasses 51.5 percent of the watershed. Wet areas, woodlands and unused lands cover 32.2 percent. Lands devoted to residences and related uses such as commercial, transportation and private parks cover 16.3 percent. Agricultural land practices appear to have a substantial impact on lake nutrition in this instance. Existing land use is illustrated on a map of the lake and environs (Map 3). The area encompassed in land use is based on total quarter section area provided more than one-half the total was within the watershed.

EXISTING PROTECTIVE MEASURES

Sewage Disposal

Public sewerage is lacking in the watershed; hence, soil absorption systems are the most common type of treatment. As stated in the discussion of soil resources, most of this area is poorly suited to such systems, as the water table is nearly at the surface. As Camp Lake receives groundwater and surface runoff from the surrounding area, contamination of lake waters by inoperative private systems is to be expected.

TABLE 5

Recreational Rating of Camp Lake, Kenosha County, Wisconsin, 1967

Space: Total area - 460 acres Total shore length - 461 acres
Ratio of total area to total shore length: 0.148:1
Quality (18 points for each item)

Fish:					
X	9 High production	___	6 Medium production	___	3 Low production
___	9 No problems	X	6 Modest problems such as infrequent winterkill, small rough fish problems	___	3 Frequent and overbearing problems such as winterkill, carp, excessive fertility
Swimming:					
___	6 Sand or gravel (75% or more)	___	4 Sand or gravel (25 - 50%)	X	2 Sand or gravel (<25%)
X	6 Clean water	___	4 Moderately clean	___	2 Turbid or darkly stained
___	6 No algae or weed problems	___	4 Moderate algae or weed problems	X	2 Frequent algae or weed problems
Boating:					
___	6 Adequate depths (75% of basin >5')	___	4 Adequate depths (50-75% of basin >5' deep)	X	2 Adequate depths (50% of basin)
___	6 Adequate size for extended boating (>1,000 acres)	X	4 Adequate size for some boating (200-1,000 acres)	___	2 Limit of boating challenge and space (<200 acres)
___	6 Good water quality	___	4 Some inhibiting factors such as weedy bays, algae blooms, etc.	X	2 Overwhelming inhibiting factors such as weed beds throughout
Aesthetics:					
X	6 Existence of 25% or more wild shore	___	4 Less than 25% wild shore	___	2 No wild shore
___	6 Varied landscape	___	4 Moderately varied landscape	X	2 Unvaried landscape
X	6 Few nuisances such as excessive algae, carp dumps, etc.	___	4 Moderate nuisance conditions	___	2 High nuisance condition

