W. P.

Department of Natural Resources

HARBOR MANAGEMENT PLAN

ST. MICHAELS, MD.

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ST. MICHAELS HARBOR MANAGEMENT PLAN

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

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CHAPTER I

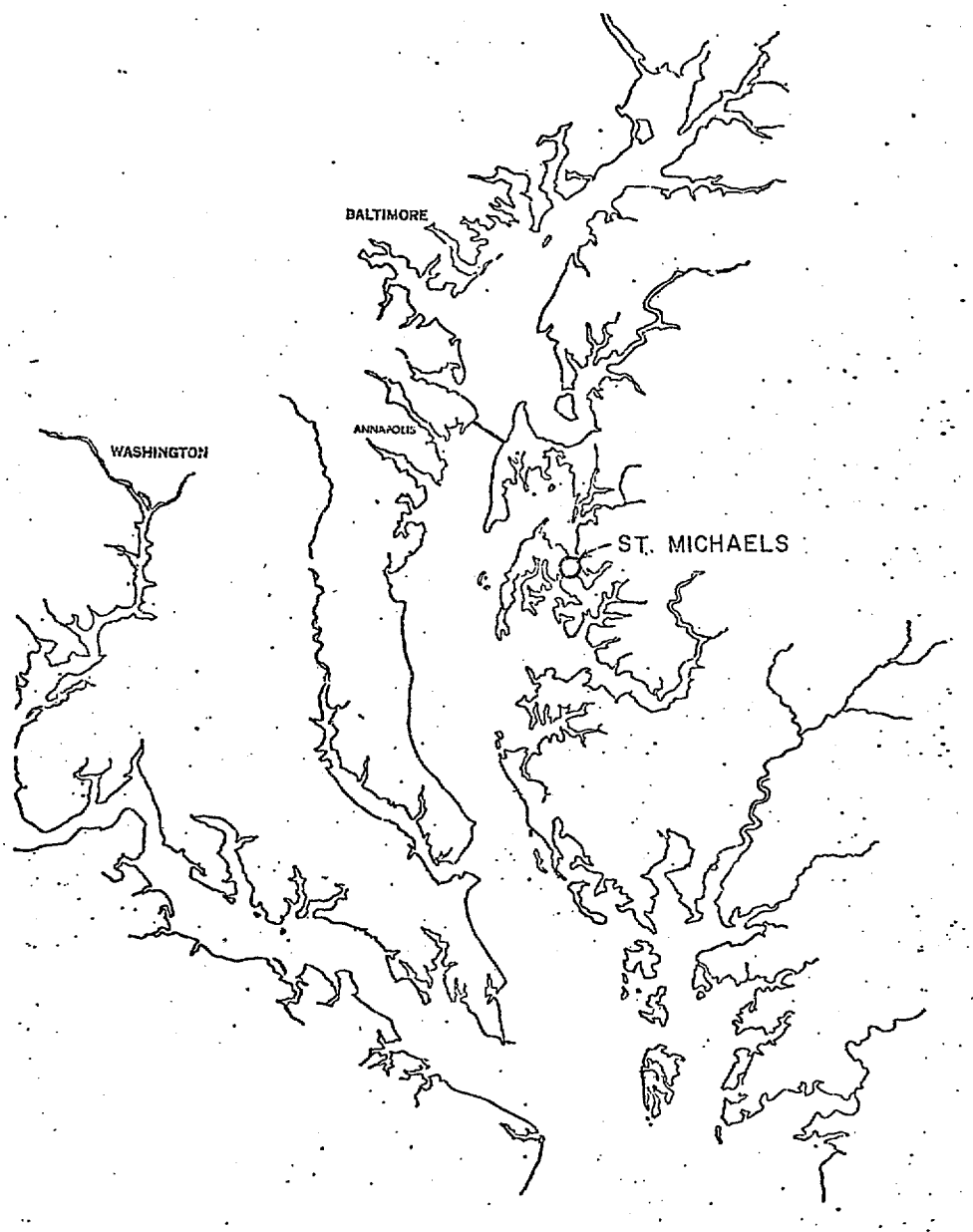
BACKGROUND DATA

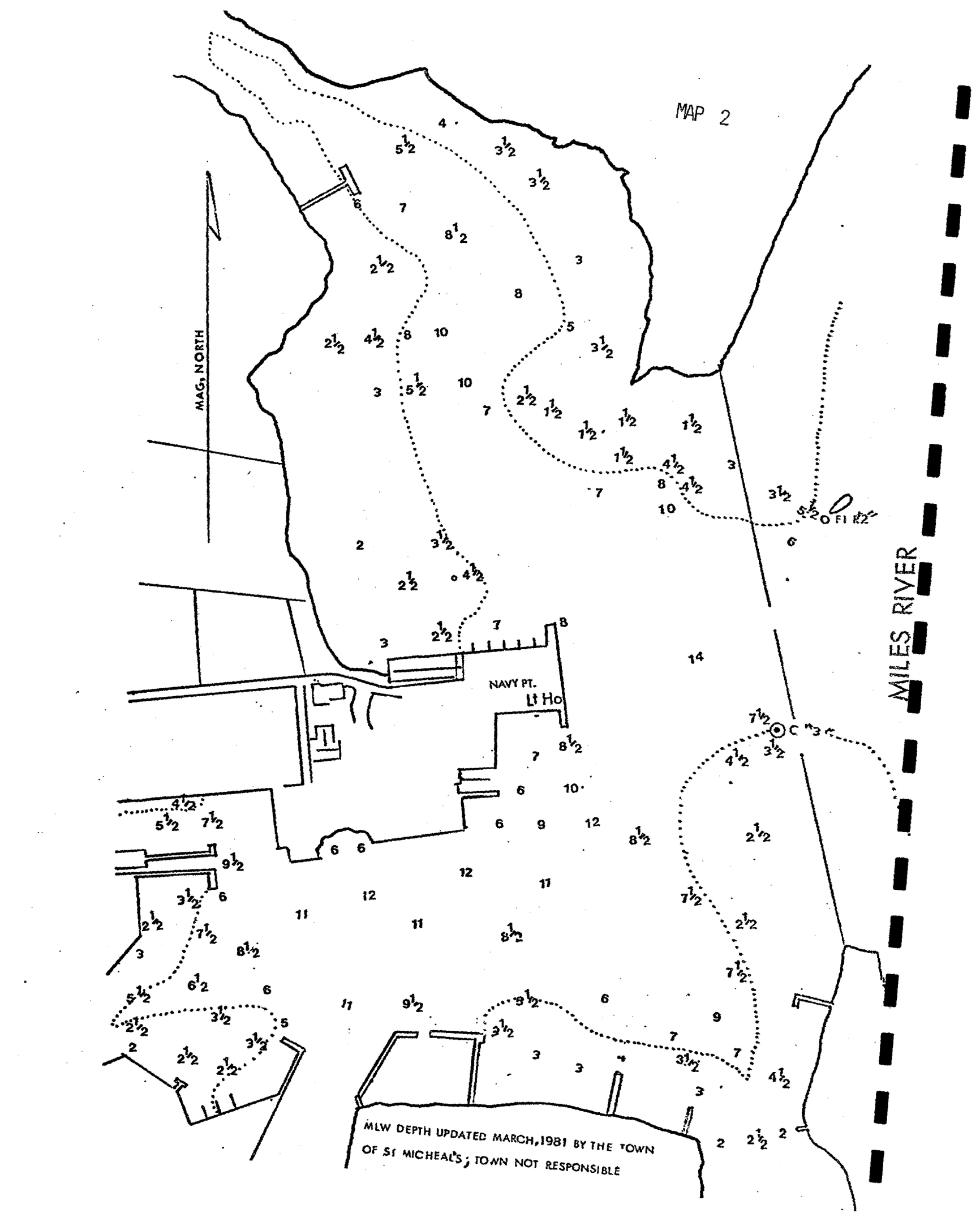
ENVIRONMENTAL CONDITIONS

Regional Setting

The Town of St. Michael's and indeed all of Talbot County, lies wholly within the Atlantic coastal-plain region. The town itself is located on a narrow, irregularly shaped peninsula jutting out into the Chesapeake Bay between the Miles River to the north and Choptank River and its estuaries to the south (See Map # 1). The town has an ideal natural harbor opening on the Miles River, as well as access to the Choptank River via San Domingo Creek on the south side of town. Only 1,500 feet of land in the center of town separate the harbor from San Domingo Creek at the point of maximum proximity.

MAP 1




MAP 2
MAG. NORTH
NAVY PT.
Lt Ho
MILES RIVER
MLW DEPTH UPDATED MARCH, 1981 BY THE TOWN OF St MICHEAL'S; TOWN NOT RESPONSIBLE

Water Depth

During the initial stages of this project the need for a map showing approximate harbor area depths was recognized. In order to acquire such a map the Chairman of the Harbor Management Advisory Committee undertook the task of developing the chart shown as Map # 2 . While this chart is not the result of actual engineering soundings it does give a reliable estimation of the bottom contour in St. Michaels harbor and adjacent areas. The dotted line following the shore is the approximate five foot contour delineating the shoal areas which are discussed later in the text.

Wind and Fetch Characteristics

The prevailing wind typically comes from either the west northwest, northwest, northeast, or from the south. During the winter, spring and fall the winds are usually strongest from these four points, however, during the summer the winds are strongest primarily from the south. Despite the variation in wind intensities, the percent of calm stays relatively the same throughout the year. The data presented here is from the Annapolis Naval Weather Service Station #13752 and is considered indicative of surface winds for the St. Michaels area.

In light of these four criterial wind directions it should be noted that only the northeasterly winds have a sizeable fetch. A fetch is defined as the area in which waves are generated by a wind coming from a particular direction. The northeasterly winds have about a mile and a quarter of open water in which to build waves before the waves reach St. Michaels. If an average gale intensity for the area is identified then estimates of expected wave height can be made. According to historical data an approximated gale intensity for the northeasterly winds would be about 45 miles per hour which in turn would mean the expected wave height

for such a storm would be about 2.5 feet. Storms of greater intensity would bring greater waves, 75 miles per hour winds would likely bring 4 foot waves, and 100 miles per hour winds would likely bring 5 foot waves. These waves are in addition to any accompaning elevation in sea level locally due to storm surges or astronomical tides.

Flooding Hazard*

Hurricanes, prolonged rainstorms, and periods of high surface water runoff from meltimg snow are fairly common occurences in much of Maryland. These natural phenomenon often result in severe flooding of land areas adjacent to streams and rivers. Surface flooding may produce both property damage and personal injury. Avoiding the consequences of periodic flooding requires a concerted effort on the part of all three levels of government (federal, state and local) in flood management.

St. Michaels is located on the Miles River in the Eastern part of Talbot County. With elevations ranging from sea level to 15 feet msl, the community is subject to tidal flooding. As shown on Map # 3, which includes a delineation of the 100 and 500 year floods, the lowest portions of the community area adjacent to the harbor are in the vicinity of Mill and N. Harbor Streets. It should be noted that the western portion of town can receive flooding from tides that are forced up Broad Creek.

If reoccurrence of the flood of record (August 1933) is estimated to a 100 year event it would flood approximately 70 structures and cause estimated $150,000 in damages (July 1979 price levels).

Wetlands

Currently St. Michaels has four primary sites designated as wetlands on the Department of Natural Resources "Wetlands Maps". These sites are legally protected from development because of their importance within the local ecosystem. These marshes are shown on Map # 3. The ability of these areas to filter pollutants from the water column make them especially important around St. Michaels. They also serve

*ARMY CORPS OF ENGINEERS, TIDAL FLOODING STUDY; DRAFT, STAGE 2 REPORT

FIGURE 1

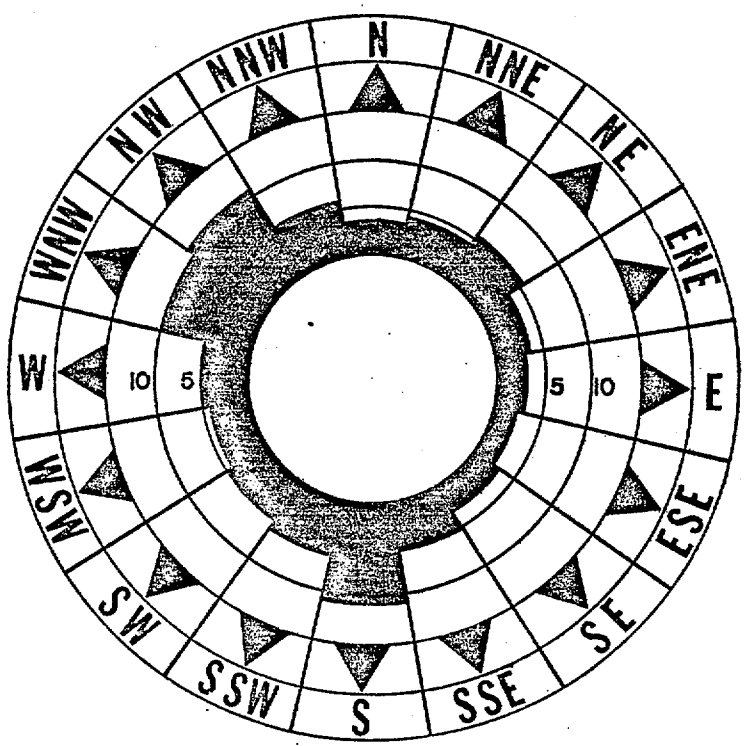
FREQUENCY OF WIND VELOCITIES FOR ANNAPOLIS

(Velocities in Knots/Hour)

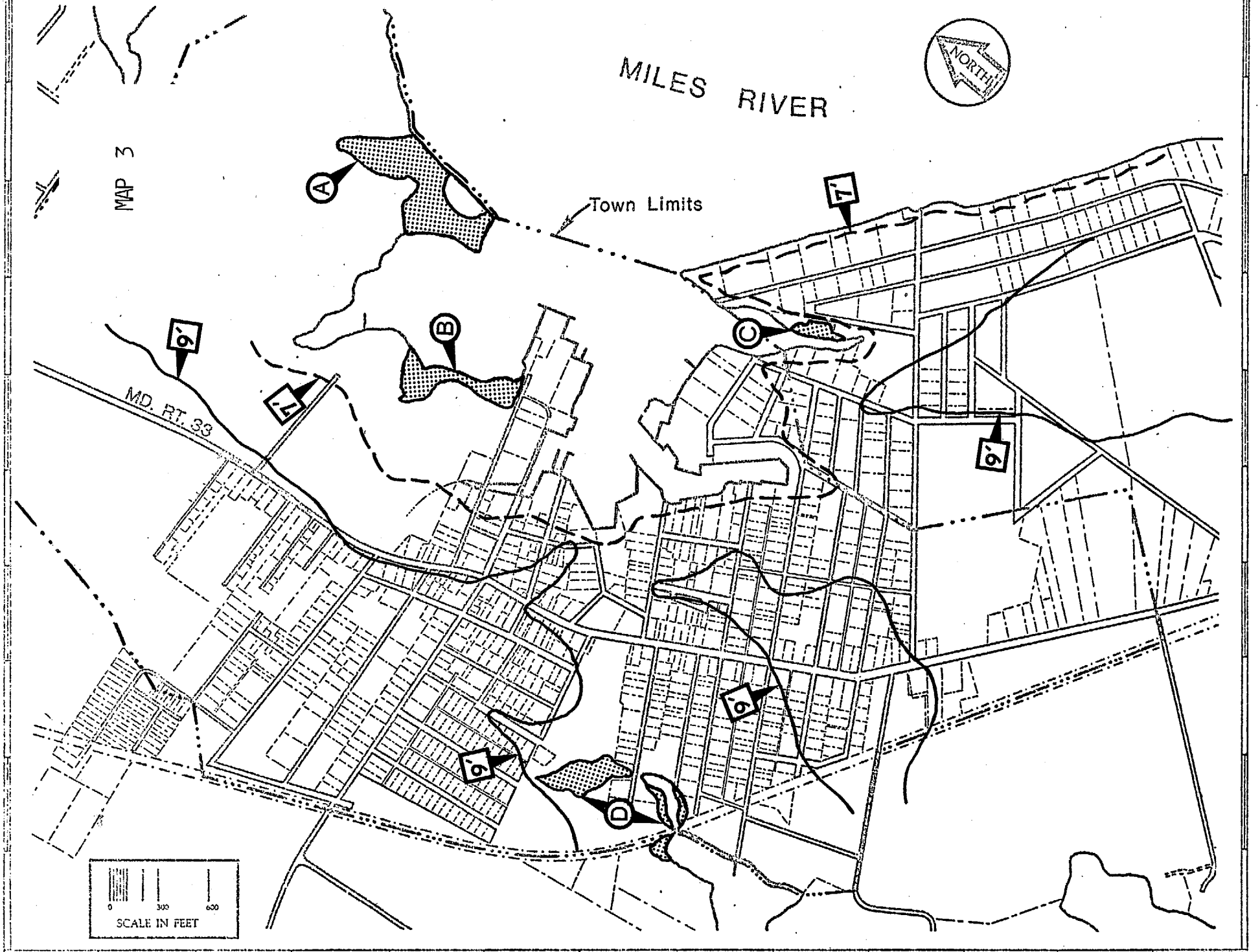
WIND DIRECTION	AVERAGE FOR JAN - APR	AVERAGE FOR MAY - AUG	AVERAGE FOR SEPT - DEC	AVERAGE FOR YEAR
N	4.0	2.5	4.1	3.5
NNE	4.3	3.9	5.2	4.5
NE	5.3	5.5	5.7	5.5
ENE	3.6	3.5	3.4	3.5
E	2.9	3.5	2.8	3.0
ESE	1.7	2.8	2.1	2.2
SE	2.4	4.5	2.6	3.2
SSE	4.3	7.0	4.3	5.1
S	10.1	13.5	10.1	11.2
SSW	4.3	6.1	5.9	5.4
SW	3.6	5.5	5.0	4.7
WSW	3.4	4.7	4.2	4.1
W	4.0	5.2	5.5	4.9
WNW	11.7	9.1	9.5	10.1
NW	13.5	7.4	11.1	10.7
NNW	7.6	2.9	6.3	5.6
% CALM	13.6	12.6	12.4	12.9

ANNUAL WIND DIRECTION
(Percentages)

This chart shows the average annual directions and percentages of surface winds coming from the sixteen points of the compass.



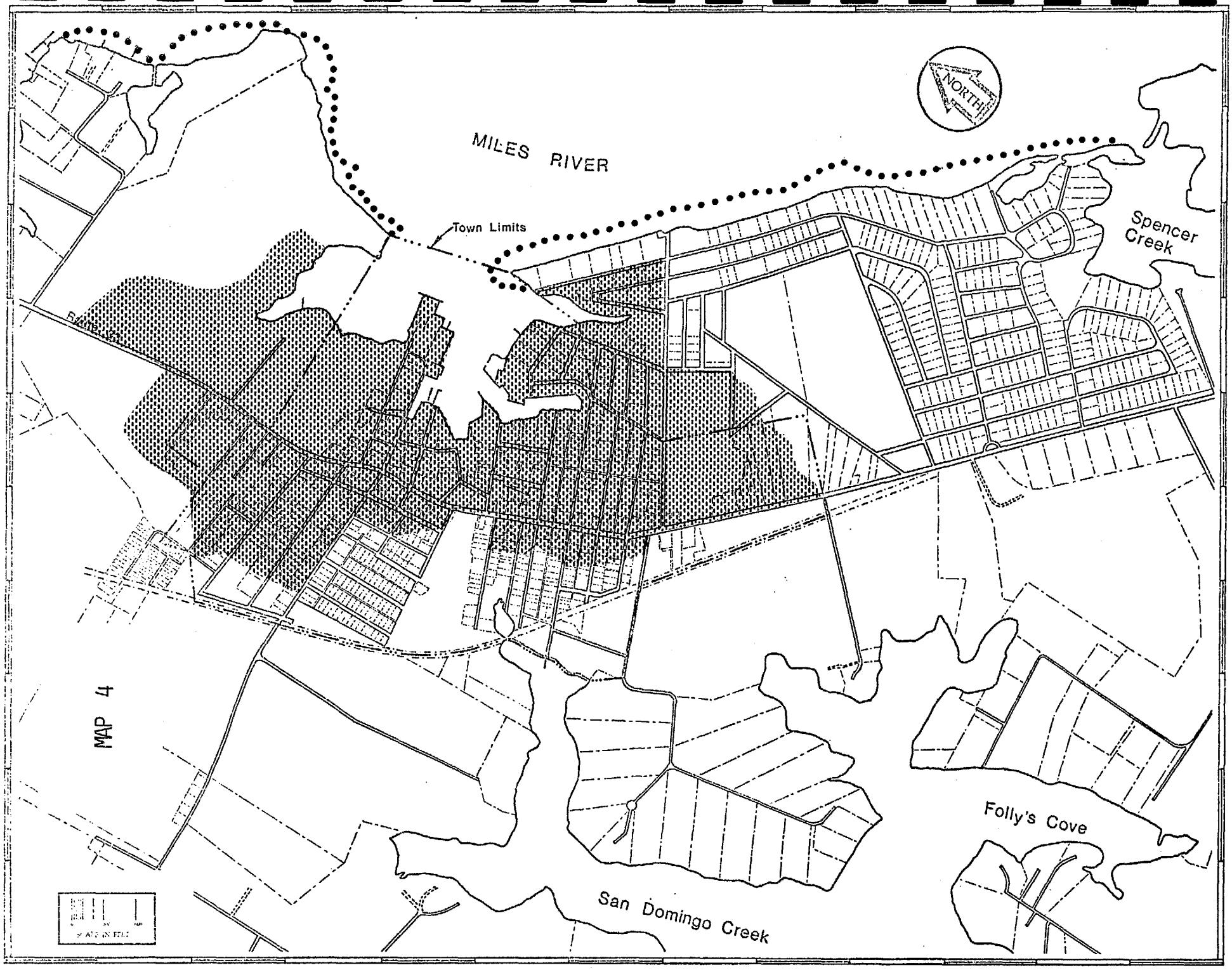
3 S.M.A.R., WBAN Station No. 13752 (Annapolis, MD, NAF), Naval Weather Service Division, National Weather Records Center, Ashville, North Carolina, 1960, p. 1-6.


MILES RIVER
NORTH
MAP 3
Town Limits
MD. RT. 33
A
B
C
D
7'
6'
SCALE IN FEET
0
300
600

as habitat and food source for wild ducks, other birds and associated wildlife.

Water Quality

For many years St. Michaels Harbor was plagued by periodic water quality degradation. The State Health Department carried out studies in the harbor and surrounding area to identify the source. During these studies no individual source was found; rather the synergistic effect of various sources working together seemed to be the problem. The old sewage treatment plant was part of the problem. This plant has since been replaced by a tertiary system which is much more efficient. The other sources of potential water quality degradation were the seafood processing plants that were located on the harbor. The plants have long since moved from the area. In addition to these above mentioned "point sources" additional loading to the waters came from overboard flushing of heads from visiting boaters. This practice is probably still occuring however, it is only noticable during crowded weekend during the summer. It is during these periods that significant water quality degradation occurs. The combination of boating pollution, high water temperature and other pollution sources apparently produce periodic water quality problem usually only lasting a few days and killing only a few hundred fish and crabs. Abatement of this problem will probably be tied to providing sufficient on-shore restroom facilities and sufficient pump-put facilities.


NORTH
MILES RIVER
Town Limits
Spencer Creek
MAP 4
Folly's Cove
San Domingo Creek

Sedimentation

One of the pressing problems in St. Michaels' harbor is the gradual development of shoaling. This is a natural phenomenon that is being accelerated in the harbor area by a stormwater drainage system that flows predominately into those waters. Because the harbor is an area of commercial activity,this shoaling becomes more than an inconvenience as open water anchorage competes with the surface requirements for orderly movement of harbor traffic. (See Map No. 5).

The catchment area for the stormwater drainage flowing into the harbor is shown on Map. No. 4. Due to adjacent topography, the harbor naturally catches runoff from many areas of land, however, due to redirecting of runoff through stormwater drainage the harbor presently receives a much greater amount of runoff than would normally be associated with these waters.

Some of the negative effects of accelerated sedimentation can be best demonstrated through estimated costs of removal and disposal. (See Chapter V B, "Dredging Program"). In the future as additions are made to the existing stormwater drainage system, care should be taken to more equally distribute the runoff into other adjacent water bodies, thus avoiding an increase in the rate of sedimentation in the harbor area.

Erosion

Because the shoreline in and near St. Michaels is almost completely lined with either bulkhead or riprap, the retreat of the shoreline has basically stopped. Before the installation of such shore protection, the rate of erosion for this area was identified as either Slight, (less than 2 feet/year) or Low, (between 2 and 4 feet/year).

Waterfront Land Use

Introduction

The process of conducting a waterfront land use inventory involves an analysis of the various land uses adjacent to the waters edge. The purpose of this analysis is to determine the impact that these associated uses have on the harbor Back Creek area in general as well as the impact that the various uses have on each other. The present residential waterfront land use patterns have developed for the most part as a result of historic growth patterns. Similarly,commercial waterfront in the St. Michaels of today resulted from the conversion of seafood packing houses and boat building establishments into marinas and restaurants or Maritime Museum exhibit areas.

Because land use controls such as zoning will probably determine future growth and development trends this chapter will also include a discussion of present zoning policies for the town owned waterfront. These policy objectives will be examined for their sensitivity to existing needs as well as future needs.

Land Use Inventory

In order to evaluate the interaction between the various land uses on the shoreline,all waterfront parcels were divided into catergories. These divisions are as follows:

A. Residential

B. Semi-public

C. Public

D. Marine Commercial

E. Agricultural/Open Space

The town owned waterfront (harbor area and Back Creek), was measured and divided according to the categories mentioned above. The results are presented below, and are listed both as total feet of waterfront per category, and number of

land parcels per category, as well as the per cent of total waterfront. These measurements are also segregated into harbor waterfront and Back Creek waterfront and then added together to give a total value for the town.

WATERFRONT LAND USE

Land Use Category	Harbor			Back Creek			Total		
	Feet	Parcels	%	Feet	Parcels	%	Feet	Parcels	%
Residential	2500	19	20	780	4	46	3280	23	24
Semi-Public	2100	1	18	N/A	N/A	N/A	2100	1	15
Public	1337	9	10	267	4	8	1604	13	10
Commercial	2600	6	22	800	3	46	3400	9	25
Agricultural & Open Space	3600	2	30	N/A	N/A	N/A	3600	2	26
Total	12,000	37	87.5	1,700	--	12.5	13,700	48	100

Waterfront Land Use - St. Michaels Harbor Cove

Presently there are approximately 13,700 feet of waterfront in St. Michaels. The harbor area, including Fogg Cove and the Perry Cabin Farm waterfront, comprises 87.5% of the total town owned waterfront of this percentage, 12,000 feet of waterfront is divided into residential semi-public, public, commercial and agricultural or open space. The residential waterfront constitutes approximately 2,500 feet or 20% of this area. A similar amount of waterfront is taken up by commercial uses. Additionally semi-public land use, Chesapeake Bay Maritime Museum, comprises 18% while agricultural and open space land use comprises the remaining 30% of the harbor area waterfront.

