

Michigan Coastal Zone Management Program

City of Grand Haven

Coastal Master Plan



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City of Grand Haven

HARBOR ISLAND MASTER PLAN

OCTOBER, 1984

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City of Grand Haven

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INTRODUCTION

PURPOSE

In 1984, the City of Grand Haven received funds from the Michigan Coastal Zone Management Program to conduct a study of Harbor Island. While the previous coastal studies have concentrated on the downtown areas, the Harbor Island area has not previously been studied in detail. The purpose of this study will be to analyze the Harbor Island coastal area, explore alternative design schemes, develop site designs, and explore implementation programs.

OBJECTIVES

Given the overall purpose of the study, a detailed set of work objectives can be developed. The objectives are as follows:

- 1) Help encourage future development in private investments in the City of Grand Haven and complement other planning efforts that are underway in the City;
- 2) Provide a standard for future development and plans which will help guide the decisions of the community;
- 3) Consider improvements for the existing municipal boat launching ramp facility which is actively used and experiencing some deterioration of infra-structure;
- 4) Provide a basis for the City of Grand Haven to plan for future waterfront development and "linkage" to existing waterfront development projects;

- 5) Further enhance and develop public access along the City of Grand Haven's waterfront;
- 6) Determine estimated costs to undertake various public improvements on Harbor Island that will enhance its development for the long run;
- 7) Review the utilization of waste heat generated from the City's power plant.

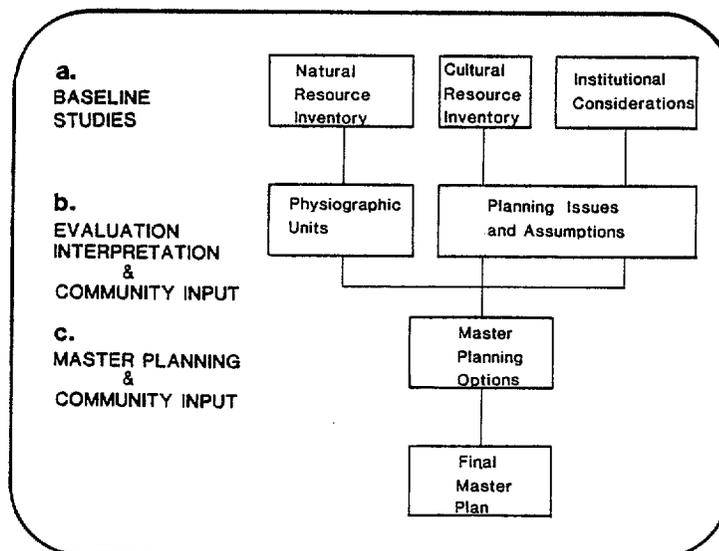
PLANNING PROCESS

The planning process followed a three-step procedure which included:

- a) baseline studies;
- b) evaluation and interpretation; and
- c) master planning and community input.

Detailed planning procedures are summarized in the accompanying diagram (Figure 1).

Harbor Island Master Plan Study Process



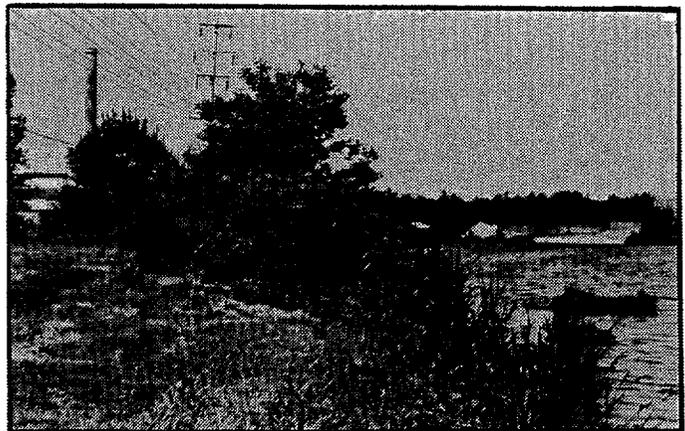
Background studies involved extensive data collection. Sources included previously published data, contacts with experts familiar with Harbor Island, discussions with local officials and citizens. In addition to these sources, detailed conversations with State and Federal agencies also transpired. The Michigan Department of Natural Resources and its various divisions were the primary source of information. Other contacts include Army Corps of Engineers, and interest groups concerned with Harbor Island.

The second step in the planning process included an evaluation and interpretation of the gathered data. The study area was classified according to natural resources. This procedure evaluated the opportunities and constraints of the island and played an important role in developing future management programs.

The final step in the process involved master planning. Alternative design concepts were prepared in order to present a range of alternatives for the future use of Harbor Island. The concepts were evaluated and a final concept selected which provided a basic framework for the Master Plan. The final step was the development of the Master Plan including management strategies and an implementation program.

HARBOR ISLAND COASTAL AREA PROFILE

Grand Haven's Harbor Island encompasses approximately 140 acres and is located on the City's north side. It is bounded by the Grand River to the west and north, US-31 to the east and the South Channel to the south. Primary access is from US-31 or via the Third Street Bridge.



Current uses on this 140-acre island include a mixture of industrial recreational and vacant uses. The City of Grand Haven is the largest single property owner, however, other major land holders include the Grand Haven Board of Power and Light, Old Kent State Bank, and Shell Oil Company.

The island has experienced an interesting history of land uses and functions. During the early settlement of Grand Haven, portions of the island were used for fishing and shipbuilding. With the advent of the lumbering era, the island was used as a place to sort, stock, and prepare raw timber for transportation to other areas. The so called "boom" area or interior lagoon located on the island was used to collect logs floated downstream. Logs were funnelled into this area and then sorted for future shipping. Lumbering, fishing, and shipbuilding continued to be important industries on the island until the early 1900s.

In the early to mid 1900s, the island was used primarily for industrial purposes such as power plants, coal docks, and as a dump for city refuse. More recently, recreation has become a major land use. The City's boat ramp and the newly constructed Harborview Linear Park are bringing more visitors to the island and a greater appreciation of the island's assets and amenities have been noted.

Today, Harbor Island has the potential for new development while preserving important resources. Industry, recreation, conservation, commercial, and residential are some possible uses which can be located on the island. However, these uses can also entail impacts to the environment of the island and character of the island if not properly planned. It is the intent of this study to determine which of the above uses are most suitable for the island and determine how these prime coastal area resources can be wisely used.



**Inventory and
Analysis of Harbor Island**

INVENTORY AND ANALYSIS OF HARBOR ISLAND

Prior to the development of site design and land use recommendations, an inventory and analysis of natural resources and physical resources is essential. Special emphasis will be given to determine the opportunities and constraints for future development.

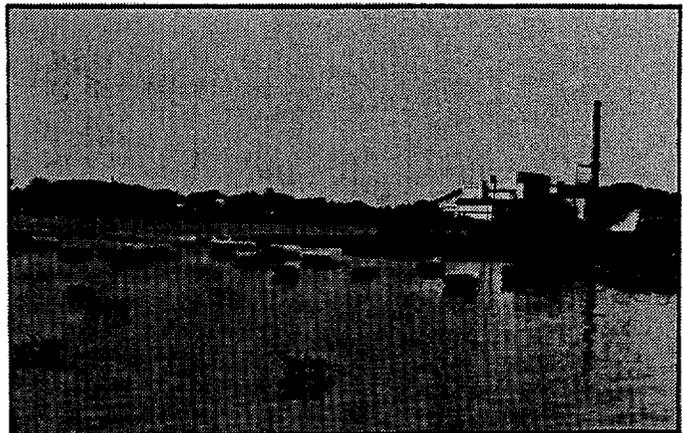
NATURAL RESOURCES

An examination of natural features and systems is important aspect of the Plan. In many ways the natural systems will dictate which future uses can or cannot be accommodated on the island. A set of "environmental determinants" can be identified for the island, as well as important biological processes currently taking place on the island.

River Flow Characteristics/Hydraulics

The Harbor Island area encompasses a portion of the Grand River estuary. It is one of the largest river basins in the Great Lakes and includes over 5500 square miles. The average daily discharge of Grand River is approximately 3500 cubic feet per second.

Prior to reaching Harbor Island, the Grand River widens to about 3000 feet in width and includes many marshy relatively undisturbed islands. As the river approaches Harbor Island the river narrows to approximately 500 feet.



The island itself and its configuration are greatly influenced by the water levels on Lake Michigan and the Grand River. Seasonal fluctuations are common and cyclical fluctuations of up to four feet are not unusual. As a result of these fluctuations, the shape and character of the shallow marshlands will vary. The interior lagoon or "boom" on the island is now mainly open water. However, as little as ten years ago, the "boom" was nearly completely vegetated with marsh species.

Flooding is also a concern on many parts of the island. The Federal Emergency Management Administration has predicted that much of the island will be submerged in the event of a 100-year flood.

Water Quality

Water quality as reported by the MDNR for the Harbor Island area is generally rated as good. It has been determined to be fit for "partial body contact" and various agencies have reported that conditions have improved quite drastically since river communities and industries have begun efforts to comply with water quality discharge standards. However, water quality in the area is still not considered acceptable for beaches or direct river swimming.

Soils

Most of the study area consists of the remnants of low areas or wetlands that have been artificially filled and smoothed. Some filled areas may have non-soil materials included with the fill as a result of use as a city dump. Non-filled soils of the study area are comprised of sands and clay deposited within a glacial lake bed. The Army Corps of Engineers diked disposal area includes dredged river bottom material. This material includes some pollutants derived from untreated or partially treated domestic and industrial wastes.

Vegetation

Vegetative communities on Harbor Island will change in response to the wetness or dryness at the site. Three major zones of vegetation have been inventoried. These are emergent, and submergent vegetation, and upland-wooded. Typical species within these zones are listed in Figure 2.

Emergent vegetation, particularly cattails, are the most photosynthetically productive group of macrophytes. Numerous beds of cattail are found in the Harbor Island wetlands, and the plant's long narrow leaves provide a large surface area for photosynthetic activity. Emergent vegetation is not consumed directly by most organisms because its high fiber content renders it difficult to digest and slow to decompose. However, seeds are consumed by waterfowl, and the vegetation does provide excellent cover for waterfowl, fish, and other organisms.

Figure 2
Typical Plant Species
Harbor Island

Pickeral weed	<u>Pontederia cordata</u>
Hybrid cattail	<u>Typha glauca</u>
Arrowhead	<u>Sagittaria latifolia</u>
Purple loose strife	<u>Lythrum salicaria</u>
Eastern cottonwood	<u>Populus deltoides</u>
Willows	<u>Salix spp</u>
Red ash	<u>Fraxinus pennsylvanica</u>
Red dogwood	<u>Cornus stolonifera</u>
Wild grape	<u>Vitis spp</u>
Gray dogwood	<u>Cornus racemosa</u>

The productivity of submergent vegetation is highly variable, depending on local environmental conditions. Both provide prime habitat for macroinvertebrates. Floating-leaved plants are restricted to quiet, protected areas (such as the north-eastern corner of the "boom" and the Old Kent Pond. Submergent and floating leaved vegetation is important habitat for macroinvertebrates, which are a major food source for fish. Waterfowl also ingest macroinvertebrates, particularly during their breeding season, to help aid egg yolk formation. Submergent vegetation is also a major direct food source for waterfowl.