Total quality rating: 47 out of a possible 72

Source: Wis. Dept. of Natural Resources

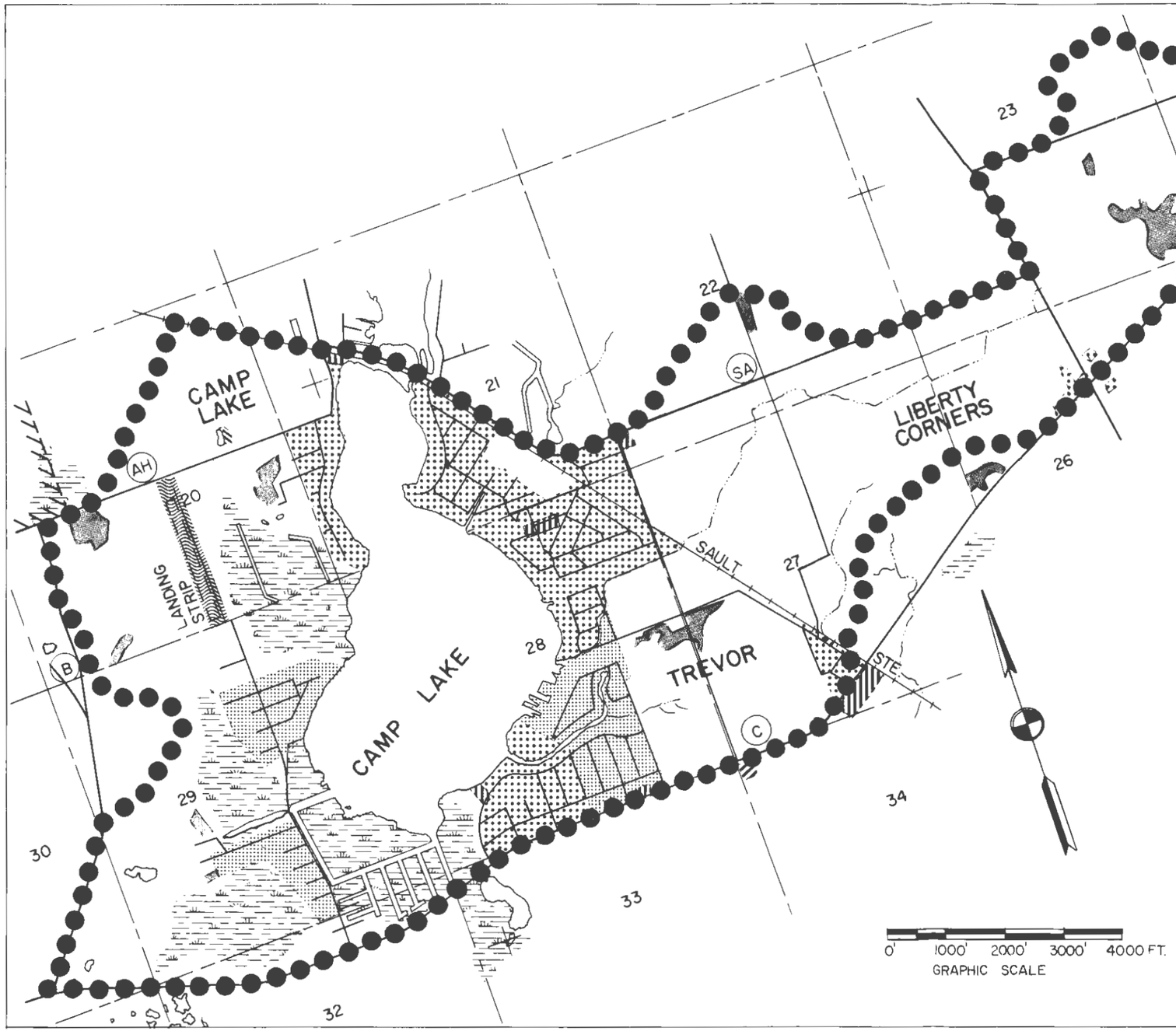
TABLE 6

Existing Land Use in the Camp Lake Watershed,
Kenosha County, Wisconsin, 1963*

Land Use				Percent of
Major Category	Detailed	Area in Acres	Total Acreage	Watershed
Residential		474.94	474.94	7.19
Commercial		22.30	22.30	.34
Industrial	Major			
	Other	6.01	6.84	.10
	Mining	.83		
Transportation & Communication		288.22	288.22	4.36
Government or Institutional		5.95	5.95	.09
Recreation	Public			
	Private	279.48	279.48	4.24
Open Land	Wet	1,463.11	2,124.15	32.15
	Unused	175.52		
	Wooded	485.52		
Agriculture	Crops	2,911.22	3,404.28	51.53
	Related	493.06		
Total Acreage for Watershed Including Lakes*		6,606.16	6,606.16	100.00

* Summarized to nearest whole U.S. Public Land Survey quarter section.

Source: SEWRPC Existing Land Use Inventory, March, 1963



LEGEND

- LOW DENSITY RESIDENTIAL (0.5-7.2 PERSONS PER RESIDENTIAL ACRE)
- MEDIUM DENSITY RESIDENTIAL (7.3-22.8 PERSONS PER RESIDENTIAL ACRE)
- HIGH DENSITY RESIDENTIAL (22.9-59.2 PERSONS PER RESIDENTIAL ACRE)
- RETAIL AND SERVICES
- WHOLESALE AND STORAGE
- TRANSPORTATION, COMMUNICATION & UTILITY
- MANUFACTURING & QUARRYING
- GOVERNMENTAL & INSTITUTIONAL
- WOODLAND
- WETLAND
- PARK & RECREATIONAL
- WATER
- AGRICULTURE AND AGRICULTURE-RELATED
- WATERSHED BOUNDARY

MAP 3

EXISTING LAND USE, 1963

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T.-1-N. R.-20-E.