There are five commercial establishments and one semi-public operation, all of which are surrounded by residential properties. Many of these commercial establishments are located at the end of quiet residential streets. Because the tourists coming to St. Michaels arrive both by land and by water, the location of waterfront commercial establishments at the end of residential neighborhoods requires land based tourist traffic to

travel through these neighborhoods. This activity has a disruptive effect on adjacent residnetial areas. Because of the limited options available, strategies designed to deal with these negative impacts will only be able to minimize, but not solve, this problem.

Publicly owned waterfront totals approximately 1,200 feet of shorefront. This land is spread out between thirteen parcels, some of which is located at the end of various dead-end streets around the harbor. However, there is approximately 760 feet of bulkhead adjacent to West Harbor Road and East Chew Avenue that is used for town slips. There is also another 220 feet of bulkhead adjacent to Church Cove Park.

The great majority of that area presently considered to be agricultural or open space will probably be converted to medium density residential or semi-public waterfront area within the next five years.

Waterfront Land Use - Back Creek

The west side of St. Michaels has access to the Choptank River by use of Domingo Creek. This area has approximately 1,700 feet of waterfront which is divided between residential (46%), commercial (46%) and public (8%) land use types. The residential character on this shoreline is premonimately larger lot parcels with some historically significant homes.

This area was developed commercially many years ago, however, the present commercial uses are located on three parcels which were not included in this early commercial growth. Two of the commercial properties are light industrial in character, while the other commercial parcel is a home occupation. Only the home occupation uses the waterfront in their operation for commercial purposes, and this site is well buffered from adjacent properties.

The publicly owned land adjacent to Back Creek is divided into four parcels which total 120 feet. Only one of those parcels has been improve

This property has a county wharf which is maintained by the town of St. Michaels. This dock is used heavily during the summer months for the docking of watermen's boats, crabbing out of Broad Creek and the Choptank River area. Adjacent residential properties may be impacted during this peak use period, however most of the year there is minimal negative impact.

Existing Zoning on the St. Michaels Waterfront.

Currently all waterfront areas are zoned either Maritime Commercial, Waterfront Commercial, Residential R-1 or Residential R-2.

The residential zones allow as a permitted use "Public and Private Boat Landing Areas". This type of wording may prove to be too vague and consequently may require rewording in order to clarify the objectives of this particular zone.

Commercial zoning on the waterfront is divided between Maritime Commercial or Waterfront Commercial. Maritime Commercial is the zone used for general marina and boat building establishments while the waterfront commercial zone is for restaurant/inn uses.

St. Michaels Waterborne Economy

Introduction

Since its earliest days, St. Michaels has been a waterfront oriented community with the early economy based in ship building and the seafood harvesting industry. Eventually these industries were dominated by the seafood packing industry which ultimately suffered from an insufficient amount of employees and the rising value of waterfront real estate. Early land based tourism had been limited to the operation of the Claiborne ferry during the early part of the 20th Century, however, the visiting boaters have been coming to St. Michaels since its beginning.

Through the years, the recreational boating industry has continued to grow which has provided for the eventual conversion of seafood processing and shipbuilding operations to the marina and boat repair industry. There has also been a continuation in the use of St. Michaels harbor as a homeport for local watermen.

Marinas

Because of the limited size of the St. Michaels harbor there are presently only three small marina/boat yard operations. The Chesapeake Bay Maritime Museum also offers limited marina services to museum members.

There are at present approximately 100 commercial slips in the St. Michaels marinas, approximately 60 slips or moorings at the Chesapeake Bay Maritime Museum, and 10 privately owned waterfront properties which have approximately 47 slips or docks which are often leased.

In addition to slips, the commercial marinas offer fuel docks, dry storage, boat service and repair, ships store, restaurants, and a swimming pool. One of the marinas is presently planning to install a pump-out facility in the near future.

During the last 20 years as the demand for marina facilities and services has continued, the gradual expansion of the marinas has proceeded until at present the limit for expansion channelward may have been reached. Consequently, in the future the town may expect to see efforts by the marina owners to reconfigure. Reconfiguration of slip and pier layout can often provide needed financial savings in this type of labor intensive industry. It will be essential for the town to cooperate with the marina owners with their efforts to improve the efficiency and effectiveness of their operations.

These maritime oriented operations are presently generating approximately $1,000,000 in gross revenue per year in St. Michaels. This gross revenue isthen in turn used to pay for salaries to employees, service charges for utilities, taxes, and maintaining inventories. In order to demonstrate the overall effect of gross revenue on a local economy, the economists often multiply TOTAL GROSS REVENUE by 3 to get an estimation of the amount of business a certain number of dollars will generate in a local economy. Using this formula, the total effect of marina generated business on the local economy, would be about $3,000,000 per year.

The three commercial marinas in St. Michaels presently have an assessed market valuation of $702,300. These operations are producing approximately $3,500 per year in town tax revenues in property tax alone. This tax is in addition to county property tax which is approximately $5,200 per year.

Employment from the marinas and marina owned restaurants is approximately 55 individuals with 72% being full-time employees. This is equal to about 8% of the total number of employees in St. Michaels while the three marina operations equal about 4% of the businesses in St. Michaels.

If all harbor related business employees are taken into account then these are approximately 110 full-time employees and 144 part-time employees. Together these equal 254 employees or 39% of the total number of employeed individuals in St. Michaels. This large percent of town employment is generated from about 10%

of the business establishments in St. Michaels proper. Marine related businesses include Chesapeake Bay Maritime Museum, seafood packing, and restaurant employees.

Commercial Fishing

As was mentioned earlier, St. Michaels was at one time a center for commercial seafood activity. However, due to employment problems and the rising cost of waterfront property as well as other external economic forces St. Michaels has lost its strong economic base in seafood. Despite the diminished importance of seafood harvesting in St. Michaels, there were123,670 bushels of oysters bought in the harbor during the 79/80 season. At $8.00 per bushel, this equaled about $989,360 in gross revenue generated due to oyster buying. In order to demonstrate the full impact of oyster buying to a local economy, the Seafood Marketing Division of Maryland Department of Economic and Community Development multiplies the gross revenue by 5 to get a dollar figure. This figure is considered to estimate the turnover of dollars in a local economy for the purchasing of food, clothing, fuel, etc. For the St. Michaels harbor seafood buyers the gross revenue for the 79/80 season of $989,360 would become slightly less than 5 million dollars for that period. This analysis does not take into account the revenue made from clamming operations or crabbing. There are no State records kept on catches for crabs and clams in local areas, therefore, the effect of this revenue could not be factored in, even though it would also be an important source of local revenue. The total number of employees involved in commercial fishing is difficult to determine. However, according to a recent count in the harbor, there are approximately 20 watermen living in St. Michaels with their boats moored there. There are at present, approximately 10 watermen living in town unable to get permanent slips, consequently keeping their boats elsewhere. In addition to these in-town watermen, there are about 40 out-of-town watermen keeping their boats moored here during the shellfish seasons.

The oyster that is found in the Miles River is a good marketing product, plump and plentiful because of several years of spat set success. From all indication this condition will continue into the future marking a potential for increased shellfish harvesting in the Miles River.

Effect of the harbor on the Central Business District

During a survey of all commercial establishments in St. Michaels in 1979, business owners and managers were asked "What percent of your business comes to you from the water?" Of those businesses that involved walk-in trade, 49% felt that at least 20% of their business activity came to them from the water. Only 17% felt that none of their business came from the water. This is only an indication of the overall importance that waterborne commerce has in St. Michaels but it should be clear that as in its earlier days St. Michaels is still heavily dependent on its harbor for commercial viability.

Transportation

Introduction

Transportation related impacts on the St. Michaels waterfront can be divided into two primary categories, overland and waterborne traffic. Overland traffic is discussed relative to existing roadways, availability of parking, as well as tourist foot traffic and related accessibility. Waterborne traffic is likewise examined according to channels for movement within the harbor, mooring or anchorage areas, and among permanent slip areas.

Vehicular Transportation

With respect to the waterfront, the physical layout of St. Michaels, (its streets and land parcels) are a result of two types of growth. In the northern section of the harbor, Mill Street, Cherry Street, Carpenter Street, Locust and Green Streets, the process used for the design and layout was largely that of an evolution that occurred during the initial settlement of the town. However, the southern section of the Harbor, Mulberry Street, Chestnut Street, and Chew Avenue, was first designed in a manner that was similar to the design criteria used in the British and European planning schools of the day.

This heritage is responsible for much of the St. Michaels' character and charm as well as certain vehicular movement problems. These problems are centered around the streets ending at the waters edge (See Map. No. 5). This type of layout requires unfamiliar traffic to travel to the end of the various dead-end streets before discovering that their desination is inaccessible from that location. Consequently the meandering vehicular traffic through quiet residential neighborhoods has a disruptive effect on the otherwise pleasant character of those areas.

Establishing better signing in such areas for directing tourist traffic would offer an alternative to this type of vehicular traffic problem.

Parking

Existing parking facilities for harbor users are sufficient for certain areas, while for other areas around the harbor, the parking is inadequate and consequently leads to congestion problems in these areas.

The town of St. Michaels has approximately 60 slips that are rented to town residents on an annual basis. These slips are located along Chew Avenue and West Harbor Road, and at the foot of Cherry Street, Chestnut Street and Harrison Alley. The West Harbor Road and Chew Avenue slips have a sufficient number of parking spaces forthe 46 slips located there. The slips located at Chestnut Street and Harrison Alley have enough parking area available for the five slips at Chestnut Street, however, the Harrison Alley slip requires its parking to be located at Chestnut Street. The parking surface located at the foot of Chestnut Street is only partially paved and there are presently no parking stripes to designate parking spaces. This site could be improved by providing some additional parking surface and painting parking strips.

Besides the town slips, St. Michaels also has a public wharf at the foot of Mulberry Street and a town dock at the foot of West Chew Avenue on San Domingo Creek. The town wharf is used by several groups, watermen and recreational boaters, which have different parking needs. Watermen use the wharf for "rafting-off" when there are no other slips available for their boats. Recreation boaters sometimes use the wharf for temporary parking of their yachts during their trips to town.

It is during the summer months when the unavailability of slips in the harbor requires many of the watermen to "raft-off" that the number of needed parking spaces out-numbers the public parking spaces provided at the town wharf. However, the recreational boaters that use the town wharf often do not require parking and are generally not placing a demand on parking facilities.

The town wharf is also used by at least one local seafood buyer as a buying station for purchasing wholesale seafood from the waterman. When this activity is underway, many of the parking spaces are blocked from use by the large trucks used for this type of operation.

St. Michaels also has a town dock which is located in San Domingo Creek (Back Creek), away from the harbor congestion. This dock has a limited number of parallel parking spaces along the street leading to the dock which are not needed by other cars. However, these spaces are not all paved and none of the spaces are marked with stripes.

The waterfront commercial establishments (marinas, restaurants, and Chesapeake Bay Maritime Museum) provide for the most part sufficient parking. However, some of the older marinas do not supply enough parking for the present demand because of the increased parking required today as opposed to historic needs.

Foot Traffic

A large majority of the foot traffic in St. Michaels during the tourist season is due to the landbased tourist who arrives by bus or car. Additionally, boaters often spend evening ashore in restaurants, site-seeing and in purchasing provisions for their boat.

Presently there is no central location for the boaters to use to get ashore. If there was one central point of access then major points of interest could be identified and unnecessary foot traffic through town could be minimized.

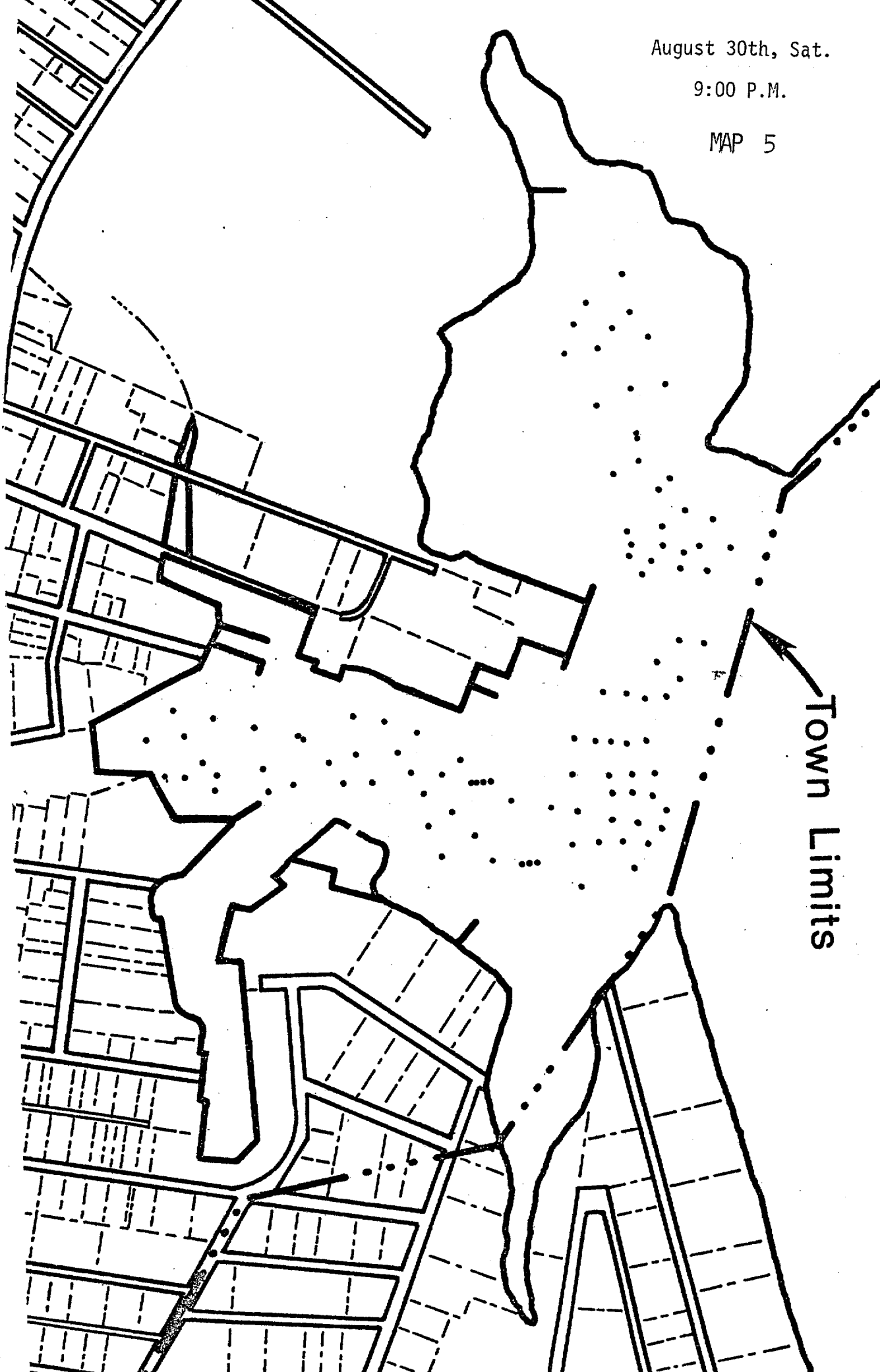
Waterborne Traffic

Historically St. Michaels harbor has not needed any designated channels because of the familiarity that most of its users have with those waters. However, due to an ever increasing influx of recreational boaters during summer weekends, St. Michaels harbor becomes jammed with boats to such a degree that

August 30th, Sat.

9:00 P.M.

MAP 5



no area for the flow of traffic in and out of the harbor is left. (See Map. No. 5). The Harbor Management Advisory Committee has proposed establishing a permanent channel in the harbor and having some designated anchorage areas assigned at the same time. By designating a channel in the constrained harbor the area that is not included in the channel can be used for anchorage.

Another of the constraints placed on a more effective use of the water surface in the harbor is the degree of shoaling. Shoaling has limited about one-third of the harbor to boats that draw less than four feet. This condition has been developing for many years and will soon need to be addressed.

Community Facilities

Introduction

St. Michaels' traditional orientation to the water has endured to the present as one of its most valued characteristics.

This attitude is confirmed by the 1604 feet of town owned waterfront scattered through the town. These locations are for the most part bulkheaded and are used for points of access to the water by the general public.

The following list identifies both the various locations of publicly owned waterfront and their associated uses. (SEE MAP NO. 12 & 13)

Town Owned Waterfront

SITE	FEET	USES
1. Church Cove Park	220	Bulkhead
1. Foot of Carpenter St.	25	Bulkhead
3. Mill Street	48	Bulkhead
4. E. Chesnut St. & Harrison Alley	95	Bulkhead/slips
5. West Harbor Road	651	Bulkhead/slips
6. East Chew Ave.	108	Bulkhead/Slips
7. Foot of Cherry Street	72	Bulkhead/Foot Bridge
8. Foot of Mulberry Street	118	Bulkhead/Wharf
9. West Chew Avenue	112	Bulkhead/Pier
	1,449	

Unimproved Waterfront

10. Foot of Mill Street	25	
11. Grace Street	35	
12. Foot of West Chestnut St.	60	
13. Thompson St.	35	

Public Waterfront Uses

Church Cove Park

There are approximately 0.8 acres in Church Cove Park which are used for picnicing, sightseeing, and public gatherings. Presently there is a dispute between the Town of St. Michaels and some adjacent land owners regarding ownership of portions of Church Cove Park.

Foot of Carpenter Street

The 25 feet of bulkhead at this location are not being used as a point of access.

Mill Street

This 48 feet of bulkhead are at the end of a shallow narrow corner of the harbor, and is only used as a point of visual access.

Foot of East Chestnut and Harrison Alley

The 95 feet of bulkhead here is used for access to town owned slips.

West Harbor Roads

The 651 feet of bulkhead here are used for access to town owned slips and for two town owned boat ramps.

East Chew Avenue

The 108 feet of bulkhead here are used for access to town owned slips.

Foot of Cherry St.

The 72 feet of bulkhead here are used for access to the Cherry Street Foot Bridge, and the catwalk for the town owned slips adjacent to foot bridge.

West Chew Avenue

There are approximately 112 feet of town owned waterfront at this location. A County owned public pier is located here with 100 feet of bulkhead. The pier is used primarily by local watermen working out of Broad Creek and the Choptank River.

Foot of Mulberry St.

This bulkhead is used as a public wharf for the transfer of oysters from the commercial fishermen to the wholesale buyers. It is also used by recreational boaters as a point of access to towns. In the last year there has been substantial disagreement between commercial fishermen and recreational boating interests regarding use of this facility.

Waterfront Structure Inventory

An inventory of waterfront structures throughout town was performed during this planning period and the results presented in the last chapter. The results indicate that a majority of the waterfront structures should last into the 1990's but because many of these structures were constructed during the late 1960's and early 1970's, their replacement may be required during the same 10 year period. Consequently in order for a municipality with limited fiscal capacity to provide for replacement of such structures a program for amortizing anticipated costs should be undertaken immediately. This program could be in part funded by the revenue from municipal boat slips as well as revenue from taxes on oysters, and other seafood sold over town owned property.

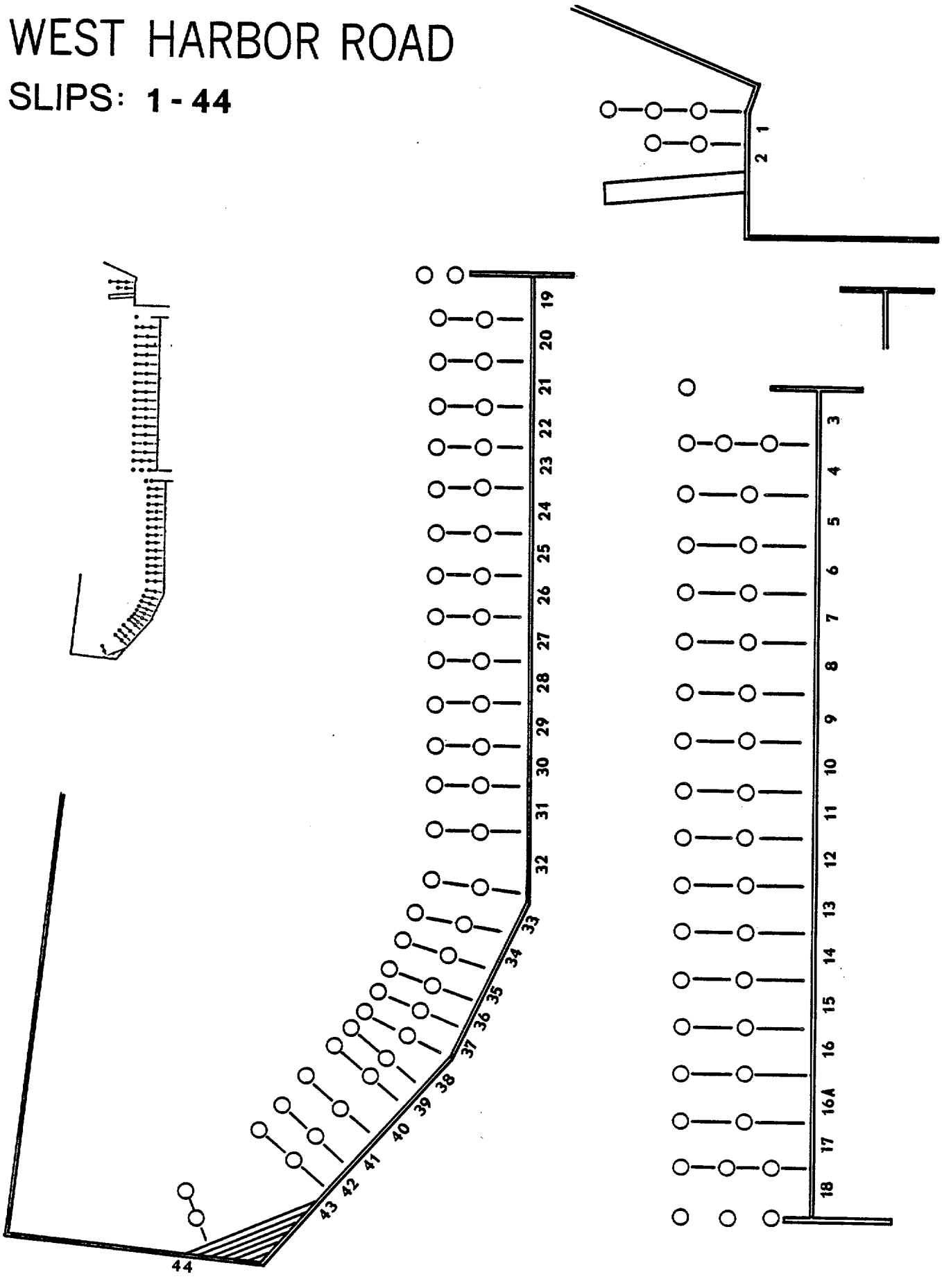
Contested Public Lands

There are several parcels of seemingly public waterfront land in St. Michaels that are presently being contested. Many of these disagreements go back many years and may only find satisfaction through legal channels. However, the ownership of those unresolved portions of waterfront should be established whenever possible and proper use made of these lands.

FIGURE 2

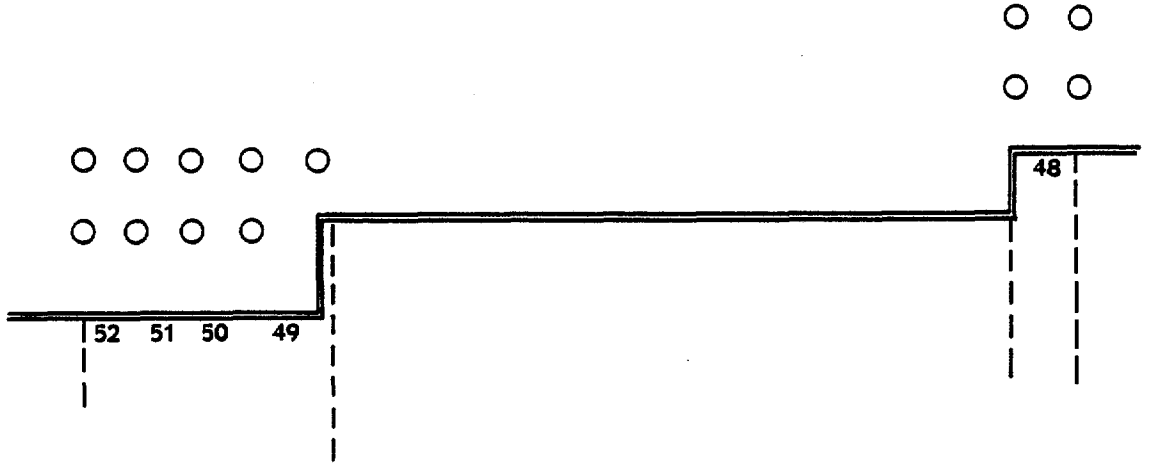
WEST HARBOR ROAD

SLIPS: **1 - 44**



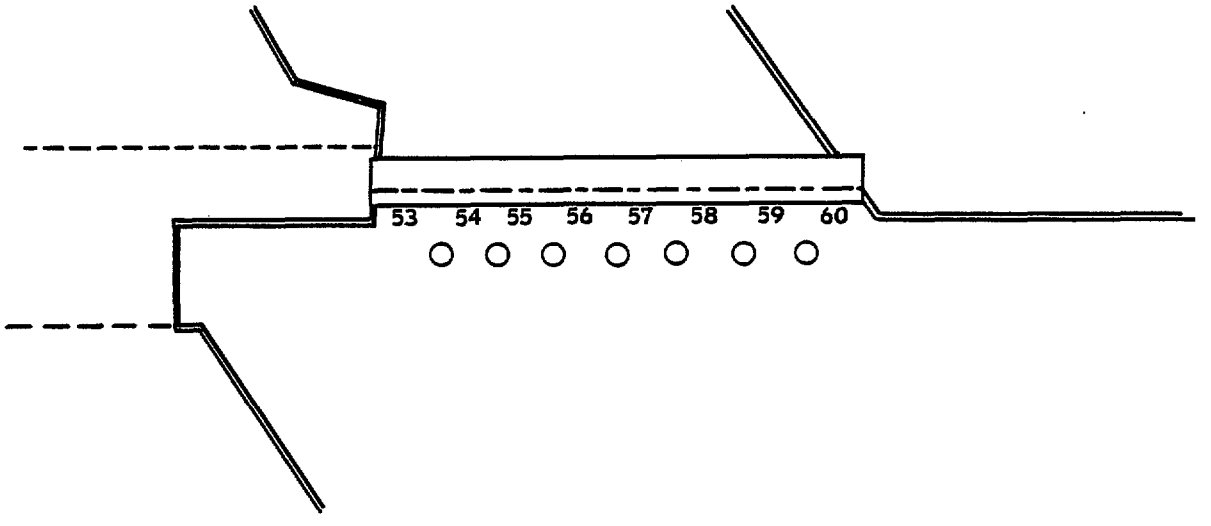
EAST CHESTNUT & HARRISON ALLEY

SLIPS: **48 - 52**



CHERRY STREET

SLIPS: **53 - 60**



CHAPTER II

PLANNING CONSIDERATIONS

Planning Considerations

Community Survey

During the fall of 1980 a mail-out survey was developed and sent to the residents of St. Michaels. The mailing list was sent to approximately 450 individuals. Questions on the survey covered all relevant issues concerning the use and management of the town waterfront. The results of the survey were compiled with the assistance of the Tidewater Fisheries and the Coastal Resource Division of Tidewater Administration, Maryland Department of Natural Resources. The complete results are presented in Appendix 1A.