Wetlands within the Harbor Island area produce detritus, which is a form of decayed organic matter. The material consists primarily of dead vegetative materials which are extensively colonized by bacteria and fungi. Detritus serves as the primary base for the food chain in wetlands, and numerous macroinvertebrates rely completely on it as their food source. In turn, macroinvertebrates are an important food source to fish, amphibians, reptiles, birds, and mammals. The diversity of macroinvertebrates is high in wetlands due to the variety of habitat available and large amount of detritus found there. Detritus feeds not only organisms residing in the wetlands but is also transported to nearshore areas of open water where it is utilized by organisms not generally associated with wetlands.

There are no known rare or endangered plant species within the Harbor Island area. However, it is suspected that wild rice Zinzania aquatica is found on the island when water levels are lower than their present condition.

Fish Species

Lake Michigan and the Grand River support a diverse array of fish species which spawn, feed or utilize the Harbor Island areas. Some species migrate through the area as the seasons change and as they enter different periods in their life cycle. Others are found in the area year round. A typical list of species is found in Figure 3 and fish habitat preferences are noted in Figure 4.

Spawning grounds are particularly sensitive areas during the spawning season. However, it should be emphasized that it is difficult to identify any specific spawning or habitat area on Harbor Island because of the transitory nature of the island and fish movement. Fish spawning and habitat areas continually change depending upon seasonal fluctuations and water levels. In addition, fish move to different habitats during different periods of their life cycles for feeding or cover.

Figure 3
Typical Fish Species
Harbor Island

<u>Salmonoids</u>	<u>Non-Salmonoids</u>
Coho Salmon	Yellow Perch
Chinook Salmon	Walleye
Steelhead	Northern Pike
Lake Trout	Bluegill
Brown Trout	Pumpkinseed
	Crappie
<u>Forage Species</u>	Largemouth Bass
Carp	Smallmouth Bass
Redhorse Sucker	Catfish
White Sucker	Sunfish
Dogfish	
Bullhead	

Bulkheading with backfill is one of the most destructive practices on fish productivity. Bulkheading destroys the natural gradient of the lake bottom. Most of Harbor Island is so shallow that small changes in water level may be evident in a ten to fifteen foot area. When bulkheads are constructed and the natural gradient is destroyed, water levels fluctuate a foot or two along a shear bulkhead wall. A portion of the habitat to fish is lost. Research into gabion structures to replace bulkheads has been proposed. Gabions are composed of large rocks and would

Figure 4
Spawning Requirements and Habitat Preferences
of the
Primary Sportsfish of Harbor Island

Species	Timing & Location of Spawning	Feeding & Cover	Year Round (Y) Migratory (M)
<u>Yellow Perch</u>	April-May, after Pike; spawn in shallow water over submerged vegetation and brush	throughout the area, especially channel fringes and marshes	Y
<u>Walleye</u>	April	channels, marsh fringes, open lake	M
<u>Northern Pike</u>	late May-April; sedge meadows (shallow marsh)	protected bays, marshes	Y
<u>Bass</u> Largemouth Smallmouth	mid-May to mid-June; deep cattail marshes	marshes (in reeds & cattails, channel edges)	Y
<u>Panfish</u> Bluegill Pumpkinseed Crappie	late June, after Bass; cattail marsh "shoreline"	throughout area (especially channel fringe & marshes)	Y
<u>Salmonoids</u> Brown Trout Rainbow Trout Chinook Salmon Coho Salmon Steelhead Splake X Lake Trout	(stocked)	channels; spring and fall migrants; Steelhead and Browns more extended periods	M

provide a more gentle transition between the land and water. The resulting habitat would be more favorable to fish than bulkheading.

Dredging is not always harmful to fish. Dredging may provide fish access to interior wetlands and provide for the exchange of nutrients. However, the benefits of the dredging have to be carefully weighed against the environmental costs associated with increased turbidity and loss of habitat. Filling is typically more detrimental in open water areas than in marshes if the sediments are unpolluted. Filling is typically more detrimental because it is most often proposed in shallow, marshy areas which are vegetated and utilized extensively by fish and waterfowl.

Waterfowl and Terrestrial Life

Shallow water feeding waterfowl such as mallards, pintails, and other dabbling ducks are commonly seen in the areas. Other species include a variety of song birds and predatory birds. Black-crowned night herons have also been seen on the island.

The island provides habitat for aquatic mammals, such as muskrat, mink, and weasel. Other urban mammals such as racoon, squirrel, mice, and rats are also common. There are no known rare or endangered species known to be living in the area.

Wildlife users change with the fluctuation of water level. During periods of low water, the red-winged blackbird, short-billed marsh wren, mallard, blue-winged teal, and the muskrat are more common. Dabbling ducks may feed and breed near the remaining open water areas.

During high water levels, wildlife diversity increases. Macroinvertebrates, amphibians, and reptiles may increase in abundance due to the increased availability of their preferred habitat (submergent vegetation in open water areas). They in turn are consumed by birds and some fish species.

PHYSICAL RESOURCES

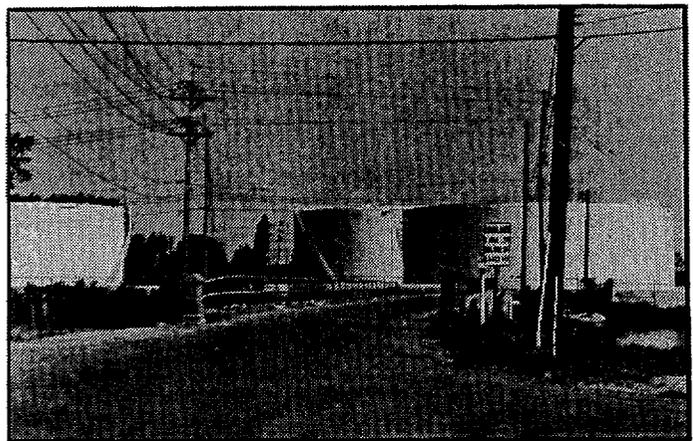
Utilities and Services

Harbor Island currently has very limited utilities which service the area. Water sanitary and electric services have been installed for the power plant but the remainder of the island is limited to electrical service. If more intensive development is proposed, water and sanitary service will have to be installed.

Transportation and Circulation

Access to Harbor Island is limited to US-31 from the north and/or the Third Street bridge from the south. The latter structure is a one-lane bridge with limited load capabilities. The bridge also forces drivers to make a sharp 90° turn on the north side. If more development does occur on the island, this bridge should be considered for replacement and better ingress and egress to U.S. 31 must be considered.

In addition to the Third Street Bridge, improvements must also be made to Coho Drive. This roadway is built on a poor sub-base and the roadway has settled in many areas. Motorists with boat trailers have complained that their vehicles have "bottomed out" on the road and motorists must often drive

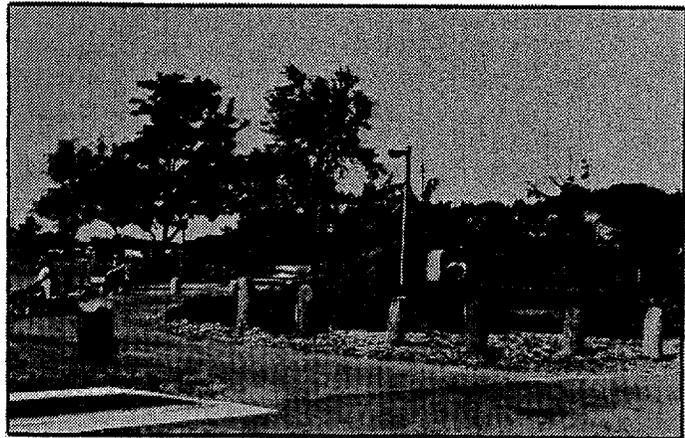


at speeds of less than 10 mph. Portions of the roadway to the west of the oil terminal are currently gravel and will have to be paved.

Finally, ingress and egress to US-31 may pose problems if more intensive development occurs on the island. The intersections and connecting roadways of Grand Isle Drive are currently functioning properly. However, the intersections may pose problems during peak traffic conditions. Map I illustrates existing circulation patterns and concerns.

Recreation

Two major city recreation complexes are currently located on the island. These are the Harbor Island Linear Park and the City Municipal Boat Launching Ramp. The linear park extends along the south perimeter of the power plant and incorporates facilities for fishing, picnicking, bicycle riding, and waterfront interpretation.



The City Boat Ramp includes six boat launching slips, vault toilets, and parking for approximately 100 vehicles and trailers. With the increasing popularity of fishing on Lake Michigan, the ramp has experienced intensive use. During peak weekends, cars are lined up for nearly a half-mile. Complaints have also been registered regarding poor circulation and traffic control near the ramp and difficult launching or loading during rough water conditions.

Existing Regulatory Authority

A variety of federal, state, and local laws apply to the land use and water management of Harbor Island. The most important of these laws pertain to

City Boat Ramp

- At capacity during peak weekends
- Need for 100 more parking spaces
- Need for 6 additional ramps

Linear Park Extension

- Possible bike path
- Possible marsh boardwalk

Entry Zone

- First impression of city
- Elevated view from bridge

Coho Dr./M-31 Intersection

- Controlled north and south access
- Safety
- Visibility

Coho Dr.

- Poor road condition
- Sub-base settling
- Poor drainage

Harborview Linear Park

- Fishing
- Bicycling
- Picnicking

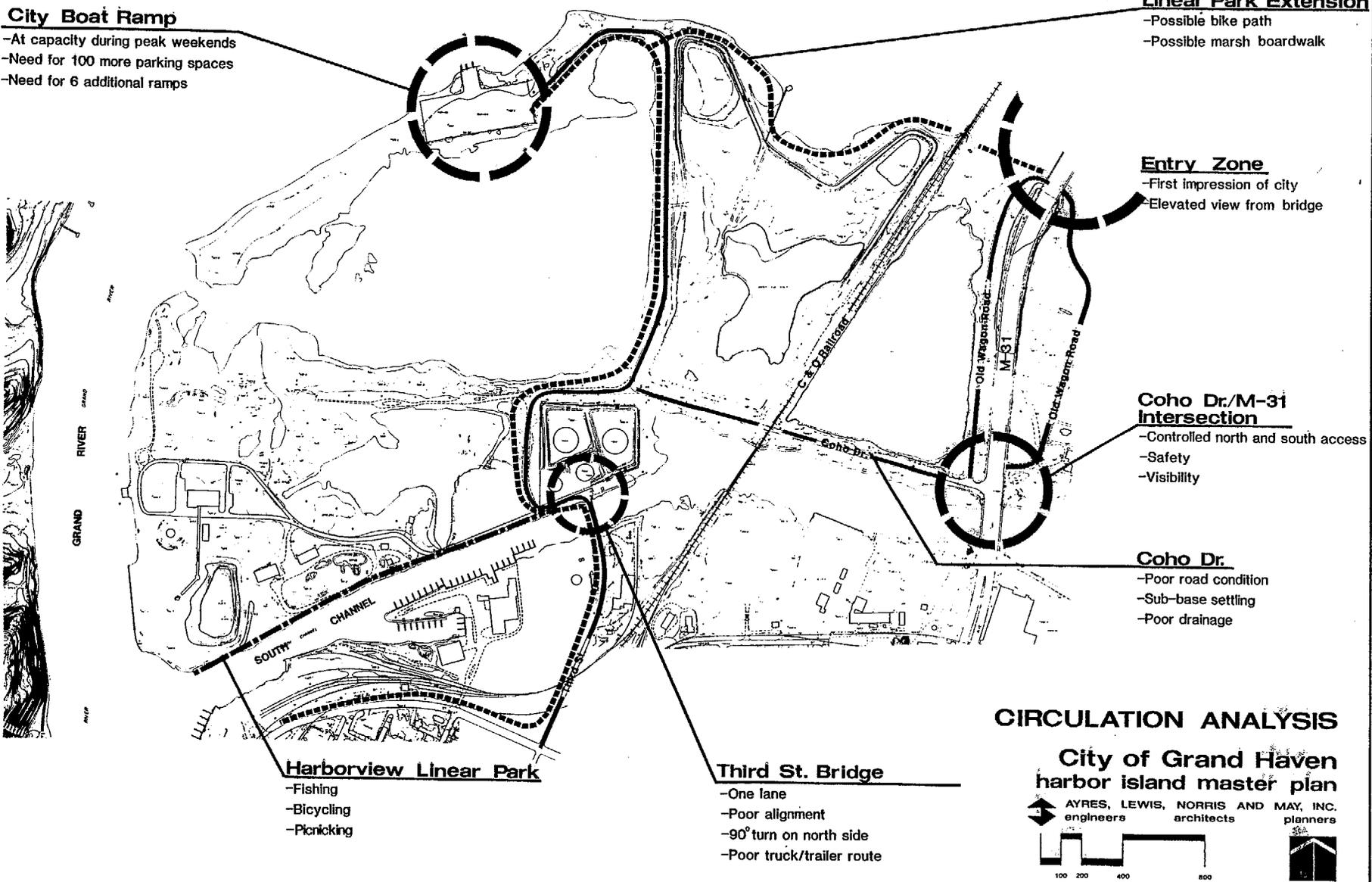
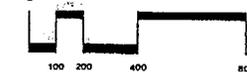
Third St. Bridge