D.N.R., OCT. 1968

Zoning

The present land use controls are those of the Town of Salem, which are evaluated in Table 7 as they affect lakeshores. The present zoning ordinance contains no provisions for conservancy district zoning, which could offer definite protection for lowlands and wetlands around Camp Lake. Lot dimensions, width, setback and area are inadequate in light of the model shoreland zoning ordinance which must eventually be adopted. The placement of boathouses, bank-shore cover protection, slope protection and placement of billboards were not adequately considered in the ordinance. As shoreland-floodplain zoning must meet standards designed for the protection and enhancement of aquatic resources in the near future, it is assumed that zoning inadequacies will be rectified (Map 3A).

Water Zoning

The present boat control ordinance is that of the Town of Salem, which is evaluated in Table 8. The lake is large enough to sustain motorboats. A maximum speed limit has been set and a 200-foot shore zone is specified, wherein speed is restricted. Provisions are not found for control of mooring; this is not, however, a problem presently. Consideration has not been given to preserving designated areas of aquatic vegetation or to shore preservation. The latter would be desired in conjunction with public ownership of shorelands.

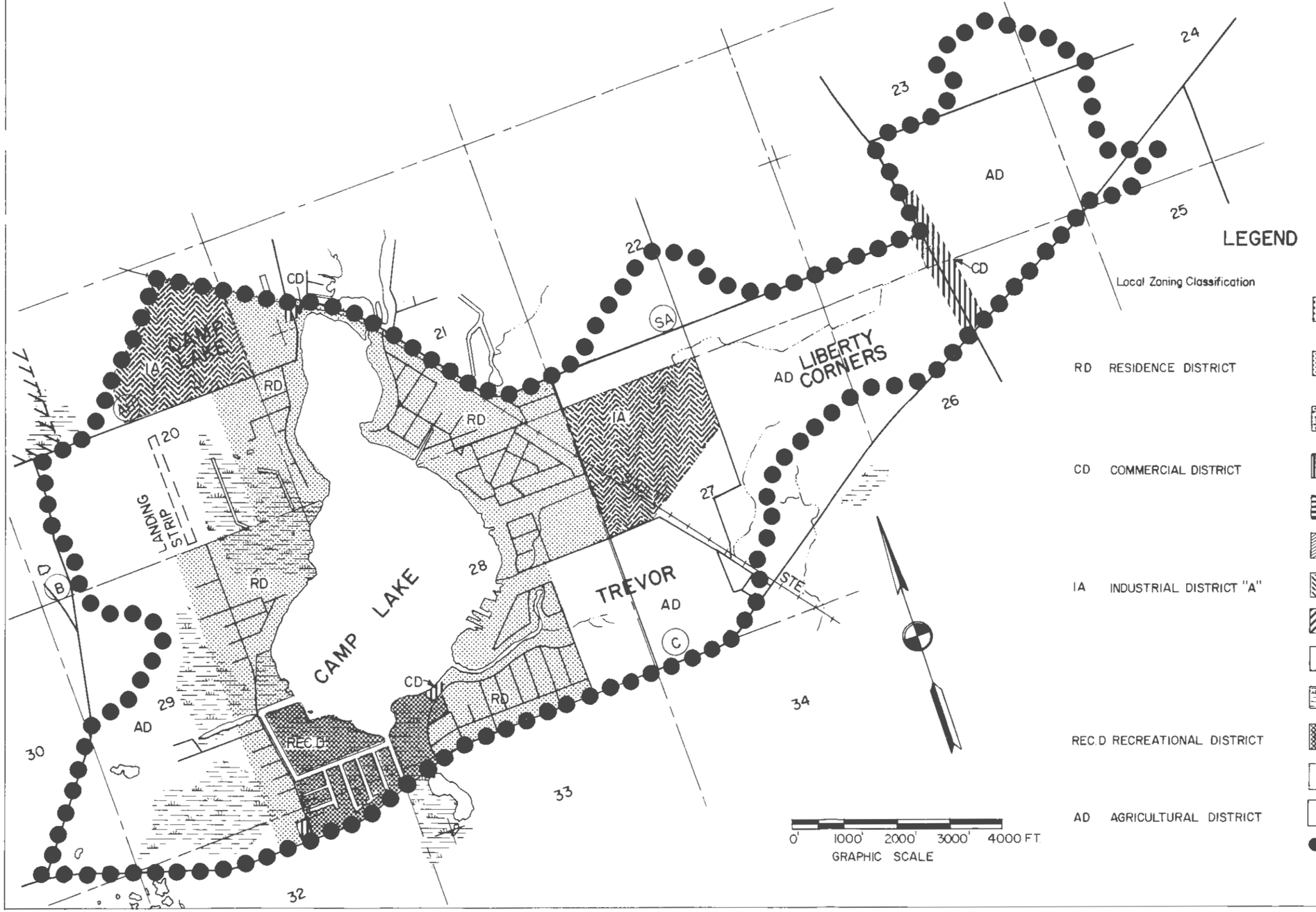
RECREATION AND RESOURCE-RELATED PROBLEMS

