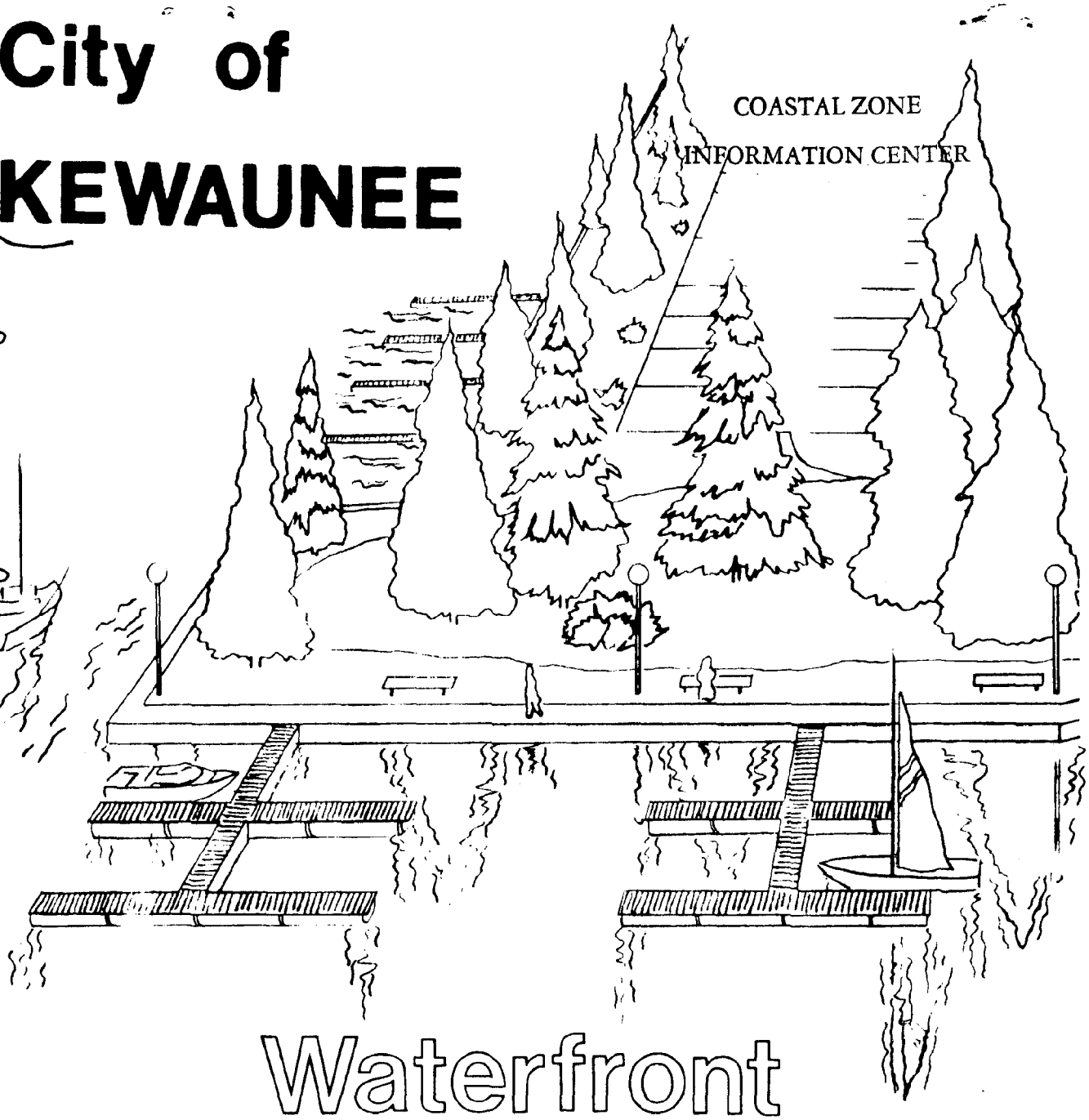
City of KEWAUNEE

COASTAL ZONE
INFORMATION CENTER



Waterfront Recreation Plan

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1981

FOTH & VAN DYKE and Associates, Inc.

CITY OF KEWAUNEE

WATERFRONT RECREATION PLAN

March, 1981

HARBOR ADVISORY COMMITTEE

Mr. Howard Balleine, Chairman
Mr. Rollie Berkovitz, Mayor
Mr. Jim Stadler, Clerk
Mr. Richard Kohrt
Mr. Tom Kleiman
Mr. Dale Pahnke

U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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PREPARED BY

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
GREEN BAY, WISCONSIN

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MAP POCKET - Overall Development Plan

I. INTRODUCTION

Overview

The City of Kewaunee, located approximately 22 miles east of the City of Green Bay on Lake Michigan, is the eastern terminus of the Green Bay and Western Railroad. Initiating service at Winona, Minnesota, the railroad connects with the Ann Arbor ferry and the Chesapeake and Ohio Railroad ferry at Kewaunee. These two ferries provide cross Lake Michigan transportation of freight and passengers to Frankfort, Michigan and Ludington, Michigan, respectively.

In 1978, a development firm announced plans for future construction of a coal transshipment facility in the City of Kewaunee. It is expected that unit trains will bring in low sulfur western coal to Kewaunee where it will be transferred to ships or barges for delivery to Michigan ports. This activity will undoubtedly have a number of impacts on the land use surrounding the harbor, especially recreational use.

The physical location of the harbor, excellent rail linkage, and vacant or underutilized land in the harbor area make Kewaunee a prime location for port development.

City officials and local businessmen have recognized the City's potential for water-based recreational and/or port development. In 1978, at the City's request, the Department of Natural Resources developed a harbor plan showing several marina alternatives. Although the basic data in the plan is still valid, the design alternatives are outdated and no longer realistic due to the following reasons:

1) Alternatives in the 1978 Harbor Plan for inner harbor marina development require acquisition of Kewaunee Engineering property which is not available. This company is a major employer in the City.

2) Alternatives for outer harbor marina development relied on a contained disposal site located partially within the outer harbor. The disposal site has been relocated entirely outside the outer harbor. This change is, at least in part, related to the coal transshipment project. The railroad did not wish to see potential dock space filled in for a contained disposal area and made a land swap with the City to allow for the new design.

Thus, the coal transshipment facility has already impacted on harbor land use and recreational opportunities. It is recognized that physical facilities for recreational boating within the inner harbor are limited by existing and proposed industrial use. Therefore, it is essential that long range planning for future recreational development of the harbor be undertaken now.

Purpose

The purpose of the Kewaunee Waterfront Recreation Plan will be to update and revise the 1978 Harbor Plan by showing existing and alternative future locations of boat launching ramps, parking areas, vehicular and pedestrian access, green areas, bulkhead construction and boat slips. The plan is intended to be a conceptual document that will serve as the basis for future development decisions concerning the inner harbor. Recommendations made in this plan will be intended to closely follow the general concept of the City of Kewaunee Comprehensive Plan.

Scope

The Kewaunee Waterfront Recreation Plan will provide recommendations concerning a phased approach for future recreational development of Kewaunee's inner harbor. Included in the plan will be a general inventory of the existing harbor conditions such as natural features, surrounding land use, channel depths, and the location of utilities. This data will then be analyzed and incorporated into the formulation of the plan recommendations.

Also included will be an analysis of bulkhead types, docking areas, and land use recommendations for the study area. Cost estimates will also be provided.

In addition to the elements mentioned above, a theme approach for future tourist commercial related development associated with the inner harbor, and methods to finance recommended improvements will also be discussed.

It is intended that the recommendations developed in this document will ultimately guide future development decisions concerning the Kewaunee waterfront, and result in improved aesthetic and physical qualities of the area.

II. EXISTING HARBOR CONDITIONS

Locational Perspective

The City of Kewaunee is located on Lake Michigan, approximately 22 miles east of the City of Green Bay, at the base of the Door County peninsula. The harbor lies at the mouth of the Kewaunee River, which flows in an easterly direction to the waters of Lake Michigan. The study area is delineated on Map 1.

State Trunk Highway "29" connects Kewaunee with the City of Green Bay to the west. State Trunk Highway "42" passes through Kewaunee in a north-south direction linking it with the Cities of Algoma and Sturgeon Bay to the north and Two Rivers and Manitowoc to the south.

The City of Kewaunee, which serves as the Kewaunee County seat, had an estimated population of 2,898 in 1979.

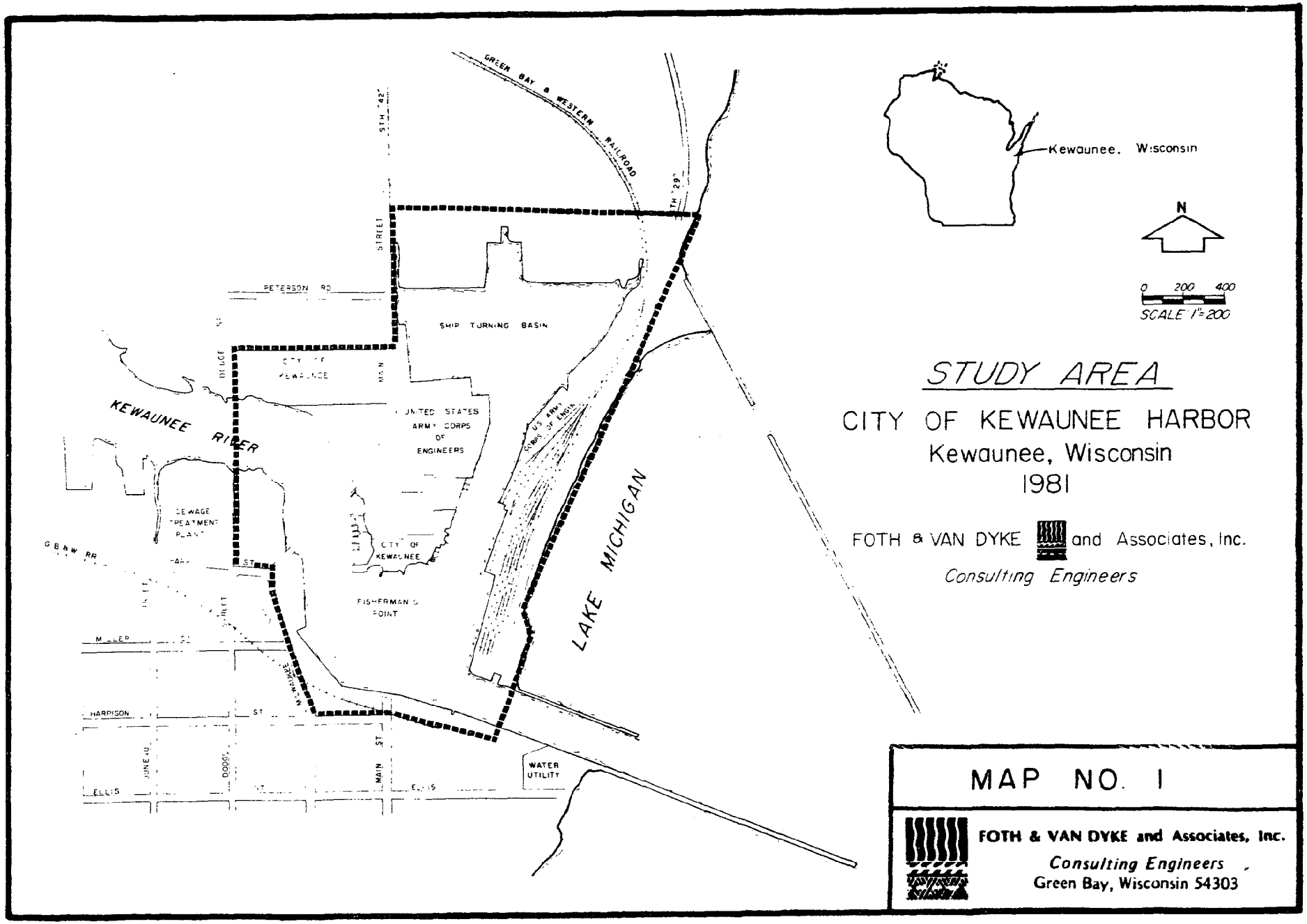
Physical Character

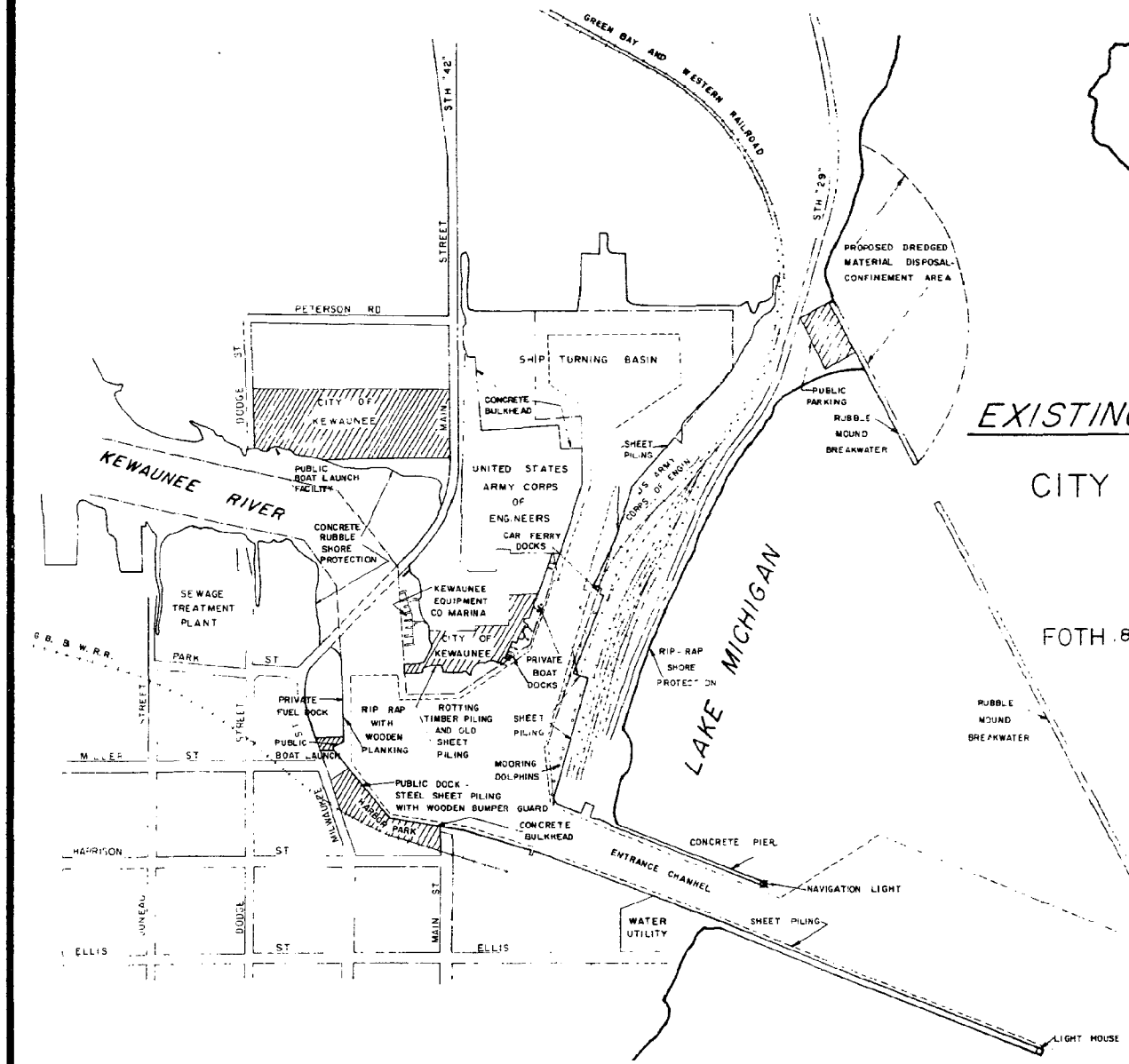
The existing harbor conditions including type of shore protection, public lands, and existing pierhead/bulkhead lines are denoted on Map 2. Map 3 provides an enlargement of the study area delineating existing structures and docks.

Shorelines

The harbor is basically composed of three physical elements: an outer harbor, entrance channel, and inner harbor. The prime focus of this plan will be on the recreational development of the inner harbor.

The outer harbor consists of a north breakwater 3,100 feet long with a 150 foot gap and a south breakwater 1,950 feet in length. Immediately to the north of the north breakwater a contained disposal area for harbor maintenance dredging is being planned by the U.S. Department of the Army Corps of Engineers. The project is expected to be bid by the spring of 1981, with construction starting soon


GREEN BAY & WESTERN RAILROAD
STH "42"
STH "29"
STREET
PETERSON RD
SHIP TURNING BASIN
CITY OF KEWAUNEE
MAIN
DUDGE
KEWAUNEE RIVER
UNITED STATES ARMY CORPS OF ENGINEERS
CORPS OF ENGRS
SEWAGE TREATMENT PLANT
G B & W RR
CITY OF KEWAUNEE
FISHERMAN'S POINT
LAKE MICHIGAN
MILLER ST
HARRISON ST
JUNEAU
DODGE
MAIN ST
ELLIS ST
WATER UTILITY
Kewaunee, Wisconsin
N
0 200 400
SCALE 1"=200
STUDY AREA
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
MAP NO. 1
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303



Kewaunee, Wisconsin

N

0 200 400

SCALE 1" = 200'

EXISTING HARBOR CONDITIONS

CITY OF KEWAUNEE HARBOR

Kewaunee, Wisconsin

1981

FOTH & VAN DYKE and Associates, Inc

Consulting Engineers

LEGEND

- EXISTING PUBLIC LANDS
- BOUNDARIES OF NAVIGATIONAL CHANNEL
- EXISTING PIERHEAD / BULKHEAD LINE (AS ESTABLISHED BY THE U.S. DEPT OF ARMY CORPS OF ENGINEERS, 1941)

MAP NO. 2

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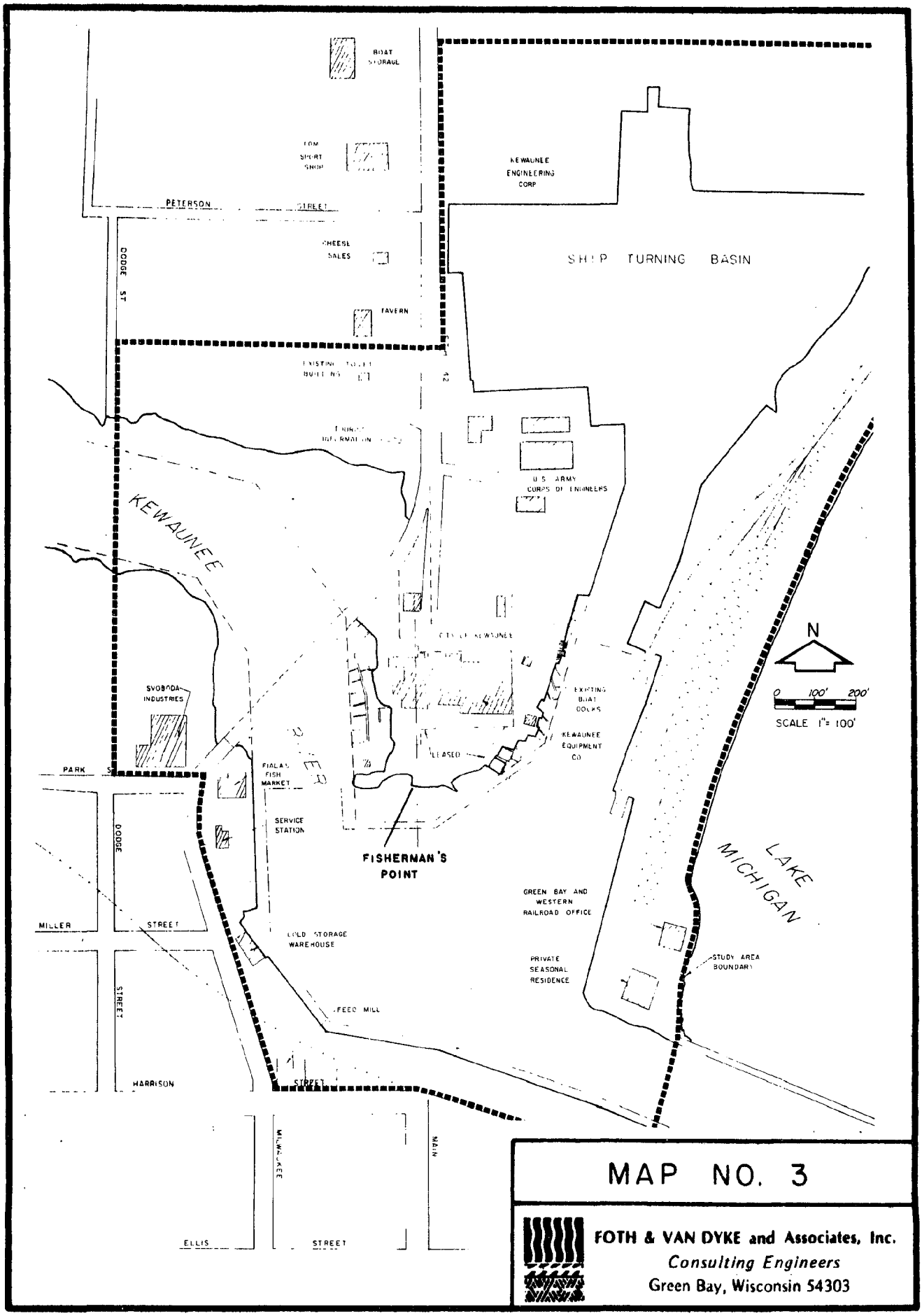
Green Bay, Wisconsin 54303



MAP NO. 3

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Green Bay, Wisconsin 54303

afterward. The confinement area is designed to hold dredged material for approximately ten years. After this period recreational use is tentatively planned for the facility. It will encompass approximately 24 acres when completed.