- One lane
- Poor alignment
- 90° turn on north side
- Poor truck/trailer route

CIRCULATION ANALYSIS

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dredge and fill activities and local land use provisions. State regulatory programs are significant to land management of Harbor Island. Three statutes administered by the Department of Natural Resources; the Great Lakes Submerged Lands Act, the Shorelands Protection and Management Act and the Soil Erosion and Sedimentation Control Act are applicable to the island.

The Great Lakes Submerged Lands Act (Act 247, P.A. 1955, as amended) was originally passed to clear title to unpatented Great Lakes' bottomlands filled prior to 1955 and to regulate filling of these bottomlands. The Act has been amended to regulate construction activities on both patented and unpatented bottomlands, convey marina leases, and allow the State to enter into agreements for the use of State-owned bottomlands. A listing of pertinent legislation and controls is listed in Figure 5.

Land Use

Existing land uses within the study area include a mixture of industrial recreational and vacant uses. Primary land owners and their corresponding land use are listed in Figure 6.

Figure 6
City of Grand Haven Harbor Island
Land Ownership and Land Use

Ownership	Use	Approximate Acreage
Grand Haven Board of Power and Light	electric power plant coal yard, fly ash ponds, etc.	23.0
Shell Oil Company	oil storage tanks	6.0
D&M Dock	vacant waterfront	2.0
Pierre Dubois	vacant waterfront	0.5
Old Kent State Bank	vacant wetland	20.0
City of Grand Haven	U.S. Army Corps of Engrs dredge disposal	27.0
City of Grand Haven	boat ramp appox. 100 car/trailer spaces	3.0
City of Grand Haven	"boom" area interior lagoon	40.0
City of Grand Haven	misc. wetlands, roadways and vacant properties	20.0
City of Grand Haven	Harbor Island Linear Park	2.0
Approximate Total Acreage		143.5

Figure 5
Legislation Relating to Harbor Island

Federal	State	Local
<u>Land & Water Management:</u>		
Coastal Zone Management Act, 1972 (16 USC 1452)	Soil Erosion & Sedimentation (Act 347, P.A. 1970)	Grand Haven building codes & zoning ordinances
National Flood Insurance Act, 1974	Shorelands Protection & Management, Flood Risk Areas (Act 245, P.A. 1970)	
Flood Disaster Protection Act	Great Lakes Submerged Lands (Act 247, P.A. 1955, as amended)	
<u>Dredge & Fill:</u>		
River and Harbor Act (1899) - Section 10	Great Lakes Submerged Lands (Act 247, P.A. 1955, as amended)	
Federal Water Pollution Control Act, 1972, PL 92-500 - Section 404		
Fish and Wildlife Coordination Act, 1934 + amendments		
<u>Water Quality - Public Health:</u>		
Federal Water Pollution Control Act, 1972, PL 92-500, Sec. 201	Public Health Code (Act 368, P.A. 1978)	Ottawa County Board of Health & local Appeals Board, County Sanitary Code & Regulations
Municipal WW Treatment Works NPDES Permits (administered by MDNR, Water Quality Division)	Water Resources Commission Act (Act 245, P.A. 1929, amended by Act 118, P.A. 1972)	
<u>Miscellaneous Legislation:</u>		
Federal Refuse Act National Solid Waste Act	Solid Waste Management Act (Act 641, P.A. 1978)	
Endangered Species Act (PL 93-205)	Endangered Species (Act 203, P.A. 1974)	
National Environmental Policy Act 1969, (42 USC 4321-4327)	Michigan Environmental Protection Act (Act 127, P.A. 1970)	
Estuary Protection Act (16 USC 1244; 82 Stat 627)		

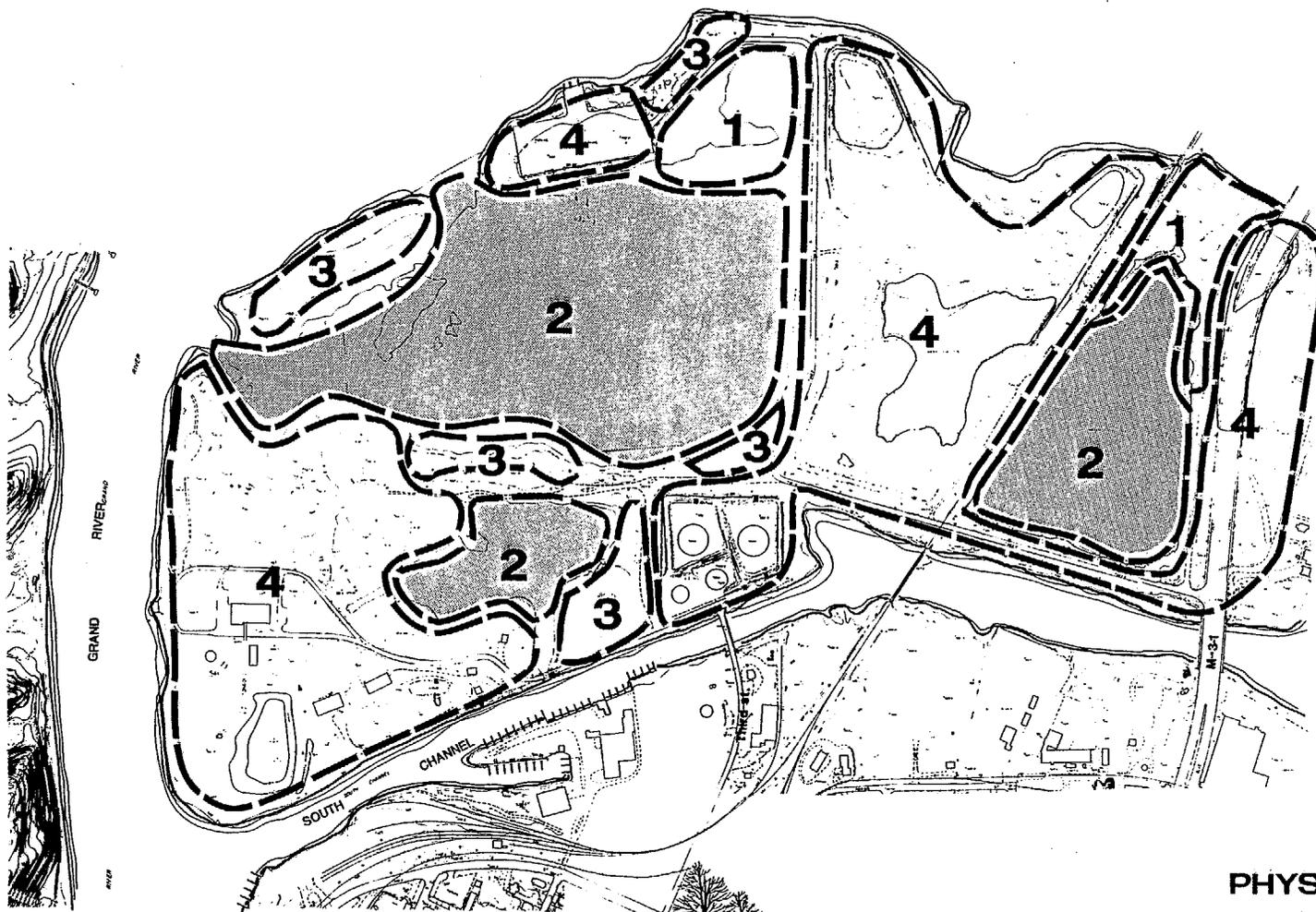
PHYSIOGRAPHIC AND CULTURAL UNITS

The Harbor Island area and the Grand River estuary is a complex and dynamic ecosystem. Many portions of these wetlands are extremely important for the propagation of fish and wildlife while other areas are less sensitive and have been subjected to previous disturbance filling and dredging.

It is the task of this section to classify various segments of Harbor Island into physiographic units which will help identify which portions of the island are more environmentally sensitive than others. Land use recommendations can then be made which will associate compatible land uses with a particular portion of Harbor Island.

The units divide Harbor Island into units of a comprehensible size with unique characteristics and present a basis for the development of the master plan. The area has been broken down into four physiographic units and Map 2 illustrates the various units:

- Unit 1 - Emergent Wetland: These areas are wet during much of the year and are colonized by cattails, arrowhead and associated species. Water depth varies from ground level to two feet deep. Biologically, it is one of the most productive zones on the island.
- Unit 2 - Submergent Wetland: These areas include wet interior, lagoons, ponds, and marshes. Water levels rarely exceed four feet and are colonized by floating leaved or deep submergent vegetation. These areas provide habitat for fish, waterfowl and macroinvertebrates.
- Unit 3 - Upland Wooded: These areas include relatively dry grasses, shrubs, and hardwoods. These areas are less sensitive to development pressures.
- Unit 4 - Man-Altered: These areas have been disturbed, dredged or filled and have been drastically modified by man. Of all areas on the island, they are most capable of supporting intensive development.