SUMMARY OF SURVEY RESULTS

The following is a short list of the major trends in the various groups that responded to the survey.

Profile of Respondents

The survey of harbor use has yielded a 26% return overall. This is generally considered a respectable percent of return for a mailout survey.

This survey asked respondents several questions regarding sex, age, education, length of time in the area, household size, and employment. This data is of little use in management of the harbor but it can be used to give a description of the survey respondents. This description can be compared to the data acquired from the 1970 Census* to determine if the opinions gathered from the survey are from a representative cross section of the St. Michaels population.

Age

The respondents for this survey were 20 years or older. Nine (9) people were between 20 and 30 years old, twenty (20) people were 30 to 44, forty-seven (47) people were 45 to 64, and forty-eight (48) people were 65 or over.

According to the data gathered during the 1970 Census there are 130 people in St. Michaels between the ages of 20 to 30 years. The nine (9) survey respondents in this age group represent seven (7) percent of those people in St. Michaels in this age group.

The census stated that St. Michaels had 164 individuals between the ages of 30 to 44. The survey received 20 responses from this age group which represents 12% of the total St. Michaels population between these ages.

Likewise, there were 151 individuals between the ages of 45 to 64, the survey had 47 respondents in this age group which represents 31% of the total St. Michaels in this age group. The last age group segregated was the group over 64 years of age, with a total in town of 185 individuals. There were 48 respondents in this age group which represents 26% of the total St. Michaels population over 64 years of age.

Sex

St. Michaels has an approximately 46% male and 54% female mix. The survey response was divided approximately 78% male and 22% female.

*The 1980 census data is not complete at this time, thus requiring the use of 1970 census data. According to the preliminary returns from the 1980 census there have been only minor changes in the St. Michaels population characteristics.

Major Problems

All groups agreed that the major problem in the town harbor was congestion.

The second most common response was lack of slips in the harbor.

The third most common response was lack of organized mooring pattern.

Parking

The response from the survey for this question was divided almost evenly for the two opinions. But upon closer observation, differences were noted.

Most boat owners, slip renters and private slip owners all agree that parking is, in general, sufficient. However, non-boat owners for the most part felt that parking with respect to docks and mooring areas was inadequate. When the response of the non-boat owners was separated according to the section of town that they live in, the area of complaint came from Sectors 2, 3 and 5. (SEE MAP) Sectors 3 and 5 are areas adjacent to the two waterfront areas in town, Back Creek and the harbor. Sector 2 lies between Railroad Avenue, Grace Street, and Talbot Street. The reason for complaints from Sector 2 may be difficult to establish.

Dockage

Most people surveyed agreed 2 to 1 that dockage and mooring is inadequate.

Regulation

The respondents for the most part agree that control and regulation in the water of St. Michaels is a problem. However, amid boaters the most active boaters agree least with this opinion.

Service

The respondents as a group agreed 3 to 1 that the services available to boaters were adequate. However, the group represented as non-boat owners were less inclined to agree with this statement than others.

Security

The percent response regarding adequacy of security on the waterfront was divided accordingly. Fifty-seven (57) percent feel security was adequate as opposed to 43 percent feeling security was inadequate. Upon closer observation we find that non-boat owners and slip renters felt least secure, with the majority of slip owners feeling security is a problem.

Trash Collection

Respondents felt 3 to 1 that trash collection was sufficient overall, however, boat owners, especially boat owners who live near the water felt that trash collection was inadequate.

Marina Survey

During the spring of 1981 a hand carried "Marina Survey" was taken to the three marinas and Maritime Museum in St. Michaels. Response followed from three of these and the results presented below are a result of those three plus some assumed responses from the marina not responding. A copy of the survey is presented in Appendix 1B.

1. The characteristic market for the marinas in St. Michaels is predominately regional (Mid-Atlantic).
2. The geographical market has changed significantly during the last ten years.
3. Problems identified with the marinas present sites were:
   A. conflicts with adjacent land use.
   B. Open water mooring
   C. Not enough slips.
4. During the last ten years, three of the "sites" have expanded over the water.
5. During the last ten years two of the sites have expanded landward.
6. At least two properties feel the need for further expansion in the near future.
7. Dredging has been required by two locations in the last ten years.
8. Three locations feel the need for additional dredging in the next ten years.
9. Employment:

   Permanent Employment, one part-time, thirty-four full time.

   Seasonal Employment, twenty-six part-time, sixty-four full time.
10. The labor climate locally has not changed substantially in the last ten years.
11. Respondants felt that the local government should:
    1. Advertise the Town more
    2. Provide for dredging
    3. Provide public bathrooms
    4. Keep the channels open

12. Total commercial slips available.

    167

13. Services provided:

    a. Three marinas with gas docks.

    b. Three marinas with ice.

    c. Four sources of slips, 3 with water and two with electric.

    d. One pump-out facility.

    e. Two marinas with dry storage.

    f. Two marinas with restaurants.

    g. Two marinas with a ships store.

CHAPTER III

OBJECTIVES

Management Objectives

Introduction

Due to a lack of time and the large number of topics to be discussed, the Harbor Management Advisory Committee began initially organizing and prioritizing issues relating to the harbor. Once identified, the individual issues were then defined in terms of problem, need, and recommendation. In this way each relevant issue was guaranteed full attention. Using this approach the terms "need" and "objective" are considered synonymous. Consequently the "objectives" listed below can be found in the chapter titled "Recommendations" listed as "needs".

ADMINISTRATIVE OBJECTIVES

The Harbor Management Advisory Committee listed the following seven needs as being key elements in the effort to better guide and administrate Harbor related management programs.

Objective:	To establish a mechanism that will protect the unique and irreplaceable traditional charm of St. Michaels Harbor.
Objective:	To establish a clear policy with regard to Marina Expansion as a guideline for future development of the Harbor.
Objective:	To establish a legal body with oversight and managerial responsibility to continuously monitor the use, maintenance, and development of the Harbor.
Objective:	To establish a minimum set of clearly stated regulations and ordinances governing use of the Harbor.
Objective:	To provide some level of fire protection for boats using the Harbor and for property owners residing around the Harbor.
Objective:	To provide a set of guidelines for safe and secure use of the Harbor, for the protection of visitors and residents alike.
Objective:	To establish a Harbor Improvement Fund into which Harbor-generated moneys are placed, as a sinking or amortization fund for present facilities and the improvement and construction of future facilities, so the Harbor can be self-supporting and self-sustaining insofar as possible.

TRANSPORTATION OBJECTIVES

The objectives listed below were cited, by the Harbor Management Advisory Committee as being critical for the proper and efficient movement of people and watercraft within the waters of St. Michaels.

Objective:	To clearly mark the necessary channels so visiting boaters can tell what areas of the Harbor must be kept clear.
Objective:	To clearly mark safe anchorage areas so visiting boaters can tell what areas of the Harbor may be used.
Objective:	To establish a long term plan for the dredging of the Harbor.
Objective:	To prepare and distribute an accurate chart of St. Michaels Harbor, showing depths, shoals, docks, landings and the location of services.
Objective:	To provide that <u>minimum</u> system of signs which will guide visitors around the Town in an orderly manner.
Objective:	Pathways need to be added to Muskrat Park to channel visitors into St. Michaels and away from nearby residential properties.

COMMUNITY FACILITY OBJECTIVES

The following list of improvements to the existing community facilities inventory and management program were identified as necessary for the equitable and prudent utilization of St. Michael's waterfront resources.

Objective:	To obtain a permanent spoil area, within 5,000 feet of the Harbor, into which dredged sand and shell can be pumped of at least five acres in extent.
Objective:	To provide a loading and unloading dock exclusively for the use of watermen, large enough to accomodate competitive buying, with space for parking and truck turnaround, which could be operated as a revenue-producing project for the Town.
Objective:	To improve Town Dock physically so it can be as useful as possible, and establish rules and regulations so that it can be used more fairly and provide some measure of revenue to the Town.
Objective:	To provide public restroom facilities that will serve visitors to the Town, coming either by boat or land transportation.
Objective:	To improve the Cherry Street Slips by putting in stern-mooring pilings and by restricting parking in the area to watermen only.
Objective:	To provide a landing area exclusively for the use of boaters coming ashore, where dinghies will be protected and visitors can have safe, easy access to the Town.
Objective:	To clean up the San Domingo Creek Dock so that it can be more fully used and appreciated.

Objective:	To establish a fair, readily-understood system by which Town slips will be rented, with safeguards built in to prevent abuse.
Objective:	To establish a program of Trash and Litter Control for the Harbor.
Objective:	To explore means by which bulkheading and the construction of additional slips might be encouraged.
Objective:	To assess the feasibility of establishing fixed moorings in the Harbor.
Objective:	To undertake a study of the feasibility of developing San Domingo Creek as a second port for St. Michaels.

CHAPTER IV

RECOMMENDATIONS

Recommendations

Introduction

In September 1980, the Commissioners of St. Michaels, approved the establishment of the St. Michaels Harbor Management Advisory Committee, to investigate the problems associated with the harbor area as well as other waters under their jurisdiction, and make recommendations as to best management approaches. The following pages in "Chapter IV , Recommendations" are a complete listing of the agreed upon recommendations from the Committee.

The Committee members were representative of the various "user groups" sharing the waters of St. Michaels. The groups and their representatives are given below:

Town Commission Member (1)	Mrs. Irene Daffin
Marina Owner (1)	Mr. Ray Wilson
Maritime Museum Representative (1)	Mr. Jim Holt
Waterfront Landowner (1)	. Chuck Kepner Ph.D.
Town Slip Renter (1)	Mr. Marion Marshall
St. Michaels Watermen (2)	Mr. Wilson Cannon Mr. Bobby Hambleton

TOPIC:	THE NATURE OF THE HARBOR
Problem:	St. Michaels Harbor has traditionally been of multiple use, with shipbuilding, fishing, private and recreational boating all sharing its facilities. The charm of St. Michaels Harbor stems in large part from this characteristic. Present and future economic pressures can change the Harbor area overnight into one of recreational marinas, boat clubs, and high rise apartments if the Harbor's current traditional nature is not zealously protected.
Need:	To establish a mechanism that will protect the unique and irreplaceable traditional charm of St. Michaels Harbor.
Recommendations:	1. A specific policy resolution should be drafted by the Town Commissioners stating the intent that St. Michaels Harbor shall remain a traditional, multiple use resource for the use and enjoyment of all the Towns' residents and visitors. 2. Plans, ordinances, regulations, oversight and enforcement bodies should be created before concrete threats to the nature of the Harbor arise, rather than after the fact.
Cost to Town:	None
Benefit to Town:	The Town will have a stated position to guide others in the development of waterfront property. The Town will be able to direct and influence change rather than be on the defensive, only reacting against change. An oversight body will be able to keep the Town Commissioners informed regarding both threats and opportunities with respect to the Harbor.

TOPIC: REGULATIONS AND ORDINANCES

Problem: Orderly, safe and productive use of the Harbor requires that there be rules and guidelines that are binding upon all that can be enforced if need be.

In the absence of such necessary regulations and ordinances, conflicts arise between individuals with differing conceptions of what constitutues good use of the Harbor.

Need: To establish a minimum set of clearly stated regulations and ordinances governing use of the Harbor.

Recommendations:

3. Zoning and use regulations should be stated for the Harbor. A harbor line should be established, beyond which no structure should be allowed to extend into the body of the Harbor. Permits should be required for all construction extending beyond the present waterline.

4. Safety and security regulations should be stated for the Harbor. Fire, high wind and natural catastrophe are ever-present threats to boats and property around the Harbor. Channels must be kept open so that navigation is possible in case of emergency. Anchorage areas must be properly utilized. Speed and navigation rules must be obeyed. Security of boats moored around the Harbor must be provided against theft and vandalism.

5. Anti-pollution and litter ordinances should be enacted so that abuse of the Harbor waters and environs can be prevented. Increasing numbers of visiting boats and increased use of the Harbor by residents place a heavy load upon the regenerative powers of the Harbor's waters.

6. Regulations should be stated governing use of Town docks and slips so that abuses do not occur and the facilities are fairly shared. These regulations should state who may use Town docks and slips, under what conditions and constraints, and assess

appropriate fees so that upkeep and replacement may be provided for.

7. Ordinances should be enacted which provide for the use of Town docks by commercial seafood buyers so that St. Michaels watermen have adequate competitive outlets for their catch. Appropriate fees should be charged for this commercial use of Town property, in keeping with standard practice in other ports around the Chesapeake Bay.

Cost to Town: None

Benefit to Town: The Town will have a stated framework of rules within which use of the harbor may be made. These rules will be primarily for the guidance of users, only secondarily to be enforced as coercive measures, and thus will prevent conflict instead of cause it. The main benefit to the Town will be to make the Harbor a pleasant, convenient, and happy place to be.

NOTE: It is the feeling of the Committee that these ordinances should be on the books, in existance for use as needed. It is not implied that these ordinances be enforced to the letter, 24-hours a day. They are seen as preventive rather than coercive in nature.

For instance, the presence of Harbor Zoning and Use regulations would give guidance for future development. Safety, Fire and Security regulations would enable the, Town to take action against a possible flagrant offender and would provide guidance for others in avoiding future problems. Such regulations and ordinances are standard for maritime communities and can readily be adapted to the special needs of St. Michaels.

TOPIC: HARBOR IMPROVEMENT FUND

Problem: Maintaining and improving the Harbor will become increasingly costly. In the past State and Federal funds have been available for dredging, bulkheading, building docks and slips, and for many repairs. In the predictable future, such funds will become scarcer. In time, funds for certain purposes may become unavailable.

The Town will have to rely increasingly on its own revenues to pay for improvements and repairs. Failure to provide in advance for these predictable expenses will place a heavy load upon the Town and threaten the Harbor with obsolescence and neglect.

Need: To establish a Harbor Improvement Fund into which Harbor-generated monies are placed, as a sinking or amortization fund for present facilities and the improvement and construction of future facilities, so the Harbor can be self-supporting and self-sustaining insofar as possible.

Recommendations:

8. Fees that the Town shall charge for the rental of slips and commercial use of Town docks should be fair and realistic, and should reflect the fair market value of such facilities.

9. A fair, lower rate should be charged to residents of St. Michaels sho are carried on the current tax rolls, and a higher but fair fee should be charged to non-residents.

10. Harbor-generated revenues should be placed in a separate interest-earning Harbor Improvement Fund, to be used only for Harbor improvement projects.

11. An inventory of bulkheads, docks, piers and other facilities owned by the Town should be made, the predictable useful life of each should be determined, and the probably replacement cost entered so that a budget of likely future expenses can be drawn up.

Cost to Town: None

Benefit to Town: The Harbor will be operated on a pay-as-you-go, business-like basis and will not constitute a drain upon the Town. It will be adequately financed and kept up, and will not develop the run-down look that many municipal waterfronts take on. "Unexpected" fiscal outlays will be minimized.

TOPIC: PERMANENT SPOIL AREA

Problem: Periodic dredging of St. Michaels Harbor will be a constant future requirement. Natural runoff siltation will continue to choke Church Cove, the Cherry Street docks, the southern extension of the Harbor, rendering slips unusable. present shoal areas in the Harbor will be extended by current-borne sediments. Without provision fur future dreding, St. Michaels Harbor will become smaller and more shallow with the passage of time.

Dredging by suction, where spoil material is pumped off as a slurry, is cheapest and most efficient, costing only one-fourth as much as fredging from a barge, then trucking the spoil materials to a distant dumping location. It is the cleanest, least disruptive method of deepening a harbor area.

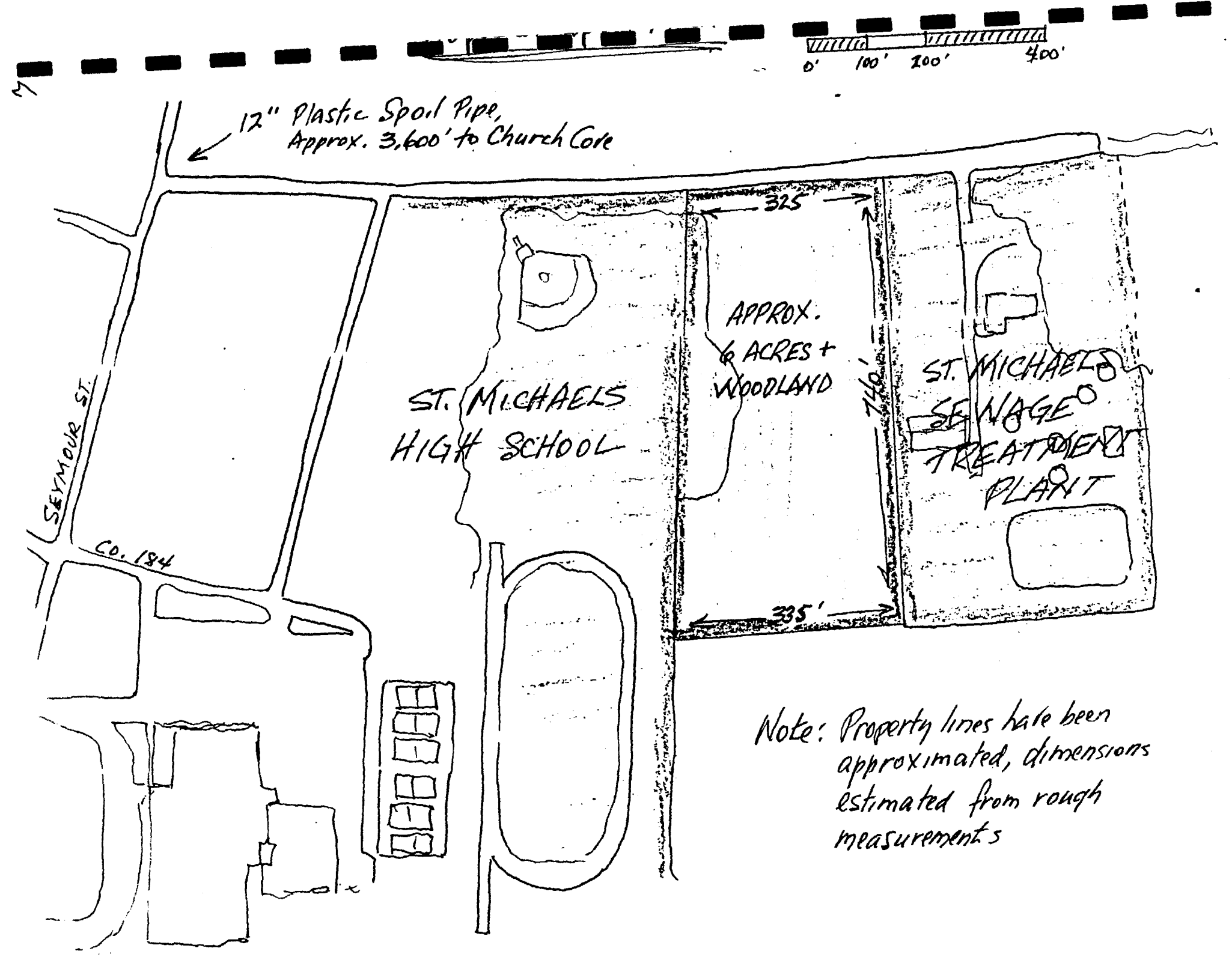
Suction dredging requires that there be a large spoil area within 5,000 feet of the dredge site. As the Town builds up, open unimproved areas suitable for use as spoil sites become harder to obtain and more expensive. At some point in the near future, suction dredging of the St. Michaels Harbor will become impossible for lack of such a site.

Need: To obtain a permanent spoil area, within 5,000 feet of the Harbor, into which dredged sand and shell can be pumped, of at least five acres in extent.

Recomme dations:

12. The Town should immediately commence negotiations for acquisition of a permanent spoil site as a hedge against predictable future need.

13. The Town should seriously consider that parcel of County-owned wooded property lying between the St. Michaels High School and the Water Treatment Plant. It is six acres in extent, is not bounded on any side by residential property, and lies 4,000 feet from the Harbor, easy pumping distance for any modern suction dredge. See accompanying drawings.


0' 100' 200' 400'
12" Plastic Spoil Pipe,
Approx. 3,600' to Church Cove
325'
APPROX.
6 ACRES +
WOODLAND
ST. MICHAELS
HIGH SCHOOL
ST. MICHAELS
SEWAGE
TREATMENT
PLANT
SEYMOUR ST.
CO. 184
335'
Note: Property lines have been approximated, dimensions estimated from rough measurements

Cost to Town: Not determinable at this time.

Benefit to Town: A permanent spoil site would ensure that dredging can be carried out in the future, conveniently and inexpensively. This may be far more important a few years hence than it seems now, should the cost of dredging no longer be subsidized by State or Federal grant.

A permanent spoil site would also be usable should the dredging of San Dom ingo Creek or Spencer Creek be un-ertaken. Material deposited in the spoil site would be largely fine sand, shell, and small stones, and would be useful for Town road and construction work.

Early acquisition of a permanent spoil site would be a hedge against the higher prices that undeveloped land will command as the Town is built up and such land becomes scarce.

NOTE: The Committee believes its recommendations regarding acquisition of a permanent spoil area to be of greatest importance. Failure to obtain permanent spoil areas while they are available will cripple management and operation of the Harbor for all future time. It is easy to say, "We'll think about that when the need arises." By then, it is likely to be too late.

TOPIC: BOARD OF PORT WARDENS

Problem: The best of plans and intentions for the Harbor are likely to come to nothing if there is no one specifically responsible to oversee them and deal with problems as they arise.

Need: To establish a legal body with oversight and managerial responsibility to continuously monitor the use, maintenance, and development of the Harbor.

Recommendation:

14. A Board of Port Wardens should be appointed by the Commissioners of St. Michaels, as provided in the Annotated Code of Maryland, Article 23A, Section 2, Paragraph 23A.

15. The Board should be empowered to hear and adjudicate problems arising from use of the Harbor, make recommendations to the Commissioners concerning matters important to the well-being of the Harbor, keep the Commissioners informed as to trends and conditions which will have future effect on the Harbor, and provide continuity in carrying out the wishes of the Commissioners with respect to the Harbor.

Cost to Town: None

Benefit to Town: The best interests of the Town of St. Michaels will not get lost concerning the use and Development of the Harbor. The Harbor will always have a legally constituted proponent whose duty will be to monitor the health of one of St. Michaels most important resources.

NOTE: In order to protect the interests of the watermen in the Harbor, the Committee strongly suggests that one of the three persons on the Board of Port Wardens be an active, practicing St. Michaels waterman.

TOPIC: CONGESTION IN THE HARBOR

Problem: Particularly on summer weekends, the Harbor becomes highly congested. As many as 120 boats may be anchored out, and an additional 100 or more tied up at every available slip, dock and wharf. There is a great deal of confusion and watermen find it difficult to navigate in and out.

Much of the confusion arises from lack of information. Visiting boatmen don't know where to go, where to anchor or tie up, what water is deep and what is shoal, or what facilities St. Michaels has to offer. As a result, boats mill around and get in each other's way, visitors and residents alike are frustrated, and the resources of the Harbor are inefficiently used.

Need: To prepare and distribute an accurate chart of St. Michaels Harbor, showing depths, shoals docks, landings and the location of services.

Recommendations:

16. The commissioners of St. Michaels should accept with thanks the offer by the Maritime Museum to prepare and supervise the printing and distribution of a chart of the Harbor, done much in the format of the popular "Walking Tour of St. Michaels."

17. Local merchants, marina and restaurant owners should be asked to underwrite the cost of printing, as they would be direct recipients of benefits from its circulation.

18. The chart should show the location of all facilities in the Harbor, channels, anchorage areas, shoals, gas docks and marine services, as well as present the Harbor rules and regulations, in addition to showing the locations of commercial services available in the Town proper.