Deteriorating Water Quality

Dwellings on soils with a high water table and poor absorption characteristics can be expected to deterioriate water quality through inoperative sanitary systems. In addition, Camp Lake receives drainage from Center Lake,which is extensively developed, and surface runoff from agricultural land where the practice of fertilization is becoming increasingly important.

Excessive Aquatic Vegetation

Large areas of rooted aquatic food plants are desired for maintaining waterfowl populations. However, dense vegetation exerts a high oxygen demand and has been responsible for oxygen depletion to the extent that fish have been killed in previous winters,and on one occasion a "summerkill" occurred from similar circumstances. Dense vegetation along the shore retards the sorting action of waves and permits silting on what might otherwise be wave-washed beaches. Dense vegetation restricts boating and thus reduces the recreational base of Camp Lake.



LEGEND

Local Zoning Classification

- RD RESIDENCE DISTRICT
- CD COMMERCIAL DISTRICT
- IA INDUSTRIAL DISTRICT "A"
- REC.D RECREATIONAL DISTRICT
- AD AGRICULTURAL DISTRICT

SEWRPC Land Use Classification

- LOW DENSITY RESIDENTIAL (0.5-7.2 PERSONS PER RESIDENTIAL ACRE)
- MEDIUM DENSITY RESIDENTIAL (7.3-22.8 PERSONS PER RESIDENTIAL ACRE)
- HIGH DENSITY RESIDENTIAL (22.9-59.2 PERSONS PER RESIDENTIAL ACRE)
- RETAIL AND SERVICES
- WHOLESALE AND STORAGE
- TRANSPORTATION, COMMUNICATION & UTILITY
- MANUFACTURING & QUARRYING
- GOVERNMENTAL & INSTITUTIONAL
- WOODLAND
- WETLAND
- PARK & RECREATIONAL
- WATER
- AGRICULTURE AND AGRICULTURE-RELATED
- WATERSHED BOUNDARY

MAP 3A

PRESENT ZONING, 1967

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T-1-N. R.-20-E.

D.N.R., OCT. 1968

TABLE 7

Degree of Protection Afforded by Land Use Controls to Camp Lake, Kenosha County, Wisconsin, 1967

Criterion (Suggested reservation)	Adequate	Inadequate	Remarks
1. Dwelling setback (at least 75' from high water and 3' above water level)		x	No 3' restriction. 25' rear yard
2. Sewage disposal facilities (adequate lot size to permit desired positioning of septic tanks)		x	14,000 sq. ft.
3. Boathouses (not over water to extent they constitute a hazard - not used as dwellings)		x	Not considered
4. Refuse disposal (public or private refuse disposal areas not contiguous with the water or adjoining wetlands)	x		
5. Lot width (minimum set to enhance shoreline values - 75' or more)		x	60' at present
6. Bank/shore cover (discourage removal of cover where result is destruction of natural beauty)		x	Not considered
7. Grazing of shores (discourage indiscriminate grazing since it destroys spring areas and aids bank erosion - fencing is suggested)	x		No grazing here
8. Conservancy district (protect adjoining wetlands by a conservancy zoning program)		x	No provision
9. Commercial facilities (adequate space required to buffer from private development and be serviceable)		x	Camps buffered. No sideyard for businesses.
10. Slope protection (prohibit construction on slopes of 12% or more)		x	Not considered
11. Billboards (restrict billboard placement and size to protect scenic shores)		x	Not considered

Source: Wis. Dept. of Natural Resources; SEWRPC

TABLE 8

Degree of Protection Afforded by Boat Control Ordinance to Camp Lake, Kenosha County, Wisconsin, 1967