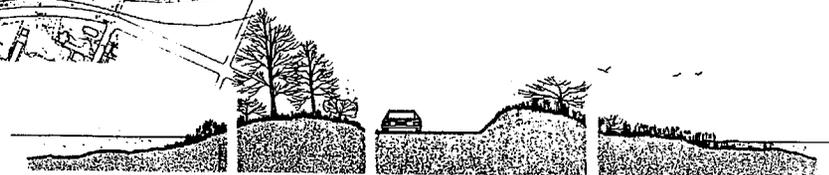
Legend

- 1** Emergent Wetland
- 2** Submergent Wetland
- 3** Upland-Wooded
- 4** Man Altered

PHYSIOGRAPHIC UNITS

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harbor island master plan**

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2 submergent wetland **3** upland-wooded **4** man altered **1** emergent wetland

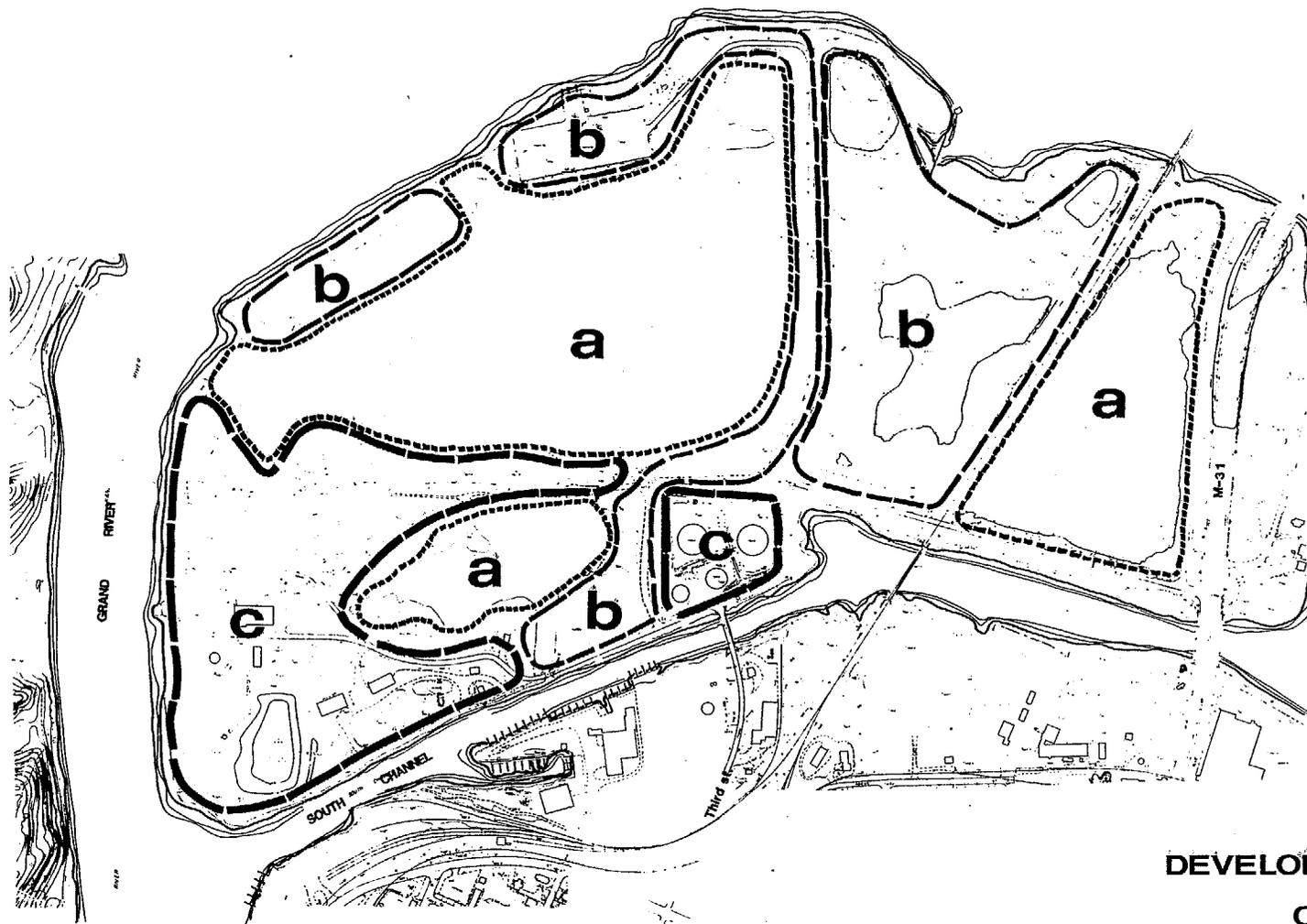
Typical Landform Cross-section



DEVELOPMENT CAPABILITY

Based upon the physiographic units developed in the previous section, a development capability map is presented on Map 3. This map summarizes the areas where future development can successfully occur as well as areas which will be most sensitive to future development. Three general classifications are established. These are:

- a) Limited Development Capability - high water levels, flood hazard and important wildlife areas. These areas include the "boom", fly ash ponds, and the Kent Pond.
- b) Moderate Development Capability - transitional water level areas, unconsolidated soils and upland vegetation. These areas include the dredge disposal area, boat ramp and other filled areas.
- c) Suitable Development Capability - previously altered upland and fill areas. These include the Sims Power Plant area and the oil terminal complex.



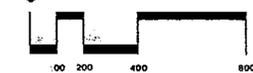
Legend

- a** Limited Development Capability
-High water levels, flood hazard and important wildlife habitat
- b** Moderate Development Capability
-Transitional water levels, unconsolidated soils and upland vegetation
- c** Suitable Development Capability
-Previously altered upland fill areas

DEVELOPMENT CAPABILITY

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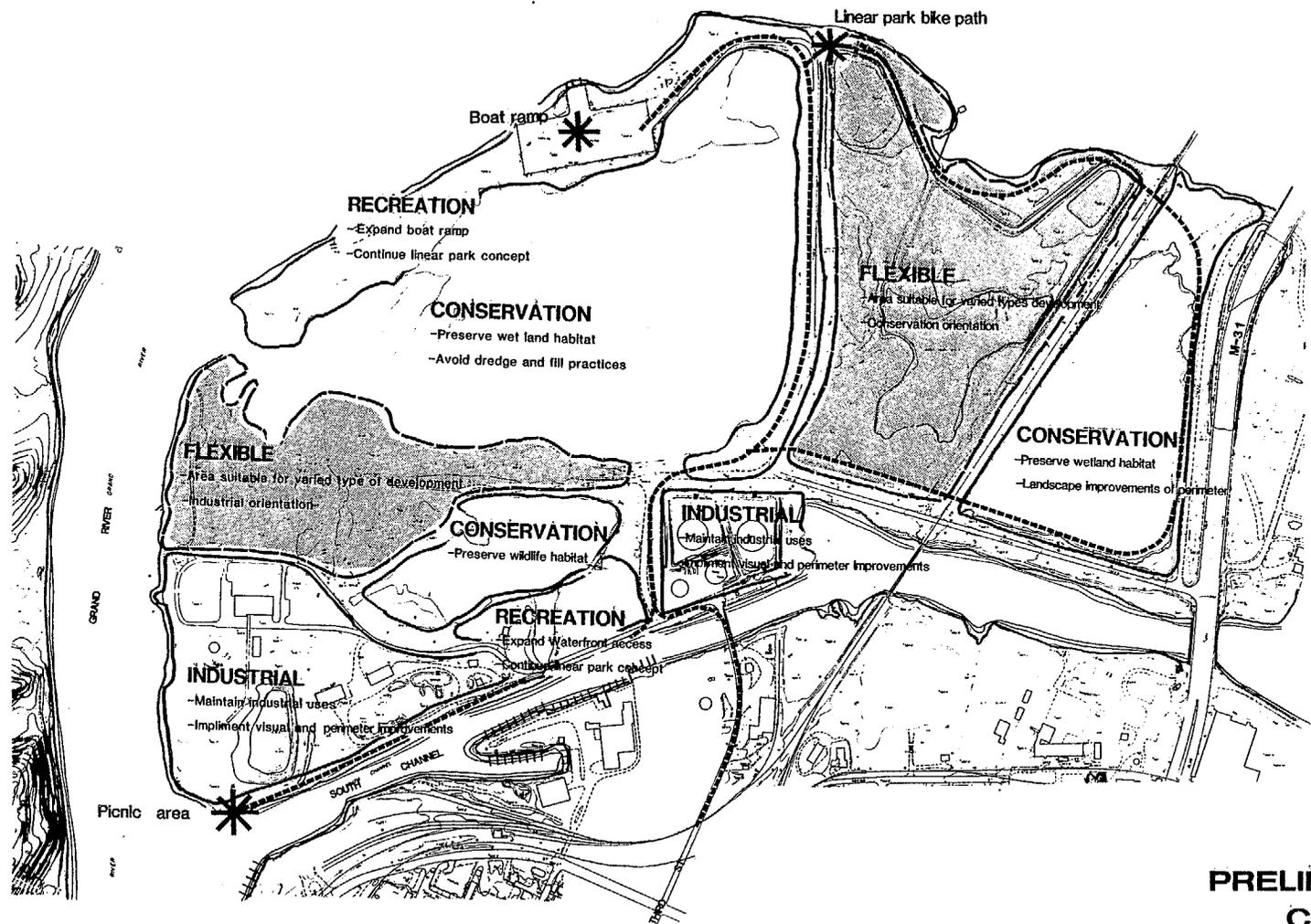
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PRELIMINARY CONCEPT PLAN

This plan outlines broad land use concepts for future development, and was presented at the first public meeting conducted by the Harbor Island Master Plan Committee. The land use concepts are consistent with the analysis conducted under the Physiographic Units (Map 2) as well as the Development Capability (Map 3).

The next chapter of this report will provide greater detail concerning these land use concepts and will devise a specific master plan for Harbor Island.



PRELIMINARY CONCEPT
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Harbor Island Master Plan

HARBOR ISLAND MASTER PLAN

The Harbor Island Master Plan is designed to provide direction for the future development of this important island resource. The recommended plan consists of three elements: Harbor Island Master Plan, Description of Plan Components, and Implementation Program.