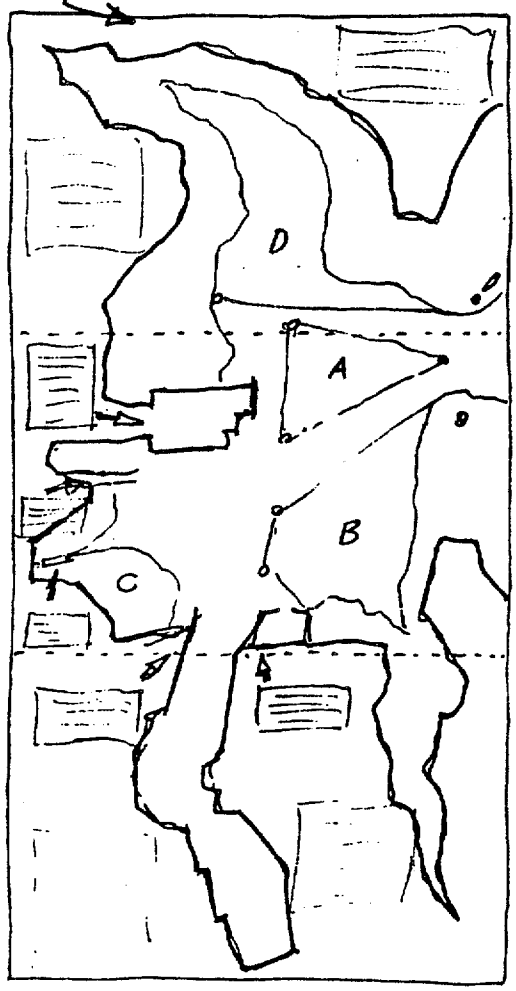
Cost to Town: None

Benefit to Town: Confusion on the part of boaters using the Harbor would be reduced. Safety of navigation within the Harbor would be increased. The

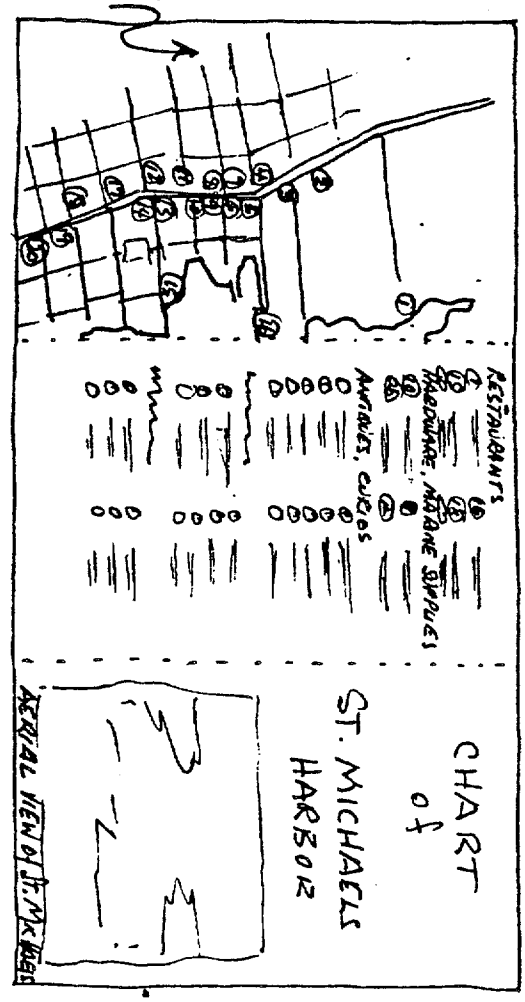
chart would be widely circulated and would constitute a powerful public relations piece advertising St. Michaels. It would be reproduced in cruising guides, boating magazines, and regional newspapers. Most important, by making the visit to the Harbor more convenient, the chart would increase the satisfaction of visitors substantially.

THREE-FOLD
11½" X 22½"
BLACK & WHITE

CHART WITH MARINE SERVICES, ANCHORAGE AREAS MARKED



STREET MAP WITH MERCHANTS, SERVICES, RESTAURANTS LOCATED



TOPIC: DESIGNATION OF CHANNELS

Problem: Channels in the Harbor are not presently designated. The traffic patterns within the Harbor are not immediately apparent to the visiting boater. As a result, yachts are often anchored in such a way as to impede navigation in and out of the Harbor.

Need: To clearly mark the necessary channels so visiting boaters can tell what areas of the Harbor must be kept clear.

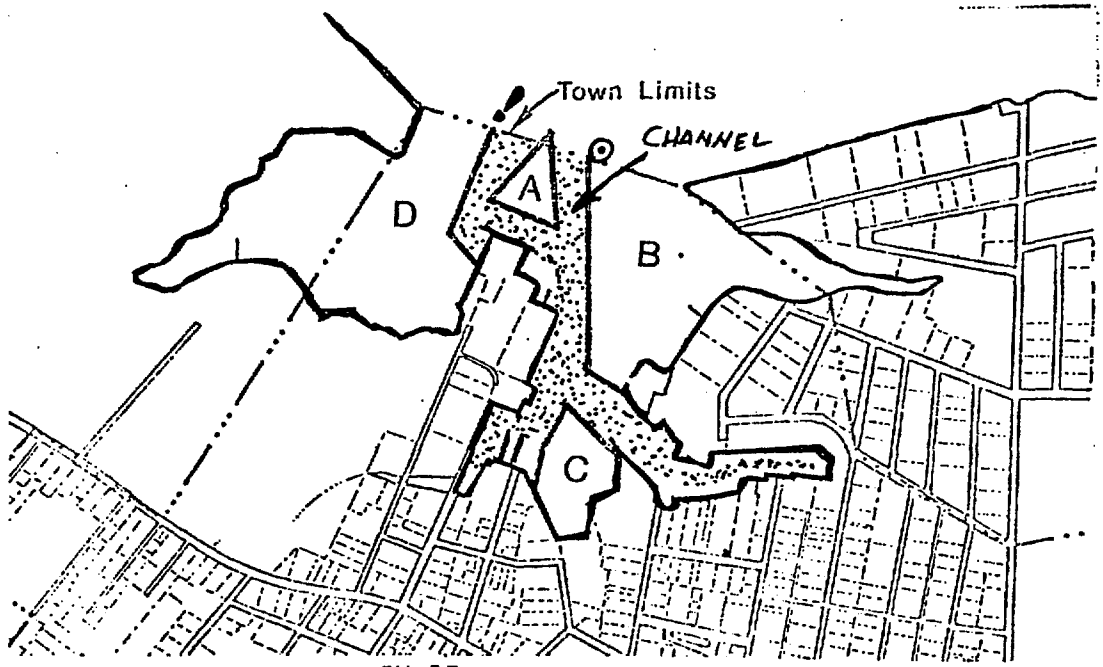
Recommendations:

19. Survey and determine a system of safe and adequate channels for navigation within the Harbor. This has been done by members of the Harbor Advisory Committee. (See chart below)

20. Apply to Waterway Improvement Division of Tidewater Administration for buoyage needed to adequately mark the channels. This also has been done. (See chart below)

Cost to Town: None

Benefit to Town: Channels will be clearly marked so that visiting boaters may leave them open to navigation. Available anchorage areas will be more efficiently used. Safety of navigation will be enhanced.



TOPIC: DESIGNATION OF SAFE ANCHORAGE AREA

Problem: Anchorage areas within the Harbor are not presently designated. Deep water cannot be readily discriminated from shoal water due to murkiness. As a result, visiting boaters often go aground while searching for safe anchorage and the available anchorage area is inefficiently used through excessive caution.

Need: To clearly mark safe anchorage areas so visiting boaters can tell what areas of the Harbor may be used.

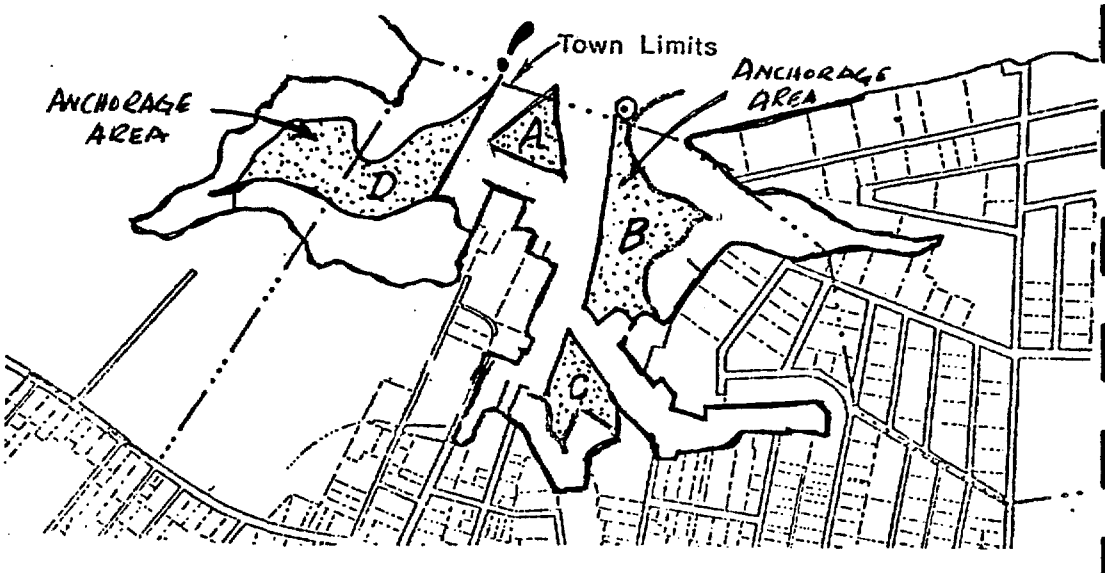
Recommendations:

21. Survey and determine the depths of water within the Harbor and identify those areas lying between the five-foot contour, below Mean Low Water, and the channels designated under Recommendation 19 above. This has been done by members of the Harbor Advisory Committee. (See chart below)

22. Apply to Waterway Improvement Division of Tidewater Administration for buoyage and day markers needed to adequately identify safe anchorage areas. This has been done. (See chart below)

Cost to Town: None

Benefit to Town: Available anchorage areas will be distinguishable and more efficiently used. Safety of navigation will be increased. More boats will be accommodated. Liability of Town for possible damage suffered by grounding will be reduced.



TOPIC: TOWN LANDING FOR DINGHIES

Problem: Visiting boaters who anchor their yachts out in the Harbor, must come ashore in small boats and dinghies. There is currently no place for them to land. Many tie up at Town Dock, getting in the way of watermen who must use that facility for unloading their catch. Others come ashore on Museum property, at the Crab Claw Restaurant, at the various marinas, and at bulkheads around the Harbor wherever they can. This is inconvenient for boaters and is a dangerous practice which poses a possible liability to the Town in the case of a serious accident.

Need: To provide a landing area exclusively for the use of boaters coming ashore, where dinghies will be protected and visitors can have safe, easy access to the Town.

Recommendations:

23. Purchase and place a floating Dinghy Dock in Church Cove, within the area of riparian right claimed by the Town and quit-claimed by Longfellows Restaurant, as shown on chart below.

24. Apply to Waterway Improvement Division of Capital Programs Administration for funding of dock, gangway, and walkway. This has been done and has been accepted for a total funding up to $25,000.

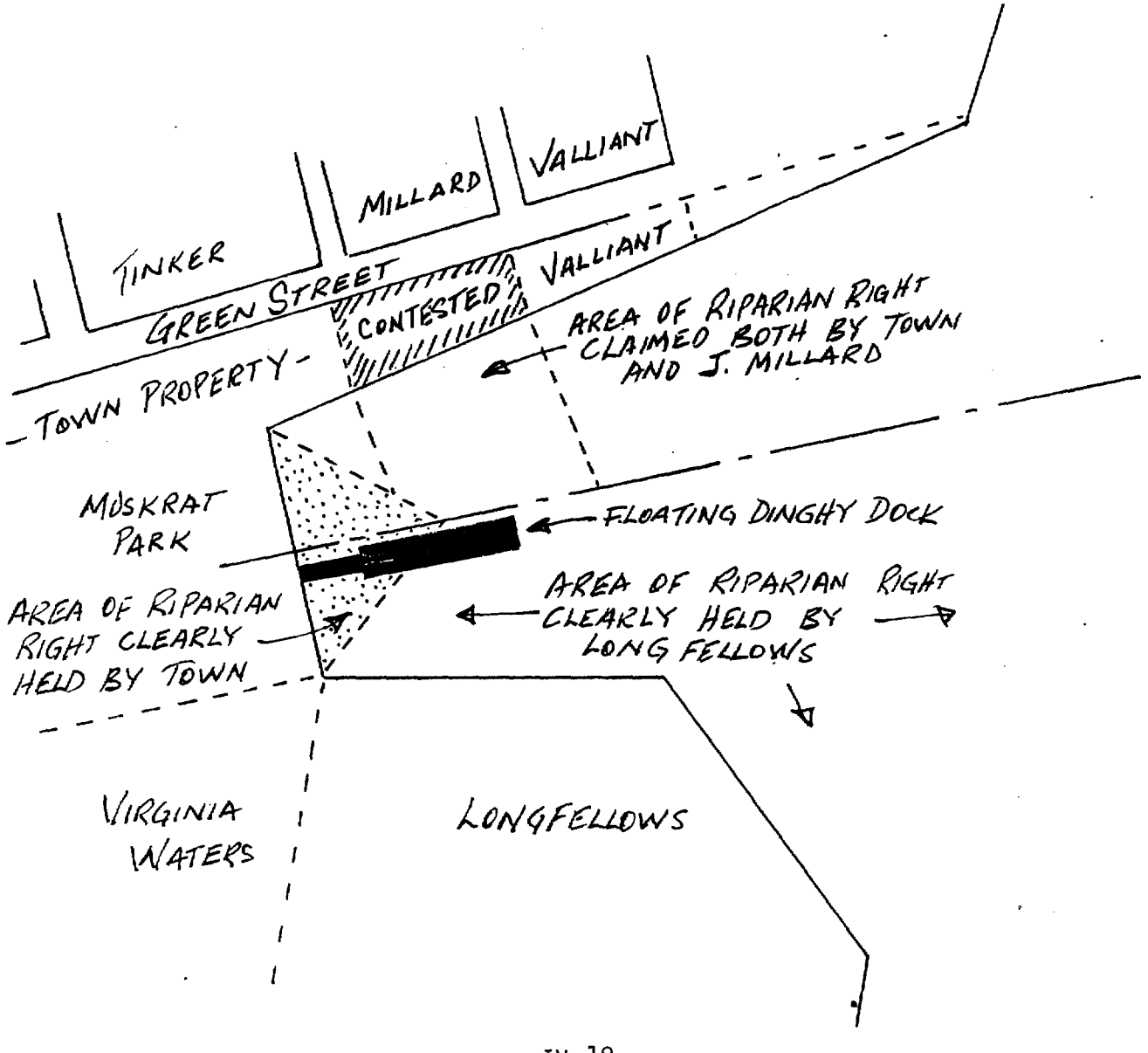
25. Apply to Waterways Improvement Division of Tidewater Administration for future dredging of Church Cove to the depth of four feet (1982?), at which time the floating dock could be moved to a location alongside and parallel to the bulkhead at Muskrat Park.

26. Post signs on Dinghy Dock limiting its use to dinghies, tenders and small craft 12 feet or less in length.

Cost to Town: Cost of signs only, estimated at $150.

Benefit to Town: The Town will have provided a safe, secure

landing for boaters visiting the Harbor. Location of the floating dock in Church Cove will bring visitors into the heart of St. Michaels across Town property with a minimum of disturbance to nearby residents. Location of the dock within the area of riparian right clearly claimed by the Town and quit-claimed to the Town by Longfellows, and clear of the area claimed by Mr. Jack Millard and contested by the Town, avoids possible suit by Mr. Millard. Confusion in the Harbor will be reduced, and conflicting use of Town Dock will be eliminated. Safety and convenience to visitors will be improved. Possible liability of Town in case of serious accident, due to lack of proper landing facilities, will be eliminated.



TOPIC: IMPROVEMENT OF MUSKRAT PARK

Problem: With installation of a floating Dinghy Dock in Church Cove, there will be a heavy flow of visiting boaters across Muskrat Park toward Talbot Street. Pathways will be worn across the grass and the natural beauty of the park damaged unless certain improvements are made in anticipation of the increased traffic.

Need: Pathways need to be added to Muskrat Park to channel visitors into St. Michaels and away from nearby residential properties.

Recommendations:

27. A gravel, cinder or macadam pathway should be added to the Park leading from the landing gangway to Locust Street, and another leading to Talbot Street, as shown on the chart below.

28. A large sign should be erected in the Park, near the head of the gangway, showing a map of St. Michaels and locating the various businesses and services available.

29. A macadamized pad should be placed near the head of the gangway for a large trash bin, to collect litter brought in from visiting boats. See Recommendation #73 for details of Trash Collection Program.

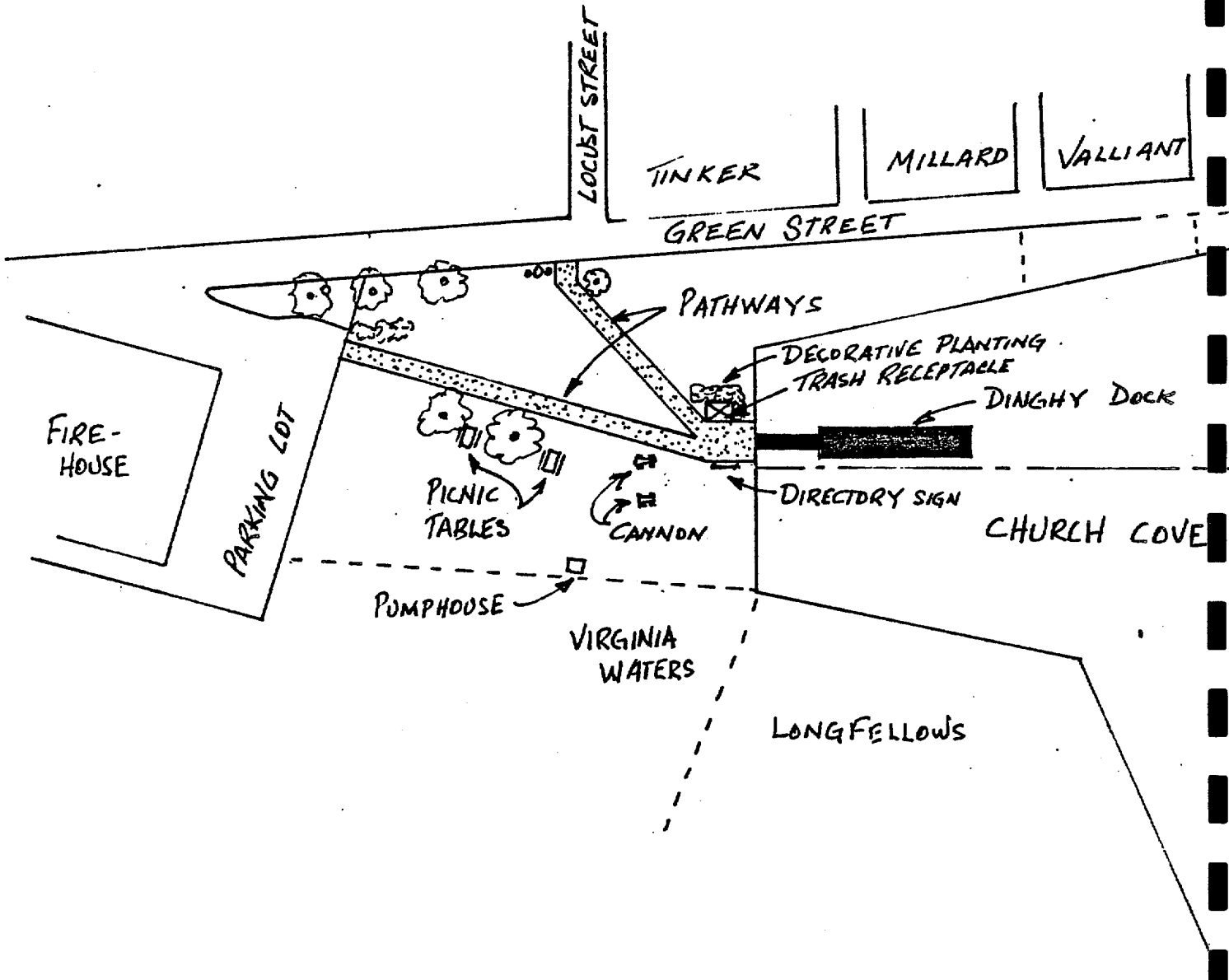
30. A decorative planting should be placed between the trash receptacle and residents on Green Street to screen them from both noise and visual pollution.

31. Apply to Waterway Improvement Division of Tidewater Administration for funding of these improvements in as much as they primarily will benefit boaters. See Recommendations #24 and #71.

Cost to Town: Possible none. Some, perhaps most or all of the above can be funded. Cost, if any, not determinable at this time.

Benefit to Town:

The beauty of Muskrat Park will be preserved. Traffic will be channeled out of the Park to Locust Street and uptown to Talbot Street. Litter will be collected at the point it arrives ashore from anchored boats. Confusion will be prevented by information sign telling visitors what St. Michaels has to offer and how to get there. Impact of the flow of people from the Dinghy Dock to the Town will be minimized.



TOPIC: PUBLIC RESTROOM FACILITIES

Problem: There are presently no public restroom facilities in the Town of St. Michaels. As more visitors come into the Town, the need for such facilities will become more critical. Local businesses are unable to to accomodate the numbers of tourists who presently enter the Town. This is particularly critical for visitors coming ashore from boats anchored in the Harbor. Having public restroom facilities ashore would help save the Harbor from pollution.

Need: To provide public restroom facilities that will serve visitors to the Town, coming either by boat or land transportation.

Recommendations:

32. Four portable toilets should be immediately installed in Muskrat Park, next to the firehouse parking lot, as a convenience to visitors. See chart below for location.

33. Outdoor lighting should be provided for the portable restroom area to discourage vandalism.

34. Appropriate signs should be erected to direct visitors to the public restrooms to ensure they will be used.

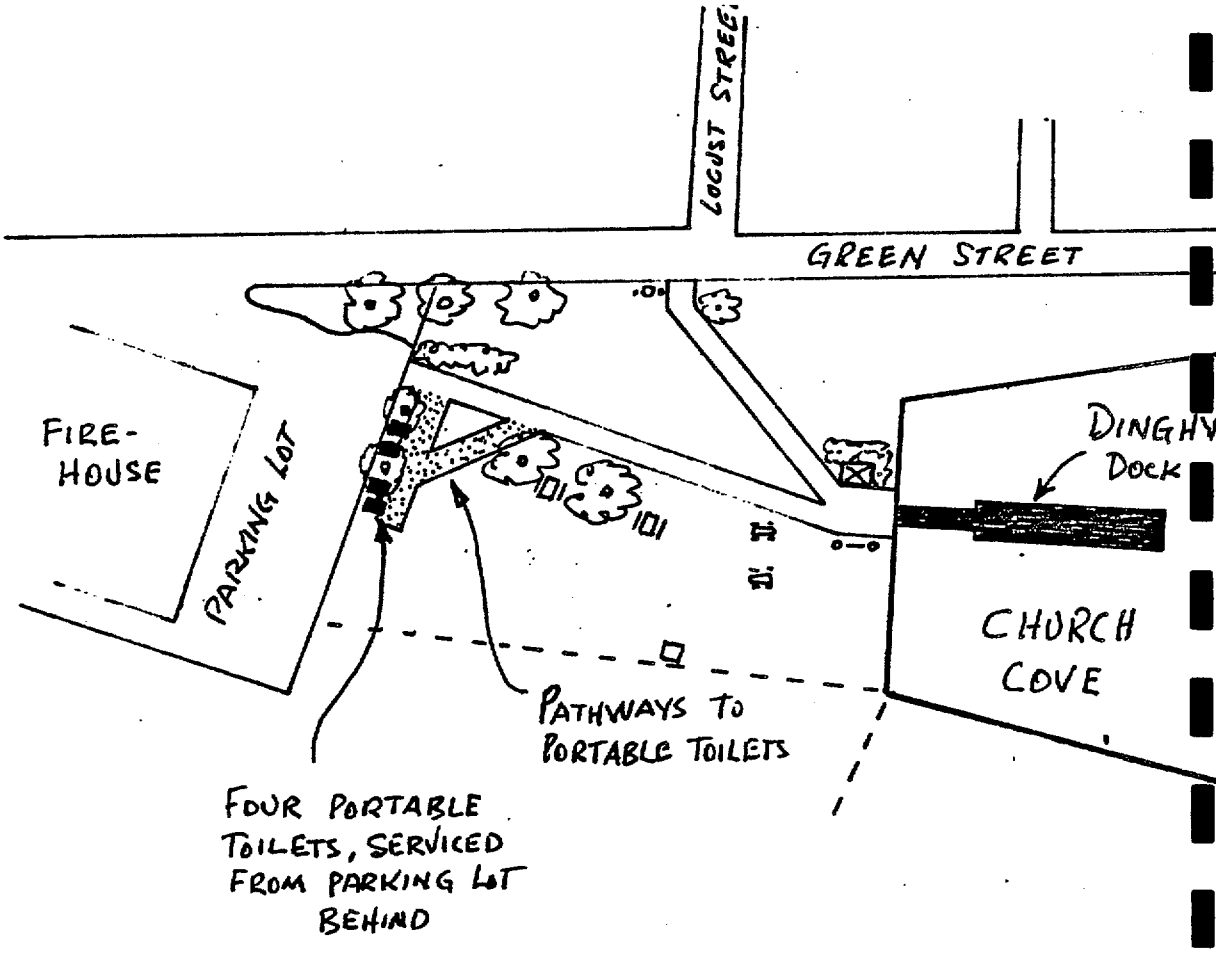
35. Apply to Waterway Improvement Division of Tidewater Administration for a grant to cover cost of the installation and service contract, pathway improvement and sign procurement, inasmuch as these facilities would primarily benefit boaters.

36. Consider the installation of portable toilets as a test of the feasibility of construction permanent facilities sometime in the future, also fundable under the Waterway Improvement Division.

Cost to Town: Probably none, depending upon how much of the project could be funded by Waterway Improvement Division. The Town's share should be minimal, if any at all.

Benefit to Town:

Visitors to the Town will have facilities they can use. These will be particularly appreciated by visitors with children. The demands otherwise made on local merchants and businesses will be reduced, a fact that will be much appreciated by them. The location in Muskrat Park is central enough to be convenient, yet will take visitors out of the immediate downtown area. Experience with portable restroom facilities will provide information for future decision making concerning the location and feasibility of permanent facilities at this unobtrusive location.



TOPIC: UNLOADING AND DOCK FACILITIES FOR WATERMEN

Problem: Present unloading and buying facilities for watermen consist of the Town Dock, which has other competing uses, a small buying station at the Crab Claw Restaurant, and unloading only at the San Domingo Creek Dock. Some loading and unloading takes place at the Town slips along West Harbor Road, but this is unsatisfactory. These facilities are congested and inadequate, with workboats rafted up three and four deep, waiting their turn to unload. Parking space is at a premium. Operation of these facilities, under present conditions, is disruptive to nearby residents and frustrating to watermen.

More space is sorely needed by watermen using St. Michaels Harbor. At the present time, there is no competitive bidding for their catches. Watermen operating out of St. Michaels receive significantly less for their catch than do others operating out of other locations. Unloading space for a second buyer is required to break this deadlock. In addition, the Town receives no revenue from oysters landed and purchased over Harbor facilities.