Criterion (suggested reservations)	Adequate	Inadequate	Remarks
1. Motors (lakes less than 50 acres be limited to boats without motors L.C. #1)	x		
2. Shore zone (speed be restricted to less than 5 mph within 200' of shore L.C. #2)	x		5 mph within 200'
3. Cabin craft mooring (boats on which persons are living, sleeping, camping are prohibited from mooring, drifting or overnight anchoring L.C. #3)		x	
4. Mooring at landings (prohibited at public landings for more than 24 hrs., except in designated areas L.C. #4		x	
5. Speed limits (on lakes 50-200 acres speed limited to 5 mph or less L.C. #5) or adequate separation of activities by time or space	x		30 mph maximum more than 200 acres
6. Passing (within 200' of another object speed is limited to 5 mph or less L.C. #6)	x		
7. Shore preservation (25% of shore must remain in wild state L.C. #8)		x	
8. Weed preservation (vital aquatic vegetation beds should be marked and boating therein prohibited)		x	

Civil Town of Salem ordinance on file

Source: Wis. Dept. of Natural Resources

Precarious Fishery

Camp Lake has a thriving fishery in most years. Winterkill voids the lake of the most desirable species; however, reintroduction from elsewhere in the watershed is fairly rapid. The lake is a potential carp haven. Too many carp can quickly tip the plant balance in favor of algae and add to the turbidity as they work over the bottom.

Protection of Wildlife Habitat

Camp Lake provides significant waterfowl habitat in southeastern Wisconsin. Wetlands are not presently protected by conservancy zoning and cannot be adequately protected by anything short of public ownership. Public parcels at present are modest and small, encompassing less than 20 percent of the marsh area that should be protected.

Limited Use Opportunities

Access to the lake is possible from various points on the lake; however, existing shoreline characteristics are not conducive to public or private use. Weeds, shallow water and soft bottom materials limit use of most of the shore.

RECOMMENDED RESOURCE PROTECTION AND ENHANCEMENT MEASURES

The following specific recommendations have been formulated for the recreational enhancement and resource protection of Camp Lake:

1. Protect the extensive marsh which borders the south basin through continuing wetland acquisition. To assure the availability of this area as marsh, it should be zoned conservancy district.

2. Fast motorboating should be excluded from the southwest corner of the lake which has shallow water and high waterfowl values and is a prime fish spawning and nursery area.

3. Shore improvements should be encouraged on the east shore of both basins. On this shore, beaches would benefit from weed removal, sand blanketing and dredging.

4. In line with the above improvements, existing public use areas should be enlarged to accommodate the large numbers of people anxious to use these waters. More beach area is always needed.

5. To increase the recreational base, vegetation control could be practiced in a wide band along the east shore. This would open part of the south basin to boating without unduly interfering with wildlife values of the west shore.

6. To accommodate increased lake use, commercial facilities should also be increased, logically near the intensive use areas and near population centers (community of Camp Lake).

