

BENEDICT LAKE

KENOSHA AND WALWORTH COUNTIES

Department of Natural Resources
Madison, Wisconsin
1969

BENEDICT LAKE
Kenosha and Walworth Counties

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-40

Prepared By
Wisconsin Department of Natural Resources

For the
Southeastern Wisconsin Regional Planning Commission

1969

Contributors

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

D. J. O'Donnell, Supervisor, Watershed Coordination Unit, Ruth L. Hine and
Carol A. Knott, Editors -- Bureau of Research.

(This report is No. 35 in the Department of Natural Resources series of
Lake Use Reports.)

CONTENTS

	Page
INTRODUCTION.	1
PHYSICAL DESCRIPTION.	1
Lake Basin.	1
Shore Characteristics	1
Drainage Characteristics.	3
Climate and Hydrology	3
Soils	3
WATER QUALITY	5
RESOURCES	5
Aquatic Plants.	5
Fish Resources.	8
Pleasure Boating.	8
Game Resources.	8
Aesthetic Features.	9
LAKE USE.	9
Fishing	9
Hunting, Trapping, Wildlife Observation	9
Swimming.	9
Cottages and Homesites.	9
Boating	10
RECREATIONAL RATING	10
EXISTING LAND USE	10
EXISTING PROTECTIVE MEASURES.	10
Sewage Disposal	10
Zoning.	13
Water Zoning.	13
RECREATION AND RESOURCE-RELATED PROBLEMS.	13
Deteriorating Water Quality	13
Deteriorating Wildlife Habitat.	13
Limited Use Opportunities	13
RECOMMENDED RESOURCE PROTECTION AND ENHANCEMENT MEASURES.	13

INTRODUCTION

Benedict Lake is a small lake of medium depth located in the Town of Randall, Kenosha County, and the Town of Bloomfield, Walworth County, Wisconsin. It has a surface area of 78.02 acres, and a water volume of 1,207.36 acre feet at a mean water elevation of 822 feet above mean sea level. Although it is small, the depth, water quality, fishery, and location of the lake prompted early development of its shore with homes. It has considerable local economic and recreational value. Provisions for protection, development and wise use of this resource are important to its proper management.

PHYSICAL DESCRIPTION

Lake Basin

Benedict Lake is a "kettle" lake in end moraine glacial drift, closely associated with marsh deposits extending westward on its outlet. It is separated from Powers Lake to the north by a ridge less than a quarter of a mile wide. Its deepest point is centrally located, and the shoreline is fairly regular. Map 1 illustrates the configuration of the basin as well as its hydrography. The channel which connects Benedict Lake and Tombeau Lake has undergone considerable alteration in recent years. The surface drainage basin of the lake (including the lake area) is 262.4 acres.

The uniformity of the basin is illustrated by its shore development factor of 1.37. Basic hydrographic and morphologic data are presented in Table 1.

Shore Characteristics

Sand predominates along 51 percent of the shoreline. Gravel and rubble cover 21 percent and soft sediments cover 28 percent of the shoreline. Sand and gravel usually dominate along wave washed shores, where water turbulence holds finer sediments in suspension. Finer sediments appear beyond a depth of approximately 3 feet since in waters deeper than this wave action has little effect. With a maximum length of 0.55 miles over which winds could blow unimpeded, the theoretical maximum wave height is 1.0 feet. Sorting of bottom materials should not occur at a depth of more than 2-3 feet under these conditions. Muck bottoms exist in shallow protected bays, on the lee shores, generally the west side of the lake, and normally in conjunction with marshlands.

LEGEND

TOPOGRAPHIC SYMBOLS

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

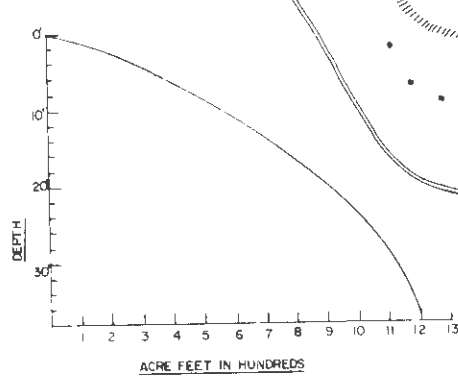
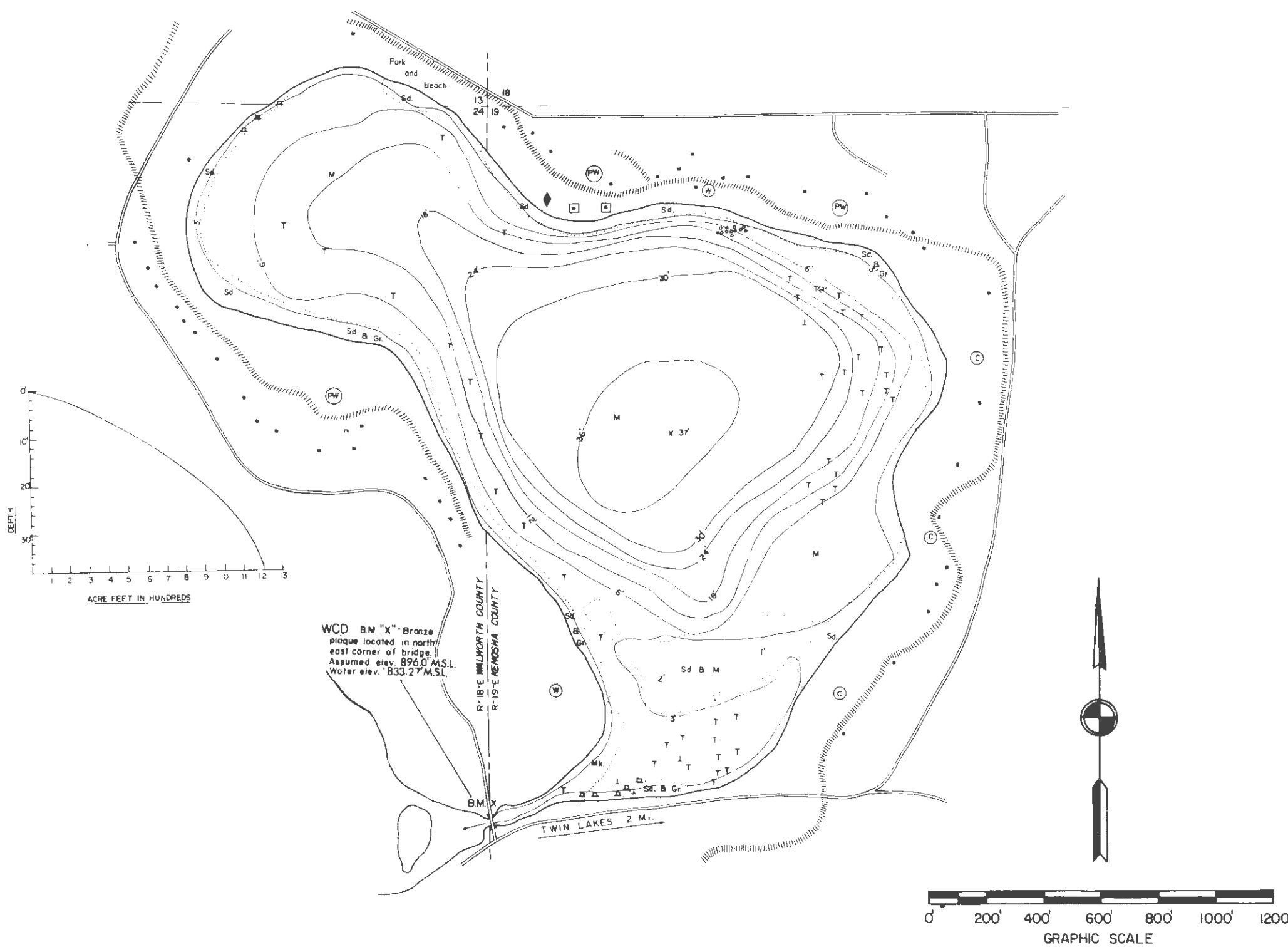
LAKE BOTTOM SYMBOLS