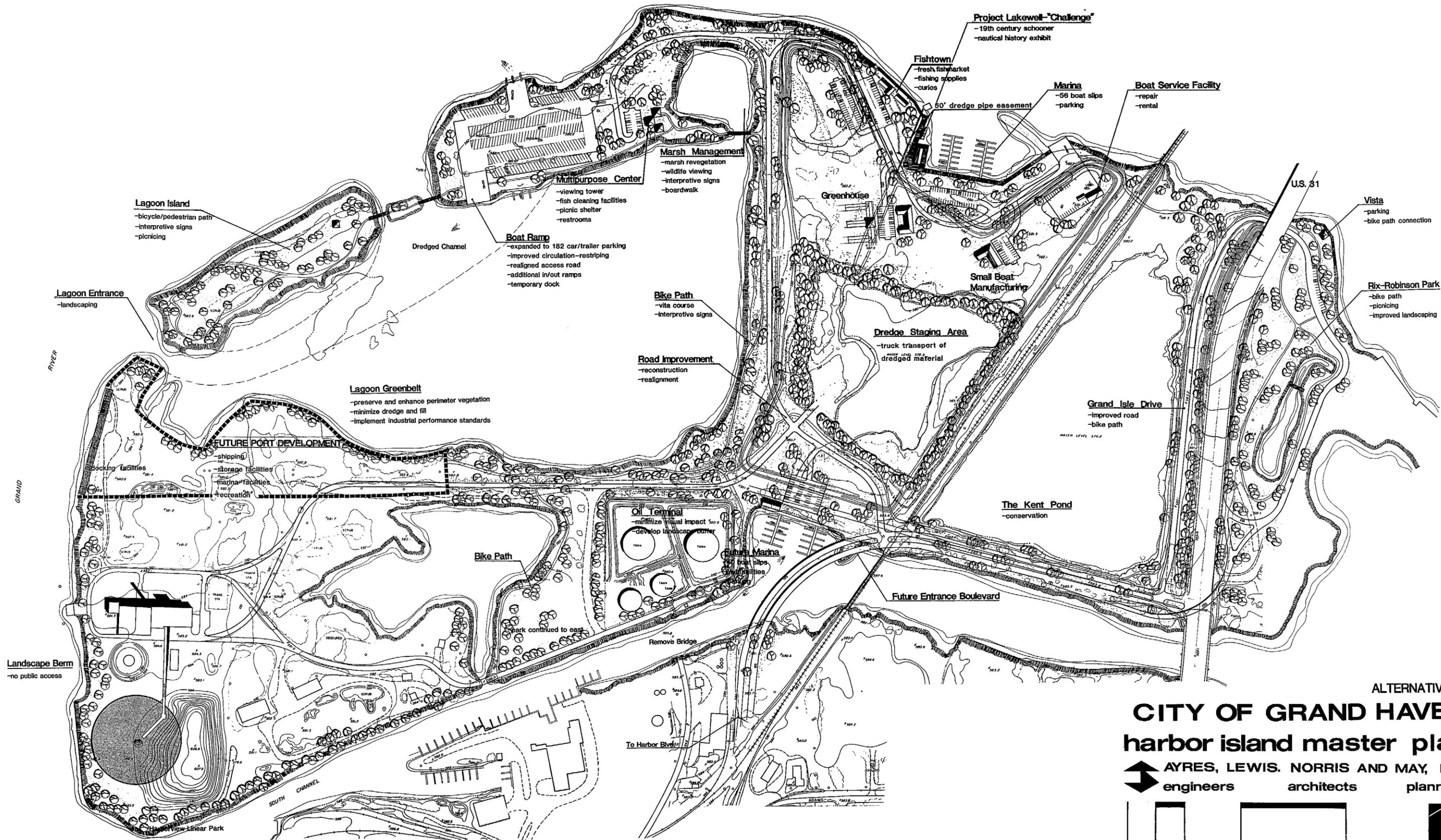
HARBOR ISLAND MASTER PLAN

The Harbor Island Master Plan presents the overall design and land use components for the island. The Plan is intended to be used as a tool to guide future development and to assist decision makers regarding future management. It is a flexible plan that promotes future land use and design concepts while allowing for variation in design detail.

The Plan is the result of three public meetings and numerous work sessions held by the Harbor Island Master Plan Committee. Four preliminary designs were developed prior to the acceptance of this master plan.

The Master Plan shown on the following pages, incorporates two development alternatives (Alternative 1 and Alternative 2). The two alternatives are the result of unknown factors which will influence the future development on the island. These unknown factors include:

- a) Status of river dredging and future plans by the Army Corps of Engineers for dredge disposal;
- b) The future use of present turning basin is unknown. It is possible that a new turning basin will be constructed downriver. If this occurs, the northern waterfront of Harbor Island can be used for other purposes;



Lagoon Island
 -bicycle/pedestrian path
 -interpretive signs
 -picnicing

Lagoon Entrance
 -landscaping

Lagoon Greenbelt
 -preserve and enhance perimeter vegetation
 -minimize dredge and fill
 -implement industrial performance standards

Boat Ramp
 -expanded to 182 car/trailer parking
 -improved circulation-restripping
 -realigned access road
 -additional in/out ramps
 -temporary dock

Marsh Management
 -marsh revegetation
 -wildlife viewing
 -interpretive signs
 -boardwalk

Bike Path
 -vita course
 -interpretive signs

Road Improvement
 -reconstruction
 -realignment

Fishtown
 -fresh fishmarket
 -fishing supplies
 -curios

Project Lakewell "Challenge"
 -19th century schooner
 -nautical history exhibit

Marina
 -56 boat slips
 -parking

Boat Service Facility
 -repair
 -rental

Greenhouse

Small Boat Manufacturing

Dredge Staging Area
 -truck transport of
 dredged material

U.S. 31

Vista
 -parking
 -bike path connection

Rix-Robinson Park
 -bike path
 -picnicing
 -improved landscaping

Grand Isle Drive
 -improved road
 -bike path

The Kent Pond
 -conservation

FUTURE PORT DEVELOPMENT

Oil Terminal
 -minimize visual impact
 -develop landscaping

Future Marina

Future Entrance Boulevard

Remove Bridge

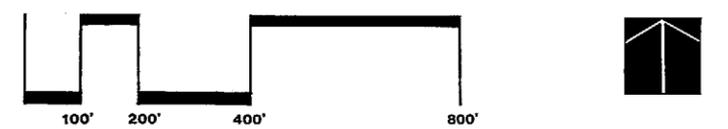
To Harbor Blvd

Landscape Berm
 -no public access

ALTERNATIVE 2

CITY OF GRAND HAVEN
harbor island master plan

AYRES, LEWIS, NORRIS AND MAY, INC.
 engineers architects planners



- c) The status of the proposed entrance boulevard is unknown. If a new entrance roadway is constructed, it may be possible to remove the present Third Street Bridge and open the South Channel for marina development.

Taken together, Alternatives 1 and 2 present the master plan for Harbor Island. They vary only in the future use of the dredge disposal area, turning basin, and South channel. All other components are the same. A detailed description of these components is presented in the following section.

DESCRIPTION OF THE PLAN COMPONENTS - ALTERNATIVE NO. 1

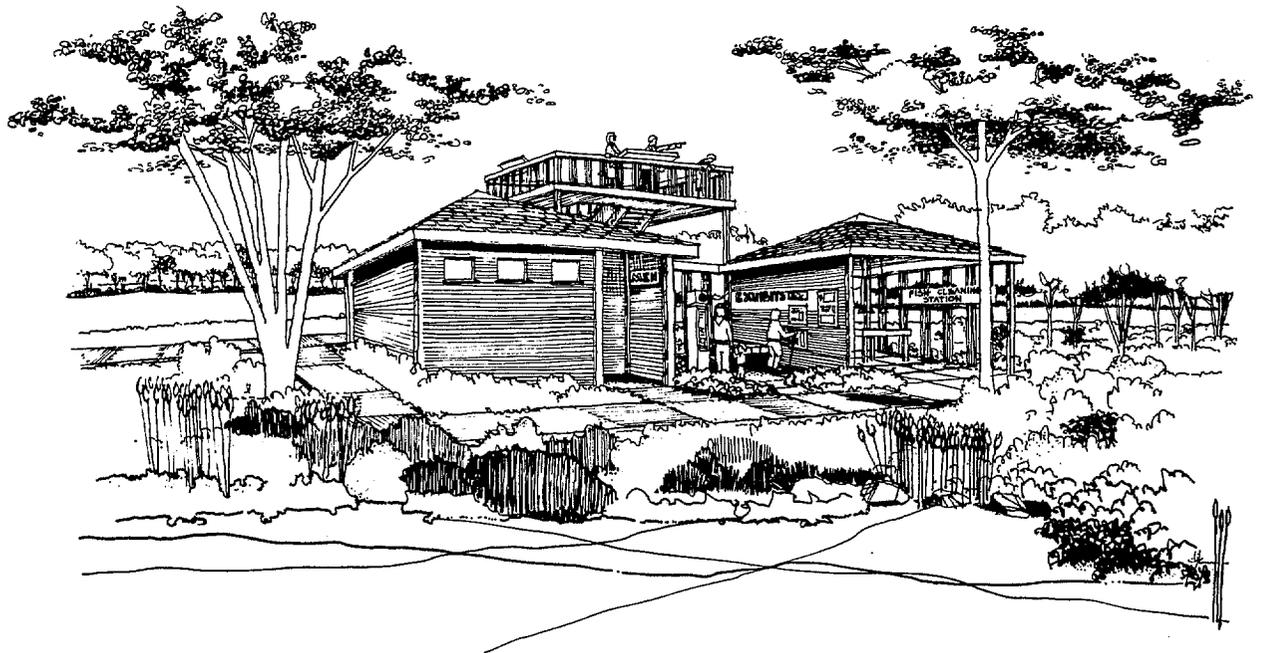
The land use and design components for each study area will be examined in detail.

Boat Ramp

The City's existing boat ramp accommodates approximately 100 vehicles and trailers and provides 6 ramp spaces. The popularity of boating and fishing within the area now dictates that this boat ramp be expanded. The Master Plan calls for an additional 100 spaces for car and trailer parking plus an additional 6 ramps. The new ramps are proposed on the lagoon or "boom" side in order to avoid the rough water conditions currently being experienced on the Grand River. The location of these ramps will require some additional dredging of the lagoon area. In addition to the new parking areas and new ramps, 6 temporary boat docks are proposed so that boaters may temporarily tie-up while parking their vehicles.

Marsh Management

To the east of the Multi-Purpose Center, the Master Plan calls for a Marsh Management Area where efforts are proposed to revegetate the northern portions of the lagoon with marsh plants. Representative marsh species such as cattails, arrowhead, wild rice, etc., can be grown in this area. The marsh will incorporate boardwalks, interpretive signs, and wooden bridges connecting with the main bicycle path.



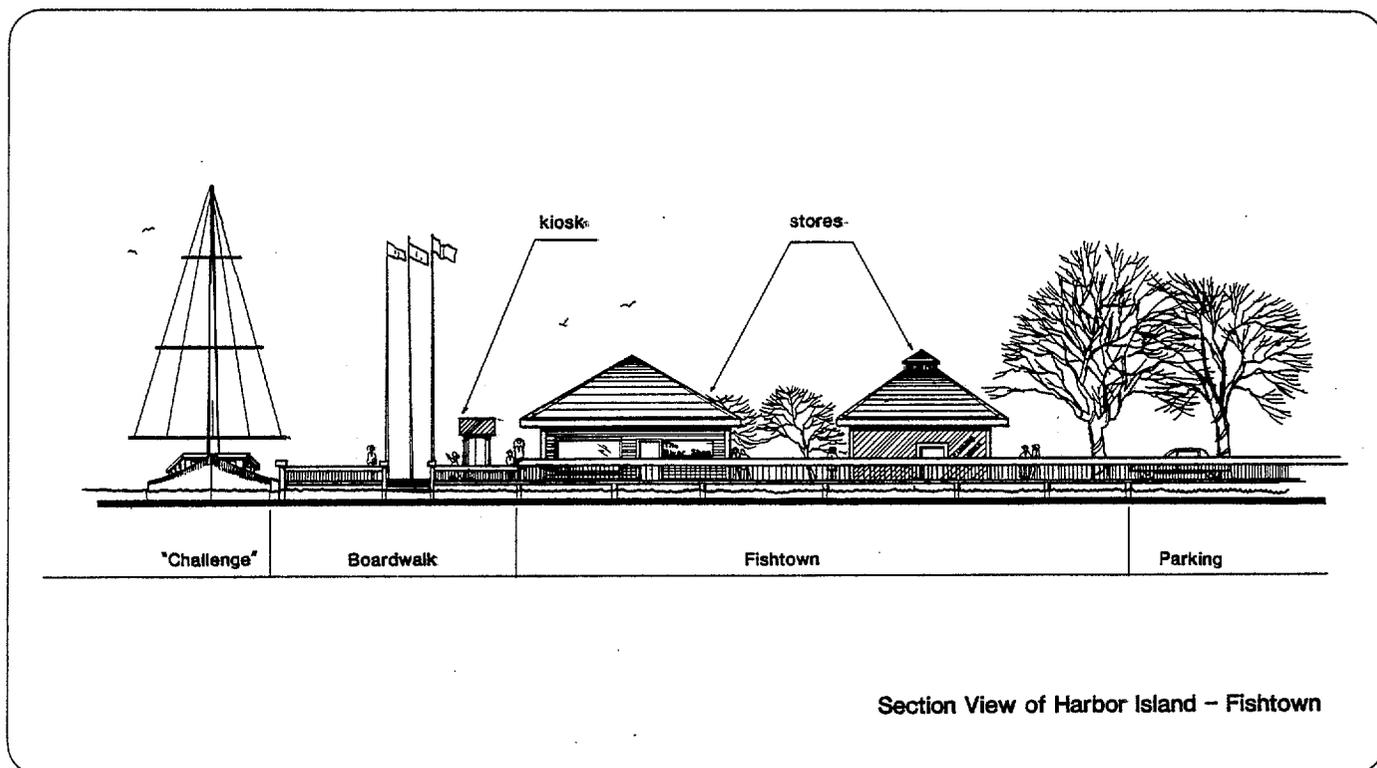
**Harbor Island
Interpretive / Multi-Purpose Center**

Multi-Purpose Center

The Multi-Purpose Center is a new facility which will incorporate restrooms, viewing tower, fish cleaning facilities, exhibits, parking area and boardwalk. The Center will accommodate the needs of the fishermen and boaters using the boat ramp, as well as other members of the public wishing to recreate on Harbor Island. The Multi-Purpose Center will provide a main attraction for bicyclists, joggers, and members of the public who wish to enjoy some of the natural scenery of the island. The Center would also provide exhibits and displays concerning the island's marsh vegetation, wildlife and natural resource systems.