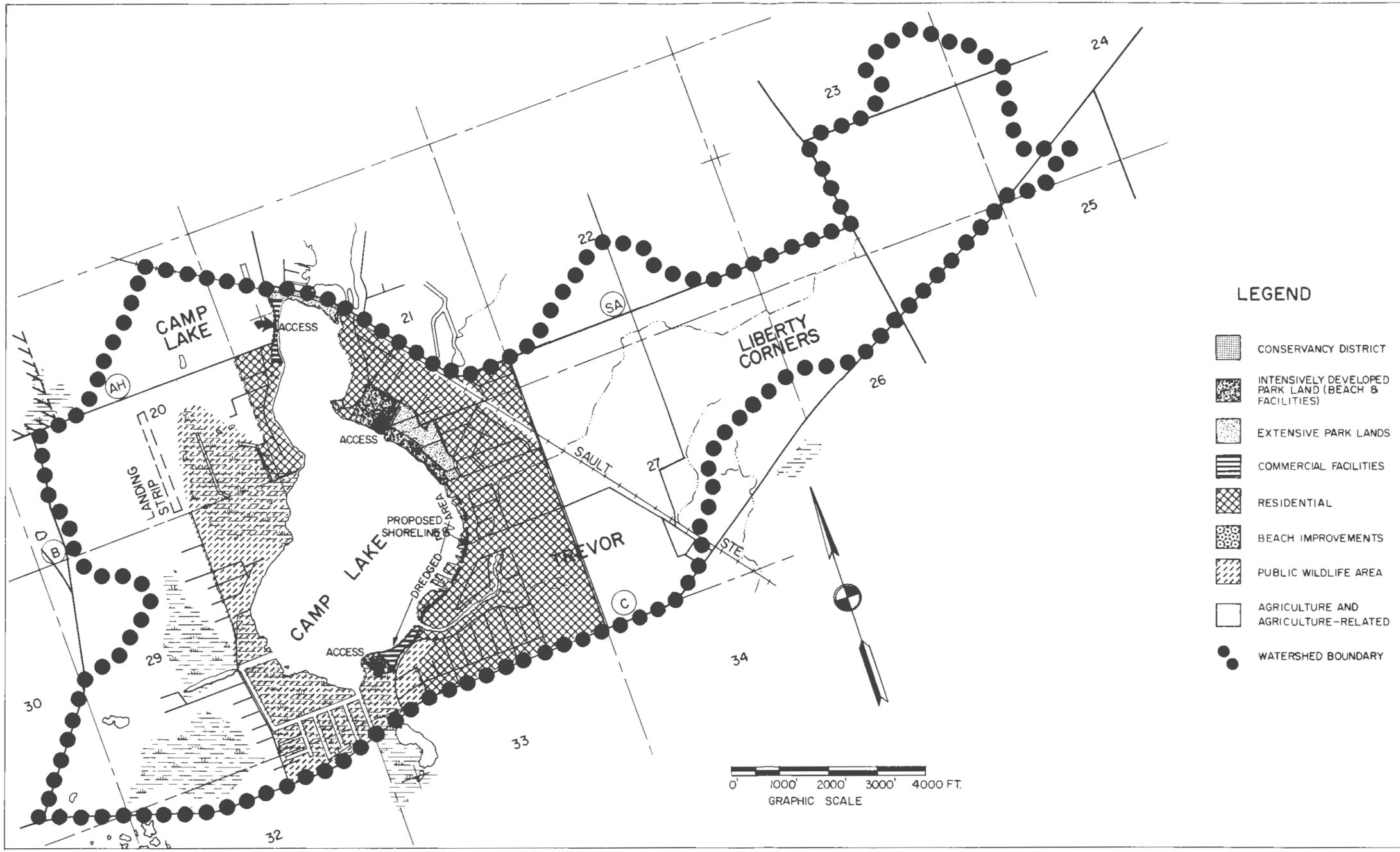
7. Shoreland zoning which will be required shortly should serve to protect most of the immediate shoreline and should in this case recognize the limitations of high water table and poorly suited soils which exist in the Camp Lake area.

8. Ultimately, there should be a community dredging project aimed at deepening the water on the east side of the basin and providing better frontage. A dredging project could wisely take the depth down to 20 feet. With greater depths along this shore, weeds would not be a serious problem and winterkill would be lessened.

9. The most effective curb of shoreline pollution and enrichment problems is public ownership of a buffer strip. Ultimately, nearly all frontage on Camp Lake should be available to the public in some form.

10. Should urbanization continue east of the lake, the poor soil conditions require consideration of community sewerage.

11. A detailed study involving local interests is necessary to determine long-range land use objectives and develop an ultimate land use plan. The recreation-related plans recommended herein should serve as a base for comprehensive planning. Recreational plans are illustrated with intermediate objectives (Map 4) and ultimate objectives (Map 5). The general trend in shoreline utilization is illustrated in Table 9, which lists frontage under the intermediate and ultimate plans.