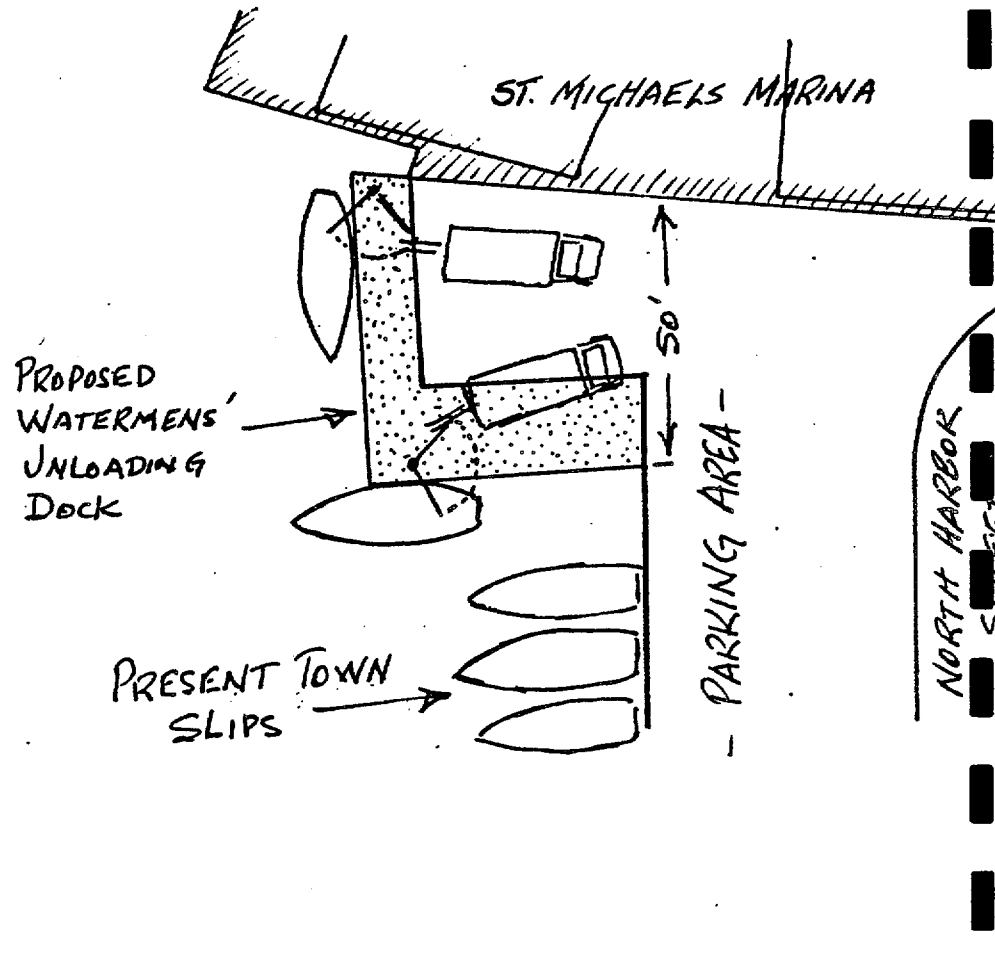
Need: To provide a loading and unloading dock exclusively for the use of watermen, large enough to accomodate competitive buying, with space for parking and truck turnaround, which could be operated as a revenue-producing project for the Town.

Recommendations:

37. The Town should construct and develop an unloading and buying area for watermen, large enough to provide competitive buying, to be operated as a revenue-producing project for the Town. See charts below for suggested locations and designs.

38. Apply for a Direct Negotiated Loan through a local bank, as suggested by the Department of Economic and Community Development, 10 years at 10% interest, to be paid back from per-bushel fee revenues collected from seafood buyers.

39. Repossess and clear Town-owned property presently occupied by Harrison Ross, adjacent to St. Michaels Marina, on North Harbor Street. He apparently has no formal aggreement with the Town and pays no lease hold fee other than a yearly slip rental. Build a Watermens' Unloading Dock on the site. See chart below for suggested design and costing.



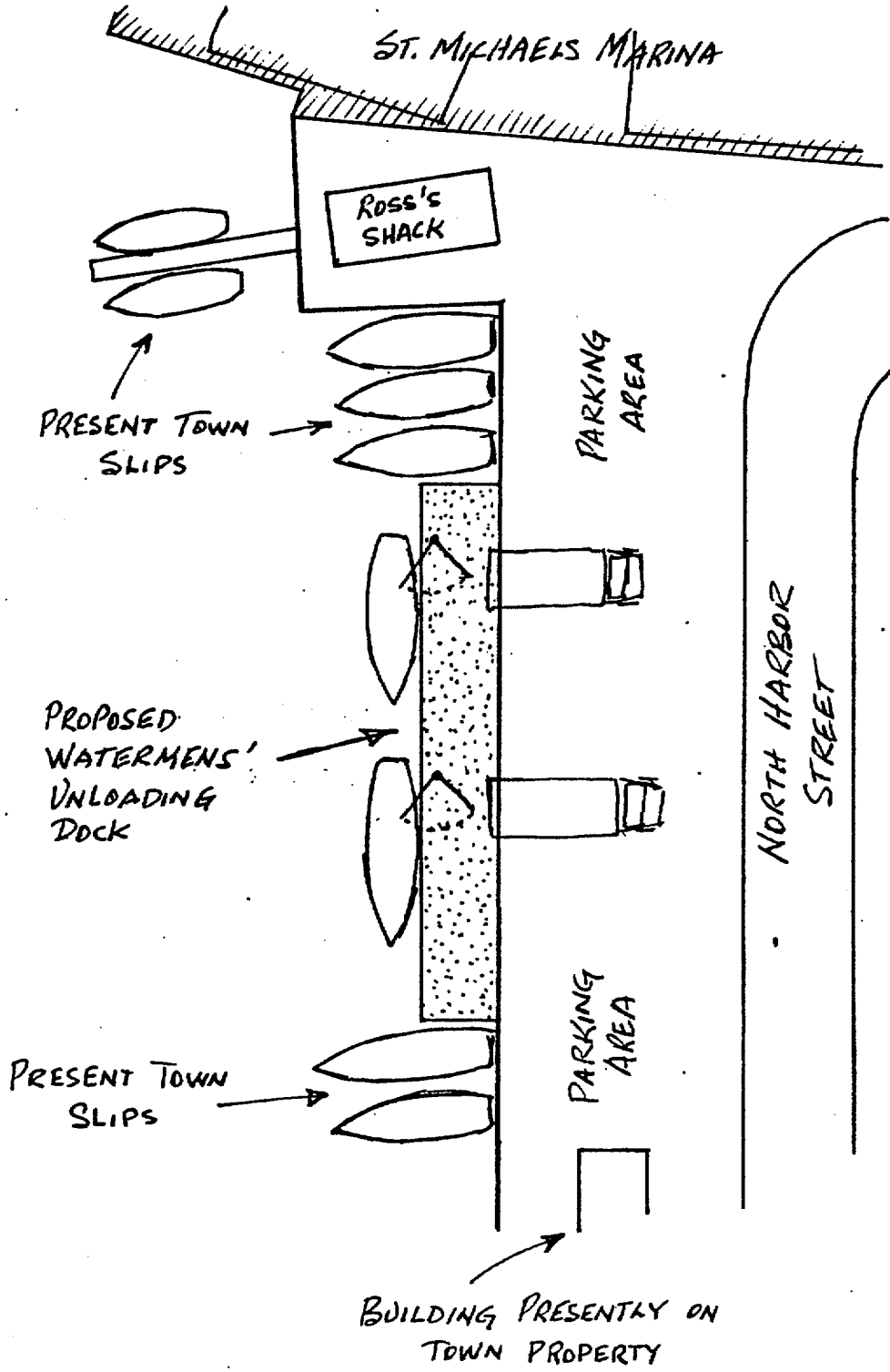
Estimated Costs:

Compensation, Harrison Ross	$ 5,000
Clear, prepare site	1,500
Wharf, 15' x 50' @ $200 per ft.	10,000
Wharf, 10' x 38' @ $140 per ft.	5,320
Electricity, water, lights	3,000
Bulkhead, fill launch ramp	1,000
Pave 160 sq. yds. @ $15 per yd.	2,400
Survey, permits	1,500

Advantages:

Lowest cost
Least obtrusive to nearby residents
Ample parking, turnaround space
Most sheltered from weather

40. If Recommendation #39 above is not feasible, build a Watermens' Unloading Dock at the second-best site, further south on North Harbor Street, on Town-owned property. See chart below for suggested design and costing.



Estimated Costs:

Wharf, 15' x 100' @ $200 per ft.	$20,000
Electricity, water, lights	5,000
Bulkhead, fill north launch ramp	1,000
Repair south launch ramp	750
Fence, visual barrier	1,500
Survey, permits	1,500
	$29,750

Advantages:

Low cost
Ample parking, turnaround area
Quite sheltered from weather

Disadvantages:

Intrudes more on nearby residents
3,700 square feet less working area
than under Recommendation #39 above.

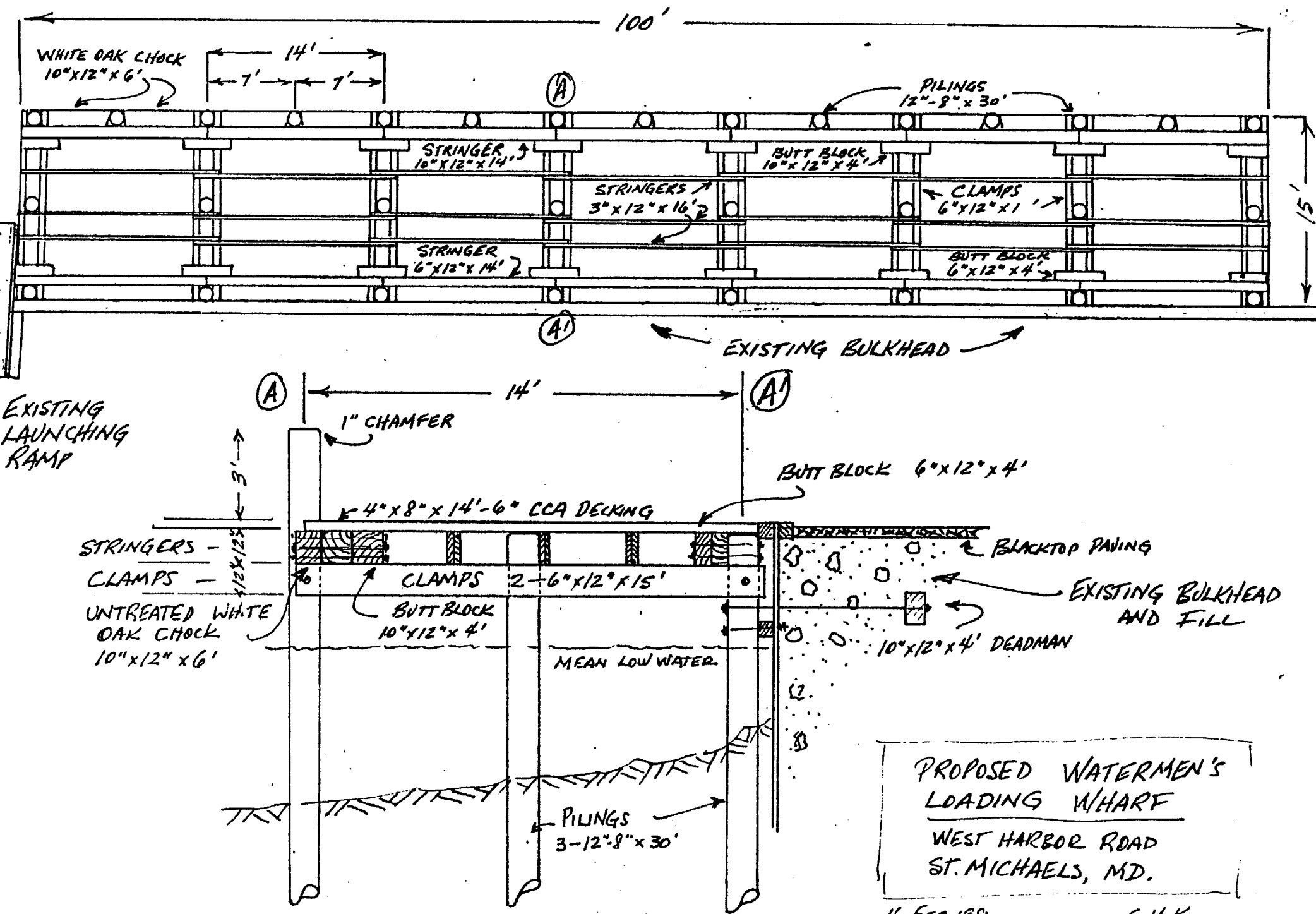
NOTE:

Wharf construction is suggested to be of heavy duty design for long life under vehicular loading. Design on following page should be more than adequate and is the basis for the estimated price of $200 per foot, at 15-foot width.

41. The Town should charge the buyer the going accepted rate of 25¢ per bushel for oysters unloaded over the Watermens' Dock, or enter into contractual relationship with a buyer for the season at some equivalent rate. A volume of 60,000 to 70,000 bushels per season can be expected, yielding a gross revenue of between $15,000 and $17,500, per year.

42. The Watermens' Unloading Dock should be for the exclusive use of watermen operating from St. Michaels Harbor in order to avoid conflict with recreational boaters. Signs should be posted: "For Watermens' Use Only."

43. At either location, rafting watermens' boats as many as five deep should be allowed and encouraged during seasons of heavy usage, as this will leave an adequate channel for navigation while at the same time accomodating the maximum number of boats.



PROPOSED WATERMEN'S LOADING WHARF

WEST HARBOR ROAD
ST. MICHAELS, MD.

16 FEB. 1981 C.H.K.

Cost to Town:

Both recommendations entail an investment by the Town of roughly $30,000. This investment can be funded by a Direct Negotiated Loan from a localinstitution, at a reduced rate of enterest. Per-year costs to the Town for principal payment, interest, insurance, and a reserve for maintenance, should amount to about $7,000. Revenues to the Town should range between $15,000 and $17,500. On a balance, there is no cost to the Town; a Watermens' Unloading Dock would constitute a net gain.

Benefit to Town:

St. Michaels has always been a working seaport. Much of its charm comes from this characteristic. Providing a Watermens' Unloading Dock, for the exclusive use of working watermen, will help perpetuate this important aspect of the Town's Life. In the absence of support from the Town, watermen may be forced out of St. Michaels by sheer economic pressure and competition.

The Watermens' Dock will be a tourist attraction for the Town, one of the few places on the Bay where visitors can still see oysters and clams unloaded and bought. It will lessen conflict between the commercial and recreational users of the Harbor. It will protect the very real contribution the watermen make to the Town's economy. It will make St. Michaels a better, happier, and more interesting place in which to live and work.

NOTE:

The Committee strongly recommends the Harrison Ross site over the other alternative. It would provide better shelter, a better workspace for watermen, and would cause little or no disturbance to nearby residents. We feel that some compromise solution can be found for Mr. Ross--compensation for moving, relocation to another Town-owned site, or something else in this vein. We feel that every possibility should be explored before this obviously superior alternative is discarded.

TOPIC: IMPROVEMENT OF TOWN DOCK

Problem: Town Dock, at the foot of Mulberry Street, has long been the main unloading point for watermen. It is over-crowded, has too little space for parking, and is a source of friction between watermen and recreational boaters as members of both groups compete for its use. There are no clear regulations governing its use. Because it is the only space available to visiting watermen, it has sometimes been abused and misused.

Need: To improve Town Dock physically so it can be as useful as possible, and establish rules and regulations so that it can be used more fairly and provide some measure of revenue to the Town.

Recommendations:

44. Widen Mulberry Street on the north side back to the Longfellow Restaurant property line to provide more room for parking, blacktop the roadway to said property line, and paint parking spaces so that more efficientuse will be made of the available space.

45. Develop a set of regulations governing use of Town Dock and post these so that commercial and recreational boaters will know what is expected of them.

46. Charge a per-bushel fee for oysters and clams purchased across Town Dock at the accepted rate of 25¢ per bushel.

47. During periods of peak use, allow and encourage rafting of watermens' boats as many as four deep, as this will help accomodate as many visiting boats as possible while leaving an open channel for navigation.

Cost to Town: Estimated $350 for widening, blacktopping, and space painting. This would be offset by revenue from sea products unloaded across the Dock.

Benefit to Town:	Use of Town Dock will be more orderly than it has been in the past. Confusion will be reduced and conflict between using factions will be avoided by the establishment of clear rules. An appreciable revenue can be realized to the Town by properly charging for catches unloaded across Town Dock.

TOPIC: IMPROVEMENT OF CHERRY STREET SLIPS

Problem: The ten Town-owned slips at the foot of Cherry Street are at the head of a narrow, constricted channel. There are no stern pilings to help watermen turn their boats into the slips or moor them securely once they are in. Parking space is barely adequate. When tourists park on Cherry Street, watermen are often unable to get their own vehicles in.

Need: To improve the Cherry Street Slips by putting in stern-mooring pilings and by restricting parking in the area to watermen only.

Recommendations:

48. Ten pilings should be placed at the Cherry Street Slips to aid in maneuvering and mooring workboats.

49. Apply to Waterway Improvement Division of Tidewater Administration for funding in placing such pilings.

50. Erect signs restricting the end of Cherry Street to parking by watermen only. See Recommendation $60.

Cost to Town: Possibly none with respect to placement of pilings. Estimate $100 for preparation and placement of signs.

Benefit to Town: Improvement of facility for use of watermen. Reduction of congestion on Bherry Street, much appreciated by watermen and by residents alike. Safer conditions for visitors walking between Museum and Town.

TOPIC: IMPROVEMENT OF SAN DOMINGO CREEK DOCK

Problem: The dock on San Domingo Creek is used by St. Michaels residents both for commercial and recreational boating. The water around the dock is shallow and cluttered with junk and trash, and is unsatisfactory in its present condition. Parking spaces are unmarked and the entire area is uninviting. More use of San Domingo Creek would take some pressure off overuse of the Harbor.

Need: To clean up the San Domingo Creek Dock so that it can be more fully used and appreciated.

Recommendations:

51. Clear the south side of Chew Avenue to provide more parking space, and paint parking spaces on pavement.

52. Clear out trash from around dock so greater use may be made of it, perhaps encouraging watermen to blow out silt with wash from their propellors.

53. Consider the acquisition of land along the old railroad right-of-way for development in the future as a second port for St. Michaels should San Domingo Creek eventually be dredged.

Cost to Town: Minimal. Estimate $150 needed to clear parking area and remove junk from water. Acquisition costs unknown.

Benefit to Town: Greater use of San Domingo Creek would remove some of the pressure presently on the Harbor. Use of San Domingo Creek would be a convenience to sport fishers because it is closer to Choptank and Sharps Island fishing grounds.

TOPIC: RENTAL OF TOWN SLIPS

Problem: The Town owns a total of 60 slips and there are at least 250 people who would like to rent them: commercial fishermen, recreational boaters, residents and non-residents. There aren't enough slips to go around and there is slim prospect that many more slips will ever become available. The Town's few slips must be allocated among their potential users in a manner that achieves the greatest good from this scarce resource.

Need: To establish a fair, readily-understood system by which Town slips will be rented, with safeguards built in to prevent abuse.

Recommendations:

54. Slip rentals should be fairly priced, realistic with respect to market values, and high enough to generate the revenues needed to cover their own costs of maintenance and eventual replacement.

55. Preference in rental of slips should go to working watermen who are tax-paying residents of the Town, and to recreational boaters who also are tax-paying residents. Resident St. Michaels watermen should have first choice, the number of these being estimated at 28 to 30. Resident St. Michaels recreational boaters should receive the balance of available slips. In no case should a non-resident be allowed to rent a slip as long as the needs of residents are unsatisfied.

56. No slip is to be rented to anyone who is not an active waterman or recreational boater, and no slip is to be re-rented except by written authorization of the Town Clerk. Slip rentals are non-transferable. Slips are to be reassigned annually to prevent abuse or misuse of the privilege. Any renter who becomes inactive, either as waterman or recreational boater, and who no longer keeps his or her own boat in the slip, shall be expected to relinquish possession of the slip immediately for reassignment.

57. In the event that a Town slip is rented to a non-resident, the charge for the slip shall be double that charged a tax-paying resident of the Town for a comparable slip.

58. The rules governing slip rentals should be posted in a public place, as should the names and addresses of slip renters, so that no questions may arise as to the fairness of the allocations made. A "Grandfather Clause" should be applied in the case of present slip renters who live within a few miles of St. Michaels and have operated ou of the Harbor over a period of time in the past, to avoid injustice being done in a few individual instances.

Cost to Town: None

Benefit to Town: Full use of the slips available, on a fair and equitable basis, is a positive benefit to the Town. Local, resident watermen will receive safe and convenient dockage for their boats at a bargain price. Such support for watermen, in the form of slips they can afford, will keep the commercial aspect of the Harbor healthy. Watermen will not be priced out of Town, as has occurred in other locations around the Bay. Watermens' boats, moored in Town slips and operating in and out of the Harbor, constitute a tourist attraction and do much to retain St. Michaels' charm and beauty. Renting the balance of the availabel Town slips to resident recreational boaters, makes for a healthy mix of users within the Harbor. Names and addresses of slip renters shall also be posted in public, so that no question may arise as to the fairness of the allocations made.

Cost to Town: None

Benefit to Town: Full use of the slips available, on a fair and equitable basis, is a positive benefit to the town. Local watermen will receive safe and convenient dockage for their boats, at a bargain price. Support for watermen, in the form of slips they can afford, will keep the commercial aspect of the Harbor healthy. Watermens' boats, moored in Town slips, constitute a tourist attraction and do much to retain St. Michaels charm and beauty.

TOPIC: POSTING OF NECESSARY SIGNS

Problem: Visitors to St. Michaels don't know where to go or how to get there, whether they come by boat or car. As a result, they are forced to explore the area for themselves, sometimes tramping across yards and gardens of Town residents to find a favored restaurant or place of interest. In cars they do much the same, turning into dead-end streets, going the wrong direction on one-way streets, blocking traffic and causing needless confusion and congestion. They do this because they have no way of knowing how to move through the Town except by trial and error.

Need: To provide that minimum system of signs which will guide visitors around the Town in an orderly manner.

Recommendations:

59. Develop an overall plan for signs that will direct visitors around the Town, protect the interests and privacy of residents, yet prevent the Town from appearing too commercial.

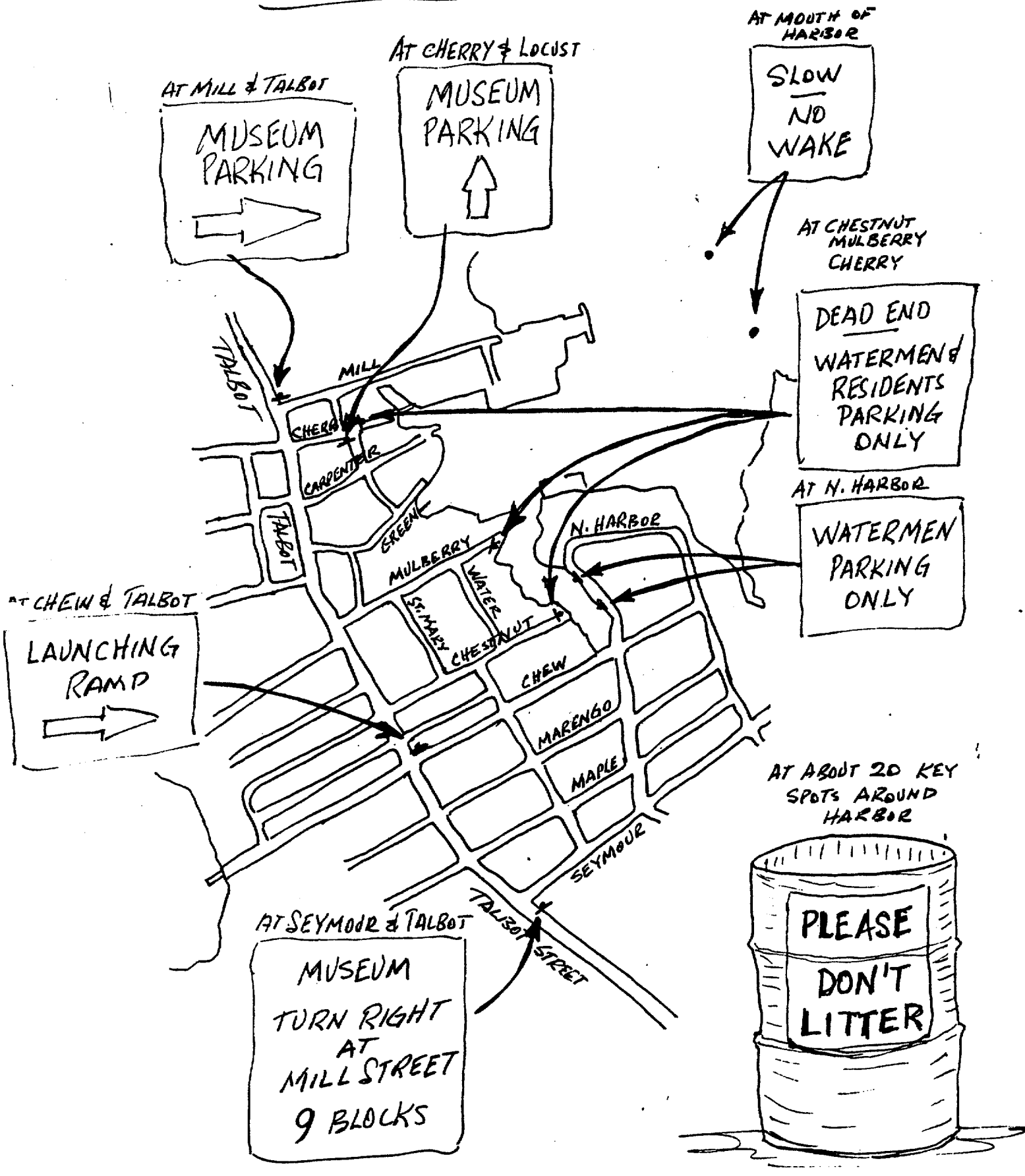
60. Restrict areas at the ends of Chestnut Mulberry and Cherry Streets to parking by watermen and residents only, and post signs so stating.

61. Post signs directing visitors coming into St. Michaels by car to the Maritime Museum parking lot in order to prevent congestion on back streets. See chart on following page for suggested locations.

Cost to Town: Estimated $500 for signs and posts.

Benefit to Town: Attractive signs would allow for a more orderly flow of visitors into and through the Town without detracting from its appearance. Addition of these necessary signs would reduce the frustration felt by residents through removing points of conflict between them and visitors. Watermen and users of the Harbor would enjoy easier access to the water, and more parking space would be available in St. Michaels and from the added convenience.