- P PEAT
- Mk MUCK
- C CLAY
- M MARL
- Sd SAND
- St SILT
- Gr GRAVEL
- ◇ ACCESS ONLY
- R RUBBLE
- BR BEDROCK
- T SUBMERGENT VEGETATION
- ⊥ EMERGENT VEGETATION
- △ FLOATING VEGETATION
- STUMPS & SNAGS
- ◇ ACCESS WITH PARKING
- ◆ BOAT LIVERY

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

WATER AREA 78.02 ACRES
 UNDER 3 FT. DEPTH 133 %
 OVER 20 FT. DEPTH 403 %
 VOLUME 1207.36 ACRE FT.
 TOTAL ALK. 191 P.P.M.
 SHORELINE 170 MILES
 MAXIMUM DEPTH 37 FT.

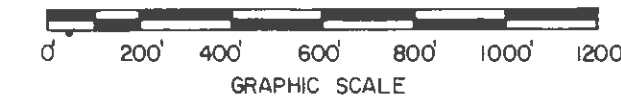
MAPPED: JAN. 1954
 REVISED: JULY 1967
 EQUIPMENT: THRU ICE
 SURFACE WATER
 ELEVATION: 833.27' MSL.



WCD B.M. "X" - Bronze plaque located in north east corner of bridge. Assumed elev. 896.0' MSL. Water elev. 833.27' MSL.

R-18-E MILWAUKEE COUNTY
 R-19-E KENOSHA COUNTY

TWIN LAKES 2 M.



HYDROGRAPHIC MAP

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

MAP I

T-1-N. R-18,19-E.

D.N.R., JUNE 1969

TABLE 1

Hydrography and Morphology, Benedict Lake,
Kenosha and Walworth Counties, Wisconsin

Area = 78.02 acres: 0.12 sq. miles
Shore length = 8,976 feet: 1.70 miles
Shore development factor* = 1.37
Ratio of area (sq. miles) to shore length = 0.071:1
Maximum depth = 37 feet
Mean depth = 15.4 feet
Volume = 1,207.36 acre feet
Percent of area less than 3 feet deep = 13.3%
Percent of area more than 20 feet deep = 40.3%
Maximum length = 2,790 feet: 0.53 miles
Maximum width = 2,167 feet: 0.41 miles
Watershed area including lake area = 262.4 acres
Ratio of watershed area to lake area = 3.63:1
Exchange time = 11.2 years (based on 7" runoff from land in watershed)
Public frontage
 Intensive use (beach, boat launching) = none
 Wild frontage = none
 Open space frontage = none

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

Source: Wis. Dept. of Natural Resources.

Drainage Characteristics

The lake surface area of Benedict Lake constitutes one-third of the total tributary watershed area, presenting a very low ratio of watershed to lake. Powers Lake to the north has a surface elevation ten feet above that of Benedict, and it is probable that groundwater may move readily from the north through the permeable glacial drift. The surface of the lake is supported at its present level by a dam at the Tombeau Lake outlet. Discharge from Benedict Lake contributes to the East Branch, Nippersink Creek, which ultimately reaches the Fox River in Illinois. Because of the broad channel connecting this lake with Tombeau Lake there are no reliable measurements of discharge from Benedict Lake alone.

Climate and Hydrology

Climatological data for the Lake Geneva station approximate conditions at Benedict Lake. These, and corroborating data from other stations in the watershed are presented in Table 2. Data from regional stations, which relates to runoff and lake surface evaporation rates are also included for reference.

About 55 percent of the average annual precipitation falls as rain from May through September, when vegetative growth occurs. Loss through evapo-transpiration would be high during this period. This loss is difficult to quantify at present and is dependent upon land cover types as well as physical conditions such as solar radiation, temperature and wind. Evapo-transpiration losses are assumed to be about 24.7 inches per year. During mid-summer loss from lake surfaces by evaporation is appreciable; about 29 inches is lost each year.

From December through March, 7.8 inches of precipitation falls as either rain or snow, and is expected to contribute to spring runoff which raises the lake level somewhat.

The watershed of 262.4 acres receives 719 acre feet of precipitation each year, of which 214 acre feet fall directly on the lake surface. Of that which falls on the land approximately 7 inches or 107 acre feet will run off to the lake. The lake will lose about 189 acre feet by evaporation. Wetlands in the watershed are negligible; therefore loss by evapo-transpiration from this source is not an important factor. That which remains, after all losses have occurred, amounts to 423 acre feet, which will presumably be available in the watershed for groundwater recharge.

The lake receives groundwater from the north and northwest and discharges to the groundwater table to the south and southeast, as evidenced by groundwater table elevations in relation to the lake surface elevation.

Soils

Development has generally been confined to loam and siltloam having moderate limitations. Steep slopes on these soils have created problems with sewage systems in some instances. A small area of the north shore

TABLE 2
Climatological Data For The Benedict Lake Area, Kenosha & Walworth Counties, Wisconsin

Lake Geneva (Most Representative Station)	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	Jn	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	Jn	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, Wilnot	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 John B. Stall, 1967, Lake Evaporation in Illinois. Report of Investigation No. 57, State of Illinois.

is "made land" of uncertain characteristics, and this area also has been developed. The northwest and southwest shores have considerable beach sand with a high water table which is governed by the lake level, making development impractical. The northwest shore is currently used as part of a commercial park. On the south shore muck soils have been developed as part of a large resort and are used exclusively for extensive park purposes. The generalized distribution of soil groups is illustrated on the fish and wildlife resources map (Map 2).

WATER QUALITY

Selected chemical analyses for spring and mid-summer of 1966 (Table 3) are a basis for evaluating the present water quality of Benedict Lake. Temperature and oxygen profiles also have been utilized as additional aids to the water quality interpretation (see Figure 1).

The lake is slightly above average in total alkalinity for lakes in the Fox River watershed. It has medium fertility based on spring phosphate levels and high fertility based on alkalinity.

The lake has a low pollutional hazard based on mean chloride content. Chlorides have been proven a reliable indicator of excessive fertility and reflect external sources of nutrients even though chloride itself is not considered a nutrient ion. These ions indicative of pollution (chloride, sulphate, sodium, potassium) are present in quantities near the regional mean concentration.