Vista

Two vista areas are proposed within the Master Plan. These areas would provide a wooden structure located on a deck or boardwalk which would afford island users a view of the river area. The structures can repeat a design theme already used at the Harbor Island Linear Park and offer users sitting benches and picnic facilities. The vistas would be connected by a bike path and incorporate parking, landscaping, and signage. The first vista area is located on the north side of the island, northeast of the boat ramp. The second vista area would be located to the east of the U.S. 31 bridge, near Rix Robinson Park.



Section View of Harbor Island - Fishtown

Fish Town

This proposed complex would incorporate a commercial center which would cater to tourists and residents. The commercial complex could include a fresh fish market, fishing supply store, and a curio shop containing art work and artifacts. It is expected that a sufficient market for supplies and goods will be generated by the boaters, fishermen, tourists, and residents.

Project Lakewell - "Challenge"

Upstream of the Fishtown complex, the Master Plan proposes a location for the Project Lakewell - "Challenge". This is a reconstructed 19th Century schooner which would be used for nautical exhibits and outdoor education. Project Lakewell is a privately-funded organization which is attempting to locate a site, as well as funds for development of this project. Members of the Harbor Island Committee feel that this particular site is suitable because of the visibility from U.S. 31, as well as its connection to the proposed Fishtown complex. The "Challenge", Fishtown complex, and the proposed vista can all be linked by a boardwalk. Together, these facilities will provide the necessary attraction for drawing people out to Harbor Island.

Recreation Area

Located on the northern portion of the current dredge disposal area is proposed a recreation complex including a football field, two baseball fields, and parking area. This recreation complex is dependent upon the partial abandonment of the area by the Army Corps of Engineers. The complex could also serve as overflow parking for the boat ramp. On peak weekends when the current boat ramp parking lot is full, vehicles and boat trailers can be parked on a grass field adjacent to this recreation complex.

Dredge Staging Area

The Army Corps of Engineers is considering the option of a dredge staging area. This staging area would replace the current practice of holding all dredge material from the Grand River within the current site. Instead the disposal area would temporarily hold annual maintenance dredging until the dredge material can be trucked out for upland disposal. This concept would allow the City to use approximately one-half the land that is currently being used for the diked, dredged disposal. The Master Plan also calls for permanent landscaped berms to improve the visual appearance of this dredged staging area.

The Kent Pond

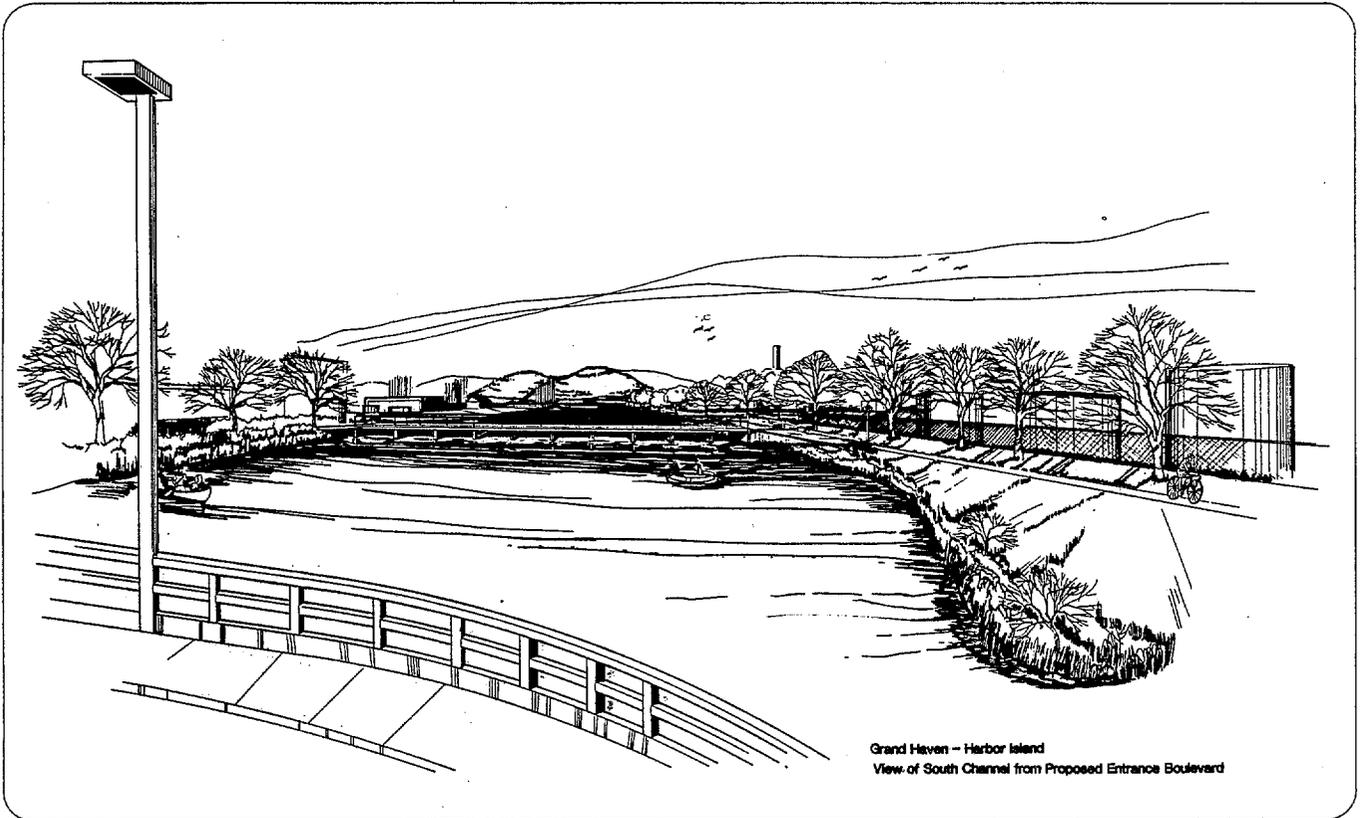
This vacant wetland area incorporates approximately 20 acres and is located to the east of the C&O Railroad. The Master Plan proposes that this area remain as conservation and that no development occur within this area.

Rix Robinson Park

This existing park area is located to the east of U.S. 31 and is a little used park area containing a pond and wooden footbridge. The Master Plan proposes improvement of this park area by including a bike path, picnic area, and landscaping. The park is recognized as bordering on one of the key entry areas for the community. As an entry area, it is intended that the park will improve the first impression that many visitors receive as they enter into the City of Grand Haven.

Future Port Development

This area incorporates approximately 6 acres of land which can be used for either industrial or recreational uses. As an industrial use, the area is planned for port development, shipping, storage facilities, and docking facilities. A portion of the land is currently in private use and is zoned as industrial. The remaining portion of the land is City-owned. If the area does develop as industrial, it is recommended that a greenbelt be installed which would enhance the perimeter vegetation and minimize the visual impact upon adjoining recreational uses. If this area does not develop for port facilities, it is possible that the land can be used for recreation and/or marina uses. The Grand River Sailing Club has expressed an interest in this site as a future complex for marina and boating facilities.



Grand Haven - Harbor Island
View of South Channel from Proposed Entrance Boulevard

Future Entrance Boulevard

The Master Plan proposes a new entrance boulevard which would ultimately connect with Harbor Boulevard and the Grand Haven downtown area. The boulevard will replace Coho Drive and a new bridge is proposed to replace the Third Street Bridge. This new bridge would be located to the west of the C&O Railroad and afford visitors coming into the City an attractive view of the South Channel with its adjoining boat slips and bike path. In order to facilitate traffic movement going out of the City, a new sweep ramp is proposed which would allow northbound traffic to cross over U.S. 31 and then merge with the northbound traffic on 31. A major advantage of this entrance boulevard is the minimization of traffic congestion on Jackson Avenue and a more direct access to U.S. 31. It is anticipated that increased traffic volumes will be generated from the area's existing and proposed facilities. The Grand Haven State Park is the fourth busiest

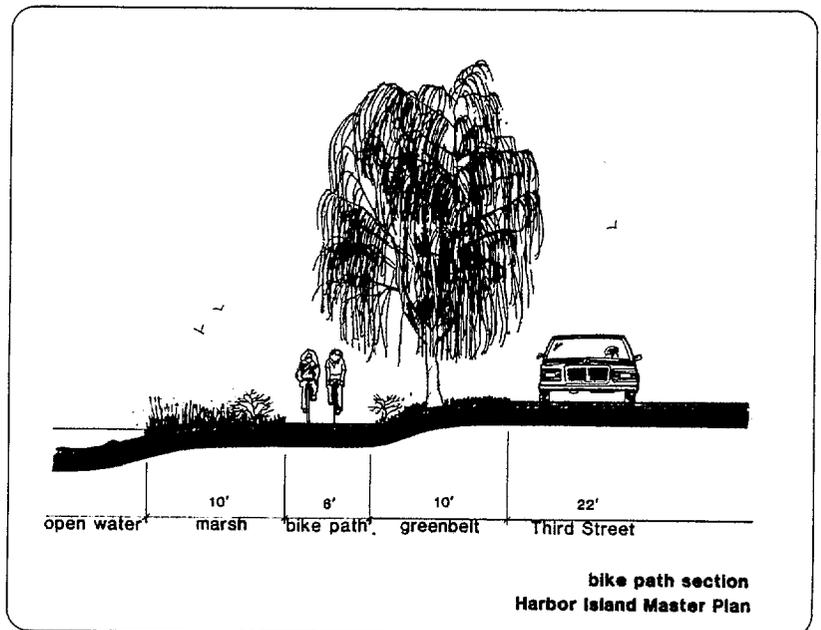
facility in the State Park system. It generates heavy traffic volumes through the City, especially during peak summer periods. Future port development on the island and continued use of the dredge disposal site by the Army Corps of Engineers will also generate additional traffic. Together, these facilities and their associated traffic volumes will necessitate road and bridge improvements for the Harbor Island area.

Oil Terminal

The Master Plan proposes that the existing oil terminal be buffered with landscaping which would minimize the visual impact of this complex. It is also proposed that this area be considered for continued light industrial uses if the oil terminal complex is abandoned or relocated.