The entrance channel to the harbor is 150 feet wide and is formed by a pier 650 feet long located north of the south breakwater. A lighthouse is located on the end of the south breakwater with navigation lights on the north entrance channel pier and at the tip of the north breakwater.

The inner harbor consists of an interior turning basin for car ferries and other large craft, a northerly channel extension and a northern inner basin. For the purpose of this plan , the inner harbor will also be defined to include a portion of the Kewaunee River extending from the inner turning basin north to the City boat launch facility. The northern turning basin is used exclusively for commercial and industrial transport activity and therefore will not be considered further for recreational use in the ensuing plan. Also it is a potential site for the proposed coal transshipment facility.

The inner harbor turning basin and entrance channel are subject to rough water conditions only when waves are generated by high wind speeds from the east-southeast direction. During most other storm conditions safe docking conditions can be found along the south and west dock walls of the turning basin and Kewaunee River. The outer harbor is presently vulnerable to storms from the entire southeast quadrant.

The shorelines along the inner harbor are lined with vertical bulkheads of various materials and designs as noted on Map 2. West of the Main Street Bridge the shorelines are lined with concrete rubble. Erosion and settling are the major problems associated with the shorelines in this area.

For the most part, the south wall bulkhead along the Kewaunee River, east of the Main Street Bridge is in good condition. However, some cracks and swells are evident along the concrete bulkhead at the eastern end of Harbor Park. Also, settling along this wall has created several large depressions along Harbor Park and near the existing parking area.

The shoreline surrounding the southern end of Fisherman's Point is in relatively poor condition. Old rotting timber piles and rusting dilapidated sheet piling is in place. Map 3 denotes the boundaries of the City owned property on Fisherman's Point that is currently being leased to Kewaunee Equipment Company. The lease is scheduled to expire in 1990. Because of suspected violations of the lease, the City is currently taking legal action to have it terminated. Thus, prior to the development of this area by the City, the lease issue must be resolved.

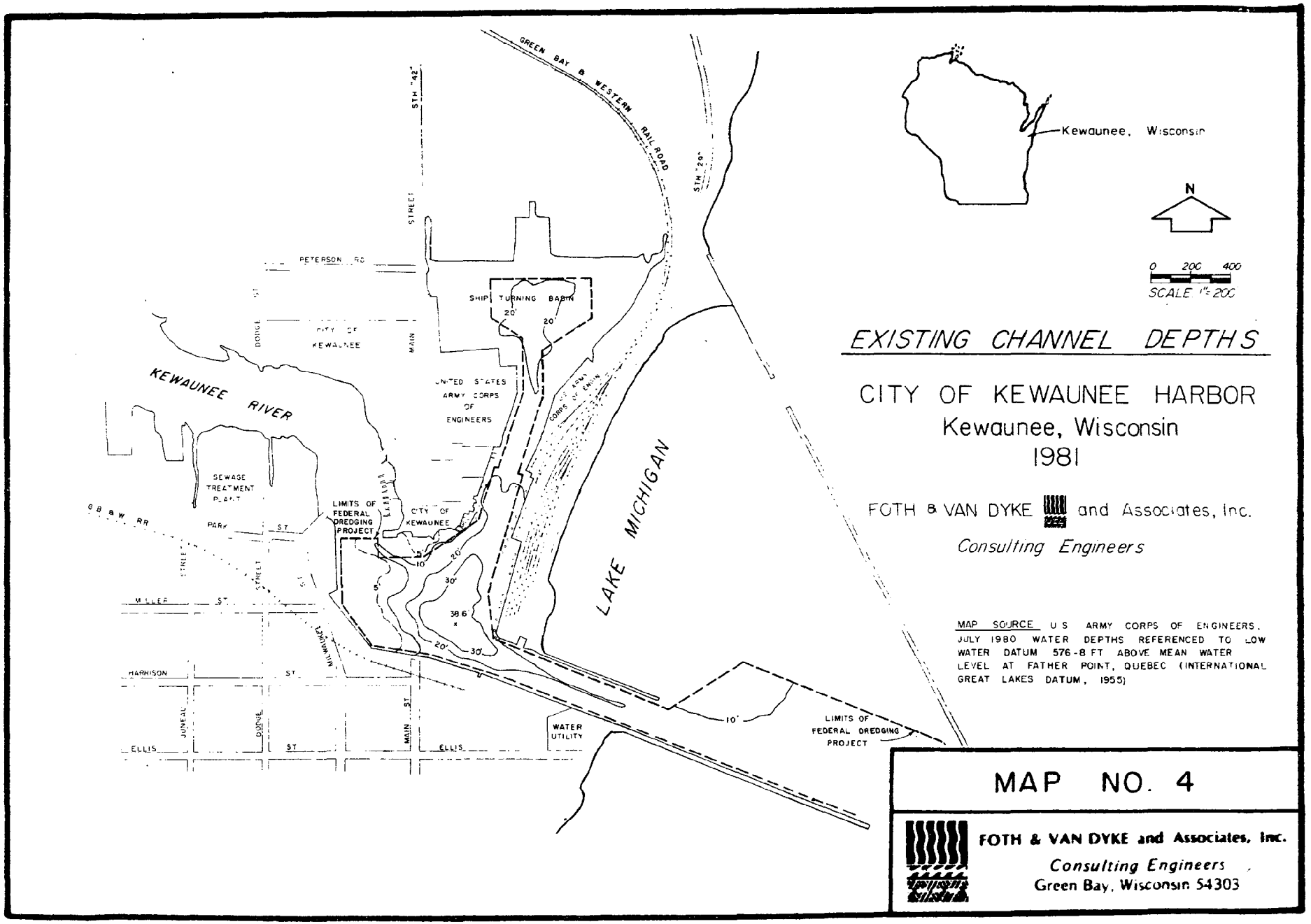
The Kewaunee Equipment Company operates a private marina on the west side of the Fisherman's Point peninsula. Private recreational craft and commercial fishing boats dock here. Permits from the Army Corps of Engineers have been applied for by the company to expand the marina on the leased property from the City. However, the permits have not been granted due to the lease issue.

Private wooden docks and boat houses line the east side of the peninsula on land also leased from the City. The majority of these docks are in fair condition, however they are in disarray and are not visually attractive. The shoreline consists of wooden and steel piling that is in fair condition.

The remaining shorelines along the inner harbor primarily consist of vertical steel sheet piling in good condition.

Water Depths

Water depths in the inner harbor range from 20-38 feet, with the greatest depths found in the lower turning basin (See Map 4). Depths


GREEN BAY & WESTERN RAIL ROAD
STH "42"
STH "29"
STREET
PETERSON RD
SHIP TURNING BASIN
20'
20'
CITY OF KEWAUNEE
DODGE ST
MAIN
KEWAUNEE RIVER
UNITED STATES ARMY CORPS OF ENGINEERS
CORPS OF ENGR.
SEWAGE TREATMENT PLANT
G B & W RR
PARK ST
LIMITS OF FEDERAL DREDGING PROJECT
CITY OF KEWAUNEE
5'
10'
20'
30'
38.6
LAKE MICHIGAN
MILLER ST
HARRISON ST
JUNEAU
DODGE ST
MAIN ST
ELLIS
ELLIS
WATER UTILITY
10'
LIMITS OF FEDERAL DREDGING PROJECT
Kewaunee, Wisconsin
N
0 200 400
SCALE 1" = 200'
EXISTING CHANNEL DEPTHS
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
MAP SOURCE U S ARMY CORPS OF ENGINEERS. JULY 1980 WATER DEPTHS REFERENCED TO LOW WATER DATUM 576-8 FT ABOVE MEAN WATER LEVEL AT FATHER POINT, QUEBEC (INTERNATIONAL GREAT LAKES DATUM, 1955)
MAP NO. 4
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

in the northerly channel extension average approximately 18 feet. The inner harbor and entrance channel will be dredged by the Army Corps of Engineers to a depth of 20 feet.

Average water depths in the Kewaunee River from the City boat launch north range from three to five feet.* The river is generally slow moving and high in turbidity. The average gradient is 6.4 feet per mile but the lower four miles has little gradient. Lake Michigan, therefore, has a pronounced affect on this portion of the river and inner harbor. A seiche, an oscillation of the surface of Lake Michigan due to atmospheric conditions, will consequently raise river levels three miles upstream up to six inches in less than an hour.

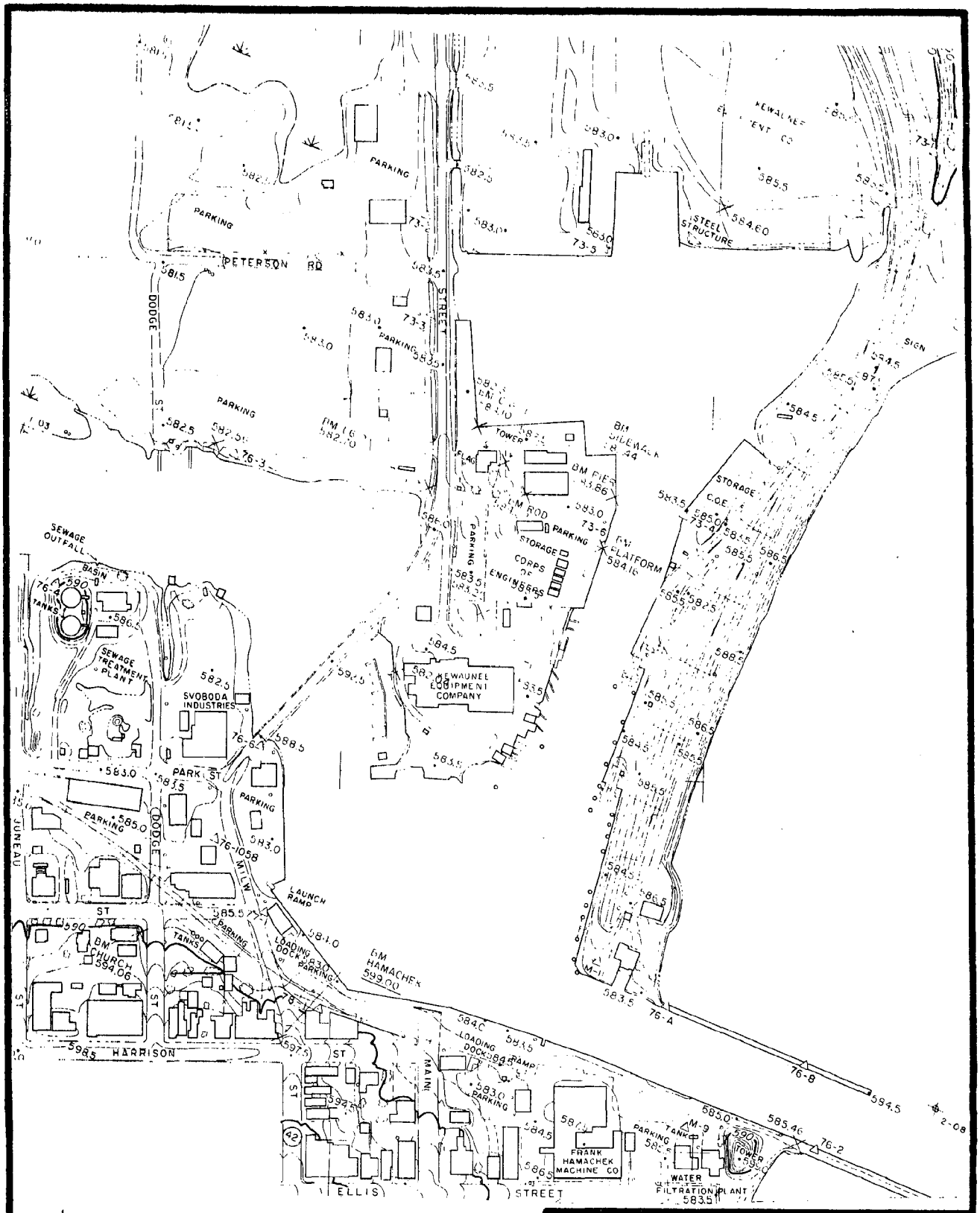
Topography

The topography in the harbor area is relatively flat, being located in the valley formed by the Kewaunee River. Land contours are delineated on Map 5. Elevations range from 583 feet (m.s.l.) on the end of Fisherman's Point to 586 feet on the S.T.H. "29" peninsula. Elevations along the south wall of the Kewaunee River range from 583 feet in the parking lot, south of the Main St. bridge to 585 feet at the beginning of the south breakwater. The parking lot at the City boat launch facility is at an elevation of 582.5 feet. To the north and south of the harbor mouth clay bluffs rise to a height of 60 to 80 feet. The bluffs range in elevation from approximately 640 feet to 660 feet (m.s.l.).

Soils

The majority of the soils in the study area have been altered by past excavation filling, and leveling. Originally the area was composed of soils in the Carbondale-Cathro-Markey association. These soils are typical of till plains, outwash plains and drainage ways. Slopes range from 0-2 percent. They are generally very poorly drained organic soils underlain by organic layers or by loamy and sandy sediment.

*Kewaunee Harbor Study, DNR, 1978, p. 9.



MAP NO. 5

SOURCE: U.S. ARMY CORPS OF ENGINEERS, 1980.

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Green Bay, Wisconsin 54303

Because the water table is at or near the surface, the area was filled in the past for development. Prior to the construction of dockwalls or bulkheads, soil borings will be required to analyze the soil conditions at each specific site.

Wetlands

Westward of the study area, following the Kewaunee River, lies one of the largest marshes along Lake Michigan. Two hundred acres of this marshland have been identified by the State Scientific Preservation Council as "a natural area of county or multi-county significance". The marsh is protected from strong winds and wave damage that often results during high water conditions. According to Natural Area Inventory* the marsh contains a fair diversity of marsh plants and provides considerable wildlife and waterfoul habitat.

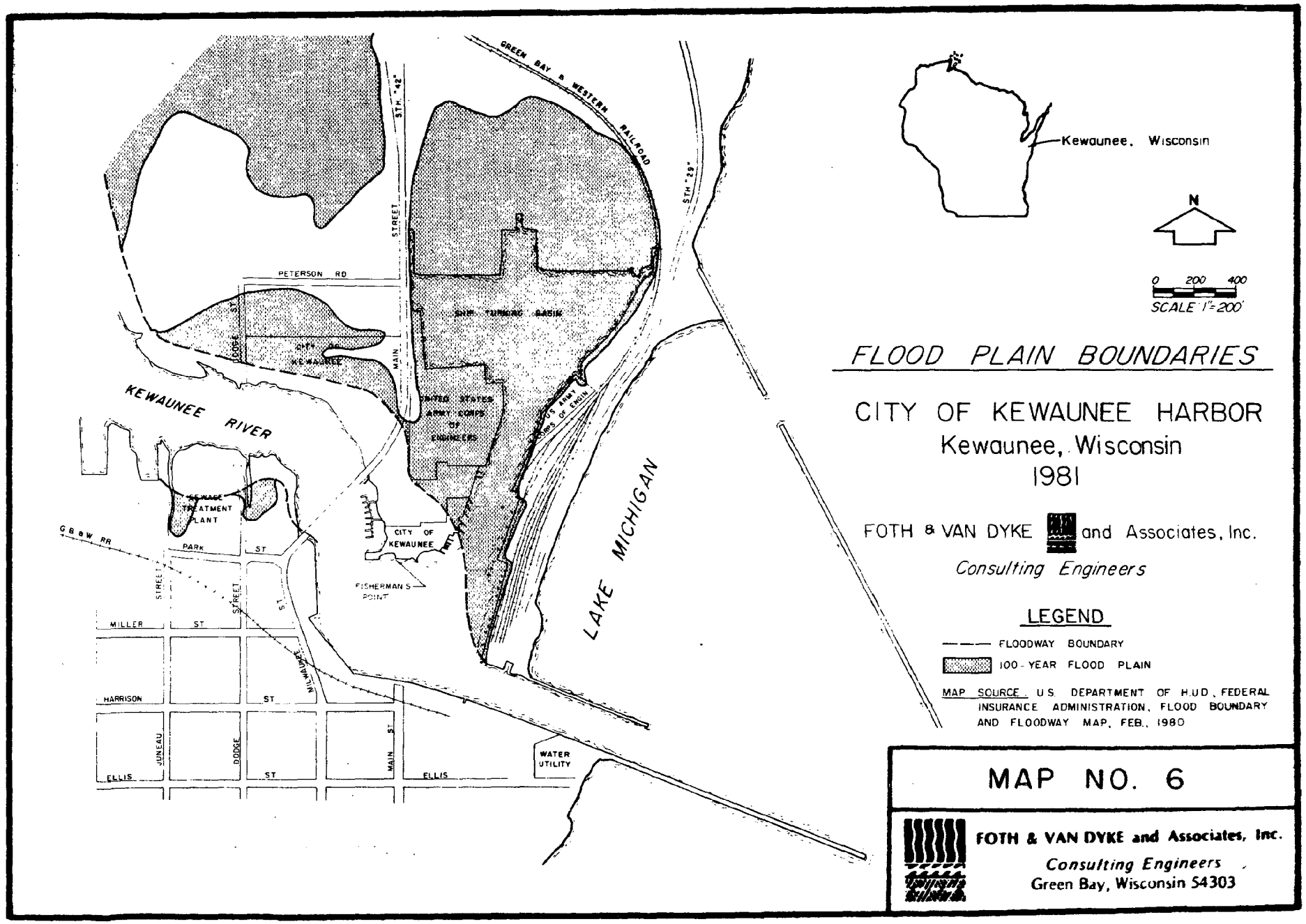
This area west of the City boat launch along the Kewaunee River, should be maintained in its natural condition for future generations to enjoy.

