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MASTER PLAN REPORT

Little Black Lake Park

SB
483
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M37
1990

OVE ASSOCIATES, INC.

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This document was prepared in part through financial assistance provided by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration authorized by the Coastal Zone Management Act of 1972.

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February 29, 1990

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We are pleased to present for your consideration the final draft of the Master Plan for Little Black Lake Park. This report has been prepared in accordance with our proposal and includes the written text with accompaning plans and detail sketches of the proposed development.

This land parcel holds real promise for nature preservation and interpretation and has potential for passive type recreational activities. Hopefully this concept can be expanded onto the adjoining private parcels so that future generations may enjoy this fragile and picturesque parksite.

We have enjoyed working with you and with fellow staff members. The enthusiasm and assistance by all participants has been most welcomed and helpful in the compilation of this report. If the city is interested in future development of the concepts presented or other projects please feel free to contact us.

Sincerely yours,

GOVE ASSOCIATES INC.

Richard S. Schaefer, RLA
Landscape Architect

RSS:klh

CITY OF NORTON SHORES

MASTER PLAN
FOR
LITTLE BLACK LAKE

FEBRUARY 1990

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INTRODUCTION

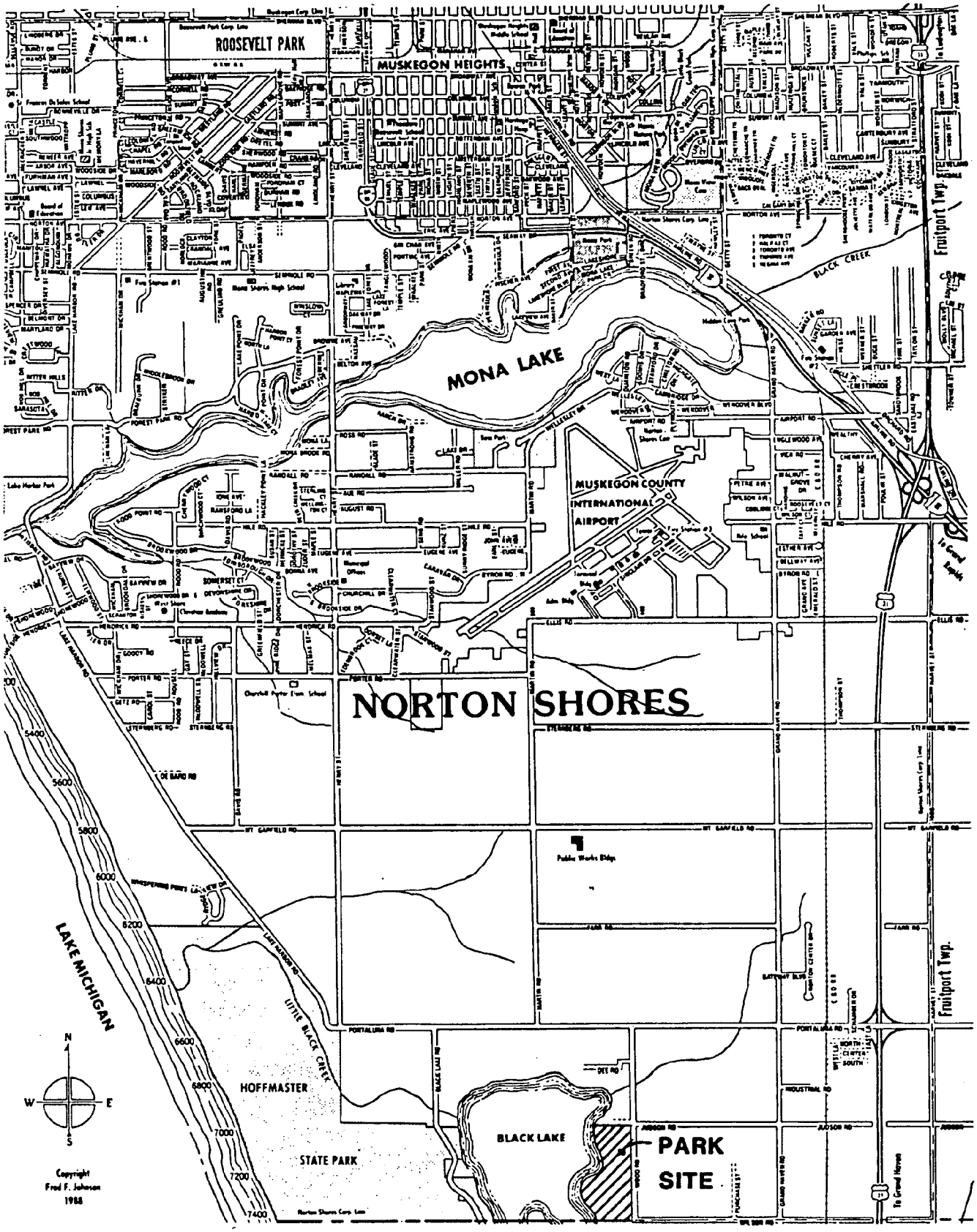
The City of Norton Shores owns a 70 acre parcel of land situated on the east shore of Little Black Lake. The State of Michigan has allocated $10,000 through the Coastal Zone Management Program to develop a park study for this land parcel. Cognizant of good planning the city retained Gove Associates Inc. to develop a master plan for this wooded site. The agreement with the State calls for a development of a master plan to make innovative and creative use of the site and to protect the existing natural features.

The Master Plan for this park site has three basic elements:

1. **Data Collection & Inventory** - significant natural features of the site are described and mapped. These include the soils, vegetation, animals, geology, climate, existing features and surrounding land use. Past and existing developments on the site, present zoning, access, legal restrictions are to be noted.

2. **Site Analysis** - the relationship of the park to the natural and cultural elements are then explored with special emphasis on preservation, environmental education, and recreational use. The city's goals and objectives for this area are analyzed and updated to present needs and existing natural resource base.

3. **Site Master Plan** - concepts for development are mapped out showing the site plan configuration for preservation, interpretation and development.



LOCATION MAP

EXISTING SITE FEATURES

EXISTING SITE FEATURES

The Little Black Lake Park site is situated within the jurisdictional limits of Norton Shores, Michigan. The site is located within the following sectional description: West 1/2 of Section 32, Township 9 North, Range 16 West. The site is remotely situated from the more developed portions of the city. The property is bordered on the west by Black Lake, Wood Road on the east, and residential parcels on the north and south.

Access to this 70 acre park site is afforded by Wood Road which is a public right-of-way. Most visitors come from the north by way of Pontaluna Road. Access can be gained by watercraft on the lake side of the property.

A natural features survey of the Little Black Lake Park site was undertaken during May and June of 1989. Parameters of the survey were soils composition, dominant vegetation types, vegetative communities (habitats), wildlife species, and wetland systems.

Soils of the area were determined by using the Muskegon County Soil Survey (Pregitzer, 1968), and soil descriptions were supplemented by the Field Manual of Soil Engineering [F.M.S.F.] (1970).

Vegetation types and plant communities were identified by visual surveys and general sampling of specimens. Dominant species were identified using taxonomic keys. Several plant species could not be identified to the species level because they were not flowering during the study period.

Wildlife was surveyed using tracks, feeding signs, scats, nests, burrows and visual observations. Birds and amphibians are also identified by their calls.

Wetland classification was performed under the guidelines of Cowardin, et. al. (1978). This is the current system used by the state regulatory agencies in identifying wetlands. Current wetland/regulations which apply to Little Black Lake Park are discussed in the wetland section.

Soils

The soils of Little Black Lake Park are part of the Rubicon-AuGres-Roscommon Association (Pregitzer, 1968) [Figure 1]. They are described in the Muskegon County Soil Survey (1968) as well as drained and poorly drained sandy soils that typically occur in the outwash and lake plains of

SOIL ASSOCIATIONS IN LITTLE BLACK LAKE PARK
MUSKEGON, MICHIGAN
Taken from Soil Survey of Muskegon County
(Pregitzer, 1968)

FIGURE 1

Muskegon County. Within the Association, there are seven soil series represented [Figure 2]. Four of these soil types are complexes consisting of two different series'. Both soils have similar profiles and occur in such an intricate pattern that they were mapped together. The major soil is listed first, followed by the minor series. All soil descriptions in this text are taken from The Muskegon County Soil Survey (Pregitizer, 1968) and the F.M.S.E. (1970).

Soil taps were conducted at various locations throughout the park site. Analysis confirmed the soil data from USDA sources with the exception of the leaf disposal area. At this particular area material consisting of leaves, grass clippings, stumps, trunks, branches and other miscellaneous organic fill was observed to be deposited. However historically the record indicates that other disposal from household to commercial items were deposited at this location. During this landfill operation this area was excavated to a depth of 15 to 20 feet and then used a disposal area for a number of years. Following fill operations it was covered with an earth cap and now lawn and tree items form the final layer. Shallow test borings confirm that the soil profile has been disturbed at this landfill site.

Other borings conducted revealed that natural soil conditions prevailed. Water table in most holes were at or near the ground surface. It was sandy soils that were encountered in all the test holes.

The hydric soils are imperfectly to poorly drained and are saturated part of the year [Table 1]. There are many isolated pools of water in these areas, indicating a high water table during the spring. The surface layers are highly organic, however, the availability of nutrients to plants is low due to the high sand content. The decomposition of organic material is inhibited by the acidity of the soils, further reducing nutrient availability.

The upland soils are well-drained and occur in gentle slopes [Table 1]. The acidity of these soils reduces the amount of organic material present, thus both nutrient availability and organic content is low.

- AuGres - Saugatuck Sands - (AsB - hydric)

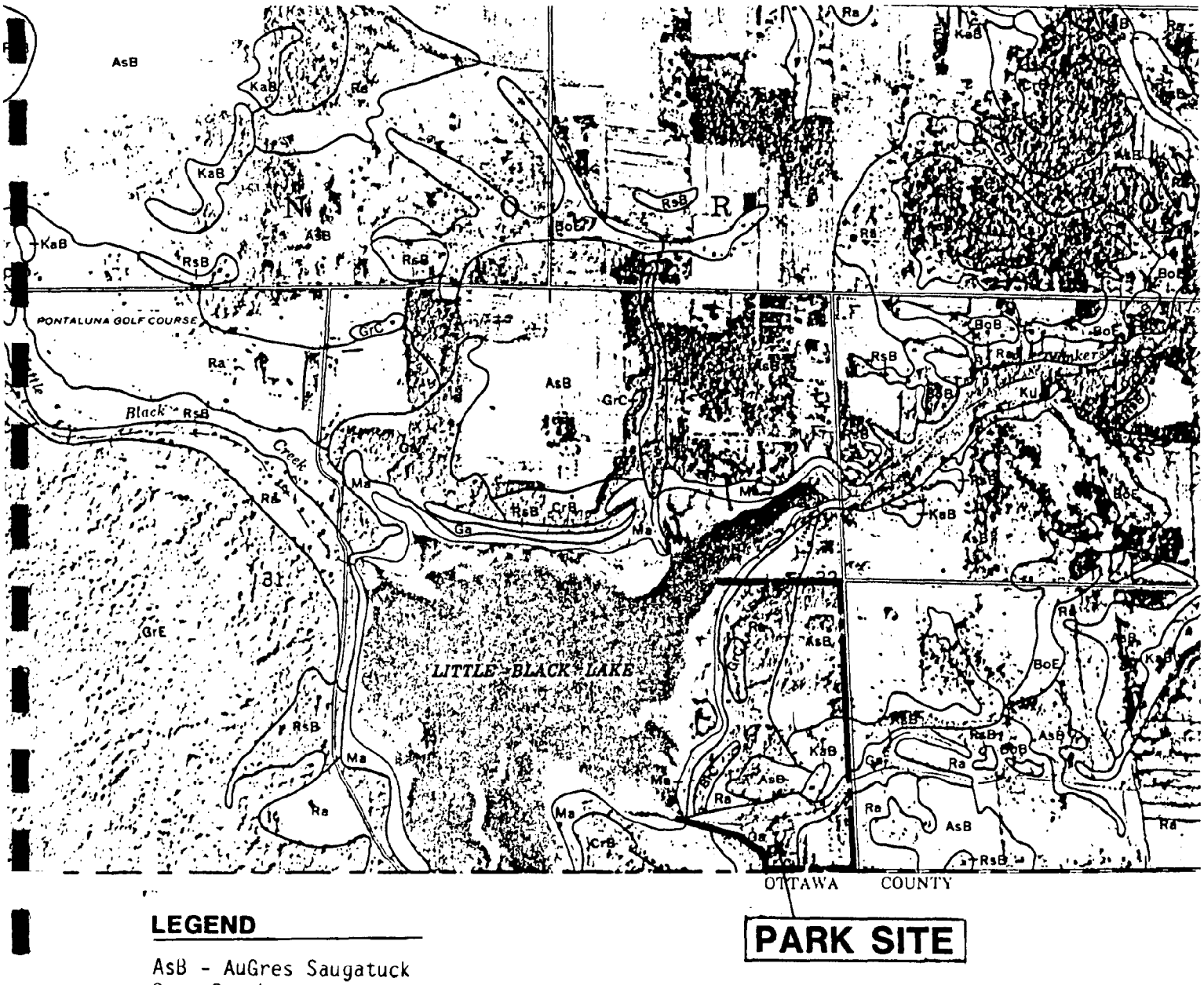
  This series consists of somewhat poorly drained soils that developed in sandy outwash at least 66 inches deep. They occupy large areas in the western part and occur locally throughout. These soils are common in the wetter parts of outwash areas and lake plains and on the low benches along old river channels and near lakes.