SOME NECESSARY SIGNS FOR ST. MICHAELS



TOPIC: FIRE PREVENTION AND CONTAINMENT ON THE HARBOR

Problem: Fire is a constant threat around boats and docks where highly flammable materials are handled. Congestion in the Harbor, particularly on summer weekends, complicates this problem. It is necessary that emergency equipment be able to reach any spot where fire might develop without delay. It is also necessary that Fire and Rescue personnel be able to move a burning boat away from Town docks and other boats.

Need: To provide some level of fire protection for boats using the Harbor and for property owners residing around the Harbor.

Recommendations:

62. Enact Fire and Safety Ordinance for the Harbor following the pattern of NFPA 303 so that enforcement is possible to protect against unsafe practices.

63. Authorize, train and qualify a volunteer Harbor Fire and Safety Force, in cooperation with the St. Michaels Fire and Rescue Squad, to act in case of emergency.

64. Accept with thanks the generous offer of the Maritime Museum to make a heavy-duty diesel launch available as a 24-hour standby emergency boat.

65. Equip the Museum launch with fire extinguishers, water pressure hose system, towing wires and stretchers so the boat can be ready to deal with emergencies that may arise in the Harbor.

66. Clearly mark fire lanes leading to all docks, patrol same and keep clear so equipment may be quickly brought to any boat fire.

Cost to Town: Minimal. Most equipment needed on the standby emergency launch can be borrowed from other activities. Estimated $2-0 to paint fire lanes and post available signs.

Benefit to Town: The Harbor will have some protection against fire and related catastrophe. The presence of a trained crew and a standby launch will enable any burning craft to be towed clear before other boats and shore facilities are involved. Possible liability of the Town for damages arising from fire on the Harbor will be sharply reduced. Insurance rates paid by Harborside businesses may be reduced. Residents of St. Michaels will be more secure from spread of catastrophic fire from an accident on the Harbor.

NOTE: Ordinances and regulations are here considered to be preventive rather than coercive. The Committee does not recommend 24-hour enforcement as this is unrealistic. We do recommend that the Town have appropriate regulations on the books for use in the case of flagrant violations which may pose a danger to residents and visitors.

TOPIC: WATER SAFETY AND SECURITY

Problem: Use of the Harbor is at present unregulated. There are no rules posted or enforced. The common sense of boaters is the only guidance that prevails, and in some cases that is not enough. Where there is congestion of weekends, many boaters have only marginal experience, and high winds and quick thunderstorms are always a possibility, some thought should be given to Water Safety and Security beyond trusting to luck.

Need: To provide a set of guidelines for safe and secure use of the Harbor, for the protection of visitors and residents alike.

Recommendations:

67. Enact a Water Safety and Security Ordinance following accepted patterns so that enforcement is possible to protect against unsafe practices.

68. Make use of the Volunteer Harbor Fire and Safety Force, described in Recommendation #63 above, to take actions in case of emergency.

69. Accept with thanks the generous offer of the Maritime Museum to fly and maintain Storm Advisory Signals from the Museum flagstaff at the end of Navy Point.

70. Require floodlights in all areas where boats are tied up to discourage theft, and vandalism.

Cost to Town: None

Benefit to Town: The Harbor will be a safer, better place for residents and visitors. Possible liability of the Town, in case of major catastrophe, will be lessened. There will be fewer accidents to mar the pleasure of those using the Harbor. Theft and vandalism of boats will be less likely to gain a foothold.

TOPIC: TRASH AND LITTER CONTROL

Problem: As more visitors come into the Harbor, the amount of trash and litter increases dramatically. If there are no containers at hand to receive it, the trash goes into any corner and then, with the first wind, into the Harbor. People don't necessarily want to be messy, but they won't work very hard to prevent it. The Town must take positive steps to keep the problem of trash and litter from growing beyond bounds.

Need: To establish a program of Trash and Litter Control for the Harbor.

Recommendations:

71. Develop a program of Trash and Litter Control for the Harbor which will place sufficient containers and receptacles in key locations to collect litter before it is thrown away in desperation.

72. Apply to Waterway Improvement Division of Tidewater Administration for funding to provide receptacles and cover the cost of maintaining them through the year.

73. Place a large receptacle at the head of the Dinghy Dock gangway to receive trash brought ashore by boaters, to be serviced daily, and to be screened from view by plantings, as shown in Recommendation #29, dealing with the Improvement of Muskrat Park.

74. Place approximately 20 litter barrels around the Harbor, wherever people pass or come ashore or are likely to have trash at hand to deposit. These should be serviced twice a week as part of the Town's regular garbage collection.

75. Organize a volunteer force to pick up trash and litter on heavy summer weekends, particularly to fish floating refuse out of the Harbor, before it piles up and becomes scattered

Cost to Town: Cost of servicing litter barrels around the Harbor. This cost may be underwritten by Waterway Improvement Division grant. Cost of receptacles should be covered by grant.

Benefit to Town: Incalculable. Everyone wants to visit a clean, neat town. Visitors are more respectful of a clean town than they are of a messy one, and will help keep it clean if there are receptacles to use. Residents of the Town will benefit from lack of trash and litter, and their pride and satisfaction in St. Michaels will increase. Neatness and pride breeds good citizenship. Keeping the Town clean will have its beneficial effect on everythink that the Town does.

TOPIC: DREDGING OF THE HARBOR

Problem: St. Michaels Harbor is small, and there is nothing which can be done to make it larger. About one-third of its total area is relatively useless because of water depths of less than four feet. The only way to make the Harbor more useful is to make it deeper. It is inevitable that portions of the Harbor will be dredged in the future. In addition, siltation will require that maintenance dredging be carried out from time to time.

Need: To establish a long term plan for the dredging of the Harbor.

Recommendations:

76. Because of the long lead times involved in obtaining funding, permits, and environmental clearances, plans for dredging must be made at least two years in advance. It is imperative that the Town begin immediately to plan for the dredging of Church Cove and deeply consider what projects should follow.

77. The Town must recognize that future economical dredging depends upon the availability of adequate spoil areas. Steps should be taken to assure that these areas will be ready when needed. See Recommendation #12.

78. First priority for dredging should be Church Cove, to a depth of four feet. Second priority should be given to Harrison Cove and that area lying immediately behind Parrot Point, to provide additional anchorage or mooring area. Third priority might be the outer portions of Fogg Cove.

Cost to Town: Dredging can be obtained at no expense to the Town from either the U.S. Corps of Engineers or the Waterway Improvement Division of Tidewater Administration.

Benefit to Town: Greater use can be had from the Harbor, with more convenience to residents and visitors alike. Danger from groundings and major catastrophe, such as

accidents from severe wind and hurricane flooding will be reduced. More visitors will be accomodated more easily and more residents will find greater use of their boats within the Harbor.

TOPIC: DEVELOPMENT OF ADDITIONAL SLIPS

Problem: There is very little space left in the Harbor that can be developed for additional slips. Yet more slips are needed. Many residents of St. Michaels are forced to keep their boats at some distance from their homes. At the same time, some waterfrontage exists around the Harbor which is not bulkheaded and along which slips might be built.

Need: To explore means by which bulkheading and the construction of additional slips might be encouraged.

Recommendations:

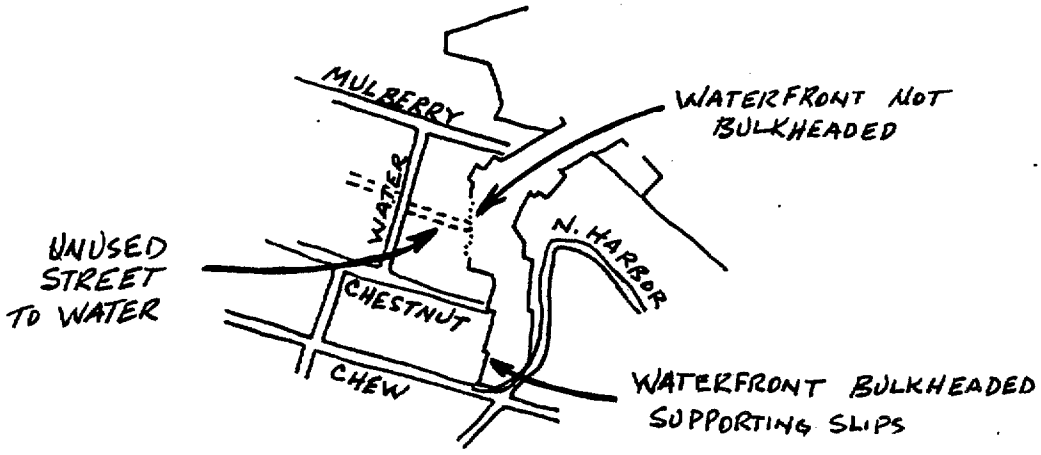
79. The Town should approach residents with property along the west side of the southern extension of the Harbor (see chart below for location) to see if they would agree to a lease arrangement by which the Town would bulkhead their waterfrontage, build slips and rent these to commercial or recreational users as a revenue measure, a small percentage being paid to the landholder. An economic study should be made to determine the feasibility of such an arrangement and the availability of money to fund it.

80. The Town should reopen the unused alley extending from Water Street to the Harbor, between Mulberry and Chestnut Streets, bulkhead the waterfrontage that faces on the street, and construct two additional slips at that location. Grant funding may be available from the Waterways Improvement Division of the Capital Programs Administration.

Cost to Town: None. The Town would not proceed unless the lease-and-rent arrangement were profitable and feasible as an additional source of revenue and the projects could be funded.

Benefit to Town: These projects would provide revenue to the Town as well as create perhaps a dozen new

slips. Bulkheading would protect and develop presently unbulkheaded land. Opening the disused street would create new access to the water and to slips presently located in the area. An additional access road to the water would enable fire and rescue vehicles to approach the waterfront in case of an emergency.



TOPIC: MARINA EXPANSION

Problem: In a commercial and recreational seaport like St. Michaels, marinas are essential. They provide services demanded by the boating public such as haul out, maintenance and repair, winter storage, slips for transient vessels, and marine supplies. The community could not function without them. But how much is enough? Some would say that more marinas are needed while others would say the Harbor is presently well served.

Need: To establish a clear policy with regard to Marina Expansion as a guideline for future development of the Harbor.

Recommendations:

80. The three working marinas presently serving the Harbor are enough. No new marinas should be allowed as there is neither space nor business to support others.

81. The three marinas presently located on the Harbor should be encouraged to expand their services within their present physical bounds, but should be discouraged from attempting to physically expand their properties at the expense of adjoining businesses or properties.

Cost to Town: None

Benefit to Town: This policy would preserve the balance and present nature of St. Michaels and its Harbor. It would protect the Harbor from becoming overly commercial. It would strengthen the present organizations and serve the interests of the boating public, for three healthy marinas are better than four or five marginal operations.

TOPIC: PLACEMENT OF FIXED MOORINGS

Problem: The present anchorage within the Harbor will accomodate a maximum of 120 boats under average conditions. They are typically of all different sizes, anchored in all different manners some safely and some not. In the case of a blow, some are bound to drag and collide with other boats.

Many harbor administrations put out fixed moorings to which boats attach. These are stronger, make better use of the space available, and protect the boats from dragging and collision. The Harbor administration charges for $3 to $5 per night. This may or may not be an action that St. Michaels will choose to take at some future time.

Need: To assess the feasibility of establishing fixed moorings in the Harbor.

Recommendations:

82. A study should be undertaken as to the economic feasibility of placing moorings in the Harbor and charging a nominal daily fee for their use.

83. A study should also be undertaken as to the economic feasibility of placing moorings in the Harbor and charging a nominal daily fee for their use.

Cost to Town: None. The project would not be undertaken unless the study indicated it as profitable to the Town and a feasible source of revenue.

Benefit to Town: Moorings would generate revenue to the Town, the amount depending upon the arrangement made for operation of the moorings. It would provide a safer and more orderly haven for visiting boats than would anchoring out. It would also provide a better basis for supervision and control than does unregulated anchoring.

TOPIC: DEVELOPMENT OF SAN DOMINGO CREEK

Problem: The only access to St. Michaels from the sea is from the Miles River into the Harbor. San Domingo Creek is presently shallow, unmarked and unattractive to recreational boaters. Yet it is substantially closer to Oxford and the Choptank than is the Miles River. Having a second port for St. Michaels would take pressure off the Harbor, both as to congestion and pollution.

Need: To undertake a study of the feasibility of developing San Domingo Creek as a second port for St. Michaels.

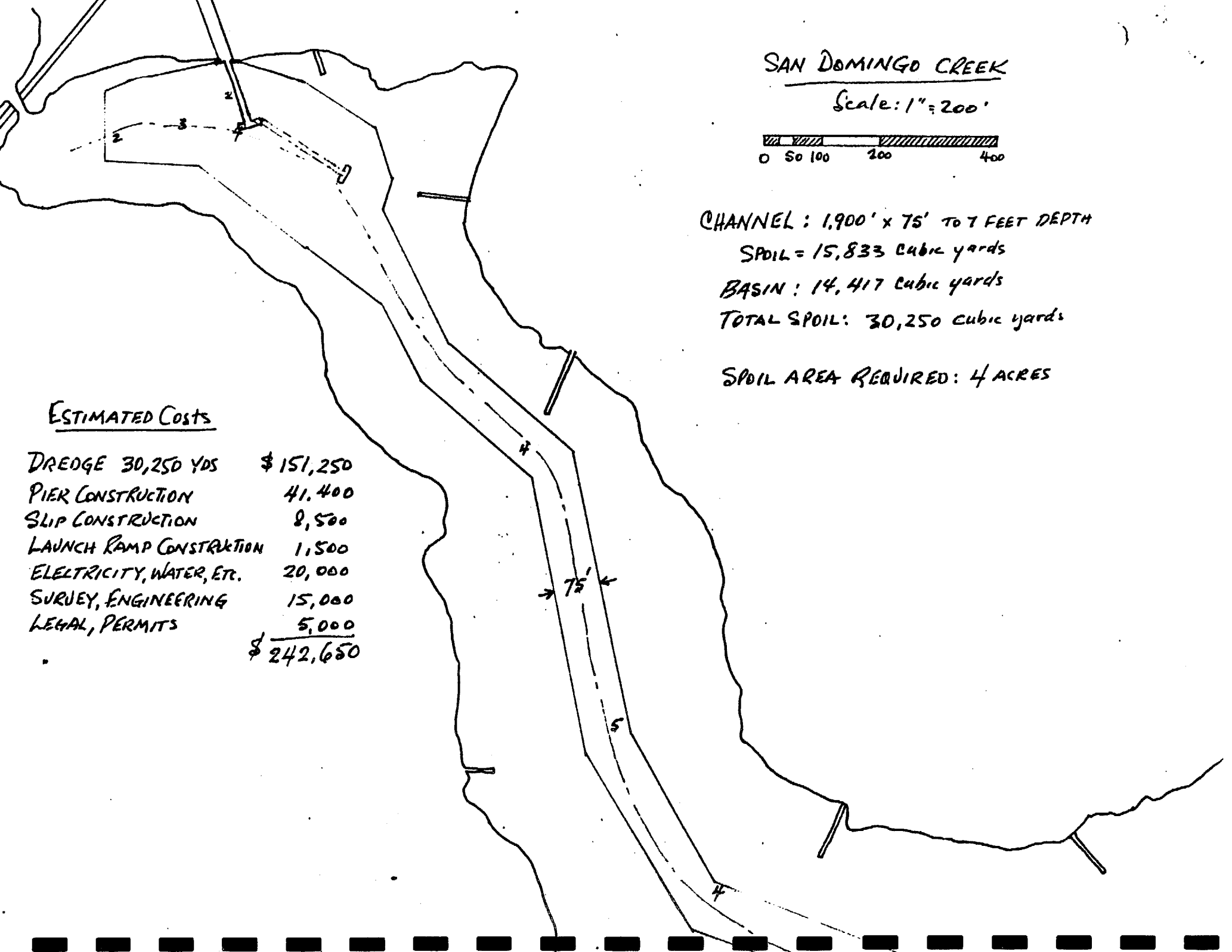
Recommendations:

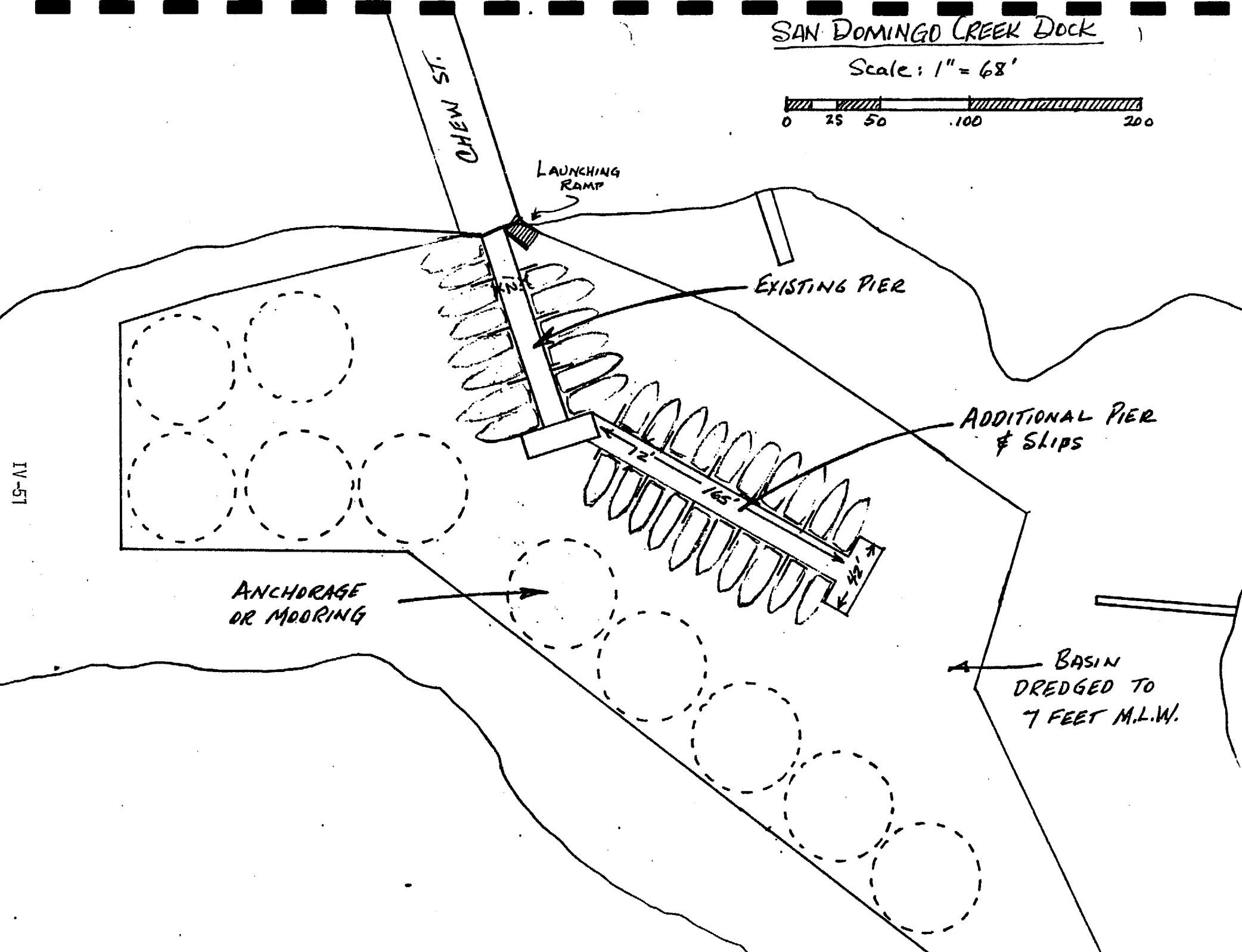
84. A study should be undertaken as to the feasibility of dredging San Domingo Creek and expanding the present dock facilities to accomodate both commercial and recreational boaters. See charts on following pages for a suggested design and estimates of cost.

85. A study should be undertaken to determine the availability of funding for such a project, where dredging of the channel might be done by the U.S. Corps of Engineers and the funding for docks and other facilities come from the Waterway Improvement Division of the Tidewater Administration.

Cost to Town: Minimum cost of conducting the study.

Benefit to Town: Would provide a firm basis for decision making. Development of San Domingo Creek itself would greatly expand the boating facilities available to Town residents. Many residents would have their boats on the Creek rather than in the Harbor as it is closer to prime fishing grounds such as the Choptank and Sharps Island. It would create 34 new slips for the convenience of boaters and provide a new source of revenue for the Town.


SAN DOMINGO CREEK
Scale: 1" = 200'
0 50 100 200 400
CHANNEL: 1,900' x 75' TO 7 FEET DEPTH
SPOIL = 15,833 cubic yards
BASIN: 14,417 cubic yards
TOTAL SPOIL: 30,250 cubic yards
SPOIL AREA REQUIRED: 4 ACRES
ESTIMATED Costs
DREDGE 30,250 YDS $151,250
PIER CONSTRUCTION 41,400
SLIP CONSTRUCTION 8,500
LAUNCH RAMP CONSTRUCTION 1,500
ELECTRICITY, WATER, ETC. 20,000
SURVEY, ENGINEERING 15,000
LEGAL, PERMITS 5,000
$242,650
75'
2
3
4
5


SAN DOMINGO CREEK DOCK
Scale: 1" = 68'
0 25 50 100 200
CHEW ST.
LAUNCHING RAMP
EXISTING PIER
ADDITIONAL PIER & SLIPS
72'
165'
42'
ANCHORAGE OR MOORING
BASIN DREDGED TO 7 FEET M.L.W.
IV-51

CHAPTER V

ADMINISTRATIVE & MANAGEMENT CONSIDERATIONS

Administrative Considerations

Introduction

In drafting recommendations for the initiation of a comprehensive management plan for the waters of St. Michaels, the Harbor Management Advisory Committee listed six primary administrative objectives. These objectives are:

1. To establish a mechanism that will protect the unique and irreplaceable traditional charm of St. Michaels Harbor.
2. To establish a legal body with oversight and managerial responsibility.....
3. To establsih a clear policy with regard to Marina Expansion.
4. To establish a minimum set of clearly stated regulations and ordinances.
5. To provide some level of fire protection for boats using the Harbor.....
6. To Provide a set of guidelines for safe and secure use of the Harbor.....

Implementing such objectives will require certain modifications and additions to the existing town administrative framework. These adjustments were separated into five individual tasks listed below:

1. Establishment of a Board of Port Wardens.
2. Establishment of a limit to the channelward extention of docks and piers (Harborline).
3. Modifications to Zoning Ordinances.
4. Establishment of Harbor Management Regulations.
5. Development of Fire and Safety Congingency Plan.

In order to properly maintain an active management program for the harbor area, the Town Commissioners may need to establish a Board of Port Wardens. The members of the Board are appointed by the Town Commissioners for three year terms and have powers as outlined in Figure No. 5.