There are no wetlands located in the inner harbor study area. Past filling and construction activities have altered the natural environment in this area.

Floodplain

Much of the study area lies within the 100-year floodplain as depicted on Map 6. Most of Fisherman's Point and all of the shoreline at the City boat launch facility is within the floodway boundary. The 100 year flood elevation for the area between the S.T.H. "29" peninsula and the City boat launch site is 583.7 feet according to the Flood Insurance Study prepared by the Federal Insurance Administration in August, 1979. The elevation is a combination of short time still-water levels reflecting general lake fluctuations and differential elevations due to wind set-up and seiche activity. Thus, according to the elevations on Map 5, flood waters on Fisherman's Point would

*Scientific Preservation Council, Wisconsin Department of Natural Resources, Madison, WI, 1976, p. 15.


GREEN BAY & WESTERN RAILROAD
STH "42"
STH "29"
PETERSON RD
DODGE ST
MAIN STREET
SHIP TURNING BASIN
CITY OF KEWAUNEE
KEWAUNEE RIVER
UNITED STATES ARMY CORPS OF ENGINEERS
SEWAGE TREATMENT PLANT
C.B.&W. RR
PARK ST
CITY OF KEWAUNEE
FISHERMAN'S POINT
LAKE MICHIGAN
MILLER ST
HARRISON ST
ELLIS ST
JUNEAU
DODGE
MAIN ST
WATER UTILITY
Kewaunee, Wisconsin
N
0 200 400
SCALE 1"=200'
FLOOD PLAIN BOUNDARIES
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
LEGEND
FLOODWAY BOUNDARY
100-YEAR FLOOD PLAIN
MAP SOURCE: U.S. DEPARTMENT OF H.U.D., FEDERAL INSURANCE ADMINISTRATION, FLOOD BOUNDARY AND FLOODWAY MAP, FEB., 1980
MAP NO. 6
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

rise to a depth of approximately two inches and approximately 14 inches at the City boat launch site, once in 100 years. Prior to the construction of facilities in these areas, more detailed hydraulic studies must be performed in addition to obtaining the proper permits from the DNR and Army Corps of Engineers.

Public Access and Existing Recreational Facilities

Public access points to the inner harbor are currently provided at the City boat launch and at a public boat ramp on Milwaukee Street. The City boat launch comprises approximately five acres and includes six boat ramps with three floating docks and a large gravel parking area. Camping opportunities for tent campers and recreational vehicles are also provided. A toilet building with flush toilets and a tourist information center is located near the entrance to the facility. Access to Lake Michigan from the City boat launch is limited, however, to small craft only, due to the existing clearance of the Main Street Bridge, (approximately 10 feet as referenced to the low water datum, 576.8 feet, International Great Lakes Datum, 1955).

At this time, large craft and sail boats can only be launched from the ramp on Milwaukee Street because of the low bridge clearance. Parking is limited at this location and launching can be difficult due to traffic on Milwaukee Street (STH "42"), the layout of the ramp itself, and relatively shallow water depths at the end of the ramp.

The Department of Transportation is currently planning a new S.T.H. "42" bridge. One bridge alternate would allow a clearance of 15' above the high water mark and would be 40' in width. Thus, the new structure would have greater clearance than the existing bridge depending on its final location. However, sail boats may still have problems with clearance. By providing higher clearance or by being located further west of the existing bridge, increased access to the inner harbor could be provided for recreational craft. The structure is tentatively planned for construction within the next five years. Construction of a new bridge would have a great impact on the future recreational use of the harbor, depending on

the selected location. Several alternative locations are currently being studied. Once completed, the old structure will be removed.

Other public lands adjoining the inner harbor include the southern portion of Fisherman's Point and Harbor Park. As mentioned previously, a section of the publicly owned land on Fisherman's Point is currently under lease to Kewaunee Equipment Company (see Map 3). The lease expires in 1990 and therefore, unless it is terminated, development of this parcel by the City will be delayed until that time. The City is currently seeking to terminate the lease because of suspected violations by the lessee.

The Fisherman's Point site is presently in need of clean-up and rejuvenation. Large piles of scrap metal, rusting equipment, rundown buildings, and deteriorating wooden boat slips are evident throughout the site.

Harbor Park, located immediately south of Fisherman's Point is approximately three-fourths of an acre in size. The City currently leases about ¼ acre from the Green Bay and Western Railroad. It offers passive recreation and provides a public viewing area of the harbor. Facilities provided include picnic tables, benches and grills. Approximately 230 feet of parallel docking is now available along the dockwall running in a northwest to southeast direction. This is currently the only public docking facility available in the harbor.

Privately owned recreational facilities within the inner harbor include the Kewaunee Equipment Company marina, and a private fuel dock. The Kewaunee Equipment Company marina provides 43 boat slips for private use and for commercial fishing craft. The private fuel dock consists of a timber bulkhead approximately 200 feet in length. In addition to fuel pumps a sanitary pumping station is provided.

In addition to the above, a number of privately owned docks are located on leased property from the City on the east side of Fisherman's Point.

Surrounding Land Use

The land use surrounding the inner harbor study area was mapped utilizing seven land use categories as depicted on Map 7. As can be seen on the map, much of the land use surrounding the inner harbor is industrial. Included in this category are land uses associated with manufacturing, warehousing, and/or outdoor open storage. Most of the industries in this area are associated with the rail service provided by the Green Bay and Western Railroad.

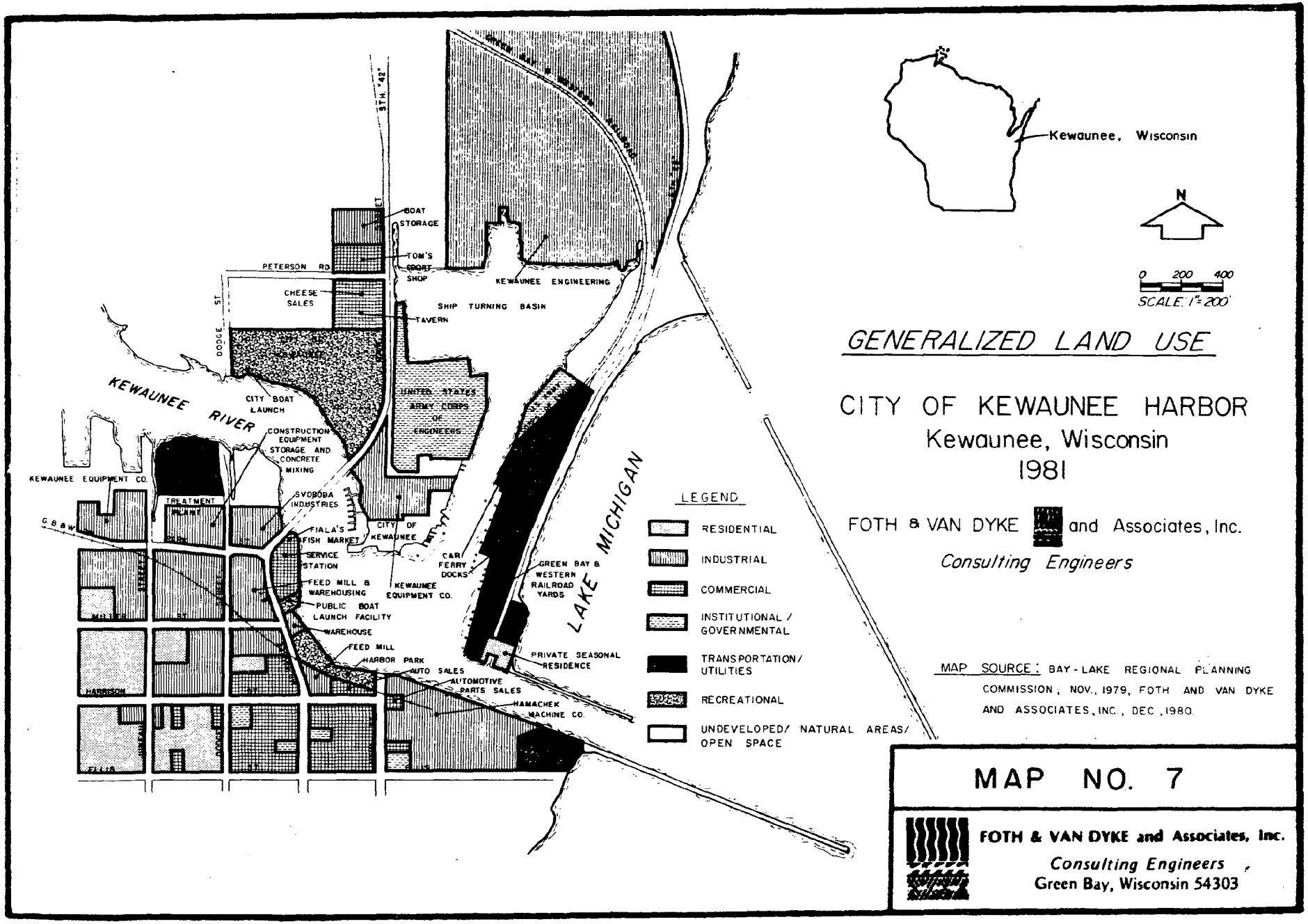
Existing commercial development immediately surrounding the harbor consists primarily of retail sales and service establishments. The City's central business district is located just south of the harbor area.

There are two parcels of vacant land in the study area, in addition to Fisherman's Point, that may be suitable for recreational development. One parcel is located immediately north of Svoboda Industries at the bend of the Kewaunee River. Another parcel lies between the U.S. Army Corps of Engineers' property and the City's property on the west side of the northern channel extension. These parcels will be considered for future recreational development in the plan formulation section of this report.

Utilities

The location of sanitary sewer, storm sewer, watermains, and gas and telephone lines in the study area are delineated on Maps 8-11.

As noted on these maps several utilities currently cross the Kewaunee River approximately 80 feet west of the Main Street Bridge. A twelve inch steel watermain and a six inch sanitary forcemain cross the river at a depth of 9-14 feet below the river bed. The pipes are joined with precast concrete river weights at twenty foot centers. In addition to these, a three inch natural gas main and a telephone cable also cross in this same general area.


Kewaunee, Wisconsin
N
0 200 400
SCALE: 1"= 200'
GENERALIZED LAND USE
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
LEGEND
RESIDENTIAL
INDUSTRIAL
COMMERCIAL
INSTITUTIONAL / GOVERNMENTAL
TRANSPORTATION/ UTILITIES
RECREATIONAL
UNDEVELOPED/ NATURAL AREAS/ OPEN SPACE
MAP SOURCE: BAY-LAKE REGIONAL PLANNING COMMISSION, NOV., 1979, FOTH AND VAN DYKE AND ASSOCIATES, INC., DEC., 1980.
KEWAUNEE RIVER
LAKE MICHIGAN
BOAT STORAGE
TOM'S SPORT SHOP
KEWAUNEE ENGINEERING
PETERSON RD
CHEESE SALES
TAVERN
SHIP TURNING BASIN
CITY BOAT LAUNCH
UNITED STATES ARMY CORPS OF ENGINEERS
CONSTRUCTION EQUIPMENT STORAGE AND CONCRETE MIXING
KEWAUNEE EQUIPMENT CO.
TREATMENT PLANT
SVOBODA INDUSTRIES
FIALA'S FISH MARKET
CITY OF KEWAUNEE
SERVICE STATION
FEED MILL & WAREHOUSING
KEWAUNEE EQUIPMENT CO.
PUBLIC BOAT LAUNCH FACILITY
WAREHOUSE
FEED MILL
HARBOR PARK
AUTO SALES
AUTOMOTIVE PARTS SALES
HAMACHEK MACHINE CO.
CAR FERRY DOCKS
GREEN BAY & WESTERN RAILROAD YARDS
PRIVATE SEASONAL RESIDENCE
MAP NO. 7
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Project Summary

D-CM-2 (Rev. 12/79)

Project Number: 8193

File Number: 53

Date Received: 1 SSW

Project Title: Waterfront Recreation Plan for Kewaunee Harbor

Project Duration: 12 months

Agency or Government and Address: City of Kewaunee, Kewaunee, Wisconsin 54216

Project Type:

- [ ] Improve SCA Management SCA #
- [ ] Implement State Law
- [ ] Demonstration
- [x] Other: 308(c)(1) CEIP Planning Grant

Principal Staff Contact: Lorna Rudie (City Clerk) — Telephone Number: (414) 388-2670

Person authorized to receive funds: Roland R. Berkovitz - Mayor — Telephone Number: (414) 388-2172

Signature of Person authorized to receive funds: Roland R. Berkovitz

BRIEF PROJECT DESCRIPTION:

:ause of concern for recreational uses of the harbor, the City has outlined a milti-phased .ject leading to the rehabilitation and development of waterfront areas suitable for public :. The initial steps include subcontracting for a revised waterfront/recreation plan (the ·pose of this project application) and, through a Coastal Energy Impact Program Environmental-reational Loss Grant, acquisition of land and improvements to the south harbor bulkhead and ·bor Park. The study area includes the harbor basin and surrounding lands, as is shown on the attached to the narrative.

WHAT DO YOU WANT THE PROJECT TO ACCOMPLISH (MAJOR OBJECTIVES)?

major objective of this project is to update and revise the 1978 Kewaunee Harbor Plan. The report, to be called a waterfront recreation plan, will show existing and alternative future ·ions of boat launching ramps, parking areas, vehicular and pedestrian access, bulkhead, and lips. It is a conceptual document and will serve as the basis for future construction ·d specifications.

WHAT WILL BE THE SPECIFIC END PRODUCTS OF THE PROJECT?

: final end product will be an updated and revised Kewaunee Harbor Plan, prepared by a qualified nsultant. The new Waterfront Recreation Plan will be submitted by February 1, 1981 to the City ·ncil for adoption. The Plan will provide conceptual designs and cost estimates for improve-its to areas identified for waterfront recreation uses.

HOW WILL THE PROJECT IMPROVE MANAGEMENT OF WISCONSIN'S COAST?

.s project will improve the management of the Kewaunee Harbor SCA because it will increase ·lic recreational use and esthetic enjoyment of the area. The SCA includes three properties ·ed or leased by the City and therefore under the direct jurisdiction of the City Council. :reational or aesthetic improvements are consistent with recently adopted policies in the City :prehensive Plan. Because it is necessary to the 1980 Environmental-Recreational Loss Grant ı to future harbor development, the revised Waterfront Recreation Plan, therefore is extremely ·ortant.

BUDGET SUMMARY CMP FUNDS $ _____ RECIPIENT SHARE $ _____ TOTAL COST $ _____

The City's water system (Map 8) consists of two wells, pumping stations, elevated storage tank and water treatment facility. Well number one is located at the water utility building at the east end of Ellis Street.

Sanitary sewers located in the planning area are shown on Map 9. A ten inch sanitary sewer main runs into a lift station, west of Main Street, in the northern portion of the study area. From the lift station a six inch forcemain crosses the river, eventually connecting with a twelve inch line heading into the existing sewage treatment plant. The treatment facility is located on the south bank of the Kewaunee River, west of Dodge Street, where it discharges treated effluent into the river. The plant was originally built in 1957 and was upgraded in 1969 to provide secondary treatment.

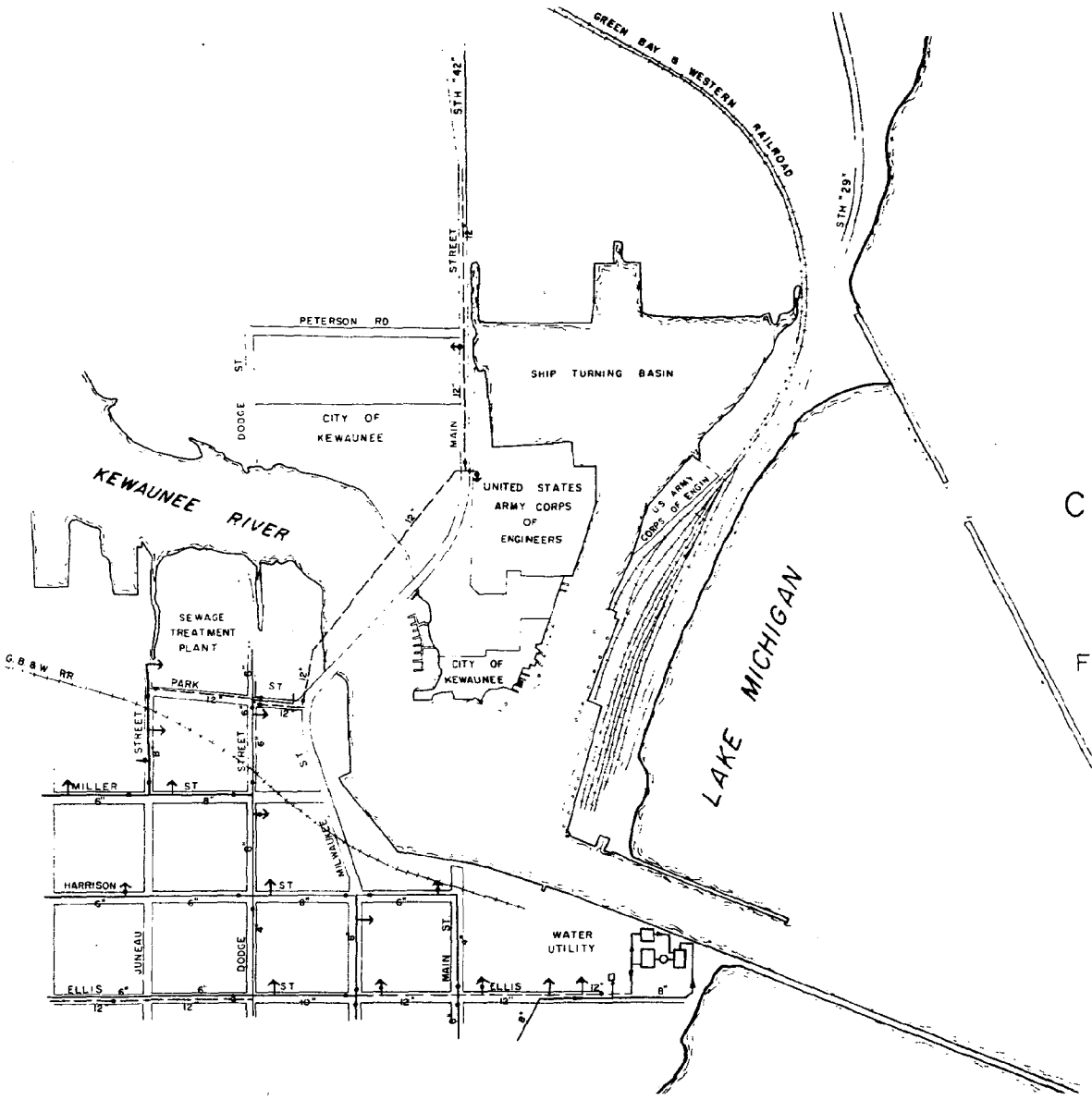
Within the study area, storm sewer (Map 10) is located on the southern side of the Kewaunee River. Discharge points are located at several areas along the south dockwall of the Kewaunee River.