Bike Path

A major component of the Harbor Island improvement plan will be the expansion of the linear park concept along the South Channel and the northern areas of the island. Ultimately, this bike path will connect with other bike paths proposed within the City. Portions of the bike path would also serve as a "Vita" course or jogging path. The entire length of the bike path would then be landscaped and/or bermed in areas where visual screening is necessary. A portion of the bike path can also extend around the perimeter of the current flyash lagoon.



Lagoon Island and Power Plant Area

The Lagoon Island is located to the west of the boat ramp and forms the entrance to the "boom." The Master Plan proposes that this island be connected by wooden bridges from the boat ramp area. Bicycle paths are proposed on the island, as well as facilities for picnicking. The entrance channels on either side of the island will have to be dredged to allow for boat access to the "boom" area. The Master Plan also proposes that a berm with vegetation be constructed on the west side of the power plant. The berm will provide a landscape buffer, screen the visual impacts of the coal pile, and help minimize shore erosion.

HARBOR ISLAND MASTER PLAN - ALTERNATIVE NO. 2

As mentioned in previous sections of this report, there are a number of unknown factors which would influence the future development of Harbor Island. The status of the turning basin has yet to be resolved as is the status of the Army Corps of Engineers dredge disposal site and the proposed future entrance boulevard. It is also conceivable that the waste heat from the J.B. Sims power plant can be utilized for boating related or greenhouse uses. Alternative No. 2 provides optional development schemes which can accommodate future development once the above issues are resolved. The optional development alternatives are as follows:

North Marina Complex

This marina is proposed for the existing turning basin located on the northern portion of Harbor Island, if the turning basin is abandoned. The marina can accommodate 56 boat slips, plus parking and satellite services. If the City elects not to build recreation fields as suggested in Alternative No. 1, optional development such as a boat service facility, and a small boat manufacturing facility can be built in the area. It is also possible that a greenhouse complex can be constructed which utilizes waste heat from the J.B. Sims power plant.

South Marina Complex

This marina will be dependent upon construction of a new entrance boulevard and the replacement of the existing Third Street Bridge. If a new bridge is constructed, additional boat slips can be developed on the South Channel. A future marina complex is, therefore, proposed to the east of the oil terminal. This marina can accommodate 40 boat slips and provide facilities for parking, as well as a club facility.

Waste Heat Recovery

The 65 megawatt J.B. Sims electric power plant operated by the Grand Haven Board of Light and Power is one of the most efficient plants in the midwest. Even so, nearly 350 million BTU's each hour is rejected as cooling water into the Grand River.

Since the rejected heat is in the form of low temperature water, standard heat recovery technology is not applicable. However, two technical approaches are available which may prove to be economically viable. The first, and most readily implemented is de-icing for a year round harbor and boat marina. It is possible that this heated water, which is generally 10-15 degrees fahrenheit above the ambient temperature of the Grand River, can be directed to a marina area near Harbor Island. Boats would then be kept in the marina on a year round basis without having to allow for winter take out.

The second approach is a condenser water loop for tenant heat pumps. The heated discharge water from the power plant can be sent to establishments near Harbor Island. The establishments can then use this heated water in conjunction with a heat pump for process heat or building heat. Alternative 2 proposes a greenhouse and boat service buildings which could utilize this waste heat. The utilization of this waste heat will depend upon more detailed studies as well as the availability of an energy user.

IMPLEMENTATION PROGRAM

The Harbor Island Master Plan graphically illustrates improvement and management programs for the island. However, the plan is incomplete without an implementation program to provide the City with a direction toward development and management of Harbor Island. The implementation program consists of project costs and priorities, and funding sources and mechanisms. It is emphasized that the Plan presents a long range program which will require public and private resources and cooperation to fully implement.

Project Costs and Priorities

The full implementation of the Master Plan is projected over a period of 15 years. Figure 7 on the following pages provides a summary of major improvement projects as well as priorities, phasing, funding and projected costs. Project priorities and phasing broken down by high (0-5 years) medium (5-10 years) low (10-15 years). Assignment of priorities is an indication of project importance as well as the potential for implementation within a given time frame. Costs are estimated within a range of categories varying from \$50,000 to over \$500,000.

High priority projects for Harbor Island include: boat ramp improvements, bike paths, dredge staging, landscaping and development of docking facilities. Most of the above items will be grant eligible and it is recommended that the City monitor various grant programs for possible funding. It is also possible for the City to begin low cost improvement measures immediately. Landscaping, clean up, sign construction and designation of the bike paths can be an early effort conducted by City residents and staff.

Figure 7
City of Grand Haven
HARBOR ISLAND MASTER PLAN
IMPLEMENTATION PROGRAM

Improvement	Priority	Phasing	Funding	Projected Cost
Boat Ramp				
82 Add'l Parking Spaces	High	0-5 years	DNR Waterways	2
6 Add'l Boat Ramps	High	0-5 years	DNR Waterways	1
Realigned Access Road	High	0-5 years	DNR Waterways	1
Temporary Dock	High	0-5 years	DNR Waterways	1
Pedestrian/Bicycle Circulation				
Bike Path	High	0-5 years	LAWCON	1
Vita Course	High	0-5 years	LAWCON	1
Interpretive Sign	High	0-5 years	LAWCON	1
Landscaping	High	0-5 years	LAWCON	1
Dredge Staging Area				
Temporary Dredge Holding Pond	High	0-5 years	ACOE	2
Landscaping	High	0-5 years	ACOE	1
Power Plant				
Landscaping	High	0-5 years	Private	1
Berm	High	0-5 years	Private	1
Future Port Development				
Docking Facilities	High	0-5 years	Private-City	2
Oil Terminal				
Landscaping	High	0-5 years	Private	1
Auto Circulation				
Replacement Bridge	High	0-5 years	Critical Bridge Program	4
Entrance Boulevard	High	0-5 years	FAUS	3
Exit/Entrance Ramps	High	0-5 years	FAUS	3
Island Road Improvements	High	0-5 years	City-Gas & Weight Funds	2
Rix Robinson Park				
Bike Path	High	0-5 years	LAWCON	1
Picnicking	Medium	5-10 years	LAWCON	1
Landscaping	High	0-5 years	LAWCON	1
Vista Structure	Medium	5-10 years	LAWCON	1
Parking	Medium	5-10 years	LAWCON	1
Lagoon				
Dredging for Boat Launch	High	0-5 years	City	2
Landscaping	High	0-5 years	City	1
Multipurpose Center				
Restrooms	Medium	5-10 years	DNR Waterways	2
Exhibits	Medium	5-10 years	LAWCON-CZM	1
Viewing Tower	Medium	5-10 years	LAWCON	1
Fish Cleaning Station	Medium	5-10 years	DNR Waterways	1
Marsh Management				
Interpretive Signs	Medium	5-10 years	LAWCON-CZM	1
Boardwalk	Medium	5-10 years	LAWCON-CZM	1
Project "Lakewell"				
19th Century Schooner	Medium	5-10 years	Private	—
Boardwalk	Medium	5-10 years	Private-City	2
Exhibits	Medium	5-10 years	Private-City	1

(continued on next page)

Figure 7
City of Grand Haven
HARBOR ISLAND MASTER PLAN
IMPLEMENTATION PROGRAM
(continued)

Improvement	Priority	Phasing	Funding	Projected Cost
Recreation Area				
Football Fields	Low	10-15 years	LAWCON	1
Baseball Fields	Low	10-15 years	LAWCON	1
Lagoon Island/Entrance				
Bicycle/Pedestrian Path	Low	10-15 years	LAWCON	1
Interpretive Signs	Low	10-15 years	LAWCON-CZM	1
Picnic Shelter/Tables	Low	10-15 years	LAWCON	1
Landscaping	Low	10-15 years	LAWCON	1
Bridges	Low	10-15 years	LAWCON	1
Fishtown				
Fresh Fishmarket	Low	10-15 years	Private/UDAG	2
Fishing Supply Shop	Low	10-15 years	Private/UDAG	2
Tourist Curios	Low	10-15 years	Private/UDAG	2
Landscaping	Low	10-15 years	Private-City	1
Boardwalk	Low	10-15 years	Private-City	2
North Marina Option				
56 Boat Slips	Low	10-15 years	Private	2
Boardwalk	Low	10-15 years	Private	1
Harbormaster/Information Bldg	Low	10-15 years	Private	2
Maintenance	Low	10-15 years	Private	1
Parking	Low	10-15 years	Private	1
South Marina Option				
40 Boat Slips	Low	10-15 years	Private	2
Harbormaster/Information/Club	Low	10-15 years	Private	2
Parking	Low	10-15 years	Private	1
Maintenance	Low	10-15 years	Private	1
Greenhouse				
Parking	Low	10-15 years	Private	1
Greenhouse Structure	Low	10-15 years	Private	2
Waste Heat Connection	Low	10-15 years	Private	1
Small Boat Manufacturing				
Parking	Low	10-15 years	Private	1
Building	Low	10-15 years	Private	2
Utilities	Low	10-15 years	Private	1
Boat Service Facility				
Parking	Low	10-15 years	Private	1
Building Structure	Low	10-15 years	Private	2
Boat Ramp	Low	10-15 years	Private	1
Utilities	Low	10-15 years	Private	1

Legends:

Funding

LAWCON - MDNR Land and Water Conservation Fund
 CZM - MDNR Coastal Zone Management
 UDAG - Urban Development Action Grant
 FAUS - Federal Aid to Urban Systems
 ACOE - Army Corps of Engineers

Costs (1984)

1 - under \$50,000
 2 - \$50,000 - \$150,000
 3 - \$150,000 - \$500,000
 4 - \$500,000 and over

Funding Sources and Mechanisms

The costs of implementation will place added importance upon outside grants and assistance programs. A variety of Federal, State, and private grant resources are available for Harbor Island. However, it is likely that local funds will be necessary for a significant portion of the project cost.

While the status of many Federal and State funding programs is unclear, it is likely that some funding for local recreation, public works, and community development will continue to be available. The City with the help of its consultants and staff, should monitor the funding situation and be prepared to act when funds become available. The following grant programs listed in Figure 8 will be important resources for the future development and management of Harbor Island.

The potential availability of grant funds does not eliminate the necessity to finance all or portions of projects with local funds. It is the rule rather than the exception that Federal grants require the local unit of government to fund a portion of the project. Local funding can be raised through the general fund revenue sharing, general obligation bonds, revenue bonds, special millage, tax increment financing and private contributions.

Volunteer efforts should not be overlooked. Concerned citizens can do a number of worthwhile, low-cost improvements within the coastal area. Possible projects include:

- bicycle and or pathway improvements
- signs
- volunteer tree donation and planting programs
- clean up programs
- general landscaping

Figure 8
City of Grand Haven
HARBOR ISLAND MASTER PLAN
POTENTIAL FUNDING SOURCES

Program	Agency	Type of Assistance	Applicable Projects
Land & Water Conservation Fund	National Park Service, MDNR	Project Grants	Recreation facilities, bike paths, landscaping, etc.
Local Waterways Assistance	MDNR Waterways Division	Project Grants	Boat launch, parking, and rest-rooms
Coastal Zone Management Program	NOAA/MDNR	Project Grants	Planning (possible low-cost construction)
Michigan Land Trust Fund	MDNR	Project Grants	Recreation development and/or acquisition
Federal Aid to Urban Systems	MDOT	Project Grants	Roads and bridges
Critical Bridge Program	MDOT	Project Grants	Bridges
Wells Fargo Fitness Program	Wells Fargo Bank	Project Grants	Bike path, vita course
Economic Development Grants & Loans	Economic Development Administration	Grants & Loans	Public works, economic development
Community Development Block Grant	HUD, Mich. Dept. of Commerce	Grants & Loans	Public works, economic development
Urban Development Action Grant	HUD	Grants & Loans	Commercial, or port development
Coastal Assistance Projects	U.S. Army Corps of Engineers	Project Grants/ Technical Assistance	Miscellaneous waterfront improvements

Summary

Grand Haven's Harbor Island Master Plan emphasizes the importance of the City's coastal resources. It attempts to determine the best use and maximum opportunity for Harbor Island. It also expands the City's recreational facilities while continuing a program of economic development. It should be noted that this plan does not represent the final planning effort for Harbor Island. The City and residents must continue to evaluate the detailed proposals for future development of the island and make sound judgements regarding the future management of this important resource.