TABLE 1

Soils occuring in Little Black Lake Park, Muskegon County, Michigan. Compiled from Soil Survey of Muskegon County (Pegitzer, 1968) and the Field Manual of Soil Engineering (1970). See Figure 2 for soils map.

Soil Series (map symbol)	Drainage	pH	Nutrient Availability	Moisture Capacity	Organic Content	*Hydric Upland
AuGres-Saugatuck (AsB)	imperfect/ poor	acidic	low	low	high surface content	Hydric
Roscommon-AuGres (Ra)	imperfect/ poor	acidic	low	low	high surface content	Hydric
Granby (Ga)	poor	slightly acidic	low	low	high surface content	Hydric
Marsh (Ma)	saturated	acidic	low	---	peat	---
Grayling-Rubicon (GrC)	well	acidic	low	low	low	Upland
Kalkaska-Wallace (KaB)	well	strongly acidic	low	low	low	Upland
Rubicon (RsB)	well	acidic	low	low	low	Upland

*Hydric classification according to National Wetlands Inventory listing of hydric sois.



LEGEND

AsB - AuGres Saugatuck
Ga - Granby
GrC - Grayling-Rubocon
KaB - Kalkaska-Wallace
Ra - Roscommon-AuGres
RsB - Rubicon
Ma - Marsh

SOIL SERIES MAP OF LITTLE BLACK LAKE PARK
MUSKEGON, MICHIGAN
Taken from Soil Survey of Muskegon County
(Pregitzer, 1968)

FIGURE 2

The surface layer in uncultivated areas is about 5 inches thick and consists of black sand that has granular structure and is very friable. The subsurface layer is light-gray sand that is about 6 inches thick and has subangular blocky structure.

The subsoil consists of brownish sand mottled with light yellowish brown. It is subangular blocky to single grain and very friable in the upper part and loose in the lower part.

Underlying the subsoil, at a depth of about 34 inches, is very pale brown sand mottled with light yellowish brown. It is single grain and loose.

The AuGres soils are very permeable to water and have low available moisture capacity and natural fertility. Mottles indicate periodic wetness. During spring free water is often within 2 or 3 feet of the surface, but this water recedes during summer, and for extended periods there is not enough moisture available to crops. Drainage is difficult because these soils are sandy. Overdrainage and droughtiness are likely.

These soils have a slope of 0 to 6 percent and are naturally acid. In the sandy plains a water table rises close to the surface during part of the year. In cultivated areas and in areas slightly eroded by wind and water, the surface has a gray salt-and-pepper appearance because the surface layer has been mixed with the grayish subsurface layer.

The soils in this complex are low in natural fertility and become very droughty during dry periods.

- <u>Granby Loamy Sand (Ga)</u>

This soil has a 0 to 2 percent slope and occupies the broad, nearly level outwash plain and low wet depressions. In cultivated areas the surface layer is black loamy sand about 10 inches thick. It has granular structure and is very friable. The material underlying the surface layer is dominantly gray and brownish sand. It has very weak subangular blocky structure in the upper part and is single grain in the lower part. Brownish-yellow mottles occur at variable depths. Granby soils have rapid permeability and low available moisture capacity. Natural fertility is low. A high water table saturates these soils in undrained areas.

The depressions in this soil series are dish shaped, and there are some gently sloping areas near their edges. The surface layer is high in organic-matter content. Where the soil has been cultivated for some time, the surface layer is lighter colored than that described in the typical profile.

Included with this soil in the mapping were areas that have been eroded by the wind and have a salt-and-pepper appearance and a dark-gray surface layer. In some cultivated areas all of the dark-colored surface layer has been removed by erosion. Also included were depressions that have 12 inches of organic matter at their surface. The AuGres soils are slightly higher and better drained than Granby loamy sand.

This soil is wet because its water table is high. Its supply of plant nutrients is low because the texture is sandy.

- Grayling-Rubicon Sands (GrC)

This soil series has slopes ranging from 6 to 12 percent and consists of well-drained sandy soils on the rolling sand hills of the county. The native vegetation consisted of white pine, red pine, aspen, black oak, and white oak.

The surface layer is black sand about 1 inch thick. It is underlain by 1-inch layer of dark-gray sand. Both of these thin layers are single grain and loose.

The subsoil is weakly developed and consists of sand about 14 inches thick. It is yellowish brown in the upper part and light yellowish brown in the lower part. This layer is single grain and loose. Below the subsoil there is a very pale brown sand that is single grain and loose.

Grayling soils have very rapid permeability. Their natural fertility and available moisture capacity are low. The effects of drought on plants are shown sooner on these soils than on most other soils in the county. These loose, dry soils are susceptible to soil blowing and water erosion where the vegetation cover has been removed.

- Kalkaska - Wallace Sands (KaB)

This sandy soil series has a slope of 2 to 6 percent. These two soils are somewhat similar, but the Wallace soil has a cemented layer in the subsoil, and the Kalkaska soil does not. The unit occupies gently sloping, narrow, land and low dune-like ridges within areas of the flat, wet outwash plain and lake plain. These soils are normally moderately well drained, although some higher positions are well drained.

Included with these soils in the mapping were eroded areas in which the surface layer consists of brownish former subsoil material and has a few chunks of cemented material on the surface.

These soils have low available moisture capacity and natural fertility. The cemented layer in the subsoil retards the penetration of roots in ome places.

The surface layer is a mixture of black and gray sand about 4 inches thick. It has granular structure and is very friable. A subsurface layer of light-gray sand underlies the surface layer. It has subangular blocky structure and is very friable.

The subsoil is sand about 16 inches thick. It is dark reddish brown in the upper part and yellowish red in the lower part. The subsoil has subangular blocky structure and is very friable.

Underlying the subsoil, at a depth of about 26 inches, is light yellowish-brown sand. This material is single grain and loose.

- Marsh (Ma)

This soil is made up of old bayous and wet areas along streams that empty into Lake Michigan and of very wet, inland areas. Slopes range from 0 to 2 percent. The vegetation consists of cattails, sedges, water weeds, and a few clumps of tamarack, willow, elder, and other water-tolerant trees. The soil material is a very friable, finely divided peat that is saturated organic material. It is saturated during the entire year.

Most Marsh is used only by wildlife. Waterfowl, muskrats, and other water-loving wildlife use the areas of nesting and shelter.

- Roscommon and AuGres Sands (Ra)

These soils are nearly level with slopes ranging from 0 to 6 percent slopes. This series consists of deep, poorly drained, sandy soils. These soils are in nearly level to slightly depressional areas on the outwash plains and the sandy uplands of the county. The native vegetation consisted of elm, ash, aspen, willow, and speckled alder.

The surface layer is very dark gray sand about 5 inches thick. It has granular structure and is very friable

Light-gray, pale-brown, or light brownish-gray sand is below the surface layer and extends to a depth of more than 60 inches. This material is mainly single grain and loose.

Roscommon soils are very permeable to water and air and have low available moisture capacity.

Roscommon and AuGres sands have a low supply of plant nutrients. They are wet most of the time because the water table is generally high. In dry periods, when the water table drops, these soils become droughty and are easily eroded by wind.

- Rubicon Sand (RsB)

This soil series has slopes from 0 to 6 percent. It occupies broad areas of the nearly level to gently sloping sandy outwash plain and lake plain. It also occurs in nearly level to gently sloping areas of the sandy uplands. The sandy plain appears flat, but is has many small depressions, swells, shallow pits, and slightly domed areas. The shallow depressions in these plains are normally oval and somewhat dish shaped. They are flat on the bottom and gently sloping near the edge. They are elongated where they occur at the base of slopes in the rolling sandy uplands and at the base of long gentle wavelike slopes of the sandy plain.

The surface layer is black sand about 3 inches thick. It has granular structure and is very friable. A subsurface layer consists of gray sand about 2 inches thick.

The subsoil also is sand, but it is dark brown or strong brown to brownish yellow, subangular blocky, and very friable. The upper part of the subsoil is darker and redder than the lower part. Below the subsoil there is very pale brown sand that is single grain and loose.

These soils are permeable, have a low supply of plant nutrients, and are low in available moisture capacity. The content of moisture is seldom adequate for optimum growth of crops. Acidity is very strong to a depth of about 19 inches.

Wetland Classification

The classification of wetlands for this study follows the guidelines of Cowardin et.al. (1979). The Cowardin system is widely accepted by both state and federal regulatory agencies as the standard inventory system.

To classify an area as a wetland, it must have two or more of the following attributes:

1. At least periodically, the land supports predominantly hydrophytes
2. The substrate is predominently undrained hydric soil and
3. The substrate is a non-soil or covered by shallow water at some time during the year. (Cowardin et. al., 1979)

Once these criteria are met, the wetland is then catagorized in a hierarchial fashion, transcending from system, subsystem, class, subclass to dominance type.

Four Palustrine systems and a Lacustrine system was delineated during the field review [Figure 4]. Each system is fully classified in Table 2, and a crosssectional view is included in Figure 3.

Wetland areas serve a variety of functions, including water retention, sediment trapping, filtration of pollutants (before they enter the groundwater and lake), and flood control. They also fulfill important habitat requirements for many species of wildlife and plants. The unique bog/fen shoreline harbors a vast array of plants that can only survive is such acidic environments; such as cranberries (*Vaccinium macrocarpon*), northern

pitcher plants (Sarracenia purpurea) and sphagnum moss (Sphagnum spp). A complete discussion of these habitats, including species composition, is presented in the next section of this report.

Vegetation (Habitats)

On-site reconnaissance covered the spring season of 1989. Four vegetative communities and one open water system were identified and mapped on the basis of soil and plant composition and hydrology [Figure 4]. Community distributions including common and scientific names are listed in Appendix A; wildlife species are in Appendix B.