FIGURE 3

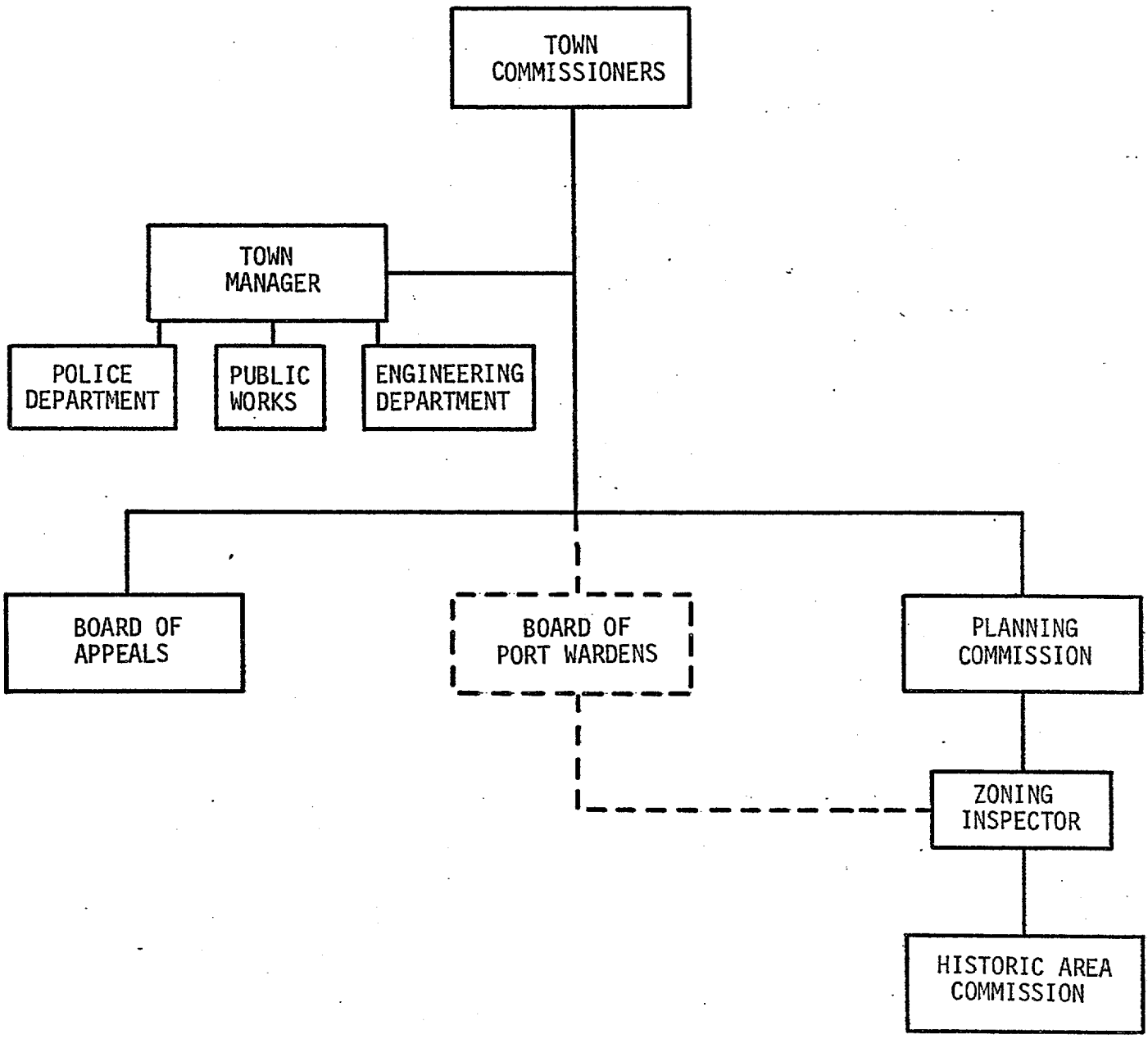
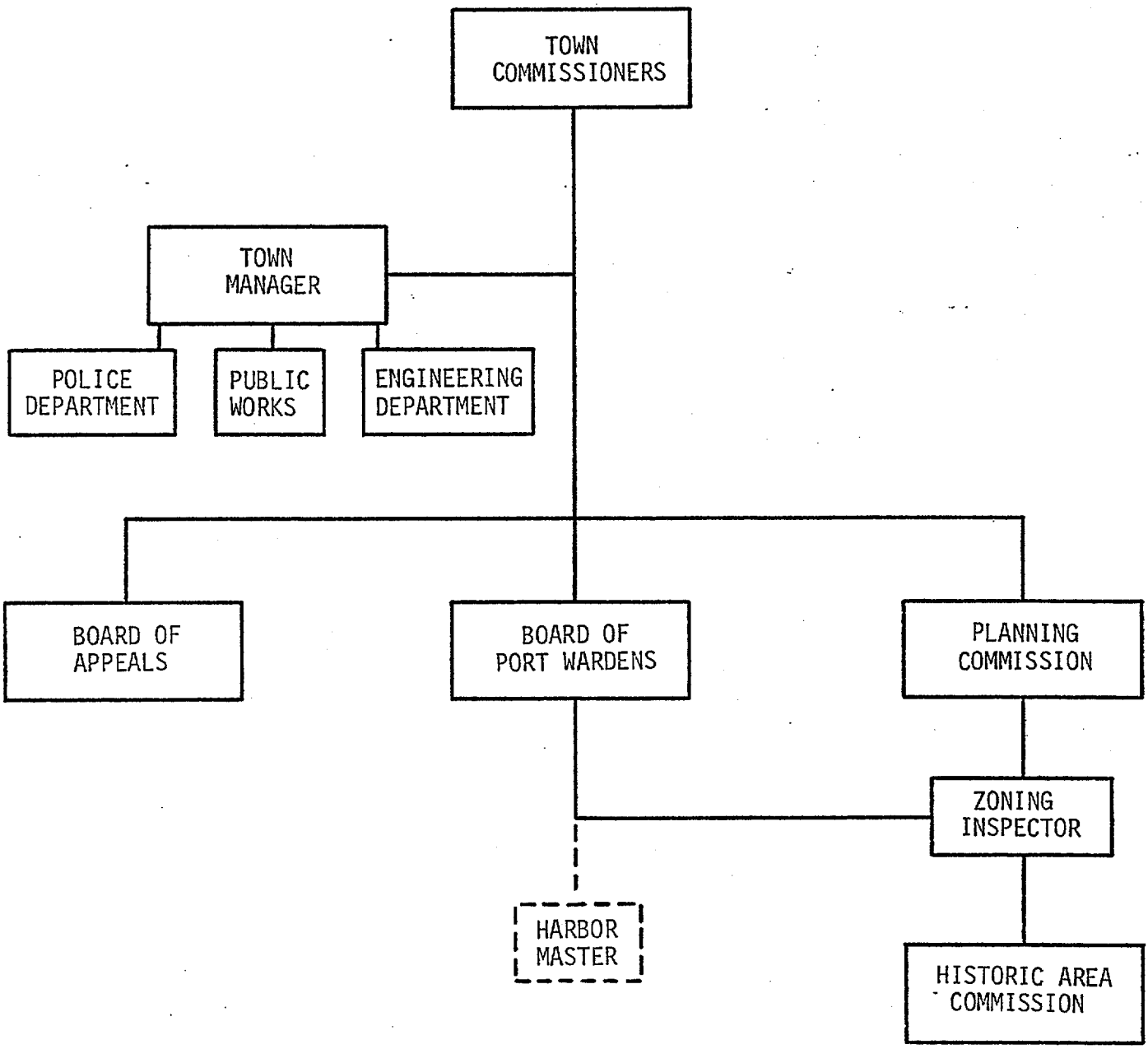

TOWN COMMISSIONERS
TOWN MANAGER
POLICE DEPARTMENT
PUBLIC WORKS
ENGINEERING DEPARTMENT
BOARD OF APPEALS
BOARD OF PORT WARDENS
PLANNING COMMISSION
ZONING INSPECTOR
HISTORIC AREA COMMISSION

FIGURE 4


TOWN COMMISSIONERS
TOWN MANAGER
POLICE DEPARTMENT
PUBLIC WORKS
ENGINEERING DEPARTMENT
BOARD OF APPEALS
BOARD OF PORT WARDENS
PLANNING COMMISSION
ZONING INSPECTOR
HARBOR MASTER
HISTORIC AREA COMMISSION

An important consideration for such an addition to the town government is interaction and overlap between proposed additions and existing commissions. Figure No. 3 graphically shows relationships between the two other growth management commissions (Planning Commission and Historic Area Commission). The Board of Port Wardens is basically on equal standing with, and independent of, the Planning Commission, however, it is important to maintain a link with the Planning Commission. This can be accomplished by incorporating the Zoning Inspector in the permitting and regulatory actions taken by the Board of Port Wardens. Additionally further adjustments will need to be made to properly interface these two commissioners. The Historic Area Commission will also be able to use the Zoning Inspector as a link between the two respective permitting programs.

Eventually, the Board of Port Wardens may require more active involvement in the day to day working of harbor management at which time the Town Commissioners may appoint a Harbormaster. Figure No. 4 shows the relationship between such a harbormaster, the Board of Port Wardens, and the Zoning Inspector. Other arrangements and/or linkages could be possible depending on the degree of need.

FIGURE 5

PROPOSED ORDINANCE FOR ESTABLISHMENT OF BOARD OF PORT WARDENS

COMMISSIONERS OF ST. MICHAELS

ORDINANCE NUMBER_____

INTRODUCED BY:_____

DATE OF INTRODUCTION:_____

A BILL ENTITLED AN ORDINANCE TO CREATE THE BOARD OF PORT WARDENS OF THE TOWN OF ST. MICHAELS, AND TO ESTABLISH THE RESPONSIBILITIES, DUTIES, AND POWERS OF THE BOARD AND PROVICE FOR THE APPOINTMENT THEREOF

BE IT ENACTED BY THE COMMISSIONERS OF ST. MICHAELS, pursuant to Section of the Charter of the Town of St. Michaels, and pursuant to Article 23A,§2, (23A), of the Annotated Code of Maryland, as follows:

SECTION 1: There is hereby created the Board of Port Wardens for the Town of St. Michaels, which Board shall consist of three (3) members appointed by the Commissioners of St. Michaels, for terms of one (1) year each, provided, however, that the initial terms of each member shall be one (1) year, two (2) years, and three (3) years, respectively, as designated by the Commission.

SECTION 2: The Board of Port Wardens shall hold public meetings at least once every month.

SECTION 3: The Board of Port Wardens shall have the following powers, duties and responsibilities:

1. To regulate the placement, erection, or construction of structures or other barriers within or on the waters of the municipality, including but not limited to the issuing of licenses to create or build wharves or piers and the issuing of permits for mooring piles, floating wharves, buoys, or anchors, taking into account the present and proposed uses, and the effect of present and proposed uses on marine life, wildlife, conservation, water, pollution, erosion, navigational hazards, the effect of the proposed use on congestion within the waters, the effect on other riparian property owners, and the present and projected needs for any proposed commercial or industrial use.

2. The Port Wardens shall have the power to regulate the materials and constructions for the aforesaid improvements and to make certain that any improvements in the waters within the municipality do not render the navigation too close and confined. This provision in no way intends to affect or conflict with any zoning power otherwise provided for.

3. In no case shall the Board of Port Wardens grant any permit or license construction in or for a waterfront structure which would extend beyond the limit for channelward extention designated by a registered survey called St. Michaels harborline.

4. The Board of Port Wardens shall have the power and duty to enforce the laws, ordinances, traffic and safety regulations, covering usage in the waters of the municipality under their jurisdiction.

SECTION 4: No person may build and wharf or pier, or carry out any earth or other material for the purpose of building a wharf or pier, nor shall any persons place or erect mooring piles, floating wharves, buoys, or anchors without a license or permit from the Port Wardens. If any person violates the provisions of this section, or if any person builds any wharf or pier a greater distance into the waters of the port, or in a different form, or of different materials than determined and allowed by the wardens, he is subject to a fine as hereinafter imposed.

SECTION 5: The Board of Port Wardens may adopt such reasonable rules and regulations, including permit or license fees, as it deems necessary for the conduct of its business; provided, however, that all such rules, regulations, and fees shall be approved by the Commissioners of St. Michaels.

SECTION 6: Violation of any provision of this Ordinance shall be a municipal infraction as described in Article 23A, §3, Annotated Code of Maryland, and a fine of $100.00 shall be imposed for each conviction hereunder. Each day in violation shall be considered a separate offense and subject to separate citations. A fine of $200.00 shall be imposed for each repeat offense.

SECTION 7: In all differences that arise between any aggrieved party and the Port Wardens concerning the discharge of the duties of the port wardens, an appeal may be taken to the Commissioners of St. Michaels.

SECTION 8: AND BE IT FURTHER ANACTED, That if any provision of this Ordinance or the application thereof to any person or circumstance is held invalid for any reason, such invalidity shall not affect the other provisions or any other application of this Ordinance which can be given effect without the invalid provisions or application, and to this end, all the provisions of this Ordinance are hereby declared to be severable

SECTION 9: This Ordinance shall be effective upon its adoption by the Commissioners of St. Michaels.

ESTABLISHMENT OF A HARBORLINE

INTRODUCTION

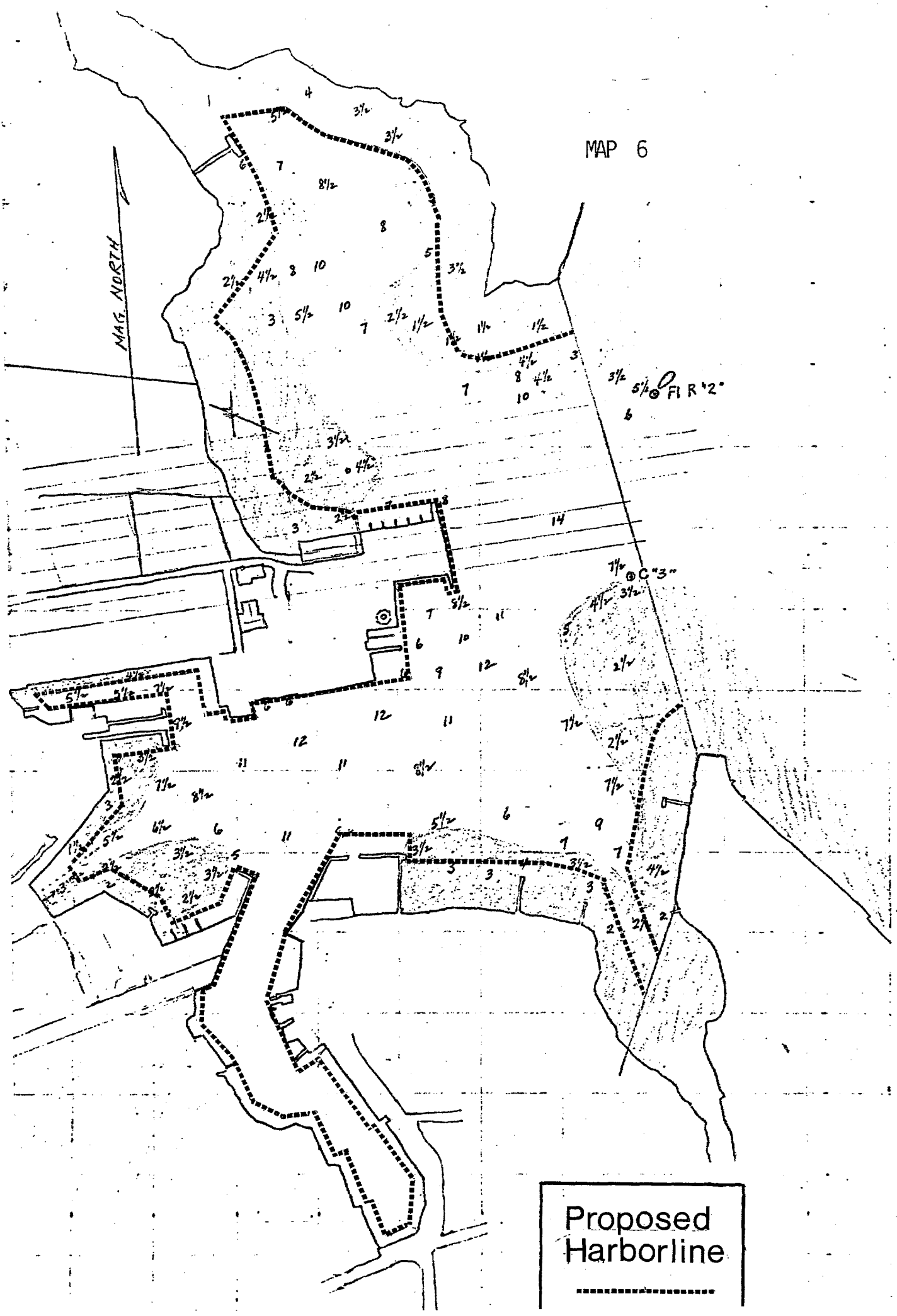
As a result of increasing pressures for growth and expansion channelward, St. Michaels is being forced to better define and secure those portions of its waterway that must be held as free and open for all to use. However, efforts aimed at accomplishing this must be cognizant of the fact that all riparian landowners have a basic right of access to the adjacent waterway. With this in mind a procedure for demarcating a line to be used as the limit of maximum channelward extention was developed. It should be noted that establishment of such a line is not intended to deny any riparian landowner rights or privileges that are normally associated with riparian ownership. Additionally the establishment of such a boundary is not designed to deprive use or ownership of any fixed waterfront structure which was lawfully installed and in use before the establishment of the harborline. However, the creation of such a line is intended to regulate all construction of commercial, community, public and private piers, mooring piles and moorings within the waterways under jurisdiction of the town of St. Michaels.

HARBORLINE DESIGNATION

In establishing limits for channelward extention, compromises must be made between boat traffic and open water mooring requirements and landward access rights and privileges. These considerations were made and a method for designating a harborline was developed under the approval of the Harbor Advisory Committee.

Because the harbor has a diverse mix of uses, separate portions of it were given different harborline designation criteria. The harbor was separated into four primary areas (see map No. 6):

1. Harbor Entrance Area
2. Central Harbor Area
3. South Cove
4. Fogg Cove.


MAP 6
MAG. NORTH
Proposed
Harborline

The Harbor Entrance Area has a harborline that is determined primarily by the designation of a harbor channel and open water mooring area. However, portions of the North Harbor Road and Parrotts Point harborline will be determined by modifications in the St. Michaels' Zoning Ordinance.

The harborline designation for the Central Harbor Areas was established according to the same constraints as the Harbor Entrance Area. That is, the need for a harbor channel and openwater mooring areas.

The third area for harborline designation was South Cove. Because South Cove is a long slender cove the establishment of a harborline was done in light of the traffic requirements for such an area. Channel requirements near the mouth of the cove will be greater than near the head of the cove. Because of this condition the harborline is drawn 3 feet from the existing bulkhead toward the mouth of the cove, and 40 feet from the bulkhead toward the head of the cove.

In contrast Fogg Cove is relatively uncongested and comprised of singular land use types. Thus channelward extension can be easily managed through modifying the St. Michaels' Zoning Ordinance. To allow "wharfing out" to go to either 125 feet or to the harborline, whichever is shorter. (See Map No. 6).

MODIFICATION OF THE ST. MICHAEL'S ZONING ORDINANCE

INTRODUCTION

During the last two decades St. Michaels has undergone increasing changes in its economic base and town population. The growth of tourism and the influx of retired and semi-retired individuals has brought a changing awareness for its waterfront. The waterfront is no longer seen as a parking area for workboats or the boatbuilders backyard but it has become instead, a resort area for the yachtsmen and an extention of the waterfront land owners frontyard. Consequently these changes have brought about a situation that requires the redefining of previously accepted standards for growth and development over the water.

Because the primary means of regulating such growth in town is the St. Michael's zoning ordinance, many of the required changes must be made through that ordinance. Previously the portion of the zoning ordinance that dealt with the waterfront and its associated land uses was broad and general in its wording. As a result of the above mentioned pressures these generalities have become vague and unclear in their intent and purpose.

RESIDENTIAL ZONING

Currently the only mention of waterfront structures for residential areas in the zoning ordinance is under permitted uses for the R-1 Zone. This reference is simply "Permitted uses #6; Public and Private Boat Landing Areas".

PUBLICLY OWNED WATERFRONT

Within the R-1 Zone are various publicly owner bulkheads, slips and a town wharf. Some of these areas are used for commercial fishing activities (buying and selling of wholesale seafood) as well as mooring of recreational boats. If these activities are considered desirable in these locations then they should be provided for at such publicly owned property.

PRIVATELY OWNED WATERFRONT

Because of the continual pressure for construction of waterfront structures and the limited size of the harbor it maybe necessary to restrict the number of waterfront structures to one per land parcel. The length of the structure should be set at 125 feet or to the proposed harborline whichever is less. This would allow landowners in uncongested areas to "wharf out" sufficiently and will also maintain areas beyond the harborline free from obstruction. This requirement need only be stated for the R-1 Zone since R-2 Zoning for waterfront structures includes all permitted uses of the R-1 Zone. In the near future the Town Planning Commission will be establishing a new Zone titled R-3. This is intended to regulate Townshouses and Condominiums. This new zoning will enable the town to regulate all community piers that are constructed in order to avoid the proliferation of community piers beyond the capacity of town waters. An additional safeguard for avoiding this type of overdevelopment would be to limit slips in community piers to units adjacent to the water. In cases of joint or condominium ownership of waterfront by adjacent landlocked property owners the permissable number of slips should not exceed that normally allotted to the same waterfront property with the zoning ordinances' highest density zoning.

MARITIME COMMERCIAL WATERFRONT

No major changes to this zone classification is indicated at this time. However, there is some considerable doubt among various town officials and employees regarding the accuracy of the present official zoning map. Currently all of the land lying between Carpenter Street, Cherry Street, and Locust Street is denoted as being Maritime Commercial. Most opinions are that only the land occupied by Higgins Boat Yard was intended to be Maritime Commercial. This discrepancy should be resolved and any required changes made immediately.

REQUIRED CHANGES IN ZONING ORDINANCE FOR ESTABLISHMENT OF A HARBORLINE

Following the establishment of a harborline, certain changes and additions to the zoning ordinance must follow in order to make full use of such a land/water use tool. Within the State of Maryland several jurisdictions have established harborlines and made necessary changes in their zoning to implement item. Some of these are Anne Arundel County, City of Annapolis, and Calvert County. Article 15 of the Calvert County Zoning Ordinance is a good indication of the zoning changes required to incorporate such a management tool and serves as a model for the zoning changes that follow. In order to establish such a harborline, the Commissioners of St. Michaels will be required to have an Official Survey of the exact harborline location. This will be an expensive procedure but will enable the harbor of St. Michaels to be maintained free of overdevelopment both now and in the future.

RECOMMENDED WATERFRONT STRUCTURE ZONING CHANGES

1. Purpose: To provide regulations for the orderly development of the waterfront areas within the waters of the municipality.

Except as specifically provided in this section, a riparian owner may not be deprived of any right, privilege, or enjoyment of riparian ownership (as access to or use of a waterway) legally excercised prior to adoption of St. Michaels harboring. The provisions of this section do not transfer the title or ownership of any waterway or interest in a waterway.

2. Applicability: The provisions of this section and any rules and regulations adopted pursuant thereto shall be applicable to, and shall govern, the construction of all waterfront structures within the waters of the municipality.

The location of harbor line and shoreline established heretofore are as shown on the Map entitled "St. Michaels Harbor Lines". Said map and all notations, dimensions, references and other data shown thereon, as well as properly attested amendments to the aforesaid, are a part of the St. Michaels Zoning Ordinance.

This section shall be in addition to existing Federal and State regulations governing the same matters and is not intended to pre-empt other valid laws. The more restrictive regulation shall take precedence.

3. Definitions: Recommended additions to Zoning Ordinance definitions.

Anchoring: To secure a watercraft to the bottom of water by dropping an anchor or anchors with a buoy or other ground tackle.

Berth: A place where a watercraft may be secured to a fixed or floating structure and left unattended.

Berthing area: The water area in which boats are berthed.

Bulkhead: A structure or partition to retain or prevent sliding of the land into the water. A secondary purpose is to protect the upland from wave action.

Developable waterfront land: Any waterfront property from which access to a waterway area can be achieved.

Finger pier: A small pier structure attached (usually perpendicular) to the headwald of a multislip pier; usually provided to facilitate access to the berthed watercraft.

Harbor line: The line defining the maximum channelward limits of marine construction, defined by and encompassing that construction lawfully installed in a given developable waterway area and identified by solid unbroken lineation on the harbor line maps.

Harbor line map: A map of the Town of St. Michaels, graphically showing shorelines of the waterways of the Town channel markers and harbor lines.

Harbormaster: The officer of the city who executes the regulations respecting the use of the harbor and the waterways.

Lateral lines: Lines extending from the shoreline to the harbor line separating adjacent developable waterway areas.

Marina: Any arrangement of piers, slips, mooring piles, wharves, and/or buoys emplaced in the water and on abutting land and which is intended to be used for the berthing, storing, mooring, securing, servicing, repairing, selling or trading, and/or renting of watercraft and is not a private or community pier and mooring.

Mooring:

(a) A place where watercraft are secured other than a pier.

(b) The equipment used to secure a watercraft.

(c) The process of securing a watercraft other than by anchoring.

Mooring buoy: An appliance used to secure to the bottom by anchors and provided with attachments to which a watercraft may be secured by use of its anchor chain or mooring lines.

Municipal infraction: A municipal infraction is any violation of a town ordinance, which violation has been specifically declared to be a municipal infraction. See section 17 of the St. Michaels Zoning Ordinance.

Piers and moorings, community: Any type of structure, fixed or floating, and extending from community, condominium-owned, or leased property, generally referred to as a pier, dock or wharf, including pilings, buoys, and other such facilities, and used for the berthing of watercraft registered to residents of the community within which the property is located or to residents or co-owners of the condominium-owned property from which the facility extends. A community pier may also be used only for the temporary berthing of watercraft owned by and registered to visitors of residents of the community or condominium, but only during such a visit.

Piers and moorings, private: Any type of structure, fixed or floating, generally referred to as a pier, dock or wharf, including pilings, buoys, and other such facilities, used primarily for the berthing of watercraft owned by and registered to the owner and/or tenant of the property from which the facility extends.

Riprap: A layer, facing, or protective mound of stones randomly placed to prevent erosion, scour or sloughing of a structure or embankment.

Shoreline: The mean high water line or the waterward line of an existing buldhead, riprap or gabion as shown on the harbor line maps.

Slip: Any arrangement of a pier and/or one or more mooring piles and/or buoys designed and intended to be used for the wet storage of a single watercraft.

Useable waterway area: The waterway area lying between the shoreline, the harbor line and the lateral lines of waterfront property.

Watercraft: Any boat or vessel used for either pleasure or commercial purposes in any waterway.

Waterfront Structures; Any number of structures employed to facilitate access to waterfront, including, but not limited to bulkheads, wharfs, piers, floating docks, or mooring piles.

Waters of the municipality: Means all waters owned, managed, or controlled by the Board of Port Wardens or under the jurisdiction of the Commissioners of St. Michaels in which the tide ebbs and flows, whether or not the ordinary or mean high tide line of the Chesapeake Bay has been fixed by ordinance, statute, court action or otherwise and whether or not the lands lying under said tidal water are privately or publicly owned.

Waterway: Any water area providing access from one place to another, primarily a water area providing a regular route for water traffic.

Recommended changes to Section 5, subsection 1: Permitted Uses, item (6)

Replacement of "Public and Private Boat Landing Areas" with Shore Erosion Protection devices of sufficient size and design to be effective; such as bulkhead and riprap.

Recommended additions to Section 5, subsection 1: Accessory Uses.

(6) Within the useable waterway, one pier, dock or other waterfront structure designed to be used solely for access to the waterfront or for the securing of a vessel.

Recommended changes to Section 5, subsection 1: Special Exceptions, item (7)

(7) Boat Launch Ramps may be approved in the useable waterway when authorized as a special exception by the Board of Appeals.

Recommended additions to Section 6, subsection 6: Supplemental zone regulations, waterfront development requirements.

1. Determination of Useable Waterway Areas: The useable waterway area is the area enclosed by the harbor line, shoreline and lateral lines.

A. Harbor and Shorelines: The harbor line and shoreline are the lines labeled as such on the applicable Map for Harbor Lines.

B. Lateral Lines: The lateral lines are imaginary lines separating adjacent useable waterway areas, and are determined graphically as follows:

1. Prepare a scale drawing showing the applicant's property and all adjacent waterfront properties within a 200' radius of the shoreline owned by the applicant. (SEE FIGURE 6A)

2. On the scale drawing, add the shorelines and harbor lines as shown on the appropriate Map for Harbor Lines.

3. Intersect all property lines with the shoreline (Points A,B,C,D,E,F on Figure 6A).

4. From the applicant's property line-shoreline intersections (Point D,E, on Figure A) intersect a 200' radius with the shoreline (Point 1, 2 on Figure 6A).

5. From the applicant's property, connect all property line-shoreline points, ending at points 1 and 2 with straight lines (D to C, C to B, B to 1, E to 2 on Figure 6A).

6. Bisect the angle formed by these straight lines and extend the lines bisecting the angle from the shoreline to the harbor line. These are the lateral lines (B-G, C-H, D-I, E-J on Figure 6A).