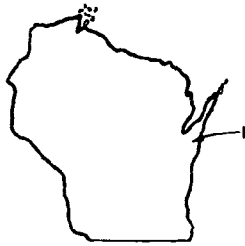
Map 11 denotes the location of telephone and natural gas lines in the study area.

According to the maps presented, Fisherman's Point is not currently serviced with any utilities. Upon further recreational development of this area, water and sanitary sewer service to the area may have to be provided. Also, if bituminous parking areas are to be constructed at the City boat launch facility or on Fisherman's Point, storm sewer or other drainage control methods will be needed.

Existing Harbor Use

Currently, recreational use of the harbor is primarily limited to craft that use the boat ramps on a day to day basis. According to the DNR, the City boat launch is the busiest launching facility on Lake Michigan north of Milwaukee. However, public docking facilities within the inner harbor for transients or for overnight use is lacking. The Kewaunee Equipment Company marina, on the west side of Fisherman's Point has dockage space available (43 slips) for private use and for commercial fishing boats.





N

0 200 400

SCALE: 1"=200'

WATER SYSTEM

CITY OF KEWAUNEE HARBOR

Kewaunee, Wisconsin

1981

FOTH & VAN DYKE and Associates, Inc.

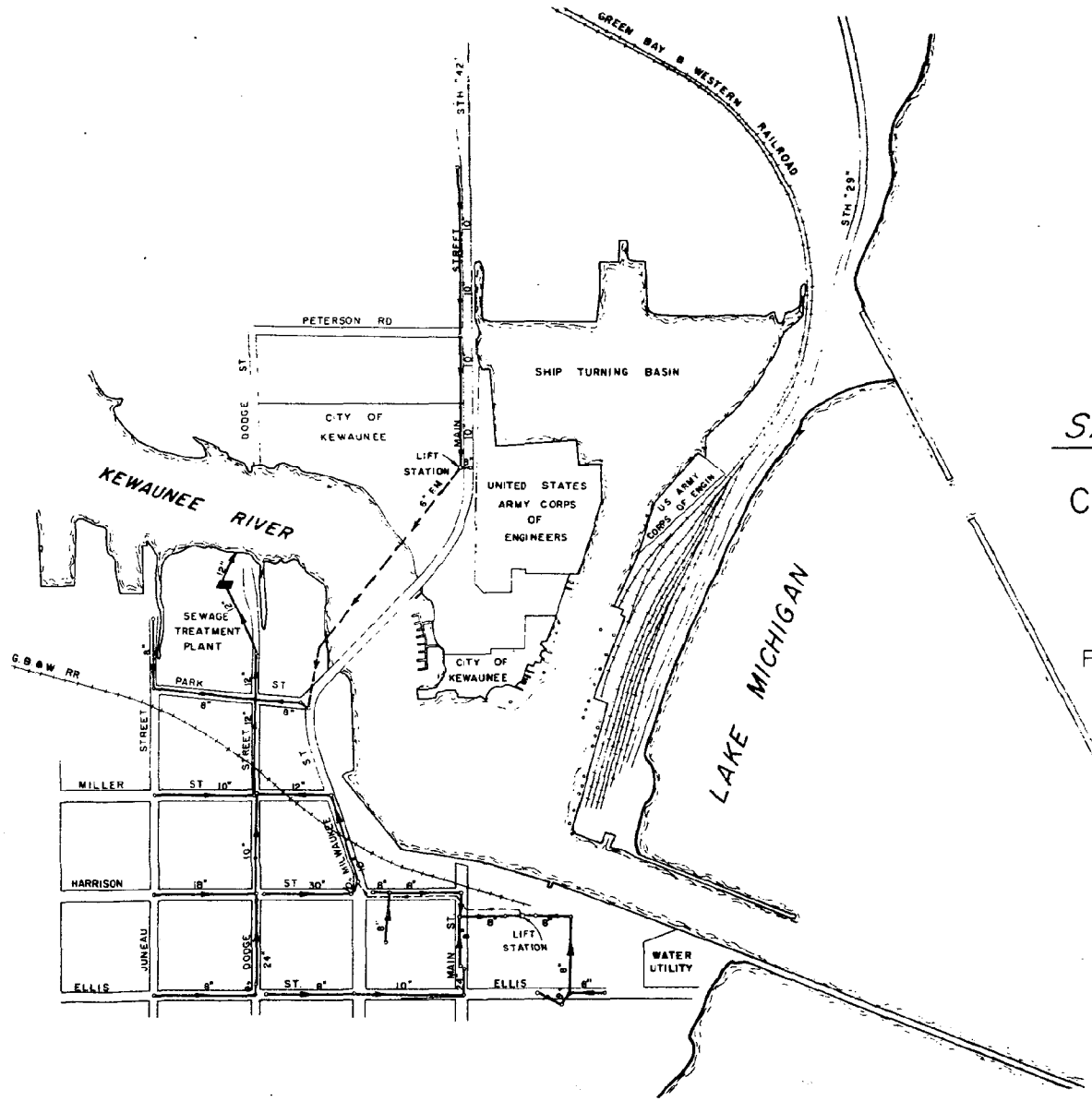
Consulting Engineers

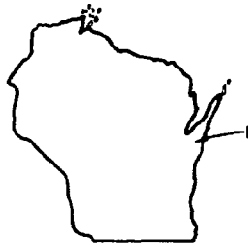
LEGEND

- 10" WATER MAIN (10" AND UNDER)
- 12" WATER MAIN (12")
- WATER VALVE
- HYDRANT
- HYDRANT & VALVE
- WELL

MAP NO. 8

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303





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SCALE: 1"=200

SANITARY SEWER SYSTEM

CITY OF KEWAUNEE HARBOR

Kewaunee, Wisconsin

1981

FOTH & VAN DYKE and Associates, Inc.

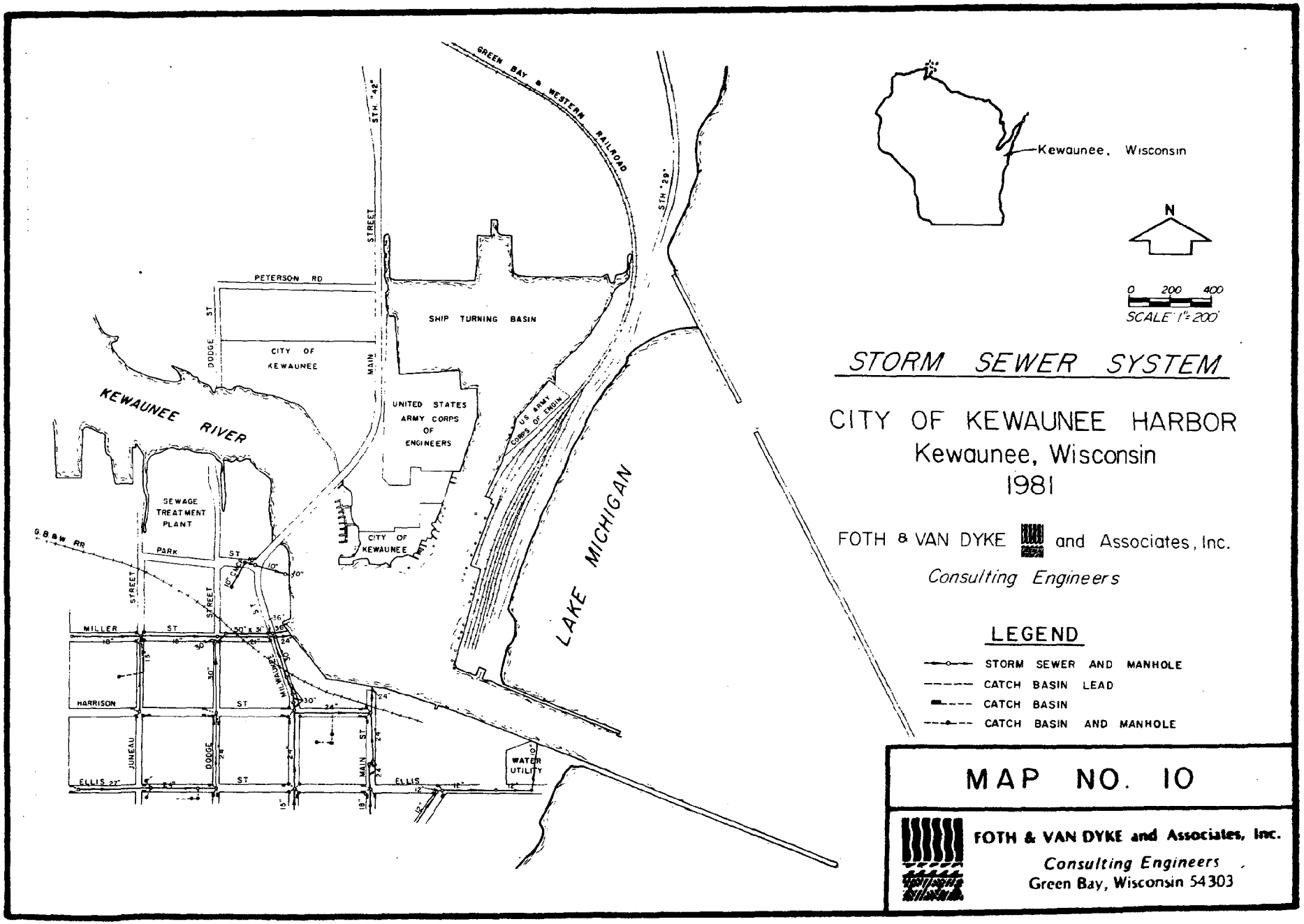
Consulting Engineers

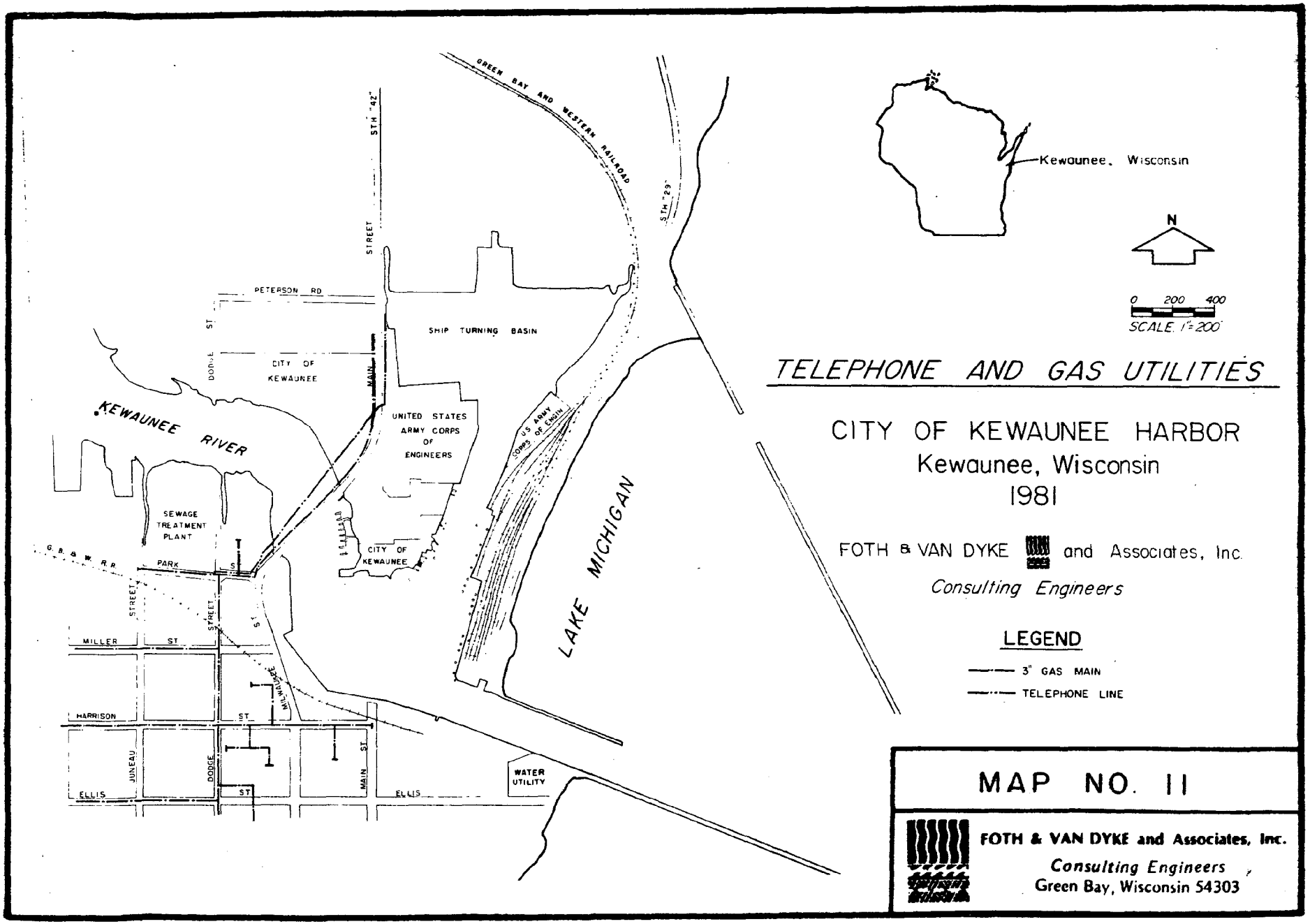
LEGEND

- SANITARY SEWER AND MANHOLE
- SANITARY SEWER AND LAMPHOLE
- SANITARY FORCE MAIN
- LIFT STATION
- SEWAGE TREATMENT PLANT

MAP NO. 9

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303


GREEN BAY & WESTERN RAILROAD
STH "42"
STH "29"
PETERSON RD
DODGE ST
MAIN STREET
CITY OF KEWAUNEE
SHIP TURNING BASIN
UNITED STATES ARMY CORPS OF ENGINEERS
U.S. ARMY CORPS OF ENGIN.
KEWAUNEE RIVER
SEWAGE TREATMENT PLANT
G.B.&W. RR
PARK ST
CITY OF KEWAUNEE
LAKE MICHIGAN
MILLER ST
HARRISON ST
JUNEAU STREET
DODGE ST
MAIN ST
ELLIS
WATER UTILITY
Kewaunee, Wisconsin
N
0 200 400
SCALE 1"=200'
STORM SEWER SYSTEM
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
LEGEND
STORM SEWER AND MANHOLE
CATCH BASIN LEAD
CATCH BASIN
CATCH BASIN AND MANHOLE
MAP NO. 10
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303


GREEN BAY AND WESTERN RAILROAD
STH "42"
STH "29"
PETERSON RD
SHIP TURNING BASIN
CITY OF KEWAUNEE
MAIN
DODGE ST
KEWAUNEE RIVER
UNITED STATES ARMY CORPS OF ENGINEERS
U.S. ARMY CORPS OF ENGRS
SEWAGE TREATMENT PLANT
G.B. & W. R.R.
PARK
CITY OF KEWAUNEE
LAKE MICHIGAN
MILLER ST
HARRISON ST
ELLIS
JUNEAU
DODGE ST
MAIN ST
WATER UTILITY
Kewaunee, Wisconsin
N
0 200 400
SCALE 1"=200'
TELEPHONE AND GAS UTILITIES
CITY OF KEWAUNEE HARBOR
Kewaunee, Wisconsin
1981
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
LEGEND
3" GAS MAIN
TELEPHONE LINE
MAP NO. 11
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Private docks, leased from the City, are located on the east end of Fisherman's Point. As mentioned previously, at this time the only public dockage space available in the inner harbor is approximately 230' along the bulkhead of Harbor Park.

In addition to recreational use, the Kewaunee Harbor is the eastern terminus of the Green Bay and Western Railroad as mentioned in the introduction. The railroad connects with two ferries, the Ann Arbor ferry and the Chesapeake and Ohio ferry. The ferries also accommodate automobiles and pasengers, providing daily service to Frankfort and Ludington, Michigan, respectively. Ferry dockage is provided on the west side of the S.T.H. "29" peninsula (see Map 2).

In addition to ferry service, barges occasionally enter the harbor to provide service to Kewaunee Engineering Company, located adjacent to the north turning basin. Because of the limited public docking available, boats are sometimes docked along the northern channel extension and more than two abreast along the concrete bulkhead at Harbor Park. This can create serious problems for the ferries and barges using the harbor.

Kewaunee Harbor is also the home of the U.S. Army Corps of Engineers Project Office. It provides a base for Corps maintenance vessels.

Thus, the major use the port receives at this time is from large commercial vessels. This type of use will be expected to increase once the coal transshipment facility is completed. However, much of this activity will take place in the outer harbor, east of the S.T.H. "29" peninsula. At this time there are no firm plans for the construction of the transshipment facility. The harbor also receives a great amount of recreational use. Current facilities however, cannot accommodate the existing demand.

Summary

The existing shorelines and bulkheads surrounding the inner harbor are generally in good condition with the exception of Fisherman's Point. Old rotting timber piles and rusting dilapidated sheet piling is in place. Due to past filling, prior to the construction of dockwalls or bulkheads, soil borings will be required at each specific site.

Much of the study area lies within the floodway and the 100-year floodplain. Development within these areas must not significantly constrict the flow of flood waters.

Currently public access to the harbor and Lake Michigan by recreational craft is limited to two boat launch locations. The City facility located west of the bridge is currently used by small craft that are able to pass under the existing structure. Larger craft must be launched at the public ramp immediately south of the bridge on Milwaukee Street. Due to its layout, traffic flow along U.S.H. "42", and shallow water depths, launching can be difficult. Public docking space is generally lacking throughout the inner harbor.

A new bridge being planned by the Department of Transportation would offer greater clearance than the existing structure. However, it may still restrict the passage of larger sail boats. Tentatively planned for construction within the next five years, the location of the new structure will have a great impact on future recreational use of the harbor; possibly by providing greater access to the harbor by recreational craft, depending upon its ultimate location.

Utilities are available throughout the inner harbor area with the exception of Fisherman's Point. Water and sewer service should be considered for the area upon future recreational development.