In mid-summer the lake thermally stratifies, and at 23 feet below the surface temperature drops sharply (see Figure 1). Sufficient oxygen is available to sustain most forms of aquatic life (2.0 mg/l or more) to a depth of 25 feet. Of the total volume, 98 percent is adequately oxygenated in mid-summer.

The lake is fairly clear with a secchi disk transparency reading of 10 feet which permits oxygen producing photosynthesis to occur to depths greater than is normally the case.

RESOURCES

Aquatic Plants

Aerial surveys and intensive water reconnaissance revealed the extent of growth of rooted aquatic vegetation. The general distribution of emergent, submergent, and floating-leaved vegetation is illustrated on the hydrographic map (Map 1).

Vegetation has been noted growing to a depth of 25 feet. Dominant species and the extent of their growth in the basin are presented in Table 4. Myriophyllum sp. was the most abundant plant in the lake. Near shore and to a depth of 17 feet the vegetation was primarily Myriophyllum and Chara. In

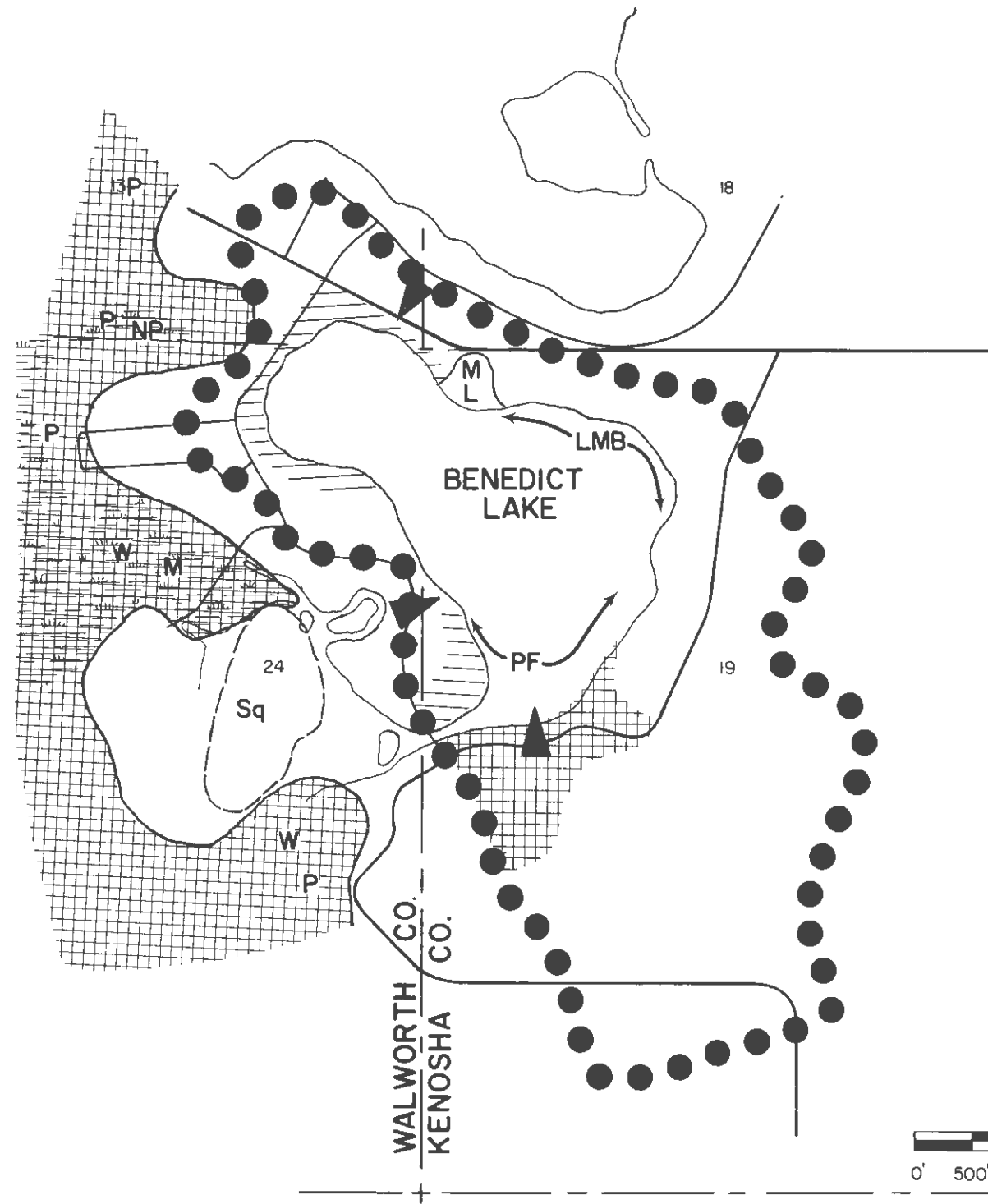
TABLE 3

Selected Water Quality Parameters of Benedict Lake,
Kenosha & Walworth Counties, Wisconsin, 1966

Parameters*	Depth: 10 ft.		17 ft.		10 ft.		30 ft.	
	Date: 03 31 66		03 31 66		08 25 66		08 25 66	
pH (units)					8.4		8.2	
Tet. Alk.	200		200		180		187	
Sp. Cond. (micromhos/ cm @ 25° C.)	426		423		413		423	
Ca	33.2		20.0		19.7		22.3	
Mg	26.2		29.5		28.8		28.0	
Na	4.0		4.0		4.4		4.3	
K	1.7		1.7		1.7		1.8	
Fe (T)	0.02		0.04		0.12		0.12	
PO ₄ (T)	0.44				0.32		0.18	
PO ₄ (D)	0.40		0.08		0.05		0.10	
Cl ⁴	7.6		7.6		8.1		8.6	
SO ₄	36.5		36.3		39.5		39.0	