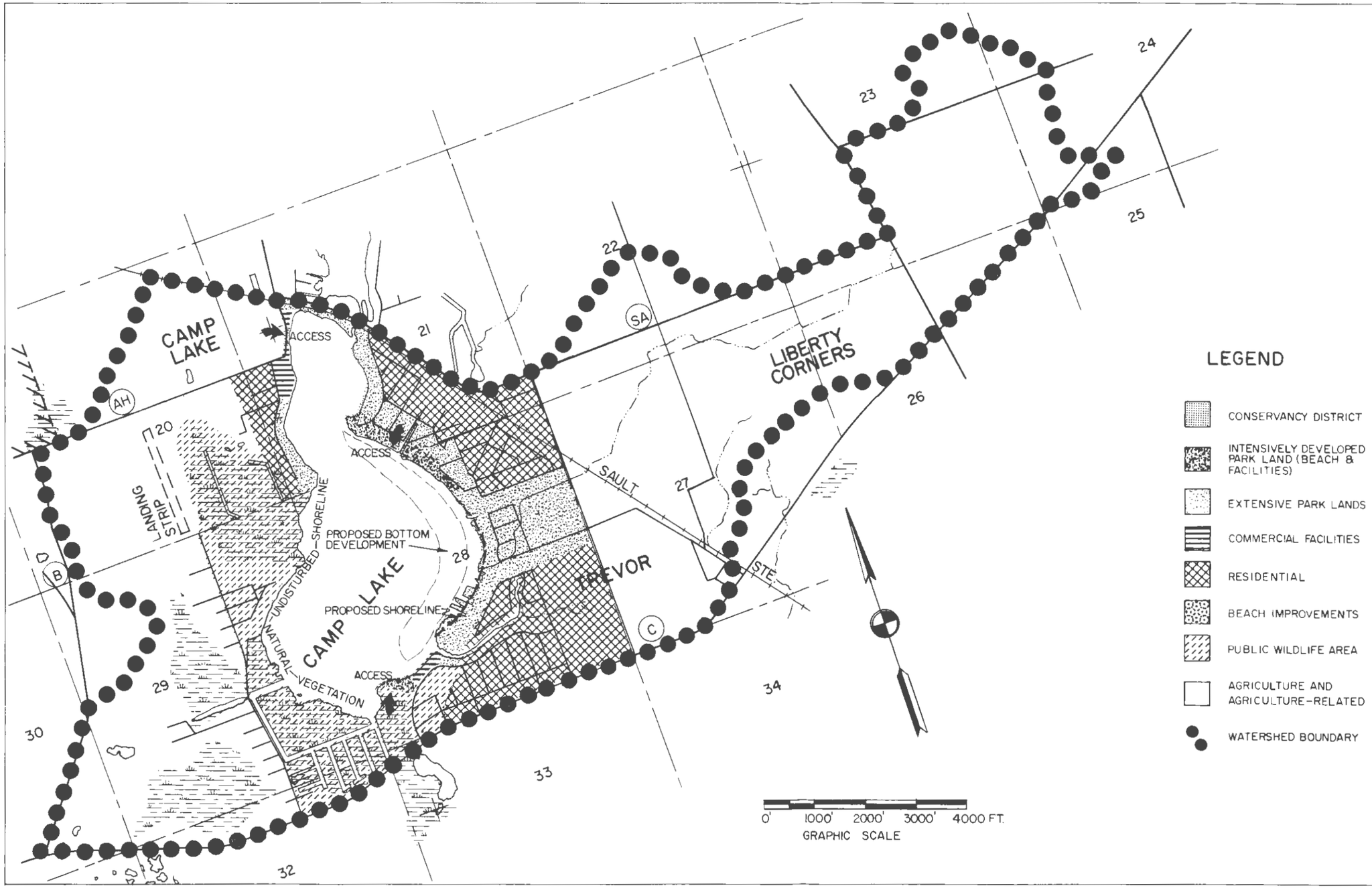
MAP 4

INTERMEDIATE RECREATIONAL USE PLAN

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T.-1-N. R.-20-E.

D.N.R., OCT. 1968



MAP 5

ULTIMATE RECREATIONAL USE PLAN

CAMP LAKE KENOSHA COUNTY, WISCONSIN

T.-1-N. R.-20-E.

D.N.R., OCT. 1968

TABLE 9

Existing and Desired Shoreline Utilization for Camp Lake, Kenosha County, Wisconsin, 1967*

Category	Feet Existing	Intermediate Plan	Ultimate Plan
Residential	12,400	7,920	-
Public Recreational			
Intensive	270	2,940	3,960
Extensive	335	1,478	8,250
Open - Wild	4,680	7,392	7,392
Private Recreational			
Resorts - Liveries	85	2,442	2,442
Parks (subdivision)	220	396	-
Nonrecreational			
Commercial	-	-	-
Industrial	-	-	-
Agricultural	-	-	-

* Shoreline footages are based on the basin shores and do not include channel frontage. For this reason, totals are not comparable.

Source: Wis. Dept. of Natural Resources

4-9-68
bg