Most of the developed land surrounding the inner harbor is in industrial use and is associated with the rail service provided by the Green Bay and Western Railroad. Also associated with these industries and the railroad are ferries and barges that enter the harbor. They utilize the S.T.H. "29" peninsula on the east side of the harbor and the bulkhead wall within the north turning basin for dockage.

Two parcels of vacant land in addition to Fisherman's Point, will be considered for future recreational development. Acquisition of existing developed lands will also be evaluated. The vacant lands include a parcel located immediately north of Svoboda Industries and a parcel lying between the Army Corps of Engineers property and the City's property on the west side of the north channel extension.

III. ANALYSIS OF BULKHEAD TYPES

As discussed previously, the shorelines surrounding the inner harbor are primarily in good physical condition, with the exception of the southern end of Fisherman's Point. Old deteriorated pilings, and the irregular shoreline, make this area unattractive and unavailable for docking for most recreational craft. The shorelines west of the Main Street bridge are stabilized by the use of concrete rubble. However, dockage is not currently available.

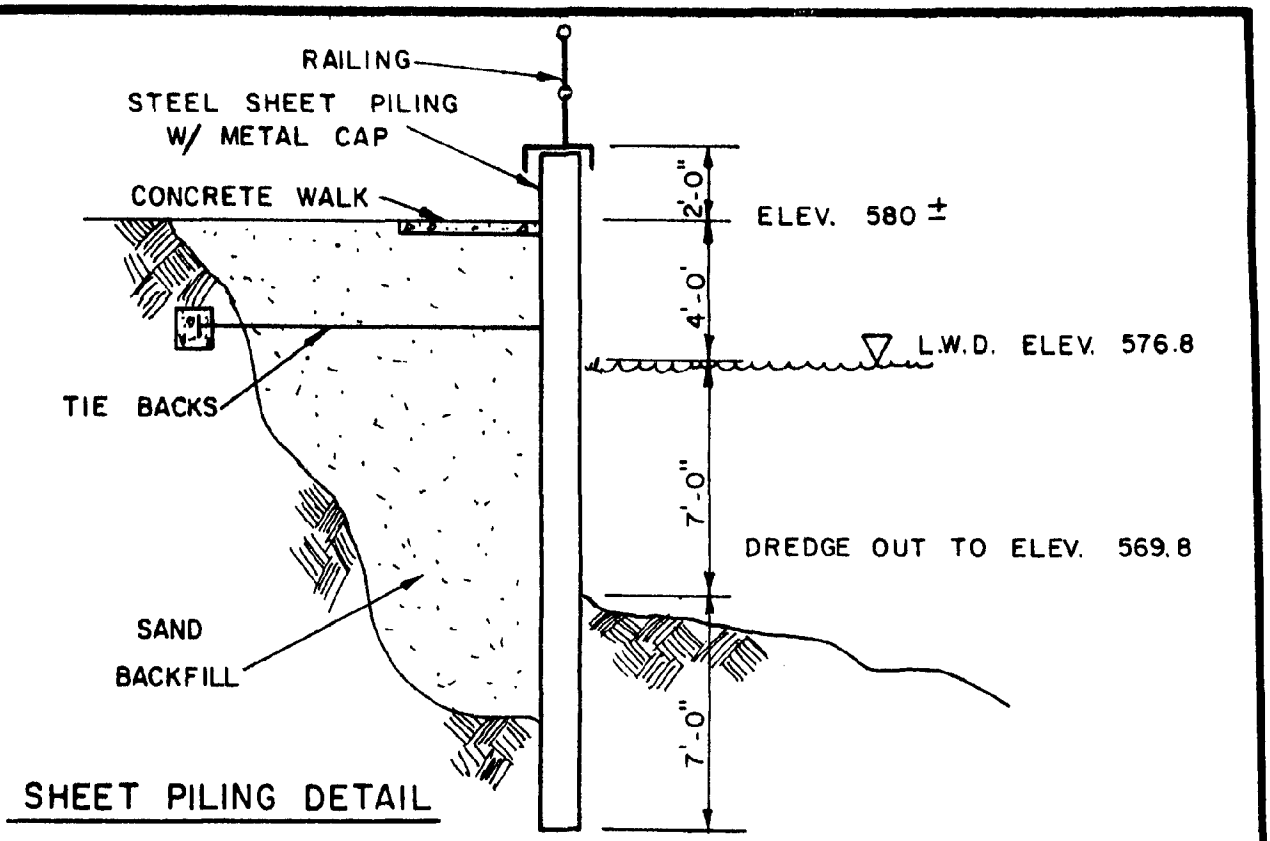
A bulkhead line for the inner harbor (see Map 2) was established by the U.S. Army Corps of Engineers in 1941. Any new bulkheads constructed in the harbor must not extend beyond this line.

Generally, to protect shorelines from erosion and provide excellent dockage capabilities, bulkheads are usually constructed in most harbors. A bulkhead is primarily a vertical wall placed along any established shoreline. It is then backfilled to provide a barrier between the land and wave action from the body of water. The principle difference between a bulkhead and a retaining wall, or crib, is that a bulkhead is constructed near water.

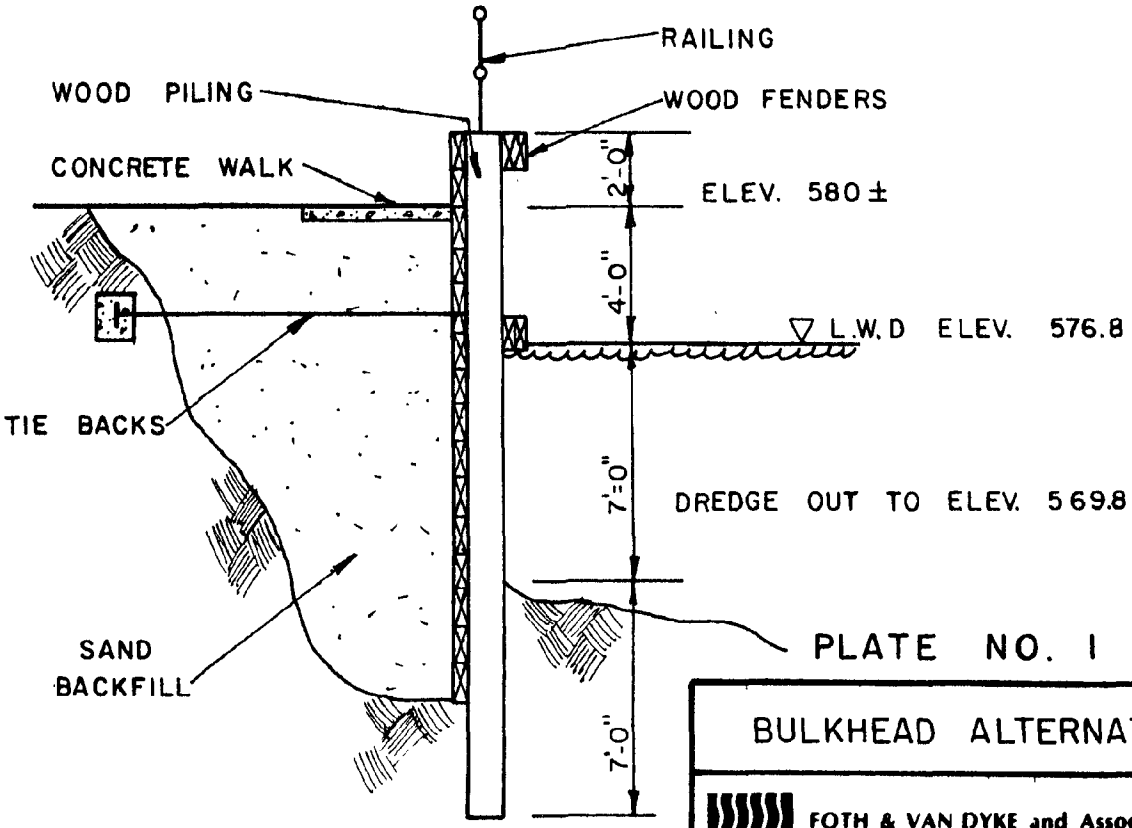
Bulkheads are generally constructed of steel, timber, concrete or a combination of these. Plate Number 1 illustrates typical cross sections for bulkheads constructed of steel sheet piling and wood piling.

Prior to actual construction of a bulkhead, several factors must be analyzed at each specific site. An analysis of soil conditions, fluctuations of water levels, and other technical data must be assembled before final designs can be completed. In addition, permits must be obtained from the U.S. Army Corps of Engineers and DNR.

There are both advantages and disadvantages to the utilization of timber piling and sheet piling. The main advantage to timber piling is that



SHEET PILING DETAIL



WOOD PILING DETAIL

PLATE NO. 1

BULKHEAD ALTERNATES

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

It is much less expensive to construct than steel sheet piling. It is roughly half the cost of steel sheet piling on a square footage basis. The main disadvantage to the use of timber piling, as compared to steel sheet piling, is that it is not as durable and cannot be expected to be as permanent as steel sheet piling.

Steel sheet piling, on the other hand, is most durable and can be expected to last for long periods of time, providing excellent shore protection. The disadvantage is the cost of constructing this type of bulkhead. However, in considering the long term benefits that this type of construction would provide, the benefits should exceed the costs.

It is recommended that steel sheet piling be used for future bulkhead construction in the inner harbor. A more detailed analysis utilizing site specific data should be conducted, however, prior to the selection of a final bulkhead design. Recommendations regarding the new construction of bulkheads in the inner harbor will be made in the next section. Cost estimates will also be provided later in this report.

IV. PLAN FORMULATION

The following section of this report contains recommendations for future recreational development of the inner harbor. Formulation of the proposed development scheme has taken into consideration the existing harbor conditions presented earlier in this report and citizen input provided by the Harbor Advisory Committee. The ultimate development plan has been broken down into recommended phases, formulated with the assistance of the Harbor Advisory Committee. The phases are strictly recommendations. The actual timing and scheduling of the overall harbor development will be at the discretion of the City Council. As land identified for purchase in a later phase becomes available earlier, efforts should be made to acquire it whenever feasible. The phasing assumes that a new Main Street bridge will not be constructed for at least five years and possibly longer.

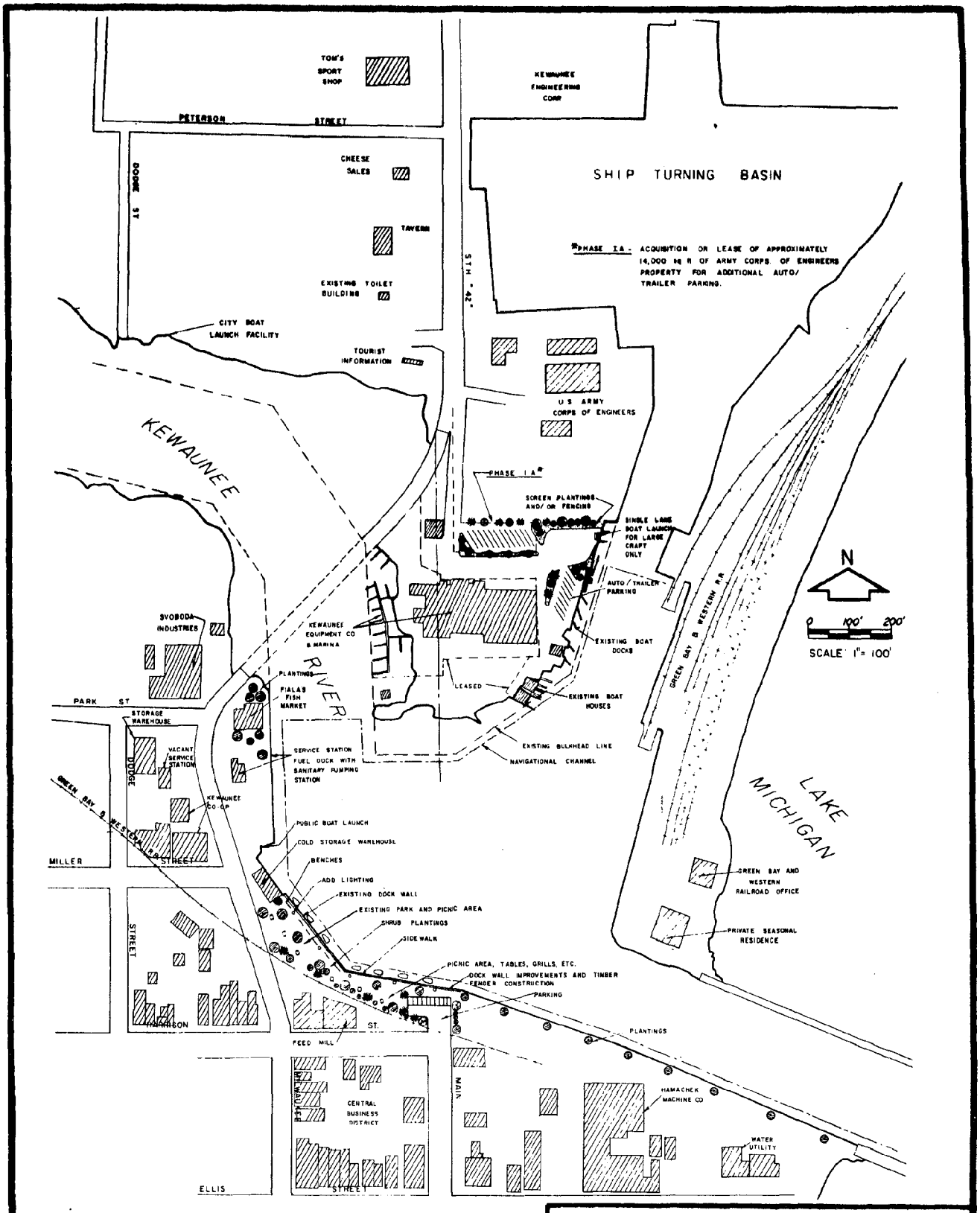
It should be noted that prior to the construction of boat ramps, docks or bulkheads, the proper permits must be obtained from the Army Corps of Engineers, U.S. Fish and Wildlife Service and/or the Department of Natural Resources.

Phase I (See Map)

Recommendations:

- -Land acquisition (approximately .6 acres) for new boat launch and associated auto-trailer parking.
- -Dock wall improvements and timber fender construction along Harbor Park.
- -Paved parking lot and general site improvements for Harbor Park.
- -General landscaping and site improvements around the inner harbor.

Land acquisition would be needed for the construction of a single-lane boat launch and for associated auto-trailer parking. Approximately 12,000 square feet would need to be purchased for the construction of the boat launch. A boat ramp constructed in this location would be intended for launching large craft only that cannot currently pass underneath the existing Main Street bridge. Thus, two boat launch sites, the proposed site and



PHASE I

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

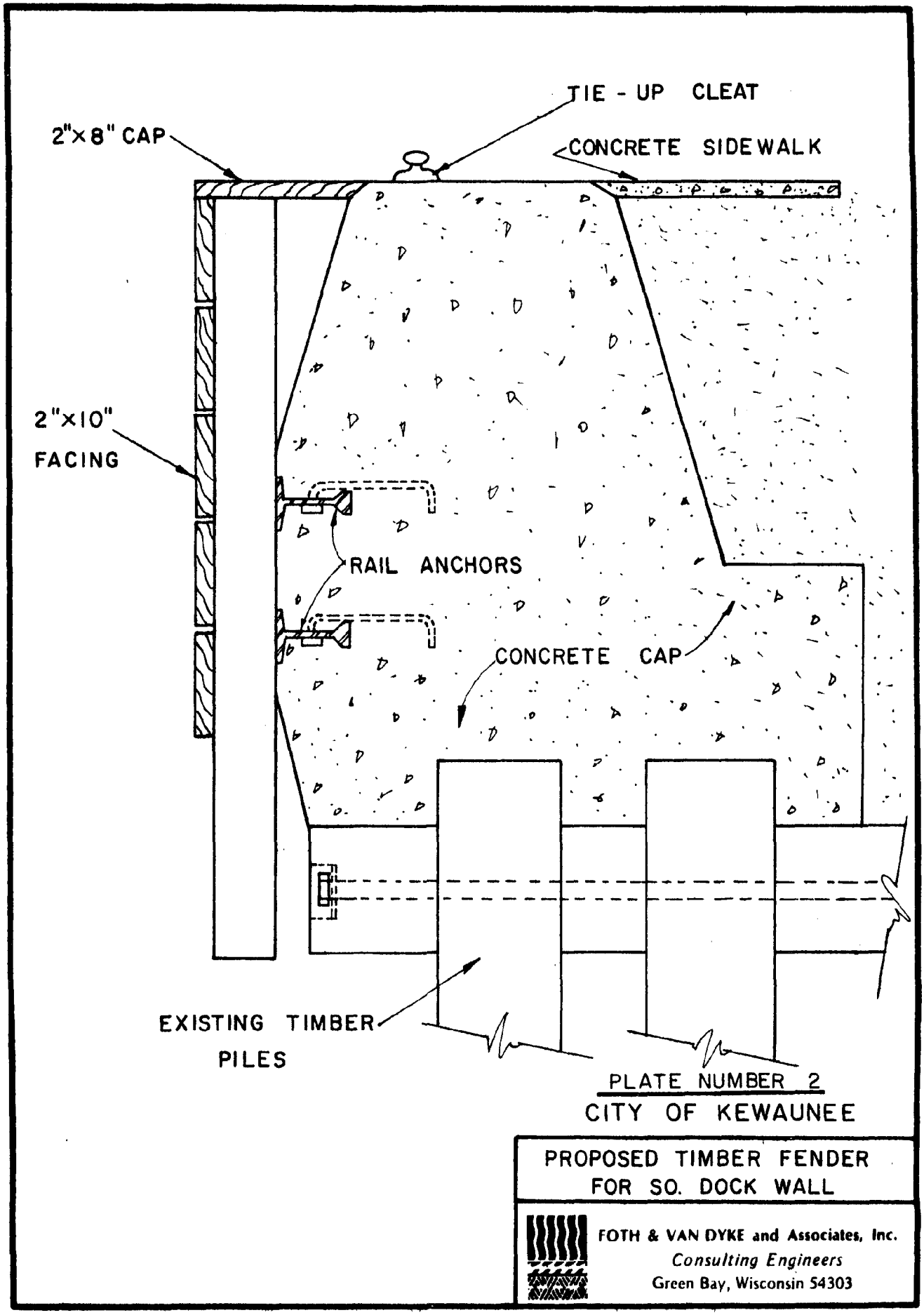
the existing site on Milwaukee Street, would be available for launching primarily large craft.