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

Source: Wis. Dept. of Natural Resources



LEGEND

FISH AND WILDLIFE VALUES

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

WOODLAND VALUES

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

SPAWNING AREAS

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

GENERAL SOIL TYPES

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

OPEN VISTAS

WATERSHED BOUNDARY



GRAPHIC SCALE

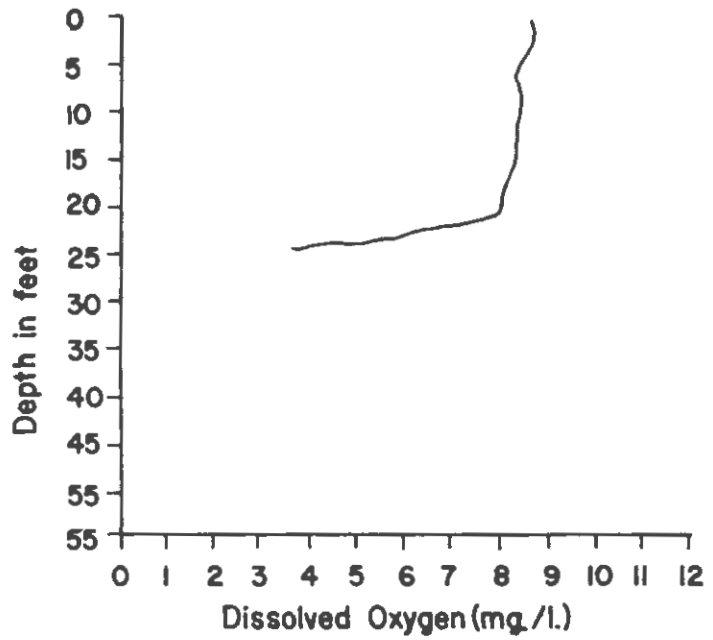
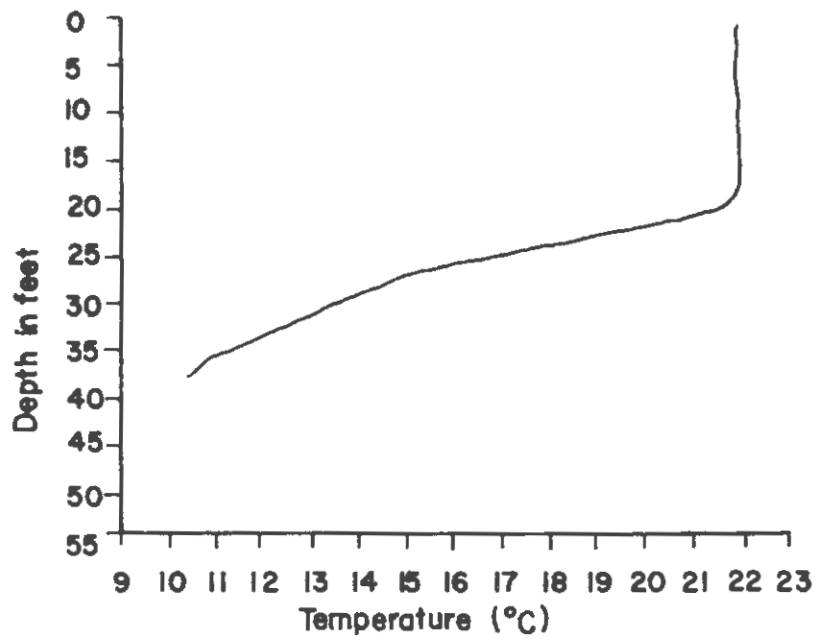
MAP 2

FISH, WILDLIFE AND WOODLAND VALUES AND BASIC SOIL TYPES

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

T-1-N R-18,19-E.

D.N.R., JUNE 1969



August 25, 1966- 9:30 A.M.
 Wis. Dept. of Natural Resources

FIGURE I. Temperature and Oxygen Profiles

TABLE 4

Dominant Species of Aquatic Vegetation in Benedict Lake,
Kenosha & Walworth Counties, Wisconsin, 1967*

<u>Scientific Name</u>	<u>Common Name</u>	<u>Growth Character</u>	<u>Extent in Basin</u>
<u>Myriophyllum</u> spp.	Water Milfoil	Submerged patches	Dark Belt around shoreline
<u>Chara</u> sp.	Musk grass	Submerged mats	Small dense patches
<u>Potamogeton</u> <u>Illinoensis</u>	Illinois Pondweed	Submerged & floating	Shore to 17 feet
<u>Najas</u> sp.	<u>Spiny</u> Naiad	Submerged	Scattered to 17 feet
<u>Nitella</u> sp.	Nitella	Submerged	18 to 25 feet
<u>Utricularia</u> spp.	Bladderwort	Submerged-floating	Deep water, scattered
<u>Nuphar</u> sp.	Yellow waterlily	Floating leaves	One bed
<u>Nymphaea</u> sp.	White waterlily	Floating leaves	Small scattered beds

* Results of an Intensive Survey Conducted August 3, 1967

Source: Wis. Dept. of Natural Resources

deeper water, 18 to 25 feet, the vegetation was mostly Nitella, with small amounts of Myriophyllum, Potamogeton crispus, and Utricularia. The lake has a vegetation problem in that Myriophyllum (water milfoil) extends to the surface in shallow areas. A vegetation harvester has been used to keep shoreline areas free from congestion.

Fish Resources

As Benedict Lake is connected directly to Tombeau Lake, they have similar fisheries. They are characterized as having large populations of panfish and game fish. The panfish population is dominated by bluegills of good size, and at least several year classes are present. Warmouth are also very common to the fishery. Yellow perch are present in somewhat smaller numbers.

Largemouth bass and northern pike make up the game fish population. Largemouth bass are common in the fishery and can be considered the chief game fish. Northern pike are common but not as plentiful. Walleyes may be present in the fishery, though none have been encountered in recent surveys. Consistent natural reproduction of northern pike is assumed to have taken place over the years. Wetlands associated with Tombeau Lake represent a major northern pike spawning area for Benedict Lake. Nearly all the shoreline is suitable for panfish spawning grounds.

The usual rough fishes such as carp and white suckers are common but do not appear to be a problem. Chubsuckers are a common forage species.

Pleasure Boating

Water deep enough to support motor driven boats without hazard (5 feet) encompasses approximately fifty acres or 64 percent of the lake area. Submerged pilings, vegetation, and a shallow bar are major deterrents to boating in certain areas.

Resorts and a boat livery provide some opportunity for transient use of the lake, however, a launching ramp is not available.

Game Resources

Very little undeveloped land exists in the watershed. Game values, therefore, rest with the lake surface and since the lake is small they are considered minimal. The only wetlands of prime value for wildlife are in the Tombeau and Powers Lake watersheds nearby, as is illustrated on the Fish and Wildlife resources map (Map 2).

Aesthetic Features

The high ridges north and east of the lake provide open vistas overlooking most of the water area. The drive encircling the lake offers several opportunities to view the lake community. The lack of wetlands is a definite deterrent to aesthetic values, however, clear water with its varied hues offsets this deterring factor.

LAKE USE

Fishing

Aerial boat counts reflect use levels for the past few years. Fishing is the most popular activity on the lake on weekdays, with fishing boats outnumbering others 2 to 1. On weekends other activities override fishing by about 2 to 1. On an average weekday with good weather there are 2.5 fishing boats on the lake at any one time, while on weekends, 3.6 fishing boats may be seen at one time.

Fishing pressure, as estimated from an intensive creel census, is heavy, considering the limited access. There are an estimated 79 hours per acre with 61 hrs. per acre in summer and 18 hrs. per acre in winter. This is well above the regional average of 58 hrs. per acre.

The fish harvest accompanying this pressure is also high, 64 fish per acre, with 39 fish per acre in summer and 25 fish per acre in winter, compared to the regional mean of 47 fish per acre.

Hunting, Trapping, Wildlife Observation

As suggested by the inadequacy of these resources, there is very little hunting or trapping associated with Benedict Lake. Wildlife observation too, suffers since there are relatively few animals in the watershed.

Swimming

There are no public beaches to attract swimmers. Three private beaches collectively have 800 feet of shoreline. Use is estimated at 300 bathers on weekends, however, there are no recorded observations to substantiate this. Shoreline characteristics and water quality would suggest that the lake could sustain swimming use very well.

Cottages and Homesites

There are 45 dwellings bordering the lake, presumably with private frontage. Approximately 30 percent of the shoreline has been put to this use. Most homes are on lots of adequate width, and most are on soils capable of handling private soil absorption treatment systems for sewage disposal. Potential exists for further homesite development east of the lake on higher ground.