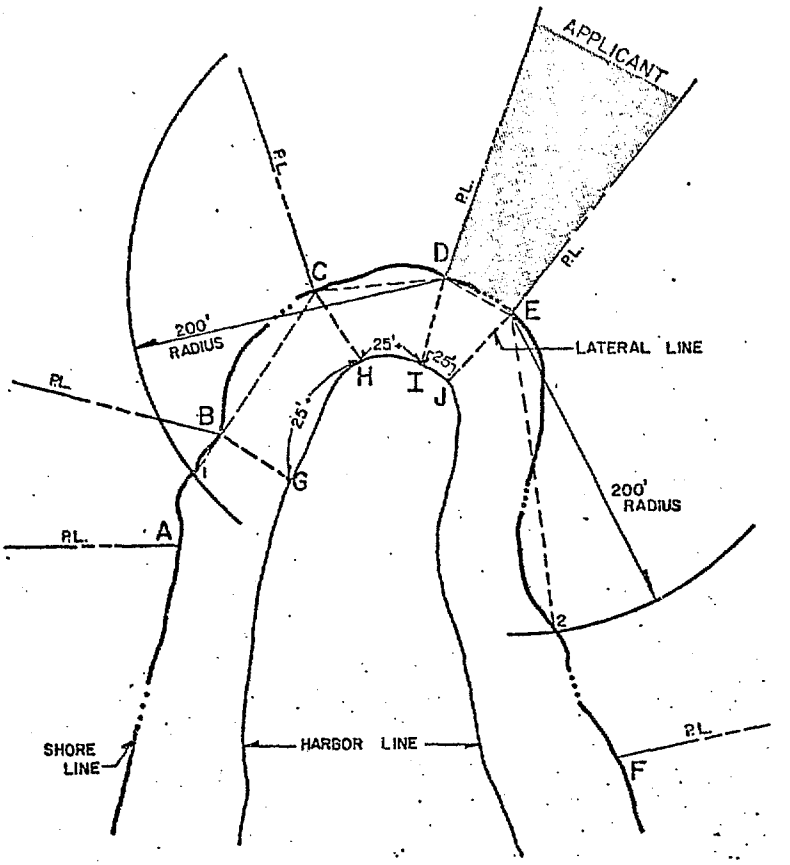


FIGURE 6A

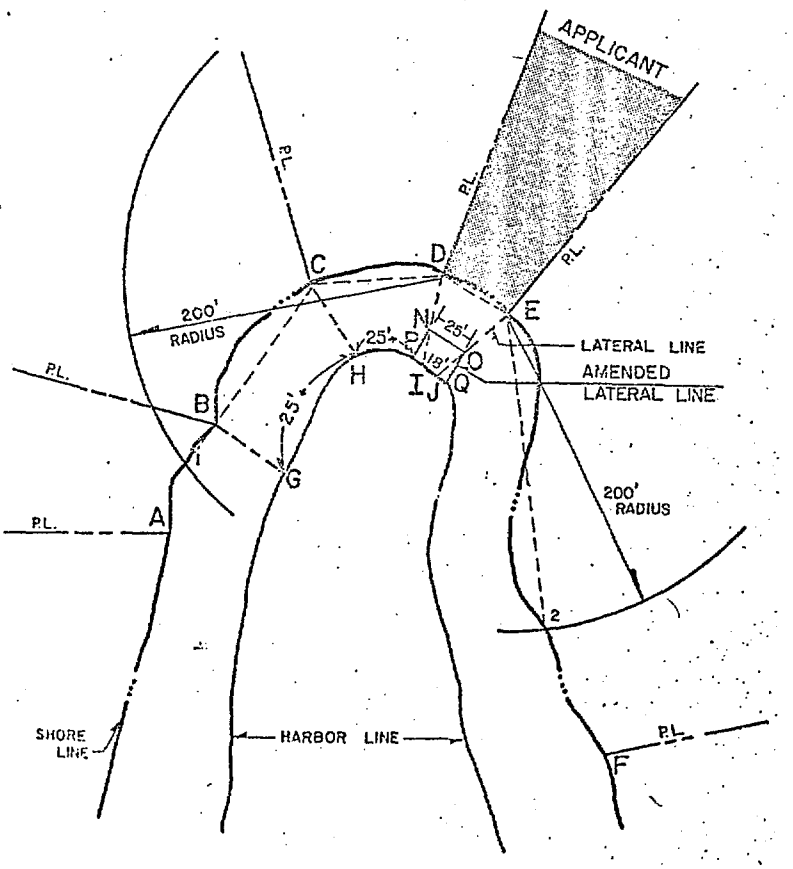


FIGURE 6B

C. Establishment of Useable Waterway Area: The useable waterway must be determined for all properties having a pair of lateral lines as shown on the applicant's drawing. For an acceptable useable waterway area, the following conditions (See Figure 6A) must be met:

1. If a pair of lateral lines extended to the harbor line result in a distance of 25' or more on the harbor line (lines G-H, H-I, I-j), the lateral lines (E-I, E-J) are satisfactory and these lines and the harbor and shorelines define the useable waterway area for the applicant.

2. If any pair of lateral lines extended to the harbor line results in a harbor line segment (G-H, H-I, I-J, FIGURE 6 A) of less than 25', the lateral lines are unacceptable and shall be modified in accordance with paragraph 10, of this section.

3. If any pair of lateral lines extended intersect before reaching the harbor line, the lateral lines are unacceptable and shall be modified in accordance with paragraph of this section.

2. Amendments to Lateral Line: Where a conflict occurs as outlined in paragraph 7 of this section, the lateral lines will be modified as shown on Figure B. An imaginary line shall be moved toward the shoreline and parallel to line D-E, (Figure B) until a twenty-five foot (25') clearance is obtained (line N-O, FIGURE 6 B).

Two additional lateral lines N-P and O-Q will be drawn perpendicular to line N-O from points N and O to the harbor line. The lines D-N-P, E-O-Q are the new lateral lines for the applicant's parcel and the adjoining properties.

For all amended lateral lines construction will be limited to the area enclosed by the shoreline, the lateral lines (D-N, O-E) and the imaginary clearance line N-O (FIGURE 6B) This procedure will insure adequate clearances for adjacent piers.

These new lateral lines, the harbor lines and the shoreline define the useable waterway area for the applicant.

3. Setbacks

A. Harbor Line Setbacks Any piers, "T" heads, "L" heads, mooring piles, moorings and/or anchorages must be setback from the harbor line an appropriate distance to assure that no moored vessel or permanent or temporary obstruction extends beyond the harbor line.

B. Adjacent Property Owners Agreement The lateral line setback may be reduced if a letter of no objection is obtained from the adjacent property owner and a rendered covenant to the property filed with the commissioners of St. Michaels. The mutual use of piers and/or mooring piles by adjacent property owners is encouraged and recommended whenever possible.

4. Pre-existing Uses: Any marine facilities lawfully existing at the time of the adoption of this Regulation may continue to be used even though such marine facility or use does not conform to use or dimensional regulations as herein defined.

Any alteration of an existing non-conforming marine facility or use is subject to the provisions of this section.

5. Construction Details

A. All waterfront structures for use in the commercial and residential zones shall have plans and details of proposed construction prepared by a licensed engineer for municipal review and approval.

B. Piers: Piers shall be limited to seven feet of width with all "T" or "L" head sections, not to exceed one third of total length of structure.

C. Bulkheading may not be constructed in the waterway beyond the shoreline except as approved by the Board of Port Wardens for the purposes of straightening minor shoreline irregularities or efficient bulkhead construction.

6. Fire and Safety

A. Fire Protection - All marine facilities shall conform to the requirements at NFPA-303 Fire Protection Standard for Marinas and Boatyards of the Maryland Fire Prevention Code. Fire protection devices shall have the approval of the Fire Marshall having jurisdiction.

B. Unsafe Conditions - No obstruction, floating or sunken, may remain in the useable waterway area such as to present a hazard to any vessel or person.

7. Municipal Permits

A. Building Permit: A building permit is required to construct, modify, enlarge, rebuild, or repair any waterfront structure. This permit is obtained from the building inspector.

B. Board of Port Wardens Permit:
See ordinance establishing Board of Port Wardens.

C. Historic Area Commission Review:
See St. Michals Zoning Ordinance, Section 7.

8. Other Permits and Approvals

A. State and Federal permits and approvals applicable to construction, modifications, enlargement, reconstruction, repair, etc. of marine facilities shall be obtained and submitted to the Commissioners of St. Michaels as a prerequisite to issuance of required municipal permits.

Proposed Harbor Management Regulations

Introduction

In a step toward implementing the objective of the Harbor Management Advisory Committee, a proposed Harbor Management Ordinance was drafted and reviewed by a subcommittee comprised of two Harbor Management Advisory Committee members, the town's manager and the project planner for the Harbor Management Plan Project. The outline and organization for the ordinance follows closely the Model Ordinance for Small Craft Harbors from SMALL CRAFT HARBORS: DESIGN, CONSTRUCTION, AND OPERATION BY JAMES W. DUNHAM AND ARNOLD A. FINN; SPECIAL REPORT NO. 2, U.S. ARMY CORPS OF ENGINEERS.

The regulations as drafted are not intended to be strictly enforced but should however, offer the Town Commissioners and Board of Port Wardens the necessary legal posture to maintain the waters of St. Michaels as the citizens of that town see fit.

PROPOSED HARBOR MANAGEMENT ORDINANCE

ARTICLE I

GENERAL PROVISIONS

Sec. 1. Short Title: This ordinance shall be known and may be cited as the "Harbor Management Ordinance."

Sec. 2. Applicability: The provisions of this Ordinance and any rules and regulations adopted pursuant thereto shall be applicable, and shall govern, the harbor (s) and all other maritime facilities under the jurisdiction of Commissioners of St. Michaels. This Ordinance shall be subordinate to existing Federal and State regulations governing the same matters and is not intended to preempt other valid laws.

Sec. 3. Invalidity of Provisions: If any provisions of this Ordinance is held invalid or inoperative, the remainder shall continue in full force and effect as though such invalid or inoperative provisions had not been made.

Sec. 4. Authority: Whenever, by the provisions of this Ordinance, a power is granted to the Board of Port Wardens or a duty is imposed upon them, the power may be exercised or duty performed by a deputy of the Board of Port Wardens or by a person authorized pursuant to law, unless it is expressly otherwise provided.

Sec. 5. Facilities, Control of Use: The Board of Port Wardens is vested with authority over and control of all floats, wharves, docks, and other facilities owned, leased, controlled, constructed or maintained by the Commissioners of St. Michaels, or constructed or maintained by a lessee in The waters of the municipality for the purpose of causing to be corrected any condition.

Sec. 6. Rules, Regulations and Orders: The Board of Port Wardens shall have the power and duty to enforce the laws, ordinances, traffic and safety regulations covering usage in The waters of the Municipality under their jurisdiction.

ARTICLE II

DEFINITIONS

Access Service Route or Fire Lane: Shall mean any access roads and/or easements designated or identified by the Board of Port Wardens for use by authorized emergency or utility vehicles.

Auxiliary: Shall mean any vessel having both sails and either an inboard or outboard motor and which may be propelled by its sails or by its motor, or both.

Basin: Shall mean a naturally or artificially enclosed or nearly enclosed body of water where small craft may lie.

Beach: Shall mean a public or private beach area bordering the water of the municipal harbor.

Bulkhead: A structure or partition to retain or prevent sliding of the land into the water. A secondary purpose is to protect the upland from wave action.

Carrying Passengers for Hire: Shall mean the carriage of a person by vessel for valuable consideration, whether directly or indirectly flowing to the owner, charterer, operator, agent or any other person interested in the vessel.

Commercial Vessel: Shall mean any vessel used or engaged for any type of commercial venture, including but not limited to the display of advertising or the carrying of cargo and/or passengers for hire.

Distress: Shall mean a state of disability or a present or obviously imminent danger which if unduly prolonged could endanger life or property.

Emergency: Shall mean a state of imminent or proximate danger to life or property in which time is of the essence.

Entrance Channel: Shall mean all that portion of St. Michaels Harbor designated as such by the Board of Port Wardens.

Facilities: Shall mean any and all facilities of a harbor or maritime facility either publicly or privately owned that are intended primarily to be used by or for the service of small craft (including ramps, hoists, parking areas, leased water areas, concessions and service facilities) located on land or in the water of the Town of St. Michaels under jurisdiction of the Commissioners of St. Michaels.

Fairway: Shall mean the parts of a waterway kept open and unobstructed for navigation.

Fire Department: Shall mean the St. Michaels Volunteer Fire Co., Inc.

Float: Shall mean any floating structure normally used as a point of transfer for passengers and goods and/or for mooring purposes.

Harbor Line: The line defining the maximum channelward limits of marine construction, defined by and encompassing that construction lawfully installed in a given developable waterway area and identified by solid unbroken lineation on the harbor line maps.

Harbormaster: The officer of the city who executes the regulations respecting the use of the harbor and the waterways.

Moor: Shall mean to secure a vessel other than by anchoring.

Mooring: Shall mean (1) a place where buoyant vessels are secured other than a pier; (2) the equipment used to secure a vessel; and (3) the process of securing a vessel other than by anchoring.

Mooring Buoy: Shall mean an appliance used to secure to the bottom by anchors and provided with attachments to which a vessel may be secured by use of its anchor chair or mooring lines.

Public Area: Shall mean all areas of any harbor except those areas under specific lease to private persons of firms or owned privately.

Regulatory Marker or Waterway Marker: Shall mean any of the waterway markers defined as "Aids to Navigation: on navigable waters "or""aids to navigation on the intercoastal waterway"or other markers as designated by the U.S. Coast Guard.

Slip: Shall mean berthing space for a single vessel alongside a pier, finger float, or walkway.

Shore: Shall mean that part of the land in immediate contact with a body of water, including the area between high and low water lines.

Shall and May: "Shall" is mandatory "May" is permissive.

State: Shall mean the State of Maryland.

Stray Vessel: Shall mean (1) an abandoned vessel; (2) a vessel the owner of which is unknown; or (3) a vessel underway without a competent person in command.

To Anchor: Shall mean to secure a vessel to the bottom within a body of water by dropping an anchor or anchors or other ground tackle.

Underway: Shall mean to condition of a vessel not an anchor; without moorings; and not made fast to the shore nor aground.

Useable waterway area: The waterway area lying between the shoreline, the harbor line and the lateral lines of water-front property.

Waterway: Shall mean any water area providing access from one place to another, principally a water area providing a regular route for water traffic,

Waters of a Harbor or the Waters of the Municipality: Means all waters owned, managed, or controlled by the Board of Port Wardens or under the jurisdiction of the Commissioners of St. Michaels in which the tide ebbs and flows, whether or not the ordinary or mean high tide line of the Chesapeake Bay has been fixed by ordinance, statute, court action or otherwise and whether or not the lands lying under said tital water are privately or publicly owned.

ARTICLE III

GENERAL BOATING AND TRAFFIC CONTROL REGULATIONS

Sec. 7. Traffic Control Authority: The Board of Port Wardens shall have authority to control water-borne traffic in any portion of the waters of The Municipality under their jurisdiction by use of authorized State regulatory markers, signal, orders or directions any time preceding, during and after any race, regatta, parade or other special event held in any portion of the waters of The municipality or at any time when the Board of Port Wardens deems it necessary in the interest of safety of persons and vessels or other property, and it shall be unlawful for any person to willfully fail or refuse to comply with any authorized State regulatory marker utilized by Board of Port Wardens, or with any signal, orders or directions of the Board of Port Wardens.

Sec. 8. Basic Speed Law: The operation of any vessel within the waters of the municipality in excess of posted speed limits or, in the absence of such limits, in a manner to create a wash which endangers persons or property, shall constitute a violation of this Ordinance; provided that special written permission may be granted to conduct and engage in water sports and regattas in specific designated areas.

ARTICLE IV

GENERAL REGULATIONS

Sec. 9. Liability:

(a) Boat Owner: Any person using the facilities within the limits of The waters of the Municipality shall assume all risk of damage or loss to his property and he agrees that the Commissioners of St. Michaels assume no risk on account of fire, theft, Act of God, or damages of any kind to vessels within The waters of the Municipality.

(b) Marina Owner and/or Operator: It shall be the responsibility of the owner, licensee, lessee, or operator of any marina, anchorage, repair yard, or other marine facility, located within any harbor, waterway or other maritime facility, to maintain the physical improvements under his jurisdiction in a safe, clean, and visually attractive condition at all times, to provide adequate security and fire prevention measures and appropriate fire fighting equipment as may be directed by Board of Port Wardens, and to rent or lease available accommodations on a firstcome firt-served basis without regard to color, race or creed upon payment of established fees. Failure to initiate within 30 days of receipt of written notice from Board of Port Wardens to correct unsafe or otherwise unsatisfactory conditions and to pursue same to completion to the satisfaction of Board of Port Wardens shall be a violation of this section.

Sec. 10. Permits, Suspensions or Revocations: All permits granted under the authority of this Ordinance shall be valid only for such period as may be determined by Board of Port Wardens and permits of unqualified duration of validity shall not be granted. A violation of the provisions of this Ordinance or of any other applicable Ordinance by any permitee shall be grounds for suspension or revocation of such permit or permits.

Sec. 11. Damage to Harbor or Other Property: It shall be unlawful to willfully or carelessly destroy, damage, disturb, deface or interfere with any public property in the Harbor area.

Sec. 12. Tampering with or Boarding Vessels without Permission: It shall be a violation of this Ordinance for any person willfully to board, break in, enter, damage, move or tamper with any vessel or part thereof, located within the harbor unless authorized by the rightful owner of such vessel. Violation of this provision shall constitute a misdemeanor, punishable by the penalties hereinabove provided for violations of this Ordinance and to additional penalties not to exceed_____ _____. Any person violating this provision shall, in addition, be responsible to the rightful owner of any such vessel for any damages caused by such violation and to the reasonable cost of any attorneys fees, necessarily incurred as a result thereof.

Sec. 13. Obstruction of Facilities: It Shall be a violation of this Ordinance for any person willfully to prevent any other person from the use and enjoyment of the harbor facilities.

Sec. 14. Signs, Erection and Maintenance: The Board of Port Wardens may place and maintain, or cause to be placed and maintained, either on land or water, such signs, notices, signals buoys or control devices as they deem necessary to carry out the provisions of this Ordinance, or to secure public safety and the orderly and efficient use of The Waters of the Municipality.

Sec. 15. Swimming, Hazzard to Navigation: Swimming and Water skiing prohibited.

Sec. 16. Structures, Construction of: Within or on the waters of the municipality no person may place, erect or construct any bulkhead, wharf or pier, or carry out any earth or other material for the purpose of building a wharf or pier, nor shall any person place or erect mooring piles, floating wharves, buoys, anchors or other obstructions, or carry out any dredging, or alter the natural shoreline, without a valid permit issued by the Port Wardens. The placement, erection, or construction of structures or other barriers within or on the waters of the municipality without a permit from the Port Wardens, or the building of any wharf or pier a greater distance into the waters of the municipality, or in a different form, or of different materials than determined and allowed by the Port Wardens is a municipal infraction as described in Article 23A 3 Annotated Code of Maryland. A fine of $100.00 shall be imposed for each conviction hereunder. Each day in violation shall be considered a separate offense and subject to separate offense and subject to separate citations. A fine of $200.00 shall be imposed for each repeat offense.

Sec. 17. Dredging Operations: Within the Municipal Harbor, no person may carry out any dredging without a valid permit issued by the Board of Port Wardens. The removal of dredge material without a permit from the Board of Port Wardens, or removal in a different way than determined and allowed by the Port Wardens is a municipal infraction as described in Article 23A 3 Annotated Code of Maryland. A fine of $100.00 shall be imposed for each conviction hereunder. Each day in violation shall be considered a separate offense and subject to separate citations. A fine of $200.00 shall be imposed for each repeat offense.

ARTICLE V

REGULATIONS CONCERNING ANCHORING, MOORING AND SECURITY OF VESSELS

Sec. 18. Placement of Private Moorings: It shall be a violation of this Ordinance to place any mooring in the harbor without a permit from the Board of Port Wardens.

Sec. 19. Obstructing Channels: It shall be a violation of this Ordinance knowingly or willfully to obstruct the free use of any channel or waterway within the harbor.

Sec. 20. Abandoned Vessels: When, in the opinion of the Board of Port Wardens, a vessel has been abandoned in the harbor, he may take custody and control of such vessel and remove it, store it or otherwise dispose of it, all at the expense and sole risk of the vessel owner. Reasonable notice of such disposal shall be publicly given.

Sec. 21. Secure Berthing and Anchoring of Vessels: The owner of any vessel moored or anchored within the municipal harbor shall be responsible for causing such vessel to be tied and secured or anchored with proper care and equipment and in such manner as may be required to prevent breakaway and resulting damage, and shall there-after provide for periodic inspection by owner of vessel for, maintenance, replacement and adjustment of anchor, mooring or tie lines at reasonable intervals.

Sec. 22. Unseaworthy Vessels Prohibited in Harbor: Exception: A person shall not moor or permit to be moored in any harbor a vessel of any kind whatsoever which is unseaworthy or in a badly deteriorated condition or which is likely to sink or to damage docks, wharves, floats or other vessels or which may become a menace to navigation, except in cases of emergency.

Sec. 23. Correcting an Unsafe Berthing: If any vessel shall be found in the judgment of Board of Port Wardens to be anchored or moored within The waters of the Municipality in an unsafe or dangerous manner, or in such a way as to create a hazard to other vessels or to persons or property, The Board of Port Wardens shall order and direct necessary measures to elimite such unsafe or dangerous condition. Primary responsibility for compliance with such orders and directions shall rest with the owner of the improperly anchored or moored vessel or his authorized agent; in the absence of such owner or agent, said responsibility shall rest with the authorized operator of the facility at which the vessel is anchored or moored. In an emergency situation and in the absence of any such responsible person The Board of Port Wardens shall forthwith

board such vessel and cuase the improper situation to be corrected, and the owner of the vessel shall be liable for any costs incurred by The Commissioners of St. Michaels in effecting such correction.

Sec. 24. Removal and Custody of Illegally Berthed or Abandoned Vessels: If any unattended vessel shall be found to be anchored or moored illegally within The waters of the Municipality, or if The Board of Port Wardens has reasonable grounds to believe that a vessel has been abandoned within The Waters of the Municipality, the Board of Port Wardens may assume custody of such vessel and cause it to be removed and held or placed in storage. Board of Port Wardens or their agent shall not be held liable for any damage to such vessel nor liable to its owners before or after assuming custody. Vessels so taken into custody shall be released to the owner by the Board of Port Wardens only after satisfactory proof of ownership has been presented and full reimbursement made to The Commissioners of St. Michaels for all costs incident to recovery, movement and storage as set forth in Article V, Sec. 25.

Sec. 25. Fees Incidental to Recovery, Movement and Storage: Charges imposed by Board of Port Wardens for Recovery and/or movement of vessels shall be in accordance with the reasonable costs approved by the Commissioners of St. Michaels or as subsequently amended, and whenever a vessel is impounded or held for safekeeping there shall be in addition a charge for storage that is consistant with current market rates for such services.

Sec. 26. Obstructions of Fairways, Channels or Berthing Spaces and Removal of Sunken Vessels:

(a) It shall be unlawful to tie up or anchor a vessel in The Waters of the Municipality in such a manner as to obstruct the fairways or channels or to prevent or obstruct the passage of other vessels; or to voluntarily or carelessly sink or allow to be sunk any vessel in any channel, fairway, berthing space; or to float loose timbers, debris, logs or piles in any channel, fairway, or berthing space in such a manner as to impede nagivation or cause damage to vessels therein. It is understood that wrecked or sunken vessels within a harbor are subject to the published rules and regulations of the United States Coast Guard and any applicable State law, rules or regulations.

(b) Whenever the navigation of any waters within The waters of the municipality, including anchorages and berths therein, shall be obstructed or endangered by any sunken vessel or other obstruction and the obstruction or danger has existed for a period of more than six months, the vessel or obstruction shall be subject to removal, sale or other disposition in accordance with Article V, Section 24. The owner or owners of such vessel or other property causing said obstruction or danger shall be liable to the Commissioners of St. Michaels for all costs incident to said removal and disposition, and the Board of Port Wardens, its employees, agents, and officers, shall not be liable for damages of any nature whatsoever arising out of or in any way connected with removal, sale or disposition of such vessel or other property.

ARTICLE VI

REGULATIONS CONCERNING COMMERICAL ACTIVITY

Sec. 27. Soliciting: Soliciting is prohibited within the harbor, except as may be specially authorized by permit issued by the Commissioners of St. Michaels and subject to terms and conditions prescribed in such permit.

Sec. 28. Water Taxi and Rental Vessels: No person shall operate a water taxi within a harbor or maritime facility without first obtaining a permit from the Board of Port Wardens and complying with any rules and regulations of Ordinances of the Commissioners of St. Michaels including any other licensing requirement.

ARTICLE VII

SANITATION REGULATIONS

Sec. 29. Discharge of Refuse: It shall be a violation of this Ordinance to discharge or permit the discharge into the waters of the harbor of any refuse or waste matter, petroleum or petroleum matter, paint, varnish or any other foreign matter, including dead animals, fish and bait.

Sec. 30. Use of Vessel as Abode: Living aboard vessels in the harbor is prohibited except as may be specially authorized by permit issued by the Board of Port Wardens. For the Purpose of this Section, the term "living aboard" means the continuous use of a vessel for a period in excess of two weeks, including use of the vessel for overnight lodging.

Sec. 31. Responsibility for Sanitation of Facilities: The lessee, agent, manager or person in charge of a facility or water area under lease from the municipal harbor shall at all times maintain the premises under his charge in a clean, sanitary condition, free from malodorous materials and accumulations of garbage , refuse, debris and other waste materials. Should the Board of Port Wardens find that any facility or water area under lease is not so maintained, he shall in writing notify said lessee, agent, manager or other person in charge of said facility or area to immediately commence and diligently prosecute to completion the necessary correction of the unsanitary condition to the satisfaction of Board of Port Wardens. Failure to do so with reasonable dispatch shall be a violation of this Article, and the Board of Port Wardens may then cause condition to be corrected and the cost of such correction shall be charged to said lessee, agent, manager or person in charge.

ARTICLE VIII

SAFETY AND MAINTENANCE

Sec. 32. Flammable and Combustible Liquids and/or Materials: Within the municipal harbor no person shall sell, offer for s ll, or deliver in bulk any class of flammable liquid or combustible material, nor dispense any flammable or combustible liquids into the fuel tanks of a vessel

except when in compliance with all requirements of the N.F.P.C. 303 Fire Code and any other laws or regulations applicable thereto.

Sec. 33. Obstruction to Walkways: Obstructing walkways within the harbor by mooring lines, waterhoses, electrical cables, boarding ladders, permanently fixed stairs or any other materials is strictly prohibited. Dinghys may not be left on the floats and piers, but may be stored only in areas designated for that purpose.

Sec. 34. Defective or Dangerous Conditions: Whenever any buildings, structures or floating facilities within The waters of the Municipality either on land or water are found to be defective or damaged so as to be unsafe or dangerous to persons or property, it shall be the duty of the owner, agent, lessee, operator or person in charge thereof to immediately post a proper notice and/or fence or barricade and night to adequately light such unsafe area or areas, and such unsafe area or areas shall be kept posted and lighted and/or fenced or barricaded until the necessary repairs are made. In the event an owner, agent, lessee, operator or person in charge fails or neglects to repair or to put up fences or other barriers to prevent persons from using or going upon the unsafe area or areas, the Board of Port Wardens may then take such measures as he may deem necessary for the protection of the public and charge the cost of same to such owner, lessee, agent, person or persons having charge of the buildings, structures, or floating facilities that are defective or dangerous.