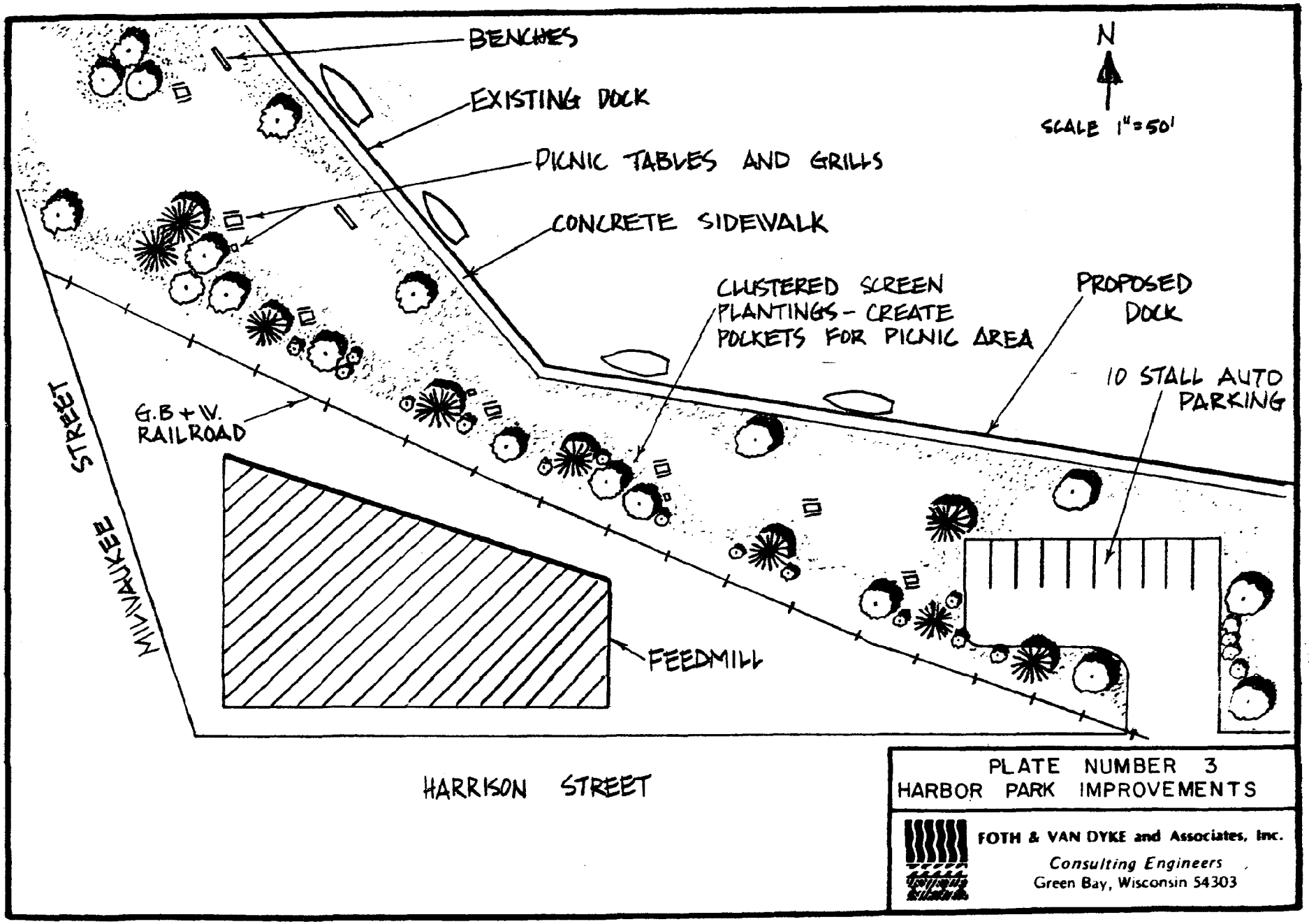
It is recommended that prior to the construction of the ramp adequate auto-trailer parking be made available. The ideal standard for the number of parking spaces at a boat ramp is 36 six auto-trailer spaces per ramp (assuming 6 launches/hour/6 hour day average). Approximately 14,000 square feet of land could possibly be purchased or leased from the Army Corps of Engineers. This would provide approximately 20 drive-through angle parking spaces. Army Corps of Engineers' officials have indicated that a portion of this land is currently being leased to the Wisconsin Department of Natural Resources. The lease will expire in April, 1982. The officials indicated that if the City is interested in the parcel a letter from the City should be formally submitted to the Army Corps District Office in St. Paul, Minnesota, requesting purchase or lease of the parcel. Due to the limited auto-trailer parking that would be available at this location a one-lane launch is recommended initially. Should Kewaunee Equipment Company land become available for additional parking, the launch could be expanded to provide two launching ramps.

Plate Number 2 shows a typical detail of a timber fender for the dockwall recommended for construction along the eastern half of Harbor Park. The fender would be approximately 260 feet in length. Also, cracks in the wall should be repaired and areas that have settled along the wall should be filled.

A general site design for Harbor Park is illustrated in Plate Number 3. Picnic tables, grills, and additional clustered plantings should be provided in addition to a pedestrian walkway and lighting. A paved, 10-stall auto parking area would also be included.

During this phase, efforts should be made to promote the overall aesthetic appearance around the harbor area. Plantings and general landscaping would serve to greatly improve the general appearance of the area. Contacts should be made to Kewaunee and Western Railroad officials regarding the placement of plantings along the south wall of the Kewaunee River adjacent to the existing industrial site.


TIE - UP CLEAT
2"×8" CAP
CONCRETE SIDEWALK
2"×10"
FACING
RAIL ANCHORS
CONCRETE CAP
EXISTING TIMBER
PILES
PLATE NUMBER 2
CITY OF KEWAUNEE
PROPOSED TIMBER FENDER
FOR SO. DOCK WALL
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303


BENCHES
EXISTING DOCK
PICNIC TABLES AND GRILLS
CONCRETE SIDEWALK
CLUSTERED SCREEN PLANTINGS - CREATE POCKETS FOR PICNIC AREA
PROPOSED DOCK
10 STALL AUTO PARKING
G.B + W. RAILROAD
MILWAUKEE STREET
FEEDMILL
HARRISON STREET
N
SCALE 1"=50'
PLATE NUMBER 3
HARBOR PARK IMPROVEMENTS
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Phase II (See Map)

Recommendations:

-Bulkhead construction around Fisherman's Point.

-Dock construction.

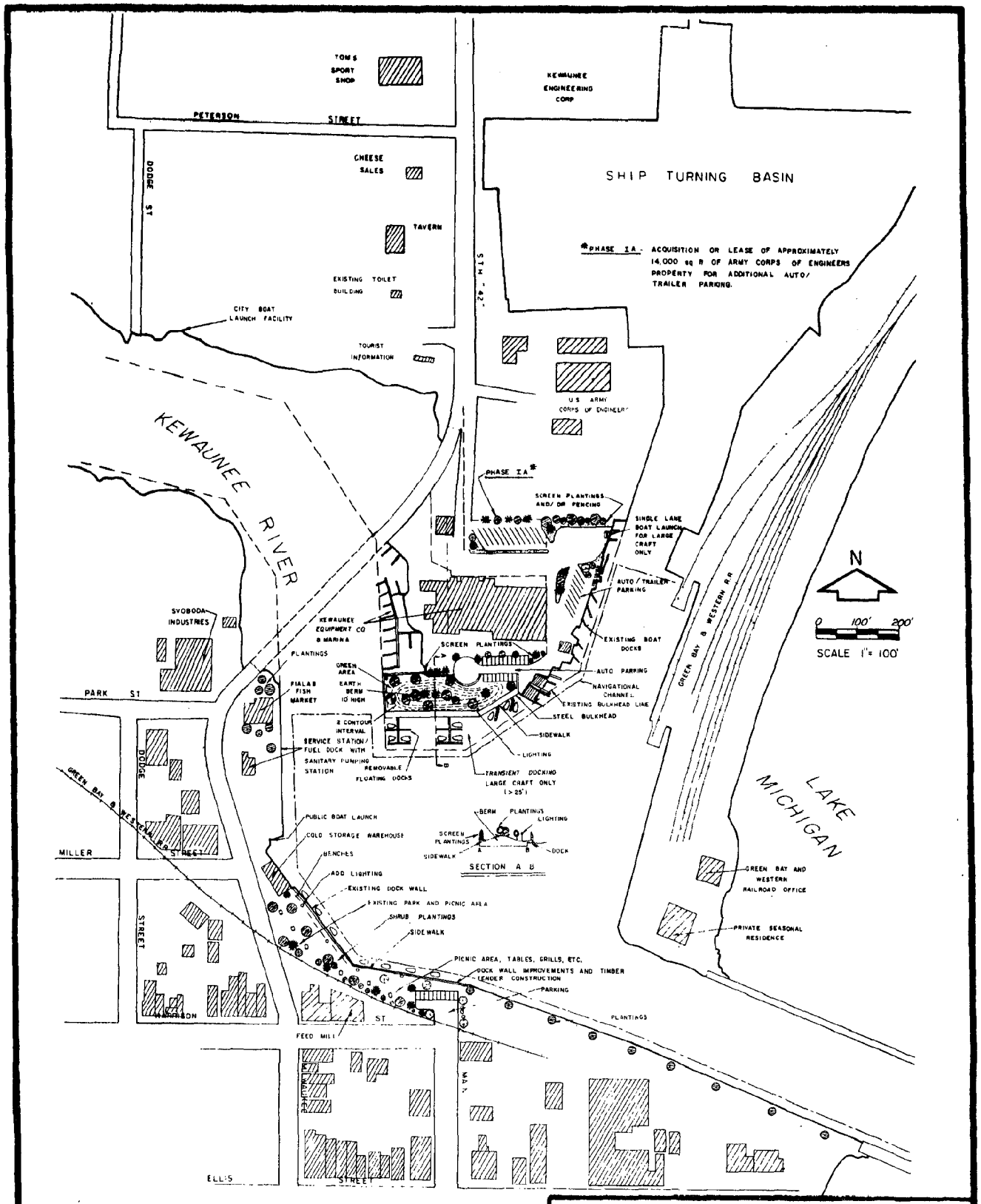
-Green space development on the southern end of Fisherman's Point.

-Parking lot on Fisherman's Point.

Prior to the development of this phase, the lease issue concerning Fisherman's Point must be resolved. A bulkhead totaling 530 feet in length would be constructed around the southern end of Fisherman's Point. Removable floating docks would be installed in 30 foot sections providing 24 berths. The docks should be designed to be removed during winter months and be replaced in spring to avoid ice damage. The design should be ramp type to allow access by the handicapped. Once installed, the docks should not extend into the navigational channel or beyond the established and bulkhead line unless approval is given from the DNR and Army Corps of Engineers.

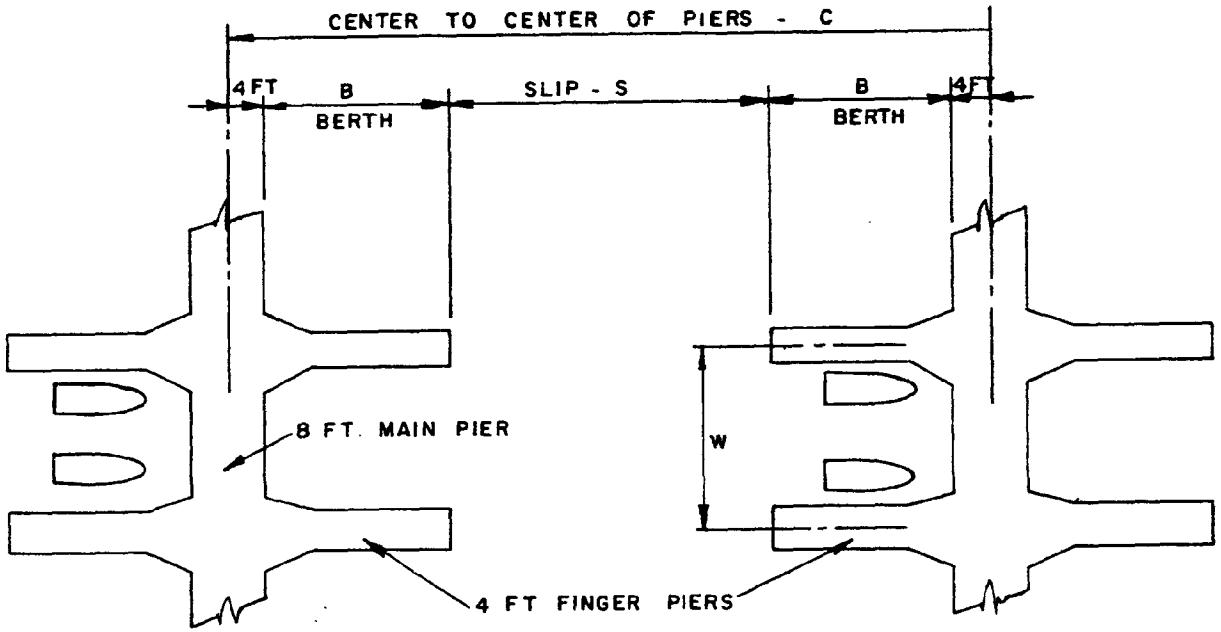
The typical berthing arrangement for recreational craft is given in Plate Number 4. The illustration shows the recommended clearances between slips and maneuvering space required for various boat lengths in a double berth arrangement.

A green area and plantings to provide screening from the industrial development to the north would also be developed. Ideally, the construction of a 10 foot high berm at the end of the point would provide additional screening. The berm would be completely sodded and planted with vegetation. Due to the low 100 year flood level on the Point, minimal gradient of the Kewaunee River and general size of the berm impacts on flood waters should be minimal. However, prior to actual construction a detailed study would have to be undertaken to determine the actual affects from flood waters. In addition, permits would be needed from the DNR and Army Corps of Engineers. The park area would provide passive recreation such as harbor viewing and picnicking. Benches and lighting should also be provided. A 19 stall paved parking area with a cul-de-sac is also recommended. Storm sewer or other storm water drainage control would be needed depending on final design of the parking area.



PHASE II

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303



Length of berth, B, in feet (1)	Width, W, in feet (2)	Slip, S, in feet (3)	Center to center of piers, in feet (4)
20	20	35	83
30	28	52-56	121
40	32	70	158
50	36	100	208
60	42	120	248
70	48	140	288
80	56	160	328

SOURCE : AMERICAN SOCIETY OF CIVIL ENGINEERS, M & R NO. 50, 1969.

PLATE NUMBER 4

TYPICAL BERTHING ARRANGEMENT

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Phase III (See Map)

Recommendations:

-Removal of docks and boat houses on east side of Fisherman's Point.

-Bulkhead construction on the east side of Fisherman's Point.

-Installation of four, 30 foot, angle dock sections.

Once the leases for the boat house and docks on the east side of Fisherman's Point expire, they should be removed for the construction of a bulkhead. The bulkhead would be extended approximately 515 feet from the south end of Fisherman's Point to the boat launch to the north. Four additional floating angle docks, 30 feet in length, would be constructed here. This would provide eight additional public berths as well as parallel docking along the bulkhead. The number of public berths that would be made available on Fisherman's Point, after Phases II and III, would total 32, in addition to parallel docking. A rendering of the proposed improvements for Fisherman's Point is shown on Plate Number 5.

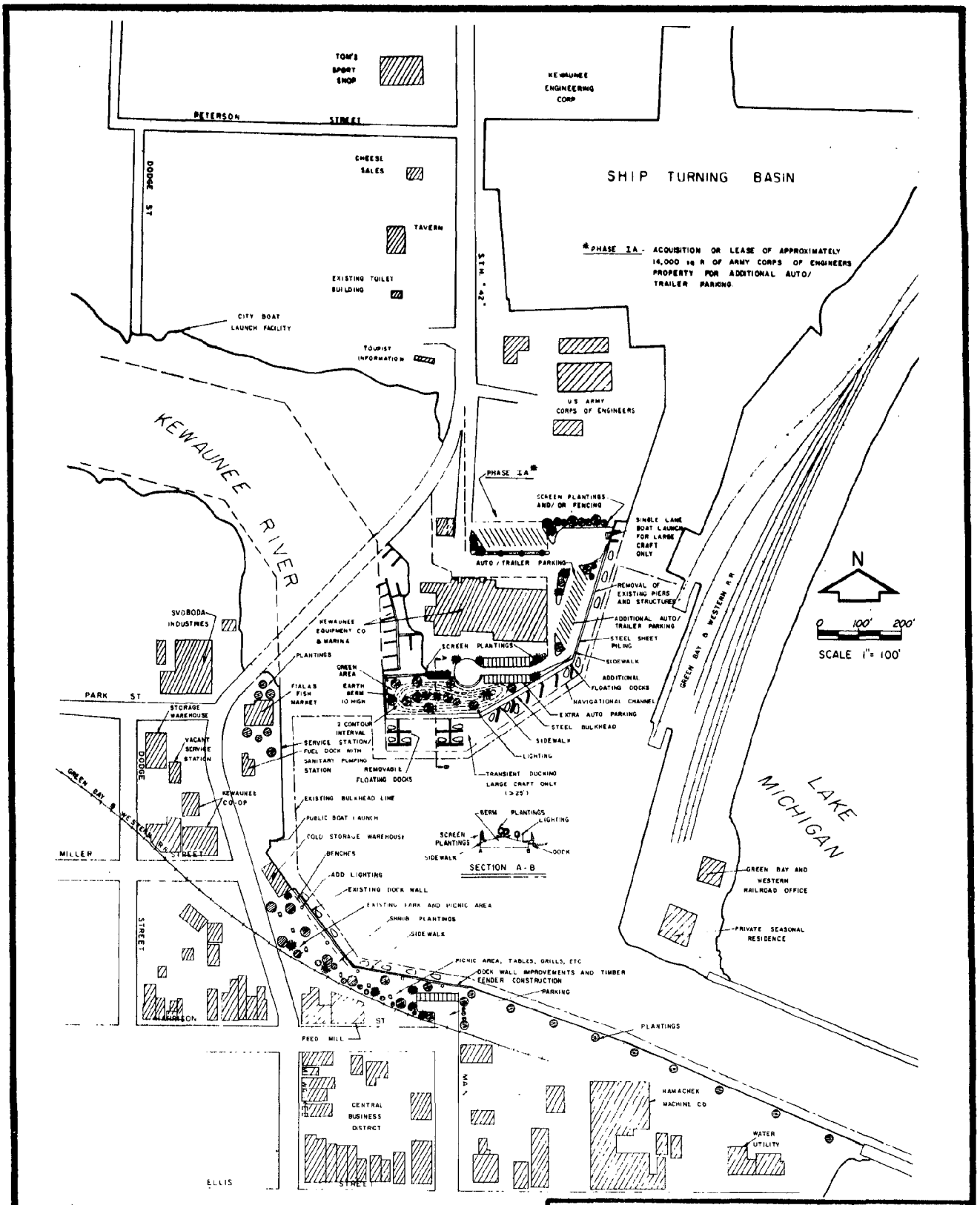
Phase IV (See Map)

Recommendations:

-Land acquisition (approximately .5 acres) for Harbor Park expansion.