Boating

Aerial observations suggest that on weekdays 4.23 boats may be counted at one time, while on weekends 10 boats may be counted. These data are biased by instantaneous count, since pleasure boating is a relatively short term activity when compared to the sedentary nature of boat fishing. While few high speed boats are operating at any one time, during the course of a day many more may have used the lake. It is estimated that Benedict Lake supports 2,100 summer boating hours, and about 1,400 summer skiing hours, compared to 6,900 summer man hours for fishing. The use level has been as high as 3.7 acres per boat. The critical limit for all forms of boating, including fishing is about 20 acres per boat.

RECREATIONAL RATING

A desirable planning element is a rating of the lake's value in terms of primary use categories. The recreational resource base of Benedict Lake has been assessed in this way in Table 5. The lake is highly rated for swimming, has medium fish production, has limited boating, and has a moderately varied landscape. With 59 out of a possible 72 points, Benedict Lake can be described as having above average recreational value with few physical limits.

EXISTING LAND USE

Land use has been summarized for the watershed for 1963 in Table 6. Cropland encompasses only .08 percent of this small, developed watershed. The largest single use category is residential, with 41.4 percent, open land (includes lake surface) has 22.7 percent. Private recreational lands (golf courses, resorts) encompass 26.4 percent; and categories which complement the residential land use encompass the remaining 9.4 percent. The area encompassed in land use data is based on total quarter section area.

Existing land use in the watershed is illustrated in Map 3 as interpreted from SEWRPC land use inventory of 1963.

EXISTING PROTECTIVE MEASURES

Sewage Disposal

It is unlikely that public sewerage will service the Benedict Lake watershed in the near future. It is therefore possible that all homes in the watershed might be contributing nutrients and pollutants at times to the lake. As long as building is prohibited on the areas of poor soils bordering the lake, and homesite density does not increase, the lake is not in great danger of becoming polluted.

TABLE 5

Recreational Rating of Benedict Lake,
Kenosha & Walworth Counties, Wisconsin, 1968

Space: Total area - 78.02 acres Total shore length - 1.70 miles
Ratio of total area to total shore length: 0.071:1

Quality (18 points for each item)

Fish:

- | | | |
|---|--|---|
| <input type="checkbox"/> 9 High production | <input checked="" type="checkbox"/> 6 Medium production | <input type="checkbox"/> 3 Low production |
| <input checked="" type="checkbox"/> 9 No problems | <input type="checkbox"/> 6 Modest problems
such as infrequent
winterkill, small
rough fish problems | <input type="checkbox"/> 3 Frequent and over-
bearing problems such
as winterkill, carp,
excessive fertility |

Swimming:

- | | | |
|--|--|---|
| <input type="checkbox"/> 6 Sand or gravel
(75% or more) | <input checked="" type="checkbox"/> 4 Sand or gravel
(25 - 50%) | <input type="checkbox"/> 2 Sand or gravel
(<25%) |
| <input checked="" type="checkbox"/> 6 Clean water | <input type="checkbox"/> 4 Moderately clean | <input type="checkbox"/> 2 Turbid or darkly
stained |
| <input checked="" type="checkbox"/> 6 No algae or weed
problems | <input type="checkbox"/> 4 Moderate algae or
weed problems | <input type="checkbox"/> 2 Frequent algae or
weed problems |

Boating:

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> 6 Adequate depths
(75% of basin >5') | <input type="checkbox"/> 4 Adequate depths
(50-75% of basin
>5' deep) | <input type="checkbox"/> 2 Adequate depths
(50% of basin) |
| <input type="checkbox"/> 6 Adequate size for
extended boating
(>1,000 acres) | <input type="checkbox"/> 4 Adequate size for
some boating
(200-1,000 acres) | <input checked="" type="checkbox"/> 2 Limit of boating
challenge and space
(<200 acres) |
| <input checked="" type="checkbox"/> 6 Good water quality | <input type="checkbox"/> 4 Some inhibiting
factors such as
weedy bays, algae
blooms, etc. | <input type="checkbox"/> 2 Overwhelming inhibiting
factors such as
weed beds throughout |

Aesthetics:

- | | | |
|---|--|---|
| <input type="checkbox"/> 6 Existence of 25%
or more wild shore | (Golf Course)
<input checked="" type="checkbox"/> 4 Less than 25%
wild shore | <input type="checkbox"/> 2 No wild shore |
| <input type="checkbox"/> 6 Varied landscape | <input checked="" type="checkbox"/> 4 Moderately varied
landscape | <input type="checkbox"/> 2 Unvaried landscape |
| <input checked="" type="checkbox"/> 6 Few nuisances such
as excessive algae,
carp dumps, etc. | <input type="checkbox"/> 4 Moderate nuisance
conditions | <input type="checkbox"/> 2 High nuisance
condition |

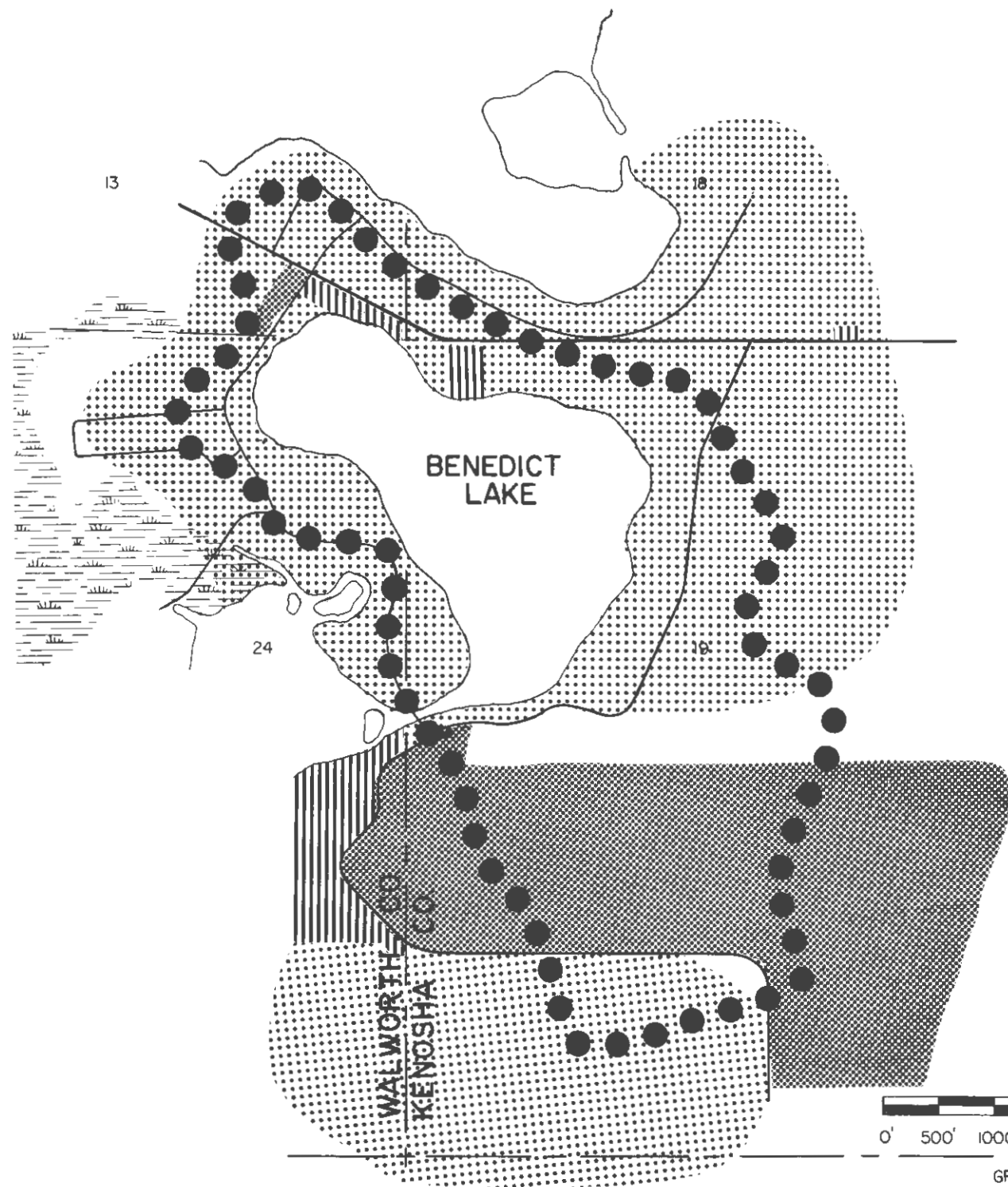
Total quality rating: 59 out of a possible 72