IV

Appendix

VEGETATIONAL SURVEY
HARBOR ISLAND
October 1984

Does not include diked disposal area or submerged aquatic species.

TREES

COMMON NAME	SCIENTIFIC NAME*
Northern White Cedar	<i>Thuja occidentalis</i>
Black Willow	<i>Salix nigra</i>
Weeping Willow	<i>Salix babylonica</i>
Eastern Cottonwood	<i>Populus deltoides</i>
White(silver) Poplar	<i>Populus alba</i>
Black Walnut	<i>Juglans nigra</i>
American Elm	<i>Ulmus americana</i>
Red Mulberry	<i>Morus rubra</i>
Apple	<i>Malus</i> sp. (<i>Johnicus Appleseedum</i>)
Pin Cherry	<i>Prunus pensylvanica</i>
Black Locust	<i>Robinia pseudoacacia</i>
Hoptree (Wafer Ash)	<i>Ptelea trifoliata</i>
Ailanthus	<i>Ailanthus altissima</i>
Sugar Maple	<i>Acer saccharum</i>
Silver Maple	<i>Acer saccharinum</i>
Boxelder	<i>Acer negunda</i>
Ash	<i>Fraxinus</i> sp.
Catalpa	<i>Catalpa</i>

*Scientific names according to C. Frank Brockman

SHRUBS AND VINES

COMMON NAME	SCIENTIFIC NAME*
Sandbar Willow	<i>Salix interior</i>
Willow shrub	<i>Salix</i> sp.
Black Current	<i>Ribes</i> sp.
Red Raspberry	<i>Rubus</i> sp.
Blackberry	<i>Rubus</i> sp.
Rugosa Rose	<i>Rosa rugosa</i>
Wafer Ash**	<i>Ptelea trifoliata</i>
Staghorn Sumac	<i>Rhus typhina</i>
Poison Ivy	<i>Rhus radicans</i>
Woodbine	<i>Parthenocissus quinquefolia</i>
Grape	<i>Vitis</i> sp.
Red-osier Dogwood	<i>Cornus stolonifera</i>
Nightshade	<i>Solanum dulcamara</i>
Buttonbush	<i>Lonicera</i> sp.
High-bush Cranberry	<i>Viburnum trilobum</i>

Common elderberry
Wild Cucumber
Common Burdock

Sambucus canadensis
Echinocystis lobata
Arctium minus

*Scientific names according to Cecil Billington (Shrubs of Michigan)

**Also listed as a tree

FORBS AND GRASSES

COMMON NAME	SCIENTIFIC NAME*
Duckweed	<i>Lemna</i> sp.
Softstem Bulrush	<i>Scirpus valides</i>
Slender Bulrush	<i>S. heterochaetus</i>
Sedges	<i>Carex</i> sp.
Rushes	<i>Juncus</i> sp.
Water Lily	<i>Nymphaea</i> sp.
Bullhead Lily	<i>Nephur lutea</i>
Arrowhead	<i>Sagittaria</i> sp.
Pickeralweed	<i>Pontederia cordata</i>
Cattail	<i>Typha</i> sp.
Burreed	<i>Sparganium</i> sp.
Japanese Knotweed	<i>Polygonum cuspidatum</i>
Smartweed	<i>Polygonum</i> sp.
Reed Grass	<i>Phragmites communis</i>
Horsetail	<i>Equisetum</i> sp.
Blue Flag	<i>Iris versicolor</i>
Slender Blue Flag	<i>Iris prismatica</i>
Yellow Iris	<i>Iris pseudocorus</i>
Jewelweed	<i>Impatiens capensis</i>
Purple Loosestrife	<i>Lythrum salicaria</i>
Sweet Cicely	<i>Ozmorhiza Claytoni</i>
Water Parsnip	<i>Sium suave</i>
Blue Vervain	<i>Verbena hastata</i>
Viper's Bugloss	<i>Echium vulgare</i>
Boneset	<i>Eupatorium perfoliatum</i>
Dogbane (Indian Hemp)	<i>Apocynum androsaemifolium</i>
Evening Primrose	<i>Oenothera biennis</i>
Four-O-Clock	<i>Myrabilis nyctaginea</i>
Bouncing Bet	<i>Saponaria officinalis</i>
Common St. Johnswort	<i>Hypericium perforatum</i>
Yarrow	<i>Achillea millefolium</i>
Heal-all	<i>Prunella vulgaris</i>
Wormwood	<i>Artemesia vulgaris</i>
Teasel	<i>Dipsacus sylvestris</i>
Dock	<i>Rumex</i> spp.
Yellow Sweet Clover	<i>Melilotus officinalis</i>
White Sweet Clover	<i>M. alba</i>
Red Clover	<i>Trifolium pratense</i>
Rabbit's-foot Clover	<i>T. arvense</i>
Storksbill	<i>Erodium circuitarium</i>
Common Cinquefoil	<i>Potentilla simplex</i>

Wild Morning Glory	Convolvulus sepium
Bur-marigolds	Bidens
Willow-herb	Epilobium chirsutum
Hoary Alyssum	Bertoria incana
White Campion	Lychnis alba
Catnip	Nepeta cataria
Black Eyed Susan	Rudbeckia hirta
White Aster	Aster sp.
White Snakeroot	Eupatorium rugosum
Ox-eye Daisy	Chrysanthemum leucanthemum
Spotted Knapweed	Centaurea maculosa
Chicory	Cichorium intybus
Motherwort	Leonurus cardiaca
Wild Snapdragon	Linaria vulgaris
Orange Hawkweed	Hieracium aurantiacum
Common Milkweed	Asclepias syrica
Joe Pye Weed	Eupatorium sp.
Horsemint	Monarda punetata
Goldenrod	Solidago spp.
Thistle	Cirsium spp.
Common Mullein	Verbascum thepsus
Moth Mullein	V. blattaria
Queen Anne's Lace	Daucus carota
Pokeweed	Phytolacoa americana
Field Pepper Grass	Lepidium campestre
Poor Man's Pepper	L. virginicum
Other Grasses	
Shaggy Mane Fungi	Basidium
Other Fungi, Lichens, and Mosses	

*Scientific names according to Peterson and McKenny

COMMENTS:

The plant variety on Harbor Island offers cover, nesting habitat, food and water for diverse populations of waterfowl and shorebirds as well as upland bird and mammal species.

Trees, shrubs and vines form an important part of the flora throughout America. Besides providing essential ground cover and nesting habitat for many wildlife species, the fruits, seeds and foliage of woody plants also furnish a large share of their food.

Forbs and grasses, annuals and perennials, are valuable to ground feeding birds and small mammals. In addition, the plants provide protective cover for many small animals.

Marjorie Hendricks, Oct. 6, 1984

BIRDS OBSERVED ON HARBOR ISLAND AREA

Horned Grebe (spring and fall)
 Pied-billed Grebe (spring, summer, fall)
 Double-crested Cormorant (spring, fall)
 Great Blue Heron (spring, summer, fall)
 Green Heron (spring, summer, fall)
 Little Blue Heron (spring) 1 record.
 Great Egret (spring, summer, fall)
 Black-crowned Night Heron (fall)
 Least Bittern (summer, nest in area).
 Canada Geese (spring, fall)
 Snow Goose (fall) 1 record.
 Mallard nest in area, permanent resident
 Black Duck (spring, fall).
 Gadwall (fall)
 Pintail (spring, fall)
 Green-winged Teal (spring, fall)
 Blue-winged Teal has nested in area (spring, summer, fall).
 Northern Shoveler (spring, fall).
 Wood Duck (spring, summer, fall).
 Redhead (spring, fall).
 Scaup Duck (spring, fall).
 Common Goldeneye (late fall, winter).
 Canvasback (spring, fall, winter).
 Common Goldeneye (Late fall, winter).
 White-winged Scoter (winter)
 Ruddy Duck (spring, late fall, winter)
 Hooded Merganser (spring)
 Common Merganser (spring, late fall, winter).
 Peregrine Falcon (spring, fall).
 Merlin (spring, fall).
 Kestrel (permanent resident).
 King Rail has nested in Rix Robinson Park
 Virginia Rail summer resident
 Sora (summer resident).
 Common Gallinule now called Moorhen (summer resident).
 American Coot (summer resident).
 Killdeer (summer resident).
 Spotted Sandpiper (summer resident nest in area).
 Solitary Sandpiper (spring, fall).
 Greater and Lesser Yellow-legs (spring, fall).
 White-rumped Sandpiper (spring).
 Least Sandpiper (spring, fall).
 Short-billed Dowitcher (spring)
 Stilt Sandpiper (spring, fall).
 Sanderling (spring, fall).
 Glaucous Gull (winter).
 Iceland Gull (winter, 1 record).
 Herring Gull (permanent resident)
 Ring-billed Gull (permanent resident).
 Franklin's Gull (spring)
 Bonaparte's Gull (spring, fall, winter).
 Little Gull (fall)
 Forster's Tern (spring, fall).
 Common Tern (spring, fall).
 Caspian Tern (spring, fall).
 Mourning Dove (permanent resident).

Snowy Owl (winter).
 Belted Kingfisher (spring, summer, fall).
 Tree Swallow (summer).
 Bank Swallow (summer).
 Marsh Wren (summer).
 Gray Catbird (summer resident)
 Brown Thrasher (summer resident).
 Robin (summer resident).
 Golden and Ruby-crowned Kinglet (Spring, fall).
 Cedar Waxwing (summer resident).
 Yellow Warbler (summer resident)
 Warblers 15 different species during spring and fall migration.
 Redwing Blackbird (summer resident)
 Common Grackle (summer resident)
 Cardinal (permanent resident).
 American Goldfinch (permanent resident).
 Dark-eyed Junco (late fall, winter).
 Tree Sparrow (winter).
 Chipping Sparrow (summer resident).
 White-crowned Sparrow (spring, fall).
 White-throated Sparrow (spring, fall).
 Fox Sparrow (spring, fall).
 Lincoln's Sparrow (spring more common in fall).
 Swamp Sparrow (spring, summer, fall).
 Song Sparrow (permanent resident).

The Harbor Island area is an excellent spot to observe migrating birds during spring and fall movements. Because birds use the shoreline of Lake Michigan as one of their main routes, many rare and unusual birds show up in the Harbor Island area. This area serves as a resting and feeding area during migration.

All birds listed have been observed on Harbor Island over a 10 year study. Habitat change from year to year because of fluctuation in water levels, so during low water when cattails return marsh birds return, and will be completely absent during high water.

If I can be of any further help please let me know.

Sincerely,

Jim

James Ponshair

Bird Record Chairman

Grand Rapids Audubon Club, Inc.