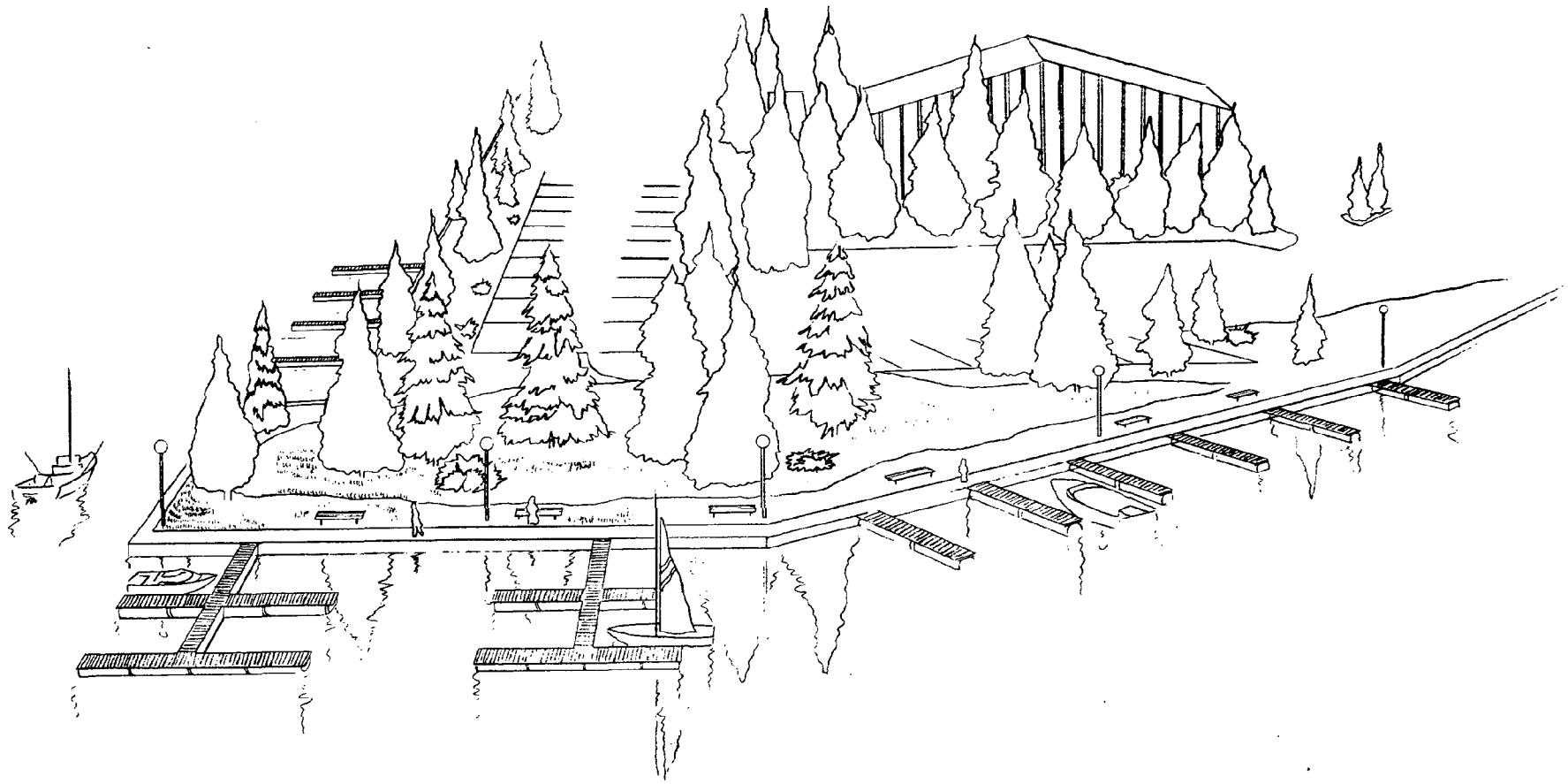
-Construction of tourist information center at the corner of Milwaukee and Harrison Streets.

This phase involves the expansion of Harbor Park by acquiring additional land for the construction of a tourist information center and/or park pavillion. The existing feed mill operation and associated businesses would be relocated. The new building would be one story in height totaling approximately 1,800 square feet in area and would include public toilets and showers for transient harbor users, in addition to tourist information and/or concessions. Plate Number 6 illustrates the general site design for the area. Parking would be provided for approximately 20-24 vehicles. A walkway would link the building with Harbor Park. It is also within walking distance from the central business district.



PHASE III

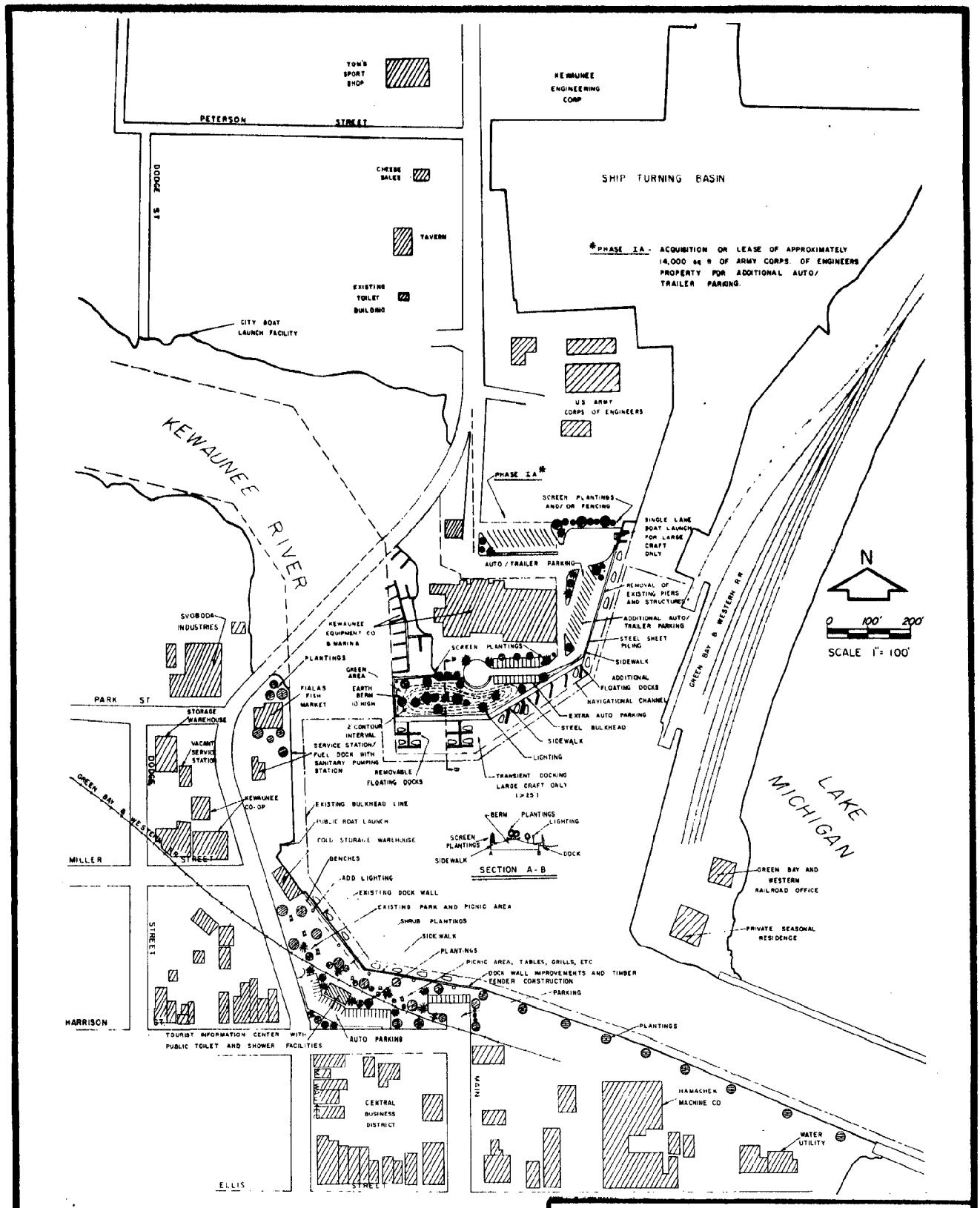
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303



FISHERMAN'S POINT

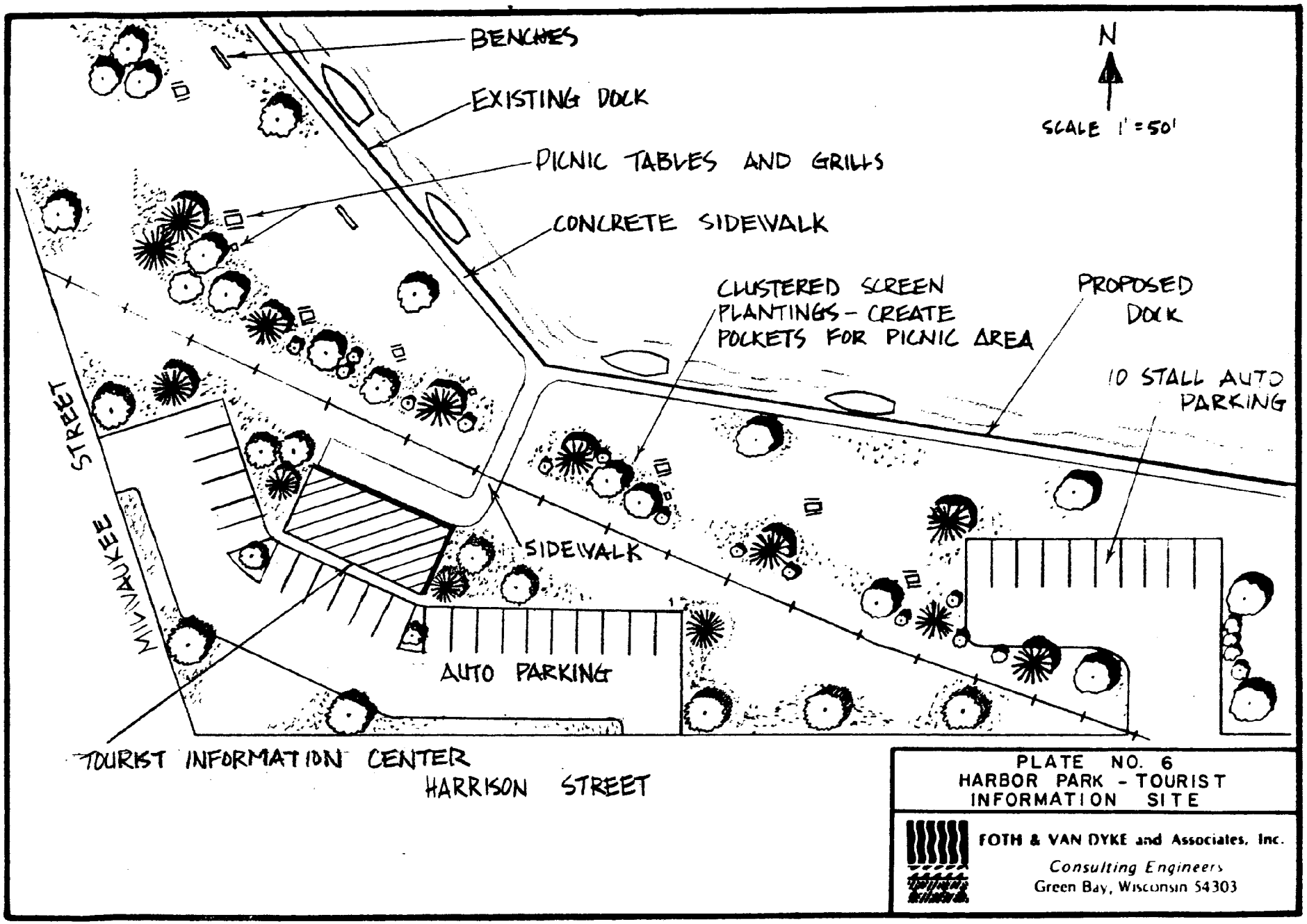
PLATE NO. 5

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303



PHASE IV

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303


BENCHES
EXISTING DOCK
PICNIC TABLES AND GRILLS
CONCRETE SIDEWALK
CLUSTERED SCREEN PLANTINGS - CREATE POCKETS FOR PICNIC AREA
PROPOSED DOCK
10 STALL AUTO PARKING
N
SCALE 1" = 50'
MILWAUKEE STREET
SIDEWALK
AUTO PARKING
TOURIST INFORMATION CENTER
HARRISON STREET
PLATE NO. 6
HARBOR PARK - TOURIST INFORMATION SITE
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

An architectural rendering of the proposed building is shown on Plate Number 7. The intent of the building in this location would be to add to rather than retract from the view of the harbor area. Its location would serve to link the harbor with the central business district. A discussion of architectural theme development surrounding the inner harbor is found in the next section of the plan.

Phase V (See Map)

Recommendations:

-Land acquisition (approximately 3.5 acres) for green space development.
-Bulkhead construction along east and west walls of Kewaunee River south of existing boat launch site.
-Dock construction at existing boat launch site and along above bulkheads.
-Expansion of existing toilet building.
-Construction of marina administration building, toilet building and concessions building.

The total development of this phase will depend on the ultimate location of the new Main Street bridge. With the bridge located further to the west, greater harbor possibilities arise creating additional docking areas for large craft. At this time, this is just one of several alternate site locations under consideration by the Department of Transportation. However, this is the recommended location for the bridge as determined by the Harbor Advisory Committee.

Dockage for approximately 80 small craft would be made available near the existing boat launch site. These could be permanent or floating docks associated with a steel sheet piling bulkhead or a timber boardwalk constructed over the existing concrete rubble. Some dredging may be needed in the area due to the relatively shallow water depths. The existing boat ramps would need to be relocated to the east side of the new bridge. Adequate auto-trailer parking and auto parking would be provided. The existing toilet building would be expanded to provide at least one additional toilet for each sex as well as one shower per sex. A marina administration building should also be included to handle potential user fees and/or other administrative tasks.

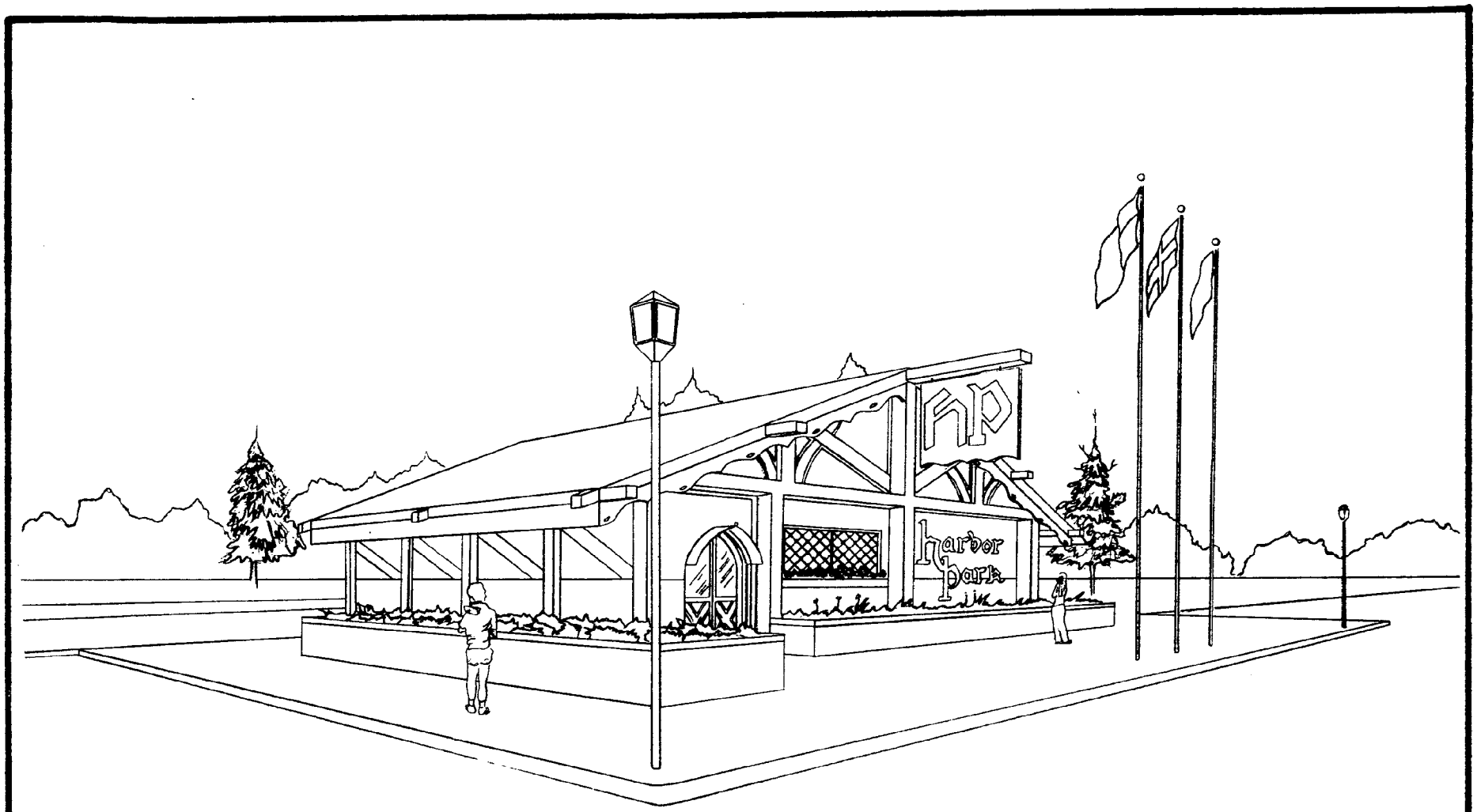
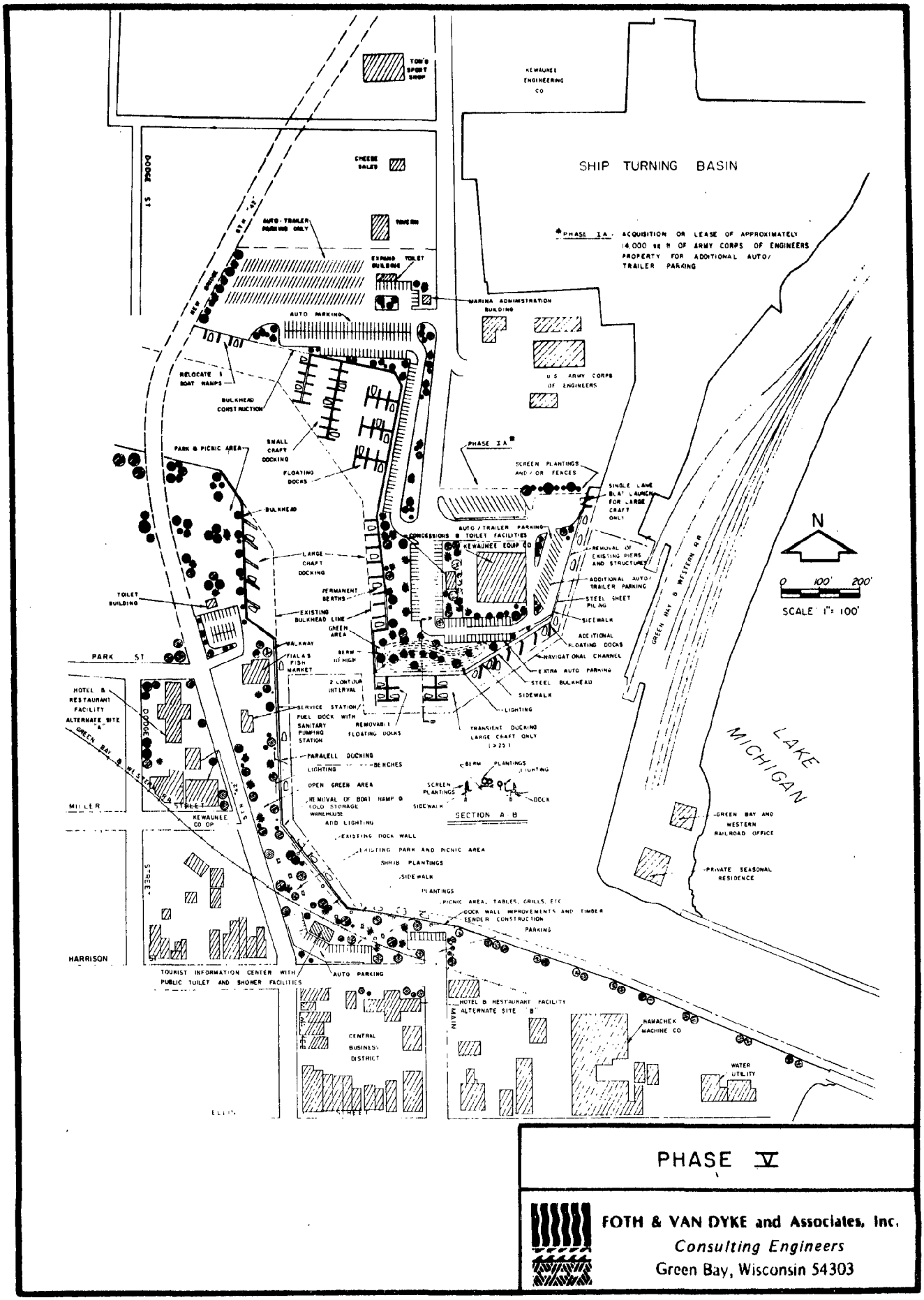