TABLE 6

Existing Land Use in The Benedict Lake Watershed,
Kenosha & Walworth Counties, Wisconsin, 1963

<u>Land Use</u>		<u>Area</u>	<u>Total</u>	<u>Percent</u>
<u>Major</u>	<u>Detailed</u>	<u>in Acres</u>	<u>Acreage</u>	<u>of Watershed</u>
Residential		130.61	130.61	41.45
Commercial		1.10	1.10	.35
Industrial	Major Other Mining			
Transportation and Communication		28.58	28.58	9.07
Government or Institutional				
Recreational	Public Private	83.01	83.01	26.35
Openland	Wet Unused Wooded	60.15 1.42 9.96	71.53	22.70
Agricultural	Crops Other	0.23	0.23	.08
Total Acreage for Watershed, including lake		315.06	315.06	100.0

Source: SEWRPC Existing Land Use Inventory, 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



GRAPHIC SCALE

EXISTING LAND USE, 1963

MAP 3

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

T-1-N. R.-18,19-E.

D.N.R., JUNE 1969

Zoning

Zoning ordinances of the Town of Randall, Kenosha County, and the Town of Bloomfield, Walworth County, apply in this lake basin. Walworth County has had progressive land use controls since 1962, with wetlands characteristically zoned as conservancy district, and considerable control exercised over the size of lakefront lots. Kenosha County, on the other hand, has permissive zoning with few restrictions to land use. Zoning, therefore, cannot be adequately evaluated at present. Under state law, shoreland zoning must be established shortly. This should offer considerable protection by increasing lot size and setback, and limiting construction in areas with poor soils and shallow water table (see Map 3A).

Water Zoning

The civil Town of Randall, Kenosha County, has a boat control ordinance which deals only with Powers Lake and therefore, offers no protection to Benedict Lake. As the lake is small, water zoning is advisable in the interest of preserving those values attached to it and avoiding user conflicts.

RECREATION AND RESOURCE-RELATED PROBLEMS

Deteriorating Water Quality

Not presently a problem, water quality could deteriorate considerably if poor soil areas were developed for housing.

Deteriorating Wildlife Habitat

Very little wildlife habitat remains in the watershed. Woodlands and wetlands in nearby watersheds must provide for this area also. There are no portions of the shoreline devoted to sustaining wildlife, though some of the low shores have possibilities.

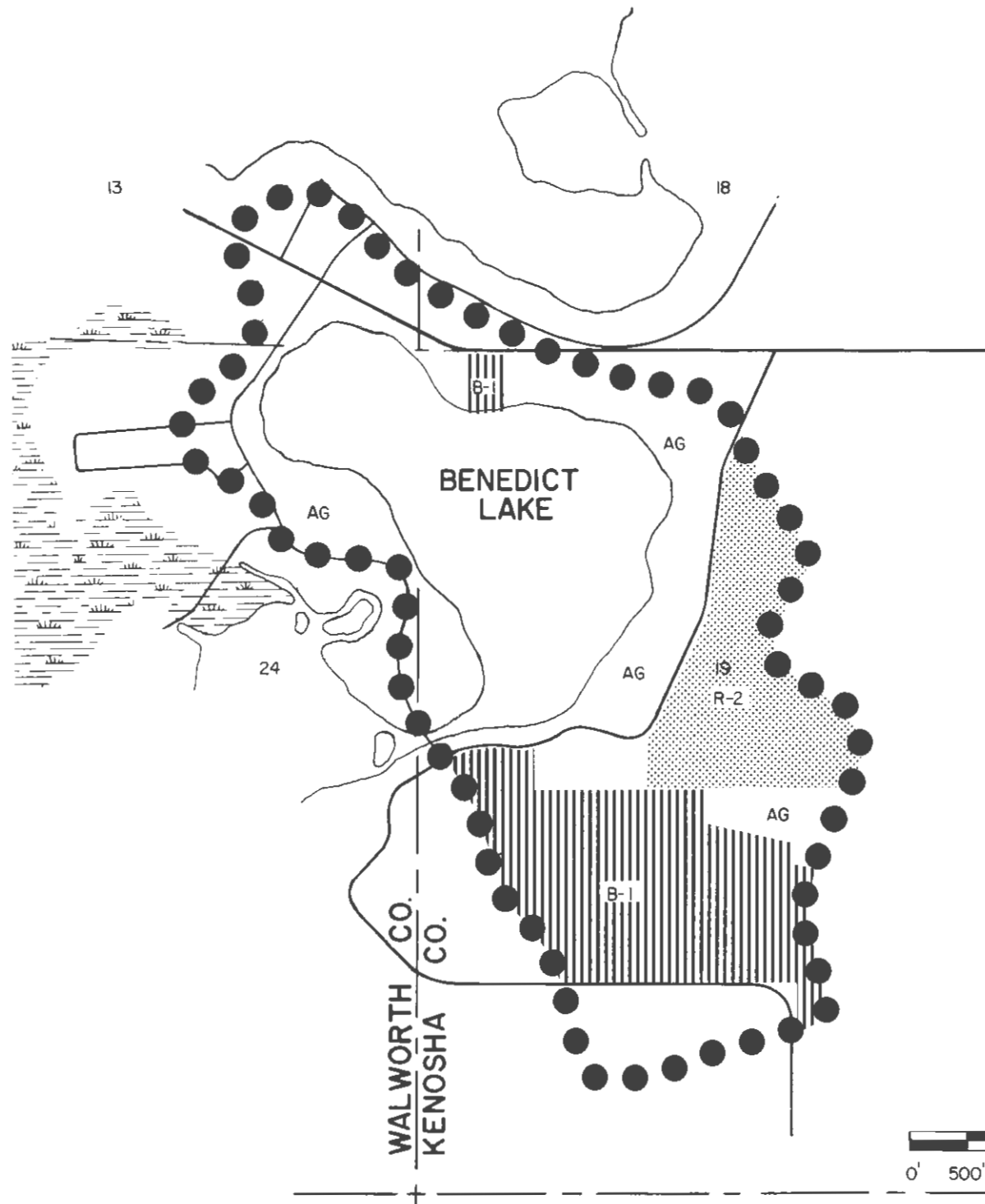
Limited Use Opportunities

Public access is lacking. Resorts offer restricted access, thereby limiting the availability of the resource. The lake is well suited for more beach frontage and has shoreline parcels unsuited for housing, which should be open land or extensive use parks.

RECOMMENDED RESOURCE PROTECTION AND ENHANCEMENT MEASURES

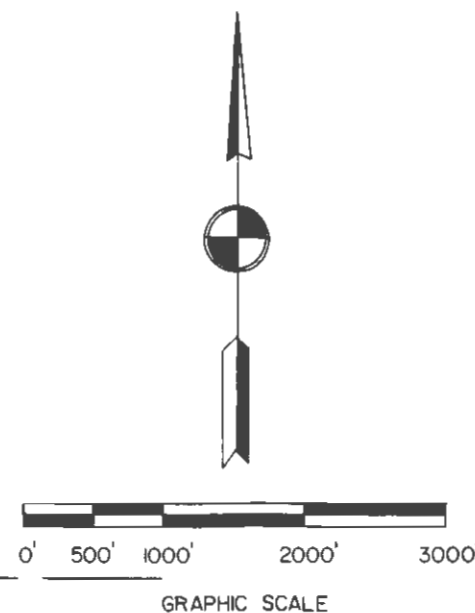
The following specific recommendations have been formulated for the protection and wise use of the recreational resource known as Benedict Lake:

1. It is recommended that land use controls be formulated to protect low, wet shorelines from further development, to buffer commercial facilities from residential development, and to provide building restrictions sufficient to protect the resource from threats of pollution.



LEGEND

- | Local Zoning Classification | Regional Land Use Classification |
|------------------------------|---|
| R-2 RESIDENTIAL DISTRICT "A" | LOW DENSITY RESIDENTIAL
(0.5-7.2 PERSONS PER RESIDENTIAL ACRE) |
| B-1 COMMERCIAL DISTRICT | 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 |
| AG AGRICULTURAL DISTRICT | |



PRESENT ZONING, 1967

MAP 3A

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

T-1-N. R-18,19-E.

D.N.R., JUNE 1969

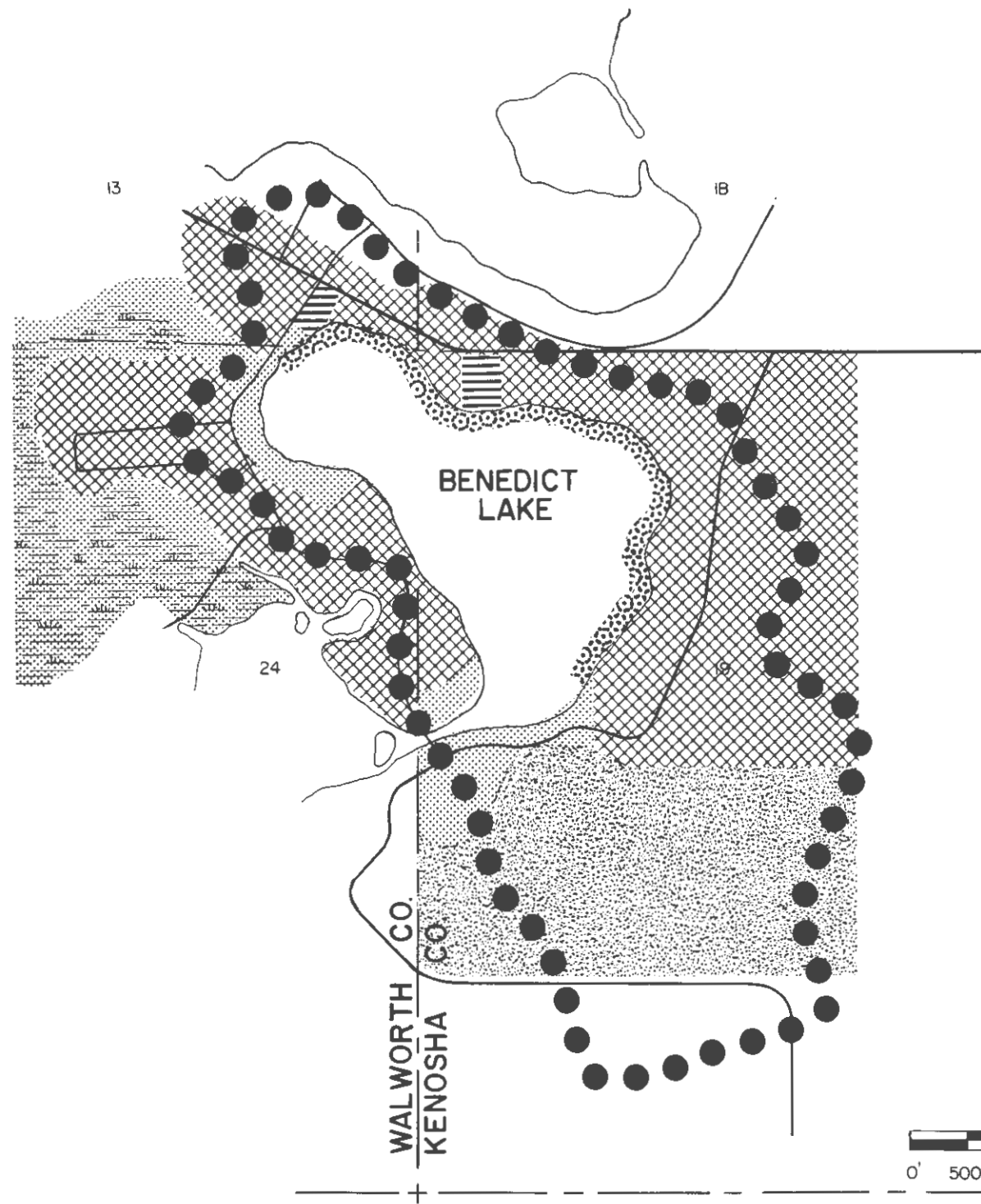
2. It is recommended that a boat control ordinance be established, or the Town of Randall ordinance rewritten, to eliminate high speed boat traffic, which is frequently in evidence well above critical limits for safety and enjoyable boating.

3. Development of public access for fishing boats and other small craft is needed and recommended. Low wet soils adjoining the south and west shores offer this possibility.

4. A community park is warranted for the east shore to service a small community developing in this area.

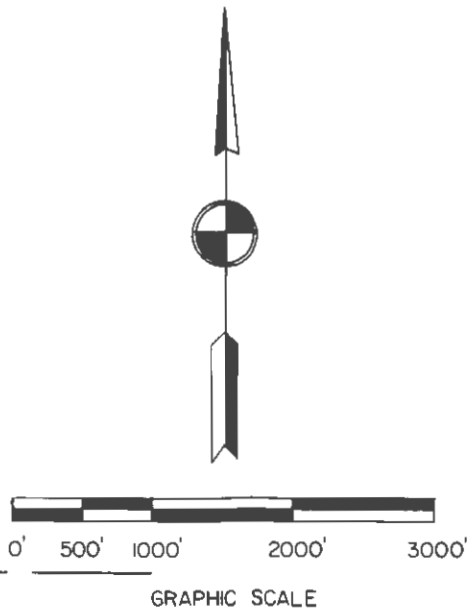
5. Ultimately the lowlands, poor soil areas and some lands between the roads and the lake should be owned publicly as extensive use park land, and in one instance, as a public beach site. Such sites could be served by existing commercial facilities.

6. A detailed study involving local interests to formulate land use objectives and develop an ultimate land use plan for the Benedict Lake basin will be necessary and is recommended. Although such master plan development is beyond the scope of this lake plan, recreation-related plans have been formulated and are recommended herein. The resource conservation plans are presented in Map 4 representing intermediate objectives and Map 5 representing ultimate objectives.



LEGEND

-  CONSERVANCY DISTRICT
-  INTENSIVELY DEVELOPED PARK LAND (BEACH & FACILITIES)
-  EXTENSIVE PARK LANDS
-  COMMERCIAL FACILITIES
-  RESIDENTIAL
-  BEACH IMPROVEMENTS
-  PUBLIC WILDLIFE AREA
-  AGRICULTURE AND AGRICULTURE-RELATED
-  WATERSHED BOUNDARY



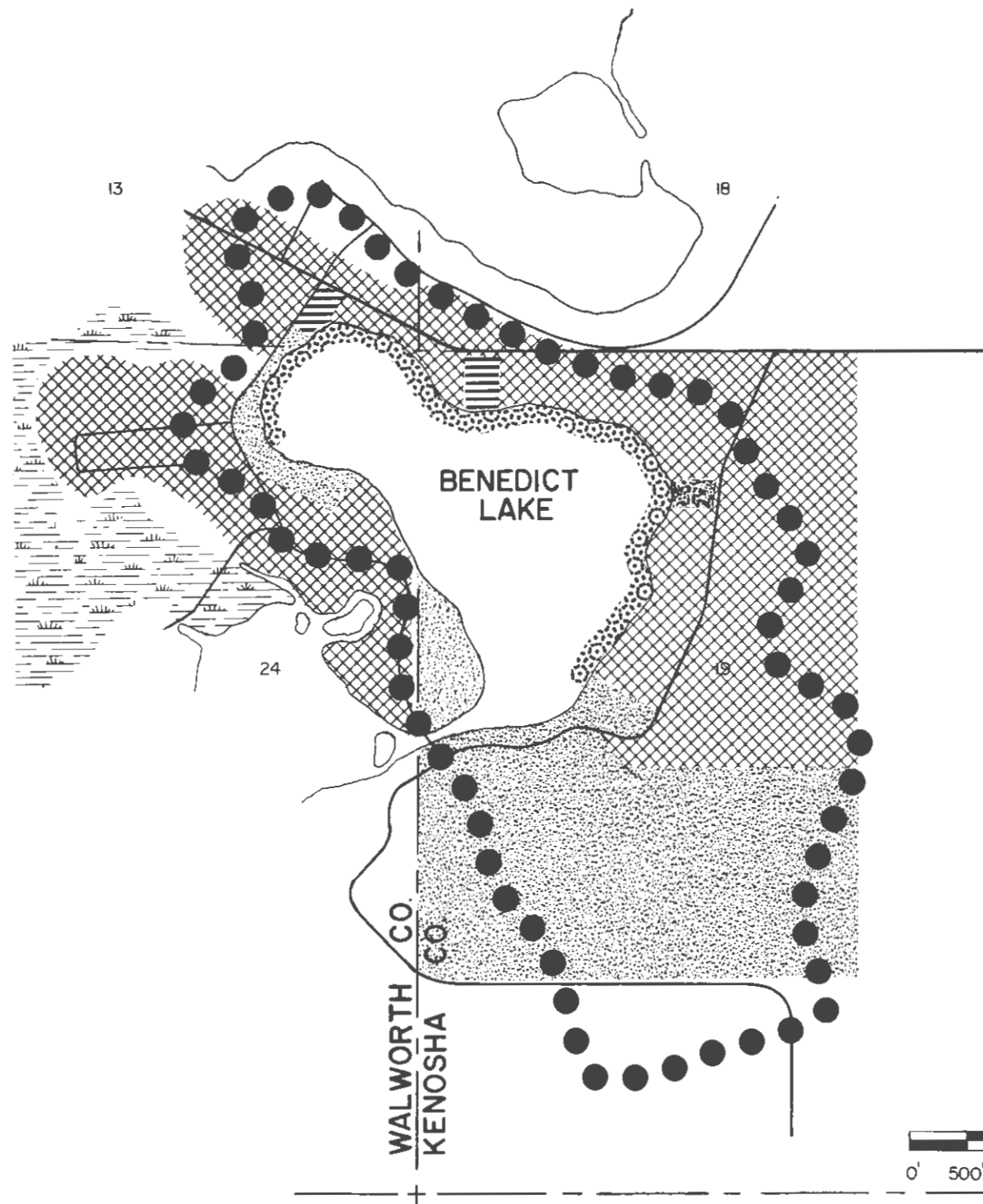
MAP 4

INTERMEDIATE RECREATIONAL USE PLAN

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

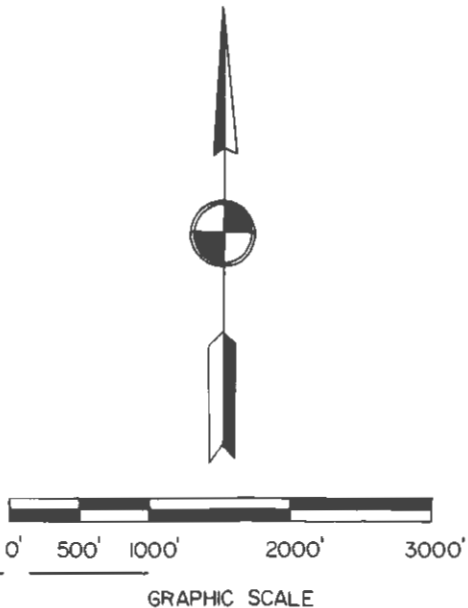
T-1-N. R-18,19-E.

D.N.R., JUNE 1969



LEGEND

-  CONSERVANCY DISTRICT
-  INTENSIVELY DEVELOPED PARK LAND (BEACH & FACILITIES)
-  EXTENSIVE PARK LANDS
-  COMMERCIAL FACILITIES
-  RESIDENTIAL
-  BEACH IMPROVEMENTS
-  PUBLIC WILDLIFE AREA
-  AGRICULTURE AND AGRICULTURE-RELATED
-  WATERSHED BOUNDARY



MAP 5

ULTIMATE RECREATIONAL USE PLAN

BENEDICT LAKE, KENOSHA COUNTY, WISCONSIN

T-1-N. R-18,19-E.

D.N.R., JUNE 1969