Several areas on the site have been impacted by logging, the parks' use as a landfill, and its current function a leaf disposal site for residents in the area. Sections in the southeastern portion of the site contain solid waste, apparently dumped by the public. Because the contents of the landfill are unknown, water quality should be tested by the Environmental Protection Agency.

The site is not open to the public, however, there are indications that the area is used for fishing, hunting and camping.

Forested Wetland

The upper canopy of the forested wetlands on this site is dominated by red maple (Acer saccarum) and black ash (Fraxinus nigra). There are several upland tree species that occur on small ridges and swales, predominantly paper birch (Betula papyrifera), eastern white pine (Pinus strobus), black cherry (Prunus serotina) and sassafras (Sassafras albidum).

The understory of this community is nearly homogenous, dominated by black cherry. It is quite dense in the swale and ridge areas, and virtually non-existant in many of the more saturated areas. Other species that occur include staghorn sumac (Rhus typhina), sassafras, and red ash (Fraxinus pennsylvanicus).

The ground cover at the time of this survey was dominated by sedges (Carex spp), wild sarsaparilla (Aralia nudicaulis), false soloman's seal (Smilacina racemosa), fringed sedge (Carex crinita), and Canada mayflower (Maianthemum canadense).

The forested wetlands are composed of Roscommon-AuGres, Granby, and AuGres-Saugatuck soils.

Wildlife species utilize forested wetland areas for travel lanes between upland sites and water, nesting, rearing, feeding and cover. This wet environment is inhabitated by amphibians and a variety of other life forms. The site may be utilized as a stopping point for many migrating bird species.

The forested wetland habitat is rich in wildlife food sources, attracting a diversity of species. Seeds from the red maple are eaten by squirrels, birds and chipmunks (Martin, Zim and Nelson 1951). Birch trees (Betula spp) provide catkins, buds and seeds which are readily eaten by ruffed grouse (Bonasa umbellicus), and other birds. Many species of birds and mammals feed on the fruits of the black cherry and gray dogwoods. Sassafras produces a bluish colored fruit eaten by many members of the flycatcher family such as the eastern phoebe (Sayornis phoebe) and the great crested flycatcher (Myiarchus crinitus). The eastern white pine, black and red ashes produce seeds which are eaten by rodents and birds.

Cover is provided by the upper canopy trees, dense stands of ferns, and understory trees. Shallow burrows were found on swales and ridges, however, the seasonal inundation of water creates problems for many ground dwellers. Dead woody vegetation provides nesting holes for many species of birds and small mammals. A pair of tufted titmices (Parus bicolor) were observed nesting in a dead tree.

Upland Forest

The upland forest habitat is characterized by open clearings, transition zones and borderline forested wetlands. In the clearings, the dominant plant species is bracken fern (Ptecidium aquilinum). Transition zones occur on the edges of two-track roads, clearings and along Wood Street. Pioneer species such as quaking aspen (Populus tremuloides), northern red oak (Quercus rubra), and big toothed aspen (Populus grandidentata) occupy these margins.

The uplands are similar in composition to the forested wetlands, however, there is a shift in dominant tree species. Paper birch, black cherry, and eastern white pine now occur in greater densities than the red maples. Major vegetation ranges in size upwards to 30" caliper. The understory consists of red ash, young aspen, black cherry and sassafras. There are several low spots within the upland system, resulting in a higher concentration of wetland species such as gray dogwood (Cornus latifolia) and speckled alder (Alnus rugosa). The ground cover consists of Canada mayflower, grasses, false-solomon's seal.

The availability of food for wildlife in this habitat is comparable to the forested wetland due to the similarity in species composition. Aspens provide browse for white-tailed deer and catkins for gamebirds such as the ruffed grouse. The dense, shrubby growth found in some areas also provide browse for deer, and good cover and nesting grounds for bird species.

The soils found in the upland forest zones are the Kalkaska-Wallace, Rubicon, and Grayling-Rubicon series.

Scrub-shrub Wetland

The scrub-shrub wetland forms a narrow band that separates the forested wetland from the emergent zone. It is a bog ecosystem, and due to the poor soils, has a low diversity of plant species. Speckled alder, gray dogwood, and meadowsweet (*Spirea latifolia*) are the dominant shrubs in this community. Other plant species inhabiting the scrub-shrub ecosystem are sedges (*Carex spp*), rushes, royal fern, marsh fern, blue flag (*Iris versicolor*), marsh cinquefoil (*Potentilla palustris*) and sphagnum moss. Northern pitcher plants are abundant, growing in clusters along the entire lakeside edge.

The soils are acidic, nutrient poor peat mats that float on the lake. Pitcher plants, common on open, developing mats, have a unique method for obtaining nutrients from the bog. Insects are trapped in the pitcher, digested and absorbed by the leaf, providing the plant with essential nutrients.

The scrub-shrub and emergent wetlands are defined zones along the lake edge. As the emergent zone becomes the dominant system, the bog environment changes to an acidic fen dominated by sedges, grasses and spikes.

There are many foods available to wildlife in the scrub-shrub ecosystem. The dogwoods provide berries and browse for deer, birds and rabbits (Martin, Zim, and Nelson 1959). Seeds from spikes, sedges and rushes are important food sources for many species of waterfowl. Roots and tubors are eaten by geese, muskrats and diving ducks.

Waterfowl, muskrats, and songbirds use the scrub-shrub habitat for nesting areas. Predators can utilize the dense vegetation for cover when stalking prey on the lake edge, conversly, prey species can use it to hide.

TABLE 2

Wetland classification of Little Black Lake Park in Muskegon County, Michigan. Based on the Cowardin system (Cowardin et. al. 1979). See Figure 4 for wetland map.

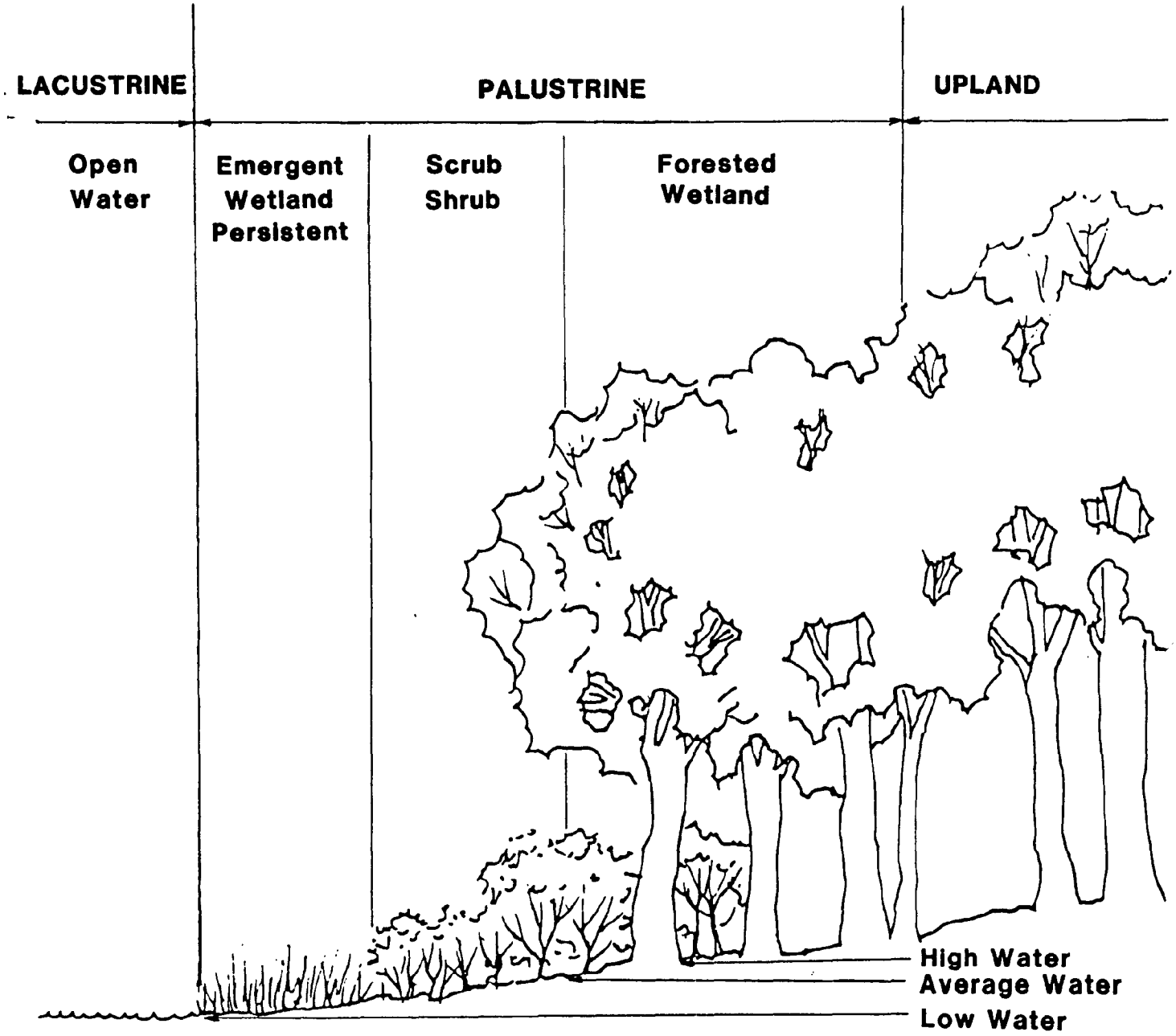
System: Palustrine
Subsystem: None
Class: Forested wetland
Subclass: Broadleafed Deciduous
Dominance Types: Red Maple (*Acer rubrum*)
Red Ash (*Fraxinus pennsylvanicum*)
Water Regime: Seasonally flooded - saturated
*Map symbol: PFO1E

System: Palustrine
Subsystem: None
Class: Scrub-shrub
Subclass: Broad-leafed deciduous
Dominance Types: Speckled Alder (*Alnus rugosa*)
Gray Dogwood (*Cornus racemosa*)
Meadowsweet (*Spiraca alba*)
Water Regime: Seasonally flooded - saturated
*Map symbol: PSS1E

System: Palustrine
Subsystem: None
Class: Emergent
Subclass: Persistent emergent
Dominance Types: Sedges (*Carex spp.*)
Rushes (*Scirpus spp.*)
Rushes (*Eleocharis spp.*)
Water Regine: Semipermanently flooded
*Map Symbol: PEM1F

System: Lacustrine
Subsystem: Limnetic/Littoral
Class: Open water/Unknown bottom
*Map Symbol: POW

* = taken from National Wetland Inventory Mapping Effort



WETLAND CLASSIFICATION PROFILE SKETCH
LITTLE BLACK LAKE PARK
MUSKEGON COUNTY, MICHIGAN

FIGURE 3

Emergent Zone

The emergent zone is a band of vegetation that occurs on the shoreline of the lake. It is dominated by sedges (Carex spp), spike rushes (Eleo deris), Olney's bulrush (Scirpus americanus), and rice cutgrass (Leersia oryzoides). Because of this dominance, it is catagorized as a acidic fen rather than a bog (pers. comm.).

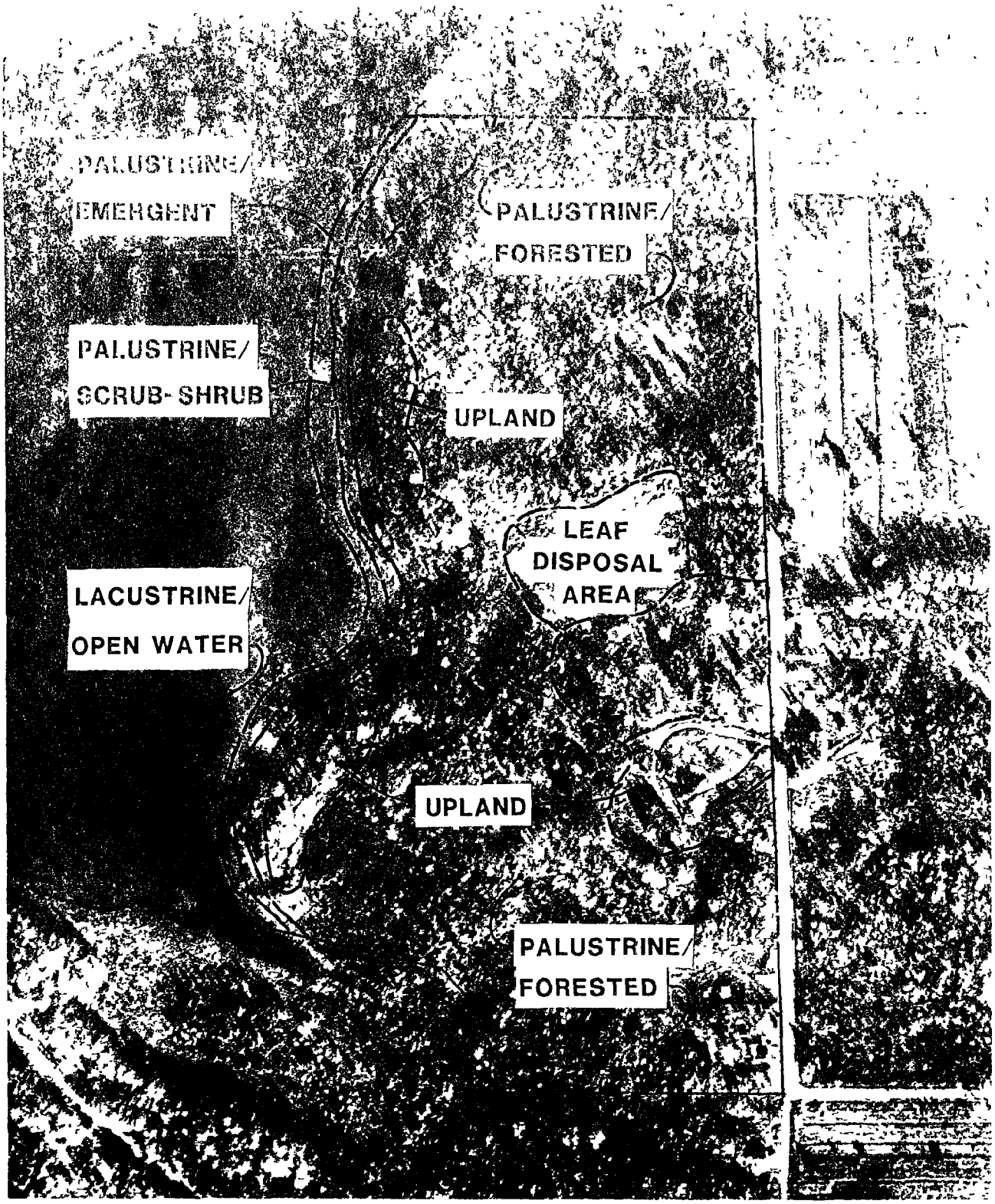
The emergent system is low in nutrients and, therefore, has low plant species diversity. The substratum is a peat layer that becomes more sandy as the zone ends in the lake.

The plant species composition shifts along the southern shore from a fen to a cranberry bog. There are fewer sedges, rushes and spikes in this area. Boneset (Eupatorium perfoliatum), a plant used by early doctors to treat broken bones, is more common here than in the fen. The peat mat in the cranberry bog area appears to "float" more than other sections of the site.

A diverse number of wildlife species utilize the emergent wetland system. Birds and mammals find a wide range of foods including seeds, bird's eggs, fish and berries. Snakes, particularly the Northern water snake (Nerodia sipedon) and easter garter snake (Thamnuphis sirtalis) hunt for frogs in the cover of the emergent plants. Wading birds, such as the great blue heron (Ardea herodias), prey upon frogs, snakes and other aquatic organisms.

The emergent zone is also important in th reproductive cycle. A pair of mallards (Anas platyrhynchos) successfully nested in the protective cover of emergent vegetation as three chicks were observed on one survey day hiding amongst the leaves. Several old muskrat lodges were located, and the feathers found on top of one lodge indicated they were used as nesting places by birds, probably Canada geese (Branta canadensis). Spring peepers (Hyla crucifer) and western chorus frogs (Pseudacris triseriata) are abundant during the spring mating season.

According to the Michigan Department of Natural Resources' Natural Features Inventory personnel, there is a state threatened plant that occurs on another section of the lake. Atlantic blue-eyed grass (Sisyrinchrum atlanticum) has been recorded on Little Black Lake, and it is possible that it occurs on this study site. The habitat in the emergent zone is favorable for the species. The grass blooms in early June and several unsuccessful attempts through 9 June were made to locate it. A complete threatened and endangered plant survey of this area is recommended.



WETLAND MAPPING FOR LITTLE BLACK LAKE PARK
MUSCKEGON COUNTY, MICHIGAN
Based on Cowardin et al (1973)

FIGURE 4

The bog/fen system of Little Black Lake Park is very fragile and should be protected as disturbance in such a nutrient poor environment can be severe and recovery is a slow process.

Lake System

According to personnel from the Department of Natural Resources (DNR), Grand Rapids office, Little Black Lake is classified as a typical warm water lake. The maximum depth ranges from five to ten feet, with a primarily organic and gravel bottom. A determination of where each bottom type was located in the lake could not be done by this survey and therefore, these types were not included in the wetland classification. Several fish species inhabit the lake (pers. comm.). A DNR fisheries biologist stated several species of pan fish, bass (*Micropterus spp.*), and northern pike (*Essox lucius*) inhabit the shallow lake. During an on site visit, an angler was observed with a large number of bluegills. A northern pike skull was found in the emergent zone, and several dead fish were also observed, though could not be identified.

Wildlife use the lake for a drinking water source, food, bathing and reproductive functions. During fall migrations, waterfowl and some wading birds may use the lake for a gathering place before departure (a phenomenom known as staging). Insects, such as the dragonfly group (family: Odonata) lay eggs in the water and spend their pre-reproductive lives as aquatic dwellers (nymphs). Frogs, salamanders and toads also use the lake for reproductive purposes.

Climate

The City of Norton Shores has a quasimarine or continental climate. Because the city borders Lake Michigan and prevailing winds are westerly, much of the time the air reaching the city has passed over a large amount of water. When the wind changes, however, and is from the southeast or east, the air moves over a large amount of land and the climate changes to continental. Because of the prevailing westerlies. the influence of the lake is strong. Winters are milder, summers are cooler, and snowfall is greater than they would be if the lake were not there.

In the spring the waters from Lake Michigan cool the warm air that reaches the area. Growth of plants is therefore delayed until frost is no longer likely. In fall the lake waters, still warm from the summer sun, warm the cool air moving into the area and delay the first frost. Plants therefore

have time to mature. Sharp contrasts in temperature occur as the air is warmed by contact with the warm water. This causes heavy snow storms and squalls that are of greatest intensity near the lake.

The highest temperature ever recorded was 97 degrees in June 1953, and the lowest was -14 degrees in November 1950. The latest freezing temperature ever recorded was on May 20. In fall the average date of the first 32 degrees temperature is October 19.

Average annual snowfall in Muskegon County is 74 inches, as compared to about 40 inches in central and east-central parts of the Lower Peninsula. This heavy snowfall is a direct result of the influence of Lake Michigan.

Physiography and Drainage

The physiography of Muskegon County, for the most part, results from the Wisconsin, or latest, glacial period. The glacial ice that once covered the State melted about eight to twelve thousand years ago. As this ice melted, a covering of raw soil material was left on the surface of the county. This glacial deposit ranges from about 150 feet to more than 400 feet in thickness.

The present surface of the county ranges from nearly level to rolling and hilly. Along the shore of Lake Michigan is a belt of strongly rolling sand dunes. These dunes are postglacial in origin but are now generally stationary. After vegetation covers these dunes, a soil profile begins to develop. For several miles inland, smaller dunes are scattered throughout the poorly drained areas of the lake plain.

A wide plain with little relief lies east of the dunes. Rolling to hilly areas are toward the eastern side of the county and in the extreme northwestern part. Parts of the central plain are somewhat broken by stream channels and lake basins.

The county is drained mainly by three major river systems, but some areas are drained by streams that flow directly into Lake Michigan. The Muskegon River cuts the county into two parts and empties into Muskegon Lake, which is an inlet from Lake Michigan. The main tributary within the county is Cedar Creek, which receives the drainage waters from the northeast. White River drains the northwestern part of the county and empties into White Lake, another inlet on Lake Michigan. Directly south of Muskegon is another small inlet, Mona Lake, into which Black Creek empties water that

drains from the west-central part of the county. Little Black Lake basin receives water from the Yonkers Drain and several small tributaries one of which crosses the south portion of the site. Little Black Lake empties into Lake Michigan via Little Black Creek.

The lake elevation is regulated at its outlet as it crosses under Black Lake Road. Here at the northwest corner of the lake it cascades over two concrete headwalls three to four feet in height. There is an adjusting mechanism in this structure which enables the golf course personnel to regulate the lake elevation depending upon their irrigation needs. It is from Little Black Lake that the course obtains it's water supply for their sprinkling system. Their water rights permit them to adjust lake levels according to their need, without D.N.R. permission.

Topography

Ground elevations throughout the park site range from the lake elevation (water 597.35) up to 609.6 USGS datum. Higher elevations are found at the leaf disposal area (615.5) but most of the park site ranges from 601 to 605. Topography would be classified as being flat with constant elevations, typical for this portion of the city. Water elevations fluctuate with the seasons and to some degree are effected by levels established at the lake outlet.

Elevations for Wood Road vary from 605 to 606. These correspond with the adjoining natural grade along the road right of way. Lake bottomlands have not been completely mapped, but it is a well known fact that lake depths are shallow and do not exceed eight feet. The shoreline beach profile has a shallow grade of 1 degree slope at the park site.

IMPROVEMENTS / RESTRICTIONS

EXISTING SITE IMPROVEMENTS/RESTRICTIONS

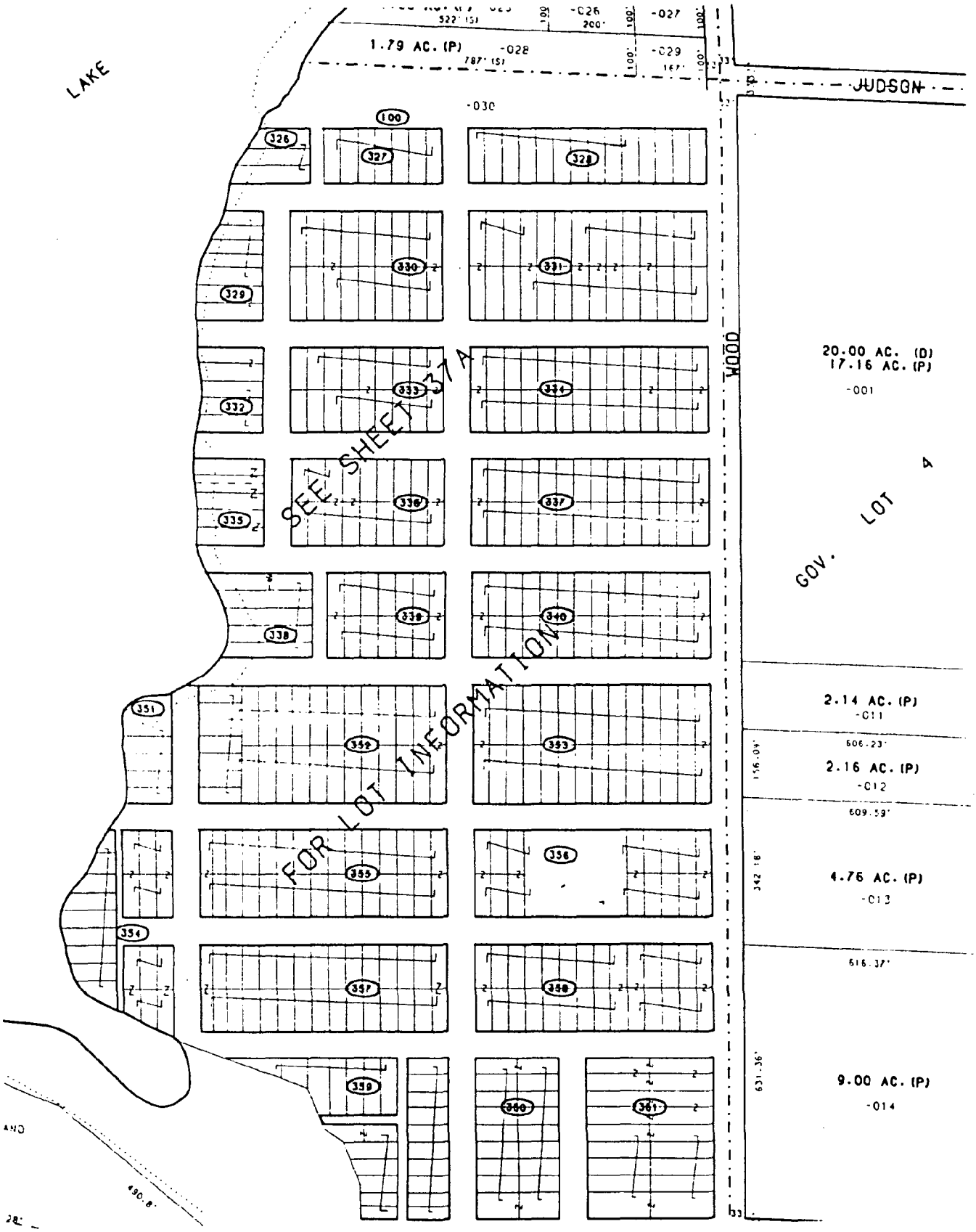
Within the city limits of Norton Shores there is an abundance of undeveloped land especially in the southern half. This period is an opportune time to plan for the future development/preservation of this site particularly because it has lake frontage. Future growth along the Muskegon/Grand Haven corridor will inevitably come making it important to set aside land for public use. These undeveloped land areas present significant opportunities for preservation and recreational resources.

The city has two inland lakes within it's boundaries: Mona Lake and Little Black Lake. Mona Lake is used extensively for fishing and boating with little swimmer use because of poor water quality. Little Black Lake at the southern edge of the city has not experienced much development on it's shores. The city and the State of Michigan own a significant portion of the lake shoreline which has helped preserve much of it's natural appearance and character.

Historically this area of lake front property has seen little development because of the shallow lake depth and a high water table which limits its potential for intensive use. Previously the entire site was subdivided small parcels being sold with several resort cabins built on it. Due to poor site conditions this development was discontinued with the cabins being razed. In the south portion of the site a residence was established and land cleared for agricultural use. Later it was abandoned and purchased by the city. This farm was situated on the only large dry upland area on the city parcel.

Site access is by either public right of way of or from the lake. The right of way provides a half mile of accessible frontage for motor vehicles, bicycles, foot traffic and other visitor use. Watercraft can beach at any point along the 2700 feet of shoreline of the park. Access is difficult since most is composed of marshy wetlands.

Temporary access across the abandoned farm parcel has been granted by the city to a land locked property for a private logging operation. For how long and whether this temporary easement is still needed is unknown but should development take place here this should be resolved before proceeding with improvements.



EXISTING PLAT

There are three gated entrances to the site which control vehicle access onto the site. Access to the leaf disposal are remains open whereas the other two entrances are locked to restrict entry only for authorized use. Both of these entrances are unimproved roads (two tracks) which provide access to the lake and ultimately leading and tying into a road paralleling the shore line.

Most public utilities have not been extended to this portion of the city. Pontaluna Road one mile to the north and Grand Haven Road one and a half miles to the east have a public water system. Additionally these roads are the nearest paved streets. Sanitary and storm sewer systems do not extend into this portion of Norton Shores. Storm water is accommodated by surface runoff ditches and channels located throughout the park site. The only major drain in the south portion of the site is scheduled for retrenching and general cleaning. This should lower the water table in that vicinity of the park and improve the surface drainage.

Presently the center portion of the property is being used for leaf and tree disposal. Leaf mounds ranging from eight to ten feet in height cover the majority of the landfill site. As indicated earlier this disposal site was used for more traditional forms of disposable items and then covered with earth.

Sportsmen and the like find this wooded property useful for hunting, fishing and camping activities. The natural resource base has provided many opportunities for nature study and other forms of non-consumptive use.

Wetland Regulations

Wetland of Little Black Lake Park (including the lake) is regulated by state and federal laws. This site fits all of the criteria for wetland determination. The following Acts are applicable and permits would be required before any development could take place.

1. Inland Lakes and Streams Act (P.A. 346,1972)
   A permit is required for any dredging, filling or construction of a permanent structure below the ordinary high watermark of any inland lake or stream, or lake greater than 5 acres in size. A permit is also required for dredging within 500 feet of a lake or a stream. It is administered by the Division of Land and Water Management (D.N.R.).

2. Wetlands Protection Act (P.A. 203,1979)
   A permit is required for any dredging, filling or draining of a wetland contiguous to a lake or stream, or any isolated wetland at least five acres in size. It is administered by the Division of Land and Water Management (D.N.R.).

3. Soil Erosion and Sedimentation Control Act (P.A. 347, 1972)
   A permit is required for any earth change greater than one acre in size or within 500 feet of a lake or stream. Permits are obtained from local county enforcing agents. It is administered by the Division of Land and Water Management (D.N.R.).

4. Section 404
   A permit is required to place 10,000 cubic yards or more of fill in a wetland, relocating a channel 500 feet or more, placing 100 feet long culvert or longer with 200 cubic yards or more of fill. 404 Authority can be implemented at staff's discretion. It is administered by the Division of Land and Water Management for the U.S. Army Corps. of Engineers.

Most of these acts are administered either by a county or state agency. Other state and federal laws might have an impact depending upon what determinations can be made regarding the environmental impact past disposal operations have had. A more in depth environmental assessment is required before final conclusions are made.

Planning Goals and Policies

Little Black Lake is situated in Planning Unit 20 as defined by the Open Space and Recreation Plan (City of Norton Shorès, 1984). In this document it outlines the proposed planning and land use for this area being open space and recreation as the two main uses. It states:

> "The major natural feature located here is the Black Lake and surrounding area. The 'Transportation Corridor Study' calls for a possible expansion of the Hoffmaster State Park facility to include the land area east of Black Lake. Presently, the City of Norton Shores has significant ownership on the east side of Black Lake in an existing platted area. It seems most appropriate to expand open space and recreation ownership and facilities around

this lake. An important open space and recreation opportunity exists in this area; therefore, efforts should be made to assure that development does not occur, which may forclose the open space and recreation opportunities of this area. The "Transportation Corridor Study' also calls for the redevelopment of Pontaluna Road into a gateway corridor parkway. The redevelopment of Pontaluna Road into a parkway or gateway entrance to the community and Hoffmaster State Park is seen as having significant aesthetic, environmental and economic benefits to the City. The redevelopment of Pontaluna as a gateway should be aggressively pursued as the facility is a major link in the City's future transportation network, and will provide the City with an improved visual setting which will benefit the tourist/vacation uses of this area."

In discussion with state officials little interest was shown in having the State assume control over this park site integrating it with Hoffmaster State Park. Not being contiguous with state land and of small acreage were two factors mentioned for not incorporating this parcel into the state system.

The city consistant with the above stated objections has remained committed to establishment of this recreation and open space corridor along Lake Michigan and southern portion of the city. It states in the Master Plan report:

"The Black Lake-Pontaluna Road area (9d) is intended primarily for private recreational development. The area already contains the Elks Club and adjoining golf course and a riding stable. Also, the City owns some lands on the eastern shore of Black Lake. The City's primary objective should be to acquire, over time, all remaining shore property to assure complete control of the lake and its fragile shore environment. In the remainder of the area, various kinds of recreation-related land uses should be permitted, e.g., camp grounds, golf shooting ranges, etc. in addition, farming, garden shops and nurseries, and large lot (5 acre minimum) residential development should also be permitted. In the Zoning Ordinance, this area would be recognized as a special district with appropriate district regulations."

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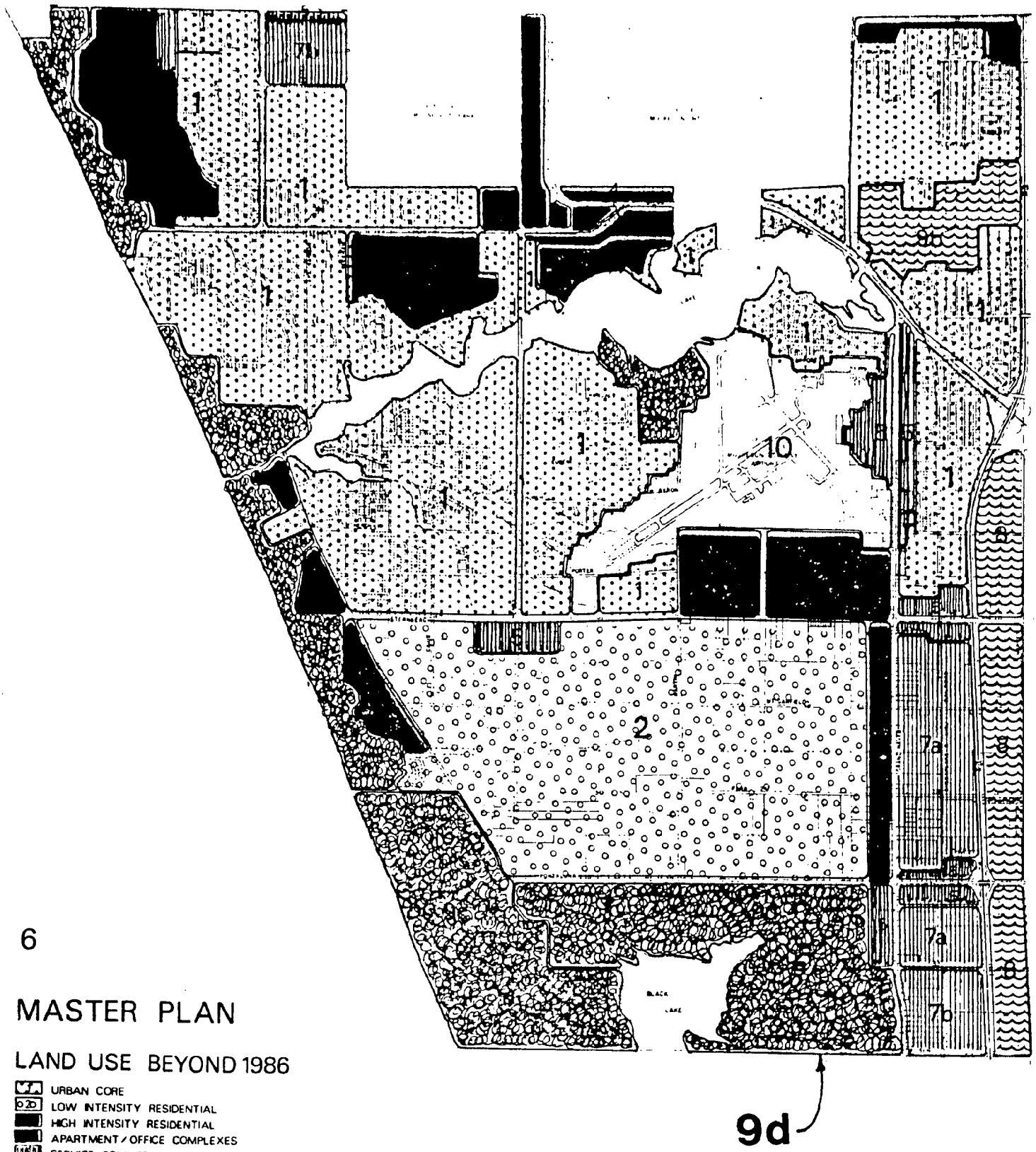

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MASTER PLAN

LAND USE BEYOND 1986

- URBAN CORE
- LOW INTENSITY RESIDENTIAL
- HIGH INTENSITY RESIDENTIAL
- APARTMENT / OFFICE COMPLEXES
- SERVICE COMMERCIAL
- MAJOR COMMERCIAL
- INDUSTRIAL
  - a INDUSTRIAL PARK
  - b SMALL INDUSTRIES
- AGRICULTURE
- RECREATION & OPEN SPACE
  - a LAKE MICHIGAN SHORELANDS
  - b BLACK CREEK BASIN
  - c HOFFMASTER STATE PARK
  - d BLACK LAKE BASIN
  - e ROSS PARK
- 10 AIRPORT

ANALYSIS

ANALYSIS

The City has an opportunity to protect the natural resources as well as expand recreational facilities to better serve the needs of the public. Through on going land purchase and park/open space improvements many of the goals and policies for this recreation corridor can be realized. Much of what has occurred with the establishment of Hoffmaster State Park, Elk's Golf Club and horseback riding facility and more recently with the addition of Pleasure Island Water Park have made this area ideal for further park development not only locally but on a regional and statewide basis as well.

The major limiting factor to intensive development is the hydric soils which comprise the vast majority of park acreage. These are a mixed blessing in that this condition has helped to preserve the park site in it's natural state and has prevented extensive development. With the exception of the leaf disposal site, this property offers an excellent resource base for nature interpretation, study and research. These two factors plus several minor components will determine the highest and best use for the city parcel.

A detailed recreational needs assessment is necessary to fully weigh the deficiency which exists in park and recreation facilities within the city and region. One survey of Norton Shores residents assigned a high priority to natural resource preservation and expansion of recreation and tourism facilities especially in shoreline areas (University of Wisconsin, 1969). In a 1971 survey, three-fourths of the residents indicated support for recreation oriented resources, neighborhood playfields, sports complex, cultural center, arts and crafts center, library and adult education center. Much of this park site would not be suitable for some of these uses.

Of the areas suitable for development the dry upland area could support roads, building structures and other improvements which require a stable, dry base. Marshy or wet portions of the site would at best support trail systems, boardwalks and other low intensive activities.

Accessibility to the site afforded by Wood Road is excellent. The most sizable upland acreage has good access from the road. Soils of the Kalkaska-Wallace complex provide excellent stable base for a road and parking lot.

The central portion of the site has been altered severely by the disposal of household waste in the past and of leaf and tree by-products occurring now. Any hard surfacing or building structures should not be developed in this area. Open field activities (baseball, football, soccer, etc.) are typical uses for the landfill sites which have been abandoned. Methane seepage and ground settlement are two difficulties which would persist in the years ahead if improvements did occur. The nuisance of the grade and elevation of the field changing as settlement occurs would need to be endured during the initial years of use.

Leaving this area lying fallow for several years would eliminate the severity of the settlement which is the greatest during the beginning years. Loss of the leaf disposal site for dumping purposes would not cause serious problems, since alternative sites could be found.

The shallow shoreline which forms the westerly edge of the park property has limited use. Fluctuating lake levels, marshy shoreline, inland wetlands and gradual grades for the wet beach makes it unsuitable for boat launch facilities and swimming beach use. There is need for a public boat launch site since none presently exists and there is heavy boating demand by fishermen. Launch facilities for canoes/lightweight motorized watercraft could be established on parcels north of the park site. This would require acquisition of private tracts of land. Preservation of this natural habitat would provide an exception resource base for interpretive and aesthetic purposes. Trails and boardwalks would provide needed access into this area especially the bog/fen ecosystem.

There are many unique features of this site that can be utilized in environmental education. Nature trails can provide park users with a close-up view of a bog ecosystem. Visitors can experience several different wetland communities in a single trip. The area also offers an excellent opportunity to watch many different species of birds. Self-guided trails would enhance the publics' nature experience in Little Black Lake Park.

An elevated walkway system will be necessary to provide user access in high water areas along the lake shoreline area and bog/fen environments. It should be noted that Hoffmaster State Park is the premier interpretive facility for fresh water coastal dunal ecosystems. The City's Black Lake site offers a completely different natural environment in which to interpret. Establishment of nature trails for the city site would not duplicate the existing state facility and only enhance the variety of opportunities for nature study and observation.

If and when the site is developed for park use a complete environmental assessment is recommended before actual development takes place. An analysis of the disposal site would determine the potential presence of contaminants. Minimally a preliminary assessment should be conducted to identify past uses of the property possible, areas of contamination and types of substances disposed of on the site. If there is uncertainty about hazardous material on site then a site characterization is performed which involves soil borings and lab testing. If contaminants are found to be present the last phase of the assessment of defining the limits of contamination is performed.

Generally speaking this site is more appropriately used for passive recreation and nature preservation interpretation. Proposed development would include nature trails interpretive signage, shelter/restroom facilities, elevated walkways, picnicking, and parking. To a great extent much of the proposed development will depend upon environmental reviews by state and federal officials especially regarding wetlands and solid waste disposal.

SITE MASTER PLAN

SITE MASTER PLAN

In keeping with stated city goals, limited park development is ideally suited for this site. It's half mile of shoreline and natural resource base provides an opportunity to create a recreation area serving the city and local region.

General

The parksite will be utilized primarily for passive uses as indicated on the site master plan. Main access is provided off of Wood Road and terminates at a parking lot which serves the picnic area, shelter/restroom building, and nature interpretive trail system. Other improvements consist of an organization campground, fencing of east property line and upgrading of existing service drives. The leaf disposal site would continue to operate until an alternate site is found for that purpose.

Core Area

A park area of this size has potential for a great variety of activities. A recreation needs analysis has not been made, helping to identify the recreation deficiencies of the community, which this parksite would serve. It is the city staff's opinion that a open field or hard surface sports facilities are not presently needed at this particular location. The high percentage of wetland and forested area found on this site also limits the amount of space available for this type of use. Passive activities such as picnicing, walking and camping are more suitable uses, given the existing site conditions. Other supportive facilities, such as restrooms, shelter, play structures, would augment the recreation experience and encourage greater park use.

Much of the recreation activity is to be centered around the parking and restroom/shelter facility. The picnic area is comprised of four acres of open and semi wooded land requiring approximately 30 tables, 10 grills and 10 waste receptacles. These are situated around the perimeter of the parking area this assuring good access into the site.

Clearing, grubbing, turf establishment and additional tree planting are needed to enhance the picnic site area. A play structure having a variety of activities (climbing, sliding, swinging, etc.) broadens the picnic experience. Situating these facilities (see master plan) in the open upland area minimizes the disruption of the natural environs and provides convenient access to Wood Road.

The park entrance is identified by a park sign locating the only official entrance for the site. This entry is gated to prevent access during off hours or seasonal use. Two other points of entry will be maintained for the leaf disposal site and for the service drive in the north portion. Initially the parking lot is graveled and later paved once funds become available and park use is established. Parking barriers, either curbs or posts, will help control vehicle access to designated areas. Handicap accessibility is a design consideration for all park improvements in terms of ramps, space requirements and absence of barriers.

Restroom/Shelter Facility

Serving as a focal point for many of the recreation functions is the restroom/shelter building located in close proximity to the parking lot. This facility will be utilized especially during inclement weather conditions and other occasions for individual or group use. This structure can serve as a starting and finishing point for nature trail users. Various interpretative displays and exhibits can be stored or permanently mounted to provide information regarding the cultural and natural site features.

Since public water and sanitary sewer systems are not available to the park, on-site septic and well systems will be established to service the restroom facility. Soils in this upland area are sandy giving sufficient percolation for a septic field. Care would need to be exercised in siting the drain field since much of the site has a high water table.

The restroom structure is to be constructed of vandal resistant material while maintaining a natural appearance suitable for parks. Many similar structures such as the one being proposed, have been successfully constructed of colored concrete block (split-face) and wood giving a pleasing natural appearance.

Access/Fencing

Most park users will approach the parksite via Wood Road either from the north or the east. A small number gain access by way of Little Black Lake in watercraft or wading the shallow shoreline. The majority of people will arrive by car or bus since the site is not near a population concentration making the journey too great for walkers or bikers. Wood Road being graveled also limits it to motorized vehicle use versus other forms of transportation.

Service roads would continue to serve access needs into the site for maintenance and emergency reasons that arise. Sections of these unimproved two tracks are to be rerouted or upgraded eliminating sections which are impassable due to low, flooded portions of the road.

Being in a remote section of town park security is at a minimum. Fencing along Wood Road is needed to prevent undesirable trespass and discourage off road vehicles from entry. Three gated entrances are to be maintained off of Wood Road. One would service the proposed parking lot, another the leaf disposal site and the third the existing service road in the north portion.

Trails

Little Black Lake park site has a variety of characteristics which lends itself to nature interpretation and study. Extensive and expensive structures and facilities are not recommended or essential due to level of expected use and amount of operational funds. However, establishment of a limited trail system traversing through a variety of plant and animal habitats is suggested. A loop trail system originating and ending at the parking area will provide on site accessibility to natural features for interpretation as well as access for individuals using it for other purposes. This trail system would be more than a mile in length and circumvent most of the site.

It's primary purpose is to provide opportunities for nature study and interpretation. Numbered trail markers keyed to corresponding numbers in a handout would orient the user to items of interest such as vegetative communities, geology, soils, animal life, history, etc. This permitting self guided tours to occur.

Trail alignment follows the edge of bog/fen in the south portion, then turns north along the lakeshore and doubles back traversing forested palustrine and upland areas (see master plan). Improvements are minimal, trail surfacing at ground elevations except for locations over wet or bog areas requiring elevated walkways or bridges. Observation platforms, consisting of widen boardwalk sections, have benches and interpretative displays serving as surveillance decks directing special attention to points of interest and observation or simply a place to rest. Minimal clearing is required to establish a 3'-4' wide trail. Trail surfacing consists of wood chips, native earth or crushed aggregate.

Other user activities such as walking, jogging, X-country skiing can be acccommodated on the trails. It will provide necessary pedestrian access to the lake and park interior from the picnic/parking area for campers, fishermen, hunters and the like.

Organization Camp

Located along the shoreline of Little Black Lake in an isolated portion of the parksite is the organization campground. The camp accommodates youth groups and organized club campers such as scouts, 4-H and church groups. Three cleared areas a quarter to a half acre in size are established and shaped to fit existing open areas and topography. These will form the camping clusters having a capacity of 25 campers each with a total campground capacity of 75.

Each area requires clearing, grubbing and turf establishment in each section with the surrounding areas being left natural. Minimal earthwork is expected. Each cluster will have vault-type toilets (one-pair), one well and hand pump, and one fire ring. Well and toilets are required to be 100 feet apart. Waste receptacles are placed according to user needs.

Access into the camp area is by way of the service drive, nature trail or by watercraft. It is expected that campers will pack-in whatever supplies are needed without the assistance of vehicles. Motorized access would be limited to maintenance and emergency vehicles using the service drive.

Leaf Disposal Site

Disposal of leaves, brush, stumps and other tree remains will continue on the parksite. It's operation possess little or no conflict with the proposed park operations. It is anticipated that disposal operations will cease when it's capacity is reach since space is limited for modern disposal techniques. For effective decomposition larger for grinding and turning of leaves.

Future Projections

One expressed need was providing public boat access to Little Black Lake. Size and type of watercraft would be limited to canoes and small motorized boats. Presently these watercrafts are launched at Wood Road and Yonkers Drain crossing at which navigation is difficult due to extensive shallows at that end of the lake.

To accommodate this need and adhere to wetland requirements, land acquisition of a private parcel immediately north of the park site is recommended. Use of existing city land would require a long access road and substantial fill and earthwork. Little alteration would be necessary to develop a suitable access on the private parcels.

Cost Estimate

Cost of development of the city parksite will depend upon when funds are available for such improvements. Other factors such as time of year, availability of volunteers, force account labor, etc., effect costs which are not projected in the estimate given on the following sheet.

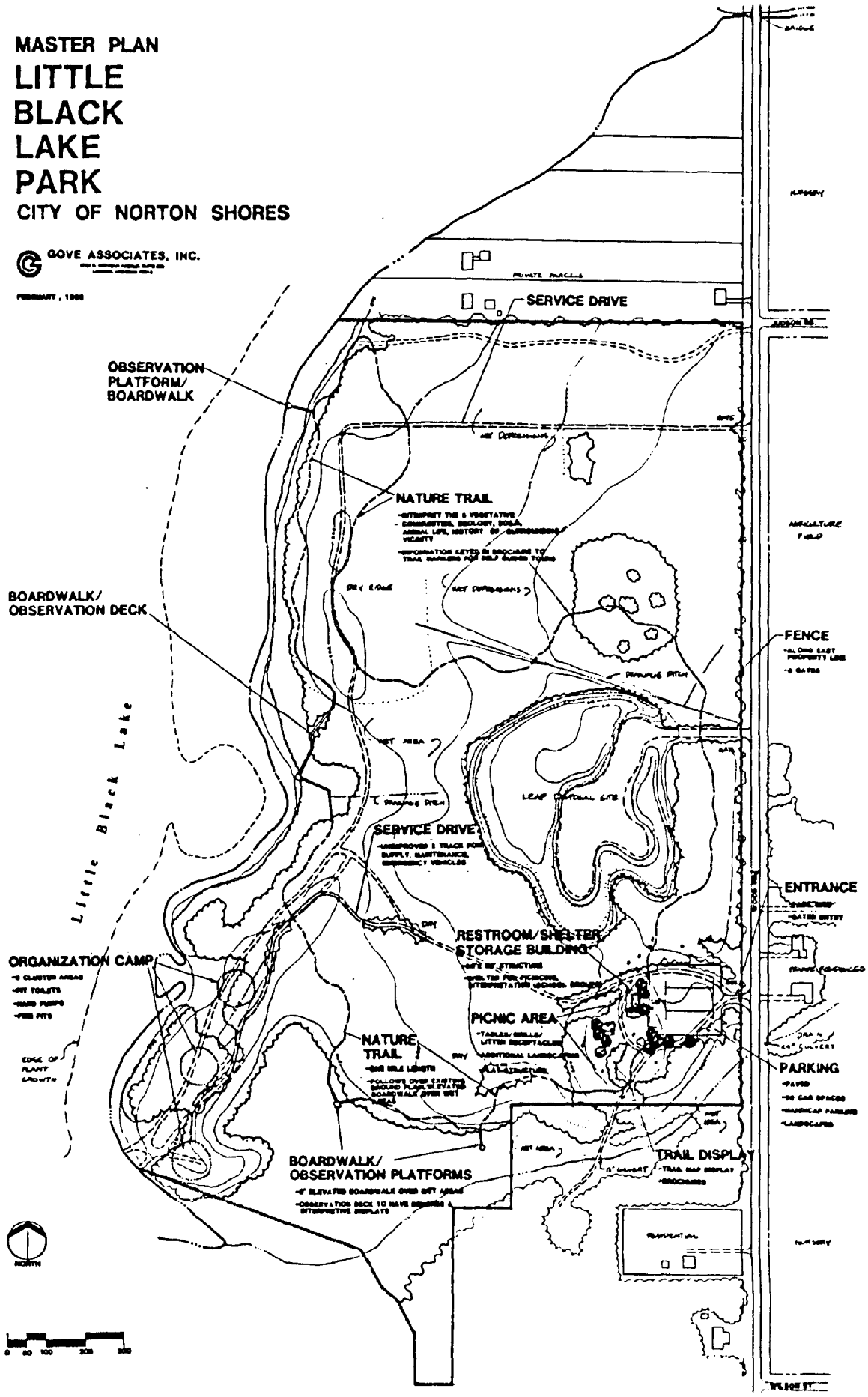
Cost estimates for labor and material are as follows:

Item	Cost
1. Picnic Area	
. Clearing, Grubbing, Topsoil, Seeding	$ 6,000
. Tables (30)	$ 5,400
. Grills (10)	$ 1,000
. Litter Receptacles (10)	$ 1,500
. Landscaping (20 trees)	$ 2,000
. Play Structure	$ 8,000
2. Parking Lot/Entry Area	
. Entrance Road and Parking (paved)	$ 30,400
. Concrete Walk	$ 2,200
. Curbs/Barriers	$ 2,000
. Sign, Gate	$ 1,000
3. Shelter/Restroom Facility	
. 30'x60' Structure with well & septic tank	$ 65,000
4. Organization Camp	
. Clearing, Grubbing, Seeding	$ 2,000
. Vault Toilets (6)	$ 4,800
. Wells & Hand Pumps (3)	$ 4,200
. Misc. (fire rings, receptacles, etc.)	$ 500
5. Trails	
. Clearing, Grubbing, Wood Chips	$ 3,900
. Boardwalkds	$ 20,000
. Signs	$ 600
6. Fencing	
. 5' high chain link industrial grade fence	$ 8,500
7. Service Roads	
. Upgrading/Relocating	$ 1,000
Subtotal	$170,000
Engineering (10%)	$ 17,000
Contingencies (10%)	$ 17,000
TOTAL	$204,000

MASTER PLAN
LITTLE BLACK LAKE PARK
CITY OF NORTON SHORES

GOVE ASSOCIATES, INC.

FEBRUARY, 1990



APPENDIX

APPENDIX A

Community distribution of trees, shrubs, and plants identified at Little Black Lake Park, Muskegon County Michigan

COMMON NAME	SCIENTIFIC NAME	COMMUNITY DISTRIBUTION			
Trees and Scrubs		E	SS	FW	UP
Tamarack	*Larix laricina*		X		
Eastern White Pine	*Pinus strobus*			X	X
Red Maple	*Acer rubrum*		X	X	X
Paper Birch	*Betula papyrifera*			X	X
Sassafras	*Sassafras albidum*			X	X
Black Cherry	*Prunus serotina*			X	X
Black Ash	*Fraxinus nigra*			X	
Red Ash	*Fraxinus pennsylvanica*			X	X
Quaking Aspen	*Populus tremuloides*			X	X
Bigtoothed Aspen	*Populus grandidentata*			X	X
White Oak	*Quercus alba*				X
Black Oak	*Quercus velutina*			X	X
Juniper	*Juniperus virginianus*			X	
Staghorn Sumac	*Rhus typhina*			X	X
Gray Dogwood	*Cornus racemosa*	X	X	X	X
Red-osier Dogwood	*Cornus stolonifera*		X	X	
Speckled Alder	*Alnus rugosa*	X	X	X	
Meadowsweet	*Spiraea latifolia*	X	X		
Swamp Rose	*Rosa palustris*	X	X		
Northern Dewberry	*Rubus flagellaris*			X	X

E = Emergent
SS = Scrub-shrub
FW = Forested Wetland
UP = Upland

COMMON NAME	SCIENTIFIC NAME	COMMUNITY DISTRIBUTION			
Plants		E	SS	FW	UP
Royal Fern	Osmunda regalis		X	X	
Marsh Fern	Thelypteris palustris	X	X	X	
Bracken Fern	Pteridium aquilinum			X	X
Canada Mayflower	Maianthemum canadense			X	X
Wild Sarsaparila	Aralia nudicaulis			X	X
Jewelweed	Impatiens capensis			X	
Periwinkle	Vinea minor			X	
Jack-in-the Pulpit	Arisaema triphyllum			X	X
Sedges	Carex Spp	X	X	X	
Fringed sedge	Carex crinita			X	
Spikerush	Eleodaris spp	X	X		
Olney's Bulrush	Scirpus americanus	X			
Rice Cutgrass	Leersia oryzoides	X	X	X	
False Solomon's Seal	Smilacina racemosa			X	X
Pink Ladies Slipper	Cypri pediom acaule			X	
Shinleaf	Pyrola elliptica			X	X
Boneset	Eupatorium perfoliatum	X	X	X	
Marsh Cinquefoil	Potentilla pallustris	X	X		
Norther Pitcher Plant	Sarracenia purpurea		X		
Blue Flag	Iris versicolor	X	X	X	
Yellow Flag	Iris psuedacorus	X			
Cranberry	Vaccinium macrocarpon	X			
Water Buttercup	Ranunculus aquaticus	X			
Arrow Arum	Peltandra virginica	X			

APPENDIX B

Bird species that may occur in Little Black Lake Park. Based on range and habitat requirements (Scott, ed. 1983). An asterisks (*) indicates species identified during survey.

COMMON NAME	SCIENTIFIC NAME
Common Leon	Gavin immer
Pied-billed Grebe	Podilymbus podiceps
Least Bittern	Ixobrychus exilis
American Bittern	Betaurus lentiginosus
Black-crowned Night Heron	Nycticorax nycticorax
Green-backed Heron	Butorides striatus
*Great Blue Heron	Ardea herodias
*Canada Goose	Branta canadensis
*Mallard	Anas platyrhynchos
American Black Duck	Anas rubripes
Northern Pintail	Anas acuta
Blue-winged Teal	Anas discors
Wood Duck	Aix sponsa
Canvasback	Aythya valisineria
Rednead	Aythya americana
Ring-necked Duck	Aythya collaris
Lesser Scaup	Aythya affinis
Bufflehead	Bucephala albeola
Common Merganser	Mergus merganser
Hooded Merganser	Lophodytes cucullatus
King Rail	Rallus elegans
Virginia Rail	Rallus limicola
Sora	Porzana carolina

COMMON NAME	SCIENTIFIC NAME
Common Moorehen	*Gallinula chloropus*
American Coot	*Fulica americana*
Spotted Sandpiper	*Actitis macularia*
Common Snipe	*Gallinago gallinago*
American Woodcock	*Scolopax minor*
Herring Gull	*Larus argentatus*
Turkey Vulture	*Cathartes aura*
Golden Eagle	*Aquila chrysaetos*
Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyancus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Gosnawk	*Accipiter gentilis*
Red-shouldered Hawk	*Buteo jamaicensis*
Broad-winged Hawk	*Buteo platypterus*
Red-tailed Hawk	*Buteo jamaicensis*
Rough-legged Hawk	*Buteo lagopus*
Osprey	*Pandion haliaetus*
American Kestrel	*Falco sparverius*
Ruffed Grouse	*Bonasa umbellus*
Wild Turkey	*Meleagris gallopavo*
Short-eared Owl	*Asio flammeus*
Long-eared Owl	*Asio otus*
Great-horned Owl	*Bubo virginianus*
Eastern Screecn Owl	*Otus asio*
Northern Saw-whet Owl	*Aegolius acadicus*

COMMON NAME	SCIENTIFIC NAME
Whip-poor-will	*Caprimulgus vociferus*
Common Nighthawk	*Chordeiles minor*
Ruby-throated Hummingbird	*Archilochus colubris*
*Belted Kingfisher	*Ceryle alsyon*
Red-bellied Woodpecker	*Melanerpes carolinus*
Northern Flicker	*Colaptes auratus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Downy Woodpecker	*Picoides pubescens*
*Hairy Woodpecker	*Picoides villosus*
Eastern Kingbird	*Tyrannus tyrannus*
Great-crested Flycatcher	*Myiarchus crinitus*
Eastern Wood-Pewee	*Contopus virens*
Eastern Phoebe	*Sayornis phoebe*
Least Flycatcher	*Empidonax minimus*
Willow Flycatcher	*Empidonax traillii*
Alder Flycatcher	*Empidonax alnorum*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Horned Lark	*Empidonax alpestris*
*Tree Swallow	*Tachycineta bicolor*
Purple Martin	*Progne subis*
Bank Swallow	*Riparia riparia*
Northern Rough-wing Swallow	*Stelgidopteryx serrpennis*
Cliff Swallow	*Hirundo pyrrhonota*
Barn Swallow	*Hirundo rustica*
*Blue Jay	*Cyanocitta cristata*

COMMON NAME	SCIENTIFIC NAME
*American Crow	Coruus brachyrhynchos
*Tufted Titmouse	Parus bicolor
*Black-capped Chickadee	Parus atricapillus
Brown Creeper	Certhia americana
*White-breasted Nuthatch	Sitta carolinensis
Red-breasted Nuthatch	Sitta canadensis
Marsh Wren	Cistothorus palustris
Sedge Wren	Cistothorus platensis
Golden-crowned Kinglet	Regulus calendula
Blue-gray Gnatcatcher	Polioptila caerulea
Wood Thrush	Hylocichla mustelina
Veery	Catharus fuscescens
Hermit Thrush	Catharus guttatus
*American Robin	Turdus migratorius
Northern Mockingbird	Mimus polyglottos
Brown Thrasher	Toxostoma rufum
Cedar Waxwing	Bombycilla cedrorum
European Starling	Sturnus vulgaris
Solitary Vireo	Vireo solitarius
Red-eyed Vireo	Vireo olivaceus
Warbling Vireo	Vireo gilvus
Prothonotary Warbler	Protonotaria citrea
Blue-winged Warbler	Vermivora pinus
Nashville Warbler	Vermivora ruficappilla
Black-and-White Warbler	Mniotilta varia
Cerulean Warbler	Dendroica cerulea

COMMON NAME	SCIENTIFIC NAME
Chestnut-sided Warbler	Dendroica pensylvanica
Black-Tnroated Green Warbler	Dendroica virens
Yellow Warbler	Dendroica petechia
Canada Warbler	Wilsonia canadensis
*Ovenbird	Selurus aurocapillus
Northern Waterthrush	Sciurus noveboracensis
Common Yellowthroat	Geothlypis trichas
Yellow-breasted Chat	Icteria virens
American Redstart	Setophaga ruticlla
*Rose-breasted Grosbeak	Pheucticus ludovicianus
*Northern Cardinal	Cardinalis cardinalis
Indigo Bunting	Passerina cyanea
Rufous-sided Towhee	Pipilo erythrophthalmus
Vesper Sparrow	Pooecetes gramineus
*Savannah Sparrow	Passerculus sandwichensis
Song Sparrow	Melospiza melodia
Chipping Sparrow	Spizella passerina
Clay-colored Sparrow	Spizella pallida
Dark-eyed Junco	Junco hyemalis
White-Throated Sparrow	Zonotrichia albicollis
Swamp Sparrow	Melospiza georgiana
Lapland Longspur	Calcarius lapponicus
Snow Bunting	Plectrophenax nivalis
Red-winged Blackbird	Agelaius phoeniceus
Brewer's Blackbird	Euphagus cyanocephalus
Common Grackle	Quiscalus quiscula

COMMON NAME	SCIENTIFIC NAME
Orchard Oriole	*Icterus spurius*
*Northern Oriole	*Icterus galbula*
Scarlet Tanager	*Piranga olivacea*
Pine Siskin	*Carduelis pinus*
*American Goldfinch	*Carduelis tristis*
Red Crossbill	*Lexia curvirostra*
Purple Finch	*Carpodacus purpureus*
Evening Grosbeak	*Caccothraustes vespertinus*

Mammal species which may occur in Little Black Lake Park. Based on range and habitat requirements. An astrisks (*) denotes field identification by sight or sign. Compiled from Burt (1947).

COMMON NAME	SCIENTIFIC NAME
Oppossum	Didelphis virginianus
*Eastern Mole	Scalopus aquaticus
Starnose Mole	Condylura cristata
Masked Shrew	Sorex cinereus
Shorttail Shrew	Blarina brevicauda
Little Brown Bat	Myotis lucifugas
Silver-haired Bat	Lasionycteris noctivagens
*Raccoon	Procyon lotor
Longtail Weasel	Mustela frenata
Mink	Mustela vison
Striped Skunk	Mephitis mephitis
*Red Fox	Vulpes vulpes
*Woodchuck	Marmora monax
*Eastern Chipmunk	Tamias striatus
*Red Squirrel	Tamiasciurus hudsonicus
*Eastern Fox Squirrel	Sciurus niger
Beaver	Castor canadensis
Woodland Deer Mouse	Peromyscus maniculatus
White-footed Mouse	Peromyscus leucopus
Southern Bog Lemming	Synaptomys cooperi
Meadow Vole	Mierotus pennsylvanicus
*Muskrat	Ondatra zibetnica
Meadow Jumping Mouse	Zapus Hudsonius
Woodland Jumping Mouse	Napaeozapus insignis
*Eastern cottontail	Sylvilagus floridanus
*Whitetail Deer	Odocoileus virginianus

Reptiles and amphibians that may occur in Little Black Lake Park. Based on range and habitat requirements. Compiled from Bebler and King (1979), Hensley (date unknown). An astrisks (*) indicates observation.

COMMON NAME	SCIENTIFIC NAME
Snakes	
Blue Racer	Coluber constrictor
Ringneck Snake	Diadophis punctatus
Rat Snake	Elaphe obsoleta
Milk Snake	Lampropeltis triangulum
Northern Water Snake	Nerodia sipedon
Smooth Green Snake	Opheodrys vernalis
Queen Snake	Regina septemvittata
*Brown Snake	Storeria dekayi
Red-bellied Snake	Storeria occipitomaculata
Eastern Ribbon Snake	Thamnophis sauritus
Easter Garter Snake	Thamnophis sirtalis
Massasauga Rattlesnake	Sistrurus catenatus
Turtles	
Painted-turtle	Chyrsemys picta
Snapping Turtle	Chelydra serpentina
Stinkpot	Sternotherus odoratus
Spotted Turtle	Clemmys guttata
Wood Turtle	Clemmys insculpta
Blanding's Turtle	Emydoidea blandingi
Map Turtle	Graptemys geographica
Eastern Bos Turtle	Terrapene carolina
Spiny Softshell	Trionyx spiniferus

COMMON NAME	SCIENTIFIC NAME
Salamanders	
Eastern Newt	Notophthalmus viridescens
Mudpuppy	Necturus maculosus
Blue-spotted Salamander	Ambystoma laterale
Spotted Salamander	Ambystoma maculatum
Four-toed Salamander	Hemidactylium scutatum
Red-backed Salamander	Plethodon cinerus
Toads	
American Toad	Bufo americanus
Fowler's Toad	Bufo fowleri
Frogs	
Cricket Forg	Acris crepitans
*Western Chorus Frog	Pseudacris triseriata
Gray Treefrog	Hyla versicolor
*Spring Peeper	Hyla crucifer
*Greenfrog	Rana clamitans
Wood Frog	Rana sylvatica
Northern Leopard Frog	Rana pipiens
Pickerel Frog	Rana palustris
Bullfrog	Rana catesbeiana

Fish species known to occur in Little Black Lake, Muskegon County, Micnigan. From a personal communication with the Department of Natural Resources.

COMMON NAME	SCIENTIFIC NAME
Bluegill	*Lepomis machrochirus*
Sunfish	*Lepomis spp.*
Bass	*Micropterus spp.*
Perch	*Perca flavescens*
Black Crappie	*Pomoxis nigromaculatus*
Northern Pike	*Esox lucius*

REFERENCES

Barnes, B.V., and W.H. Wagner Jr., 1985, Michigan Trees, University of Michigan Press, Ann Arbor, 384 pp.

Bauer Engineering, Inc., 1971, Norton Shores Survey, Chicago

Bebler, J.L. and F.W. King, 1979, The Audubon Society Field Guide to North American Reptiles and Amphibians, Alfred A. Knopf, New York, 555 pp.

Biotic Consultants Inc., Midwestern Wetland Flora: A field office guide to plant species, U.S.D.A Soil Conservation Service, Midwest National Technical Center, Lincoln, Neb., 394 pp.

Burt, W.H., 1957, Mammals of the Great Lakes Region, University of Michigan Press, Ann Arbor, 247 pp.

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoc, 1979, Classification of Wetlands and Deepwater Habitats of the United States, U.S. Fish and Wildlife Service, Washington D.C., 103 pp.

Hensley, M.M., An Illustrated Key to the Amphibians of Michigan, Woldumar Nature Center, Lansing, Michigan, 16 pp.

Martin, A.C., H.S. Zim and A.L. Nelson, 1951, American Wildlife and Plants: A guide to wildlife food habits, Dover Publishing Inc., New York, 500 pp.

Michigan Department of State Highways, 1970, Field Manual of Soil Engineering, State of Michigan, 474 pp.

Niering, W.A., 1985, Wetlands, Alfred A. Knapf, New York, 639 pp.

_____, and N.C. Olmstead, 1979, The Audubon Society Field Guide to North American Wildflowers: eastern region, Alfred A. Knapf, New York, 888 pp.

Peterson, L.A., 1977, A Field Guide to Edible Wild Plants of Eastern and Central North America, Houghton Mifflin Company, Boston, 330 pp.

Petrides, G.A., 1972, A Field Guide to Trees and Shrubs, second edition, Houghton Mifflin Company, Boston, 428 pp.

Pregitzer, K.E., 1968, Soil Survey Muskegon County, U.S.D.A. Soil Conservation Service, 89 pp.

Scott, S.L., ed. 1983, Field Guide to the Birds of North America, National Geographic Society, Washington D.C., 463 pp.

University of Wisconsin Survey Research Laboratory, 1969, Public Opinion Survey for Muskegon County Shoreland Policy Study, Tabulations for City of Norton Shores, Madison, Wisconsin

West Michigan Shoreline Regional Planning Commission, 1972, Open Space and Recreation Plan, updated 1984, City of Norton Shores, Michigan, 61 pp.

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