PLATE NO. 7
TOURIST INFORMATION CENTER

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303



PHASE V

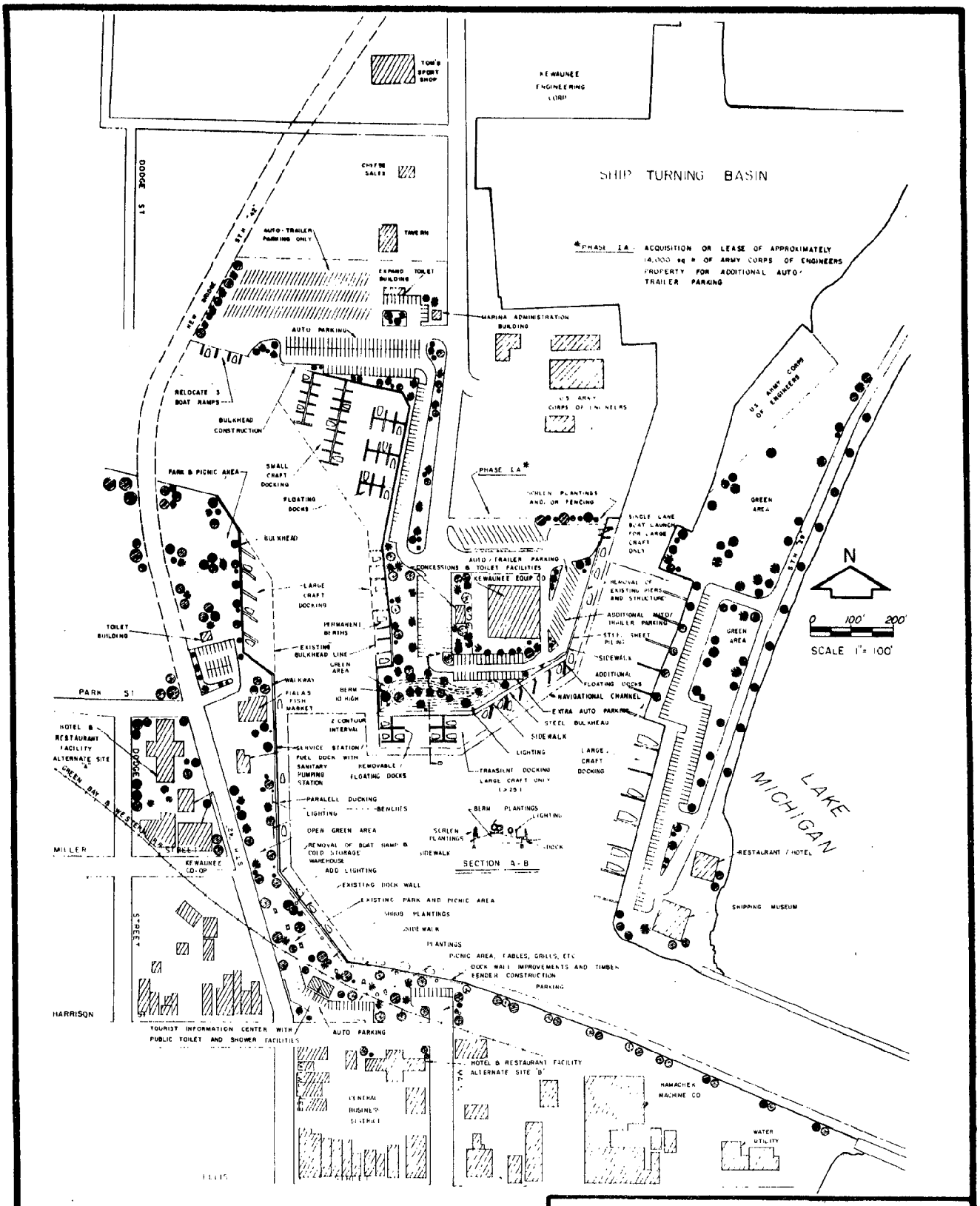
FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

Large craft docking for craft greater than 25 feet in length is provided along the east and west dock walls of the Kewaunee River south of the existing boat launch site. Green areas would be associated with these docking areas along with a toilet building and a concessions building. A portion of the Kewaunee Equipment Company operations would be relocated. Sewer and water service will be needed to serve the concession building on Fisherman's Point as well as storm drainage control for the parking areas. The existing cold storage warehouse and boat ramp would be removed to expand Harbor Park and provide additional lineal green space along the inner harbor.

This phase also denotes two alternate locations for a hotel/restaurant facility. Total land area required would be approximately 35,000 square feet. One site, located on Milwaukee Street, would require the demolition of two buildings: a storage warehouse and a vacant gas station. Another possible site, identified in the City of Kewaunee Comprehensive Plan, is located on Harrison Street. Construction at this site would require the demolition of possibly three structures: an auto body shop, a private residence and a former printing shop. A further discussion of the hotel/restaurant facility and other tourist commercial related development is included in the next section of the report.

Final Phase (See Map)

The final phase of the plan includes future development of the S.T.H. "29" peninsula. Currently much of the land is owned by the Green Bay and Western Railroad. However, contacts with railroad officials have indicated that once the coal transshipment facility is constructed, all of the railroad and ferry activity will be located in the outer harbor. This, therefore, opens up the potential for additional recreational development in the inner harbor. Although the land may not be available for some time to come, a general layout plan can be developed.



FINAL PHASE

FOTH & VAN DYKE and Associates, Inc.
Consulting Engineers
Green Bay, Wisconsin 54303

This phase includes additional large craft docking and park and open space development. The existing railroad office building could be converted to a restaurant/hotel facility or some other retail establishment aimed at the recreational boater or tourist. The former Coast Guard building, now a private residence, could be purchased for the development of a Maritime Museum, another tourist attraction.

The ultimate development of the inner harbor, according to the previous recommendations, will provide approximately 170 berths for large and small craft docking in addition to parallel docking along the bulkheads. Aesthetic improvements such as park areas and landscaping have also been recommended for improving the overall attractiveness of the area. As the plan is eventually developed, an overall management plan for the harbor may be necessary. This plan would outline recommendations for the location of permanent and transient docking, user fees as well as other harbor control and management issues.

Cost Estimates

Cost estimates for the proposed projects are given below. It should be noted that all costs are rough, "ball park" estimates. More exact estimates can only be given after final design work is completed. The costs do not include land acquisition, or engineering. All costs for parking lot construction include a paved, bituminous surface. Thus, if gravel is to be used, costs will be considerably less. In addition, if timber bulkheads are to be constructed as opposed to steel, costs will also be less.

PHASE I

Harbor Park		
Parking Lot: bituminous surface		$ 2,500
Dock Wall Improvements and Timber Fender		22,300
Concrete Walkway		2,000
Landscaping and Misc. Site Improvements		5,000
	Sub-Total	$ 31,800
Fisherman's Point		
Boat Launch and Dock		$ 24,000
Parking Lot: bituminous surface		9,000
Landscaping and Misc. Site Improvements		5,000
	Sub-Total	$ 38,000
	TOTAL	$ 69,800

PHASE II

Fisherman's Point		
Demolition: existing piers, pier piles		$ 3,000
Bulkhead: steel sheet piling		233,500
Dredging and Backfill		17,500
Soil Borings		10,000
Docks: wood construction		33,600
Parking Lot: bituminous surface		9,000
Landscaping and Misc. Site Improvements		10,000
	TOTAL	$ 316,600

PHASE III

Fisherman's Point		
Demolition: boat houses, piers, pier piles		$ 7,000
Bulkhead: steel sheet piling w/timber fender		230,000
Dredging and Backfill		19,500
Soil Borings		10,000
Docks: wood construction		9,600
Parking Lot: bituminous surface		9,000
Landscaping and Misc. Site Improvements		5,000
	TOTAL	$ 290,100

PHASE IV

Harbor Park		
Tourist Information Building		$ 60,000
Demolition of Existing Structures		5,000
Parking Lot: bituminous surface		8,500
Landscaping and Misc. Site Improvements		5,000
	TOTAL	$ 78,500

PHASE V

City Boat Launch Site		
Boat Ramp Reconstruction		$ 20,000
Bulkhead: steel sheet piling		333,000
Dredging and Backfill		20,000
Soil Borings		10,000
Boat Docks: wood construction		100,000
Marina Administration Building		30,000
Expansion of Existing Toilet Building		15,000
Parking Lots: bituminous surface		55,000
Landscaping and Misc. Site Improvements		10,000
	Sub-Total	$ 593,000
Fisherman's Point		
Demolition of Existing Structures		$ 5,000
Bulkhead: steel sheet piling		120,000
Dredging and Backfill		15,000
Soil Borings		10,000
Docks: wood construction		20,000
Parking Lot: bituminous		10,000
Concession Building		30,000
Landscaping and Misc. Site Improvements		10,000
	Sub-Total	$ 220,000
Park Area (south of City Boat Launch)		
Bulkhead: steel sheet piling		$ 220,000
Backfill and Dredging		20,000
Soil Borings		10,000
Docks: wood construction		12,000
Toilet Building		20,000
Parking Lot: bituminous surface		2,000
Landscaping and Misc. Site Improvements		10,000
	Sub-Total	$ 294,000
Harbor Park Expansion		
Demolition		$ 8,000
Bulkhead: steel sheet piling		45,000
Backfill and Dredging		5,000
Landscaping and Misc. Site Improvements		5,000
	Sub-Total	63,000
	TOTAL	$ 1,170,000

FINAL PHASE

Docks: wood construction		$ 65,000
Parking Lots: bituminous surface		25,000
Landscaping and Misc. Site Improvements		20,000
	TOTAL	$ 110,000

V. TOURIST RELATED COMMERCIAL DEVELOPMENT

The preceding section of the report contained several recommendations concerning recreational development around the inner harbor. Just as important to the City, and interrelated with this, is the potential for additional tourist related commercial development. Both type of developments can work hand-in-hand in promoting increased tourism for the City. As the recreational development begins to attract users, commercial establishments associated with the tourist should be provided. The later phases of the plan provides potential for such tourist related establishments as a hotel, restaurant, museum, and other attractions.

One of the backbones to attracting additional tourist related activity to the area, in addition to the harbor improvements, is the construction of a hotel/restaurant facility. Two alternative site locations for the facility were presented earlier in Phase V. A motel feasibility study*, conducted in 1978, concluded that there is a potential demand for a 40-room motel in the City. Support facilities including a 60 seat restaurant, 40 seat bar/lounge and 60 seat meeting room should also be provided. The total estimated land area required would be 35,000 square feet. The building would total appproximately 27,000 square feet. The proposed facility would make a substantial contribution to Kewaunee's economy by providing increased income and jobs to the area. It would also greatly add to the municipal tax base.

Upon final adoption of this plan, efforts should be taken immediately to secure one of the recommended hotel sites for future construction. Also, hotel chains should be contacted regarding the possibility of locating in the City of Kewaunee and how their business would fit into the overall development plan.

*Motel Feasibility Study - City of Kewaunee, UW Extension, Recreation Resources Center, 1978.

Acting as a focal point to the harbor area, and in close proximity to the central business district, would be the location of the tourist information center and/or park pavillion for Harbor Park. A rendering of the proposed building was shown in Plate Number 6.

Within walking distance of the central business district and waterfront, and being located at the apex of Milwaukee Street and Harrison Street, the facility could act as a stopping point for travelers normally headed to Door County. The building could house tourist information, concessions, as well as public toilet and shower facilities. Being one story in height, an approximately 1,800 square feet in size, the structure would not be intended to take away from the harbor view but add to it.

In conjunction with additional tourist related development, an architectural theme approach could also be developed. One possibility for an architectural theme is illustrated on Plate Number 7, showing the information center. The design of the building has an "old world" theme. This theme could be carried thoughout the harbor area as well as the central business district. Planters, benches, lighting elements, and other facilities would display this general theme.

The theme approach has been used often in other communities seeking to attract increased tourism. The State Division of Tourism is currently playing an active role in promoting and assisting in the development of tourism facilities, attractions, and activities. Primary objectives of the agency are to:

- -identify tourism development potentials
- -promote and coordinate the development of quality tourism facilities, attractions and activites to strengthen the tourism industry and generate increased tax revenues
- -assist in funding source investigations
- -attract developers to various projects
- -assess private investment opportunities and sell these projects to investors

-assist in community tourism planning programs

-assist in maintaining the quality of the present facilities and strengthening the role of the tourism industry in the State's economy

For further information the City should write to the following address:

Wisconsin Division of Tourism
Department of Development
2100 Beaser Avenue
Ashland, Wisconsin 54806

The proposed improvements for the inner harbor outlined in this plan, dealing with the inner harbor, can ultimately benefit the entire economy of the City of Kewaunee.

VI. FUNDING ANALYSIS

The success of any type of plan is dependent upon how well it can be implemented. The implementation of the recommendations found within this report depend primarily on the availability of funding for the various projects. Several funding mechanisms are available to assist in the harbor development.

There are several State and Federal financial assistance programs providing funds for the development of boat ramps, park improvements, and other harbor and recreational facilities. Presently, however, the future of most of these programs remain a question mark. Some of the programs are proposed for large budget cuts whereas others may be eliminated entirely. The final status of these programs will not be known until later this year when the final budgets are passed.

A listing of the State and Federal financial assistance programs currently available is given below:

1) Recreational Boating Facilities Funds
   Wisconsin Waterways Commission

   Provides up to 50 percent of cost for feasibility determination of recreational boating facilities project and up to 50 percent of the subsequent cost of project. Typically eligible: launch ramps, service piers, breakwaters and bulkheads.

2) Land and Water Conservation Fund (LAWCON)
   Wisconsin Department of Natural Resources

   Provides 50-50 matching funds for the acquisition and/or development of open space, park, recreation and conservation use.

3) Upper Great Lakes Regional Commission (UGLRC)
   Supplemental Assistance and Technical Assistance Aids

Assistance primarily associated with economic improvements and community services relating to local economic development and job creation and/or retention.

4) Outdoor Recreation Act Program (ORAP)
Wisconsin Department of Natural Resources

Program guidelines essentially the same as Wisconsin LAWCON program.

5) Wisconsin Coastal Management Program
Wisconsin Department of Administration

Financial and technical assistance for planning, site design, and management of Wisconsin coastal areas.

6) Farmers Home Administration Act of 1961 and 1962

Provides low cost loans for the establishment of outdoor oriented recreational facilities.

As stated earlier in Section V, assistance from the State Division of Tourism is also available for promoting and assisting in the development of tourism facilities and attractions. The agency can assist in funding source investigations and also help in attracting private developers.

In addition to the above programs, community development programs through the Department of Housing and Urban Development (HUD) would also provide funding assistance. The two HUD programs for which projects could be eligible for funding include Community Development Block Grants (CDBG) and Urban Development Action Grants (UDAG). As like the above programs, future funding allocations for these programs is also in question at this time.

The CDBG program awards 100% grants to communities which have the greatest need and whose program proposals address the need of low and moderate income groups. The program is very competitive, however recreational develop-

ment projects are eligible for funding for those communities qualifying to receive grants.

Eligible UDAG program applicants are determined by the Department of HUD depending on whether a community meets minimum standards for physical and economic stress. Matching grants are awarded through this program. Eligible projects include activities that support commercial, industrial, or residential areas. At this time, however, the City of Kewaunee is not eligible to receive grants through this program. If interested, the City should submit a letter to the Department of HUD requesting specific information as to why the City has not been determined eligible for community development funds through this program. The development funds through this program. The address is:

Department of Housing and Urban Development
Milwaukee Area Office
744 N. 4th Street
Milwaukee, Wisconsin 53203

Other financial mechanisms available to the City include General Obligation (GO) Bonds, State Trust Fund Loans and Tax Incremental Financing (TIF). General Obligation bonds are typically the cheapest means by which to finance public improvements. The bonds have low interest rates and are backed by the community issuing them. The use of bonding, however, is dependent on the City's current indebtedness. State statute limits the total amount of debt a city may assume at 5% of the total value of all taxable property as equalized by the State Department of Revenue.

State trust fund loans are available through the Board of Commissioners of Public Lands. The maximum amount on any single trust fund loan application is $350,000. The City's total indebtedness, including the trust fund loan, may not exceed 5% of the equalized valuation of all taxable property. Current interest rates for the loans are at 7.5%. For additional information, contact:

Board of Commissioners of Public Lands
505 North Seqoe Road, Rm. 8
Madison, Wisconsin 53705
Telephone: 608-266-1370

Tax Incremental Financing (TIF) is an additional financial mechanism that can be used for public facility improvements. Wisconsin's TIF law was created in 1975 to help cities and villages improve business areas or develop industrial sites. Under the TIF law a city designates a specifc area within its boundaries as a TIF district and develops a plan to improve property values within it. The extra taxes generated by the increased property values since the creation of the district are used to pay for land acquisition, sewer lines, street construction, or other public works projects. In creating the district, at least 25% of the property area contained in the district must be a "blighted area", an area in need of "rehabilitation or conservation work" or an area suitable for industrial development. Also, the equalized value of the district must not exceed 5% of the total equalized value of the City.

In summary, there are several State and Federal grants and aids programs available to implement the recommendations made in this plan. However, the future of these programs are uncertain. In light of this, Tax Incremental Financing in conjunction with any grants awarded from any State or Federal agencies, may be the best method of improving the harbor and revitalizing the downtown area. It is recommended that the City take a serious look at the possibility of utilizing Tax Incremental Fianncing as a means of financing the harbor improvements outlined in this report, as well as general improvements in the City's central business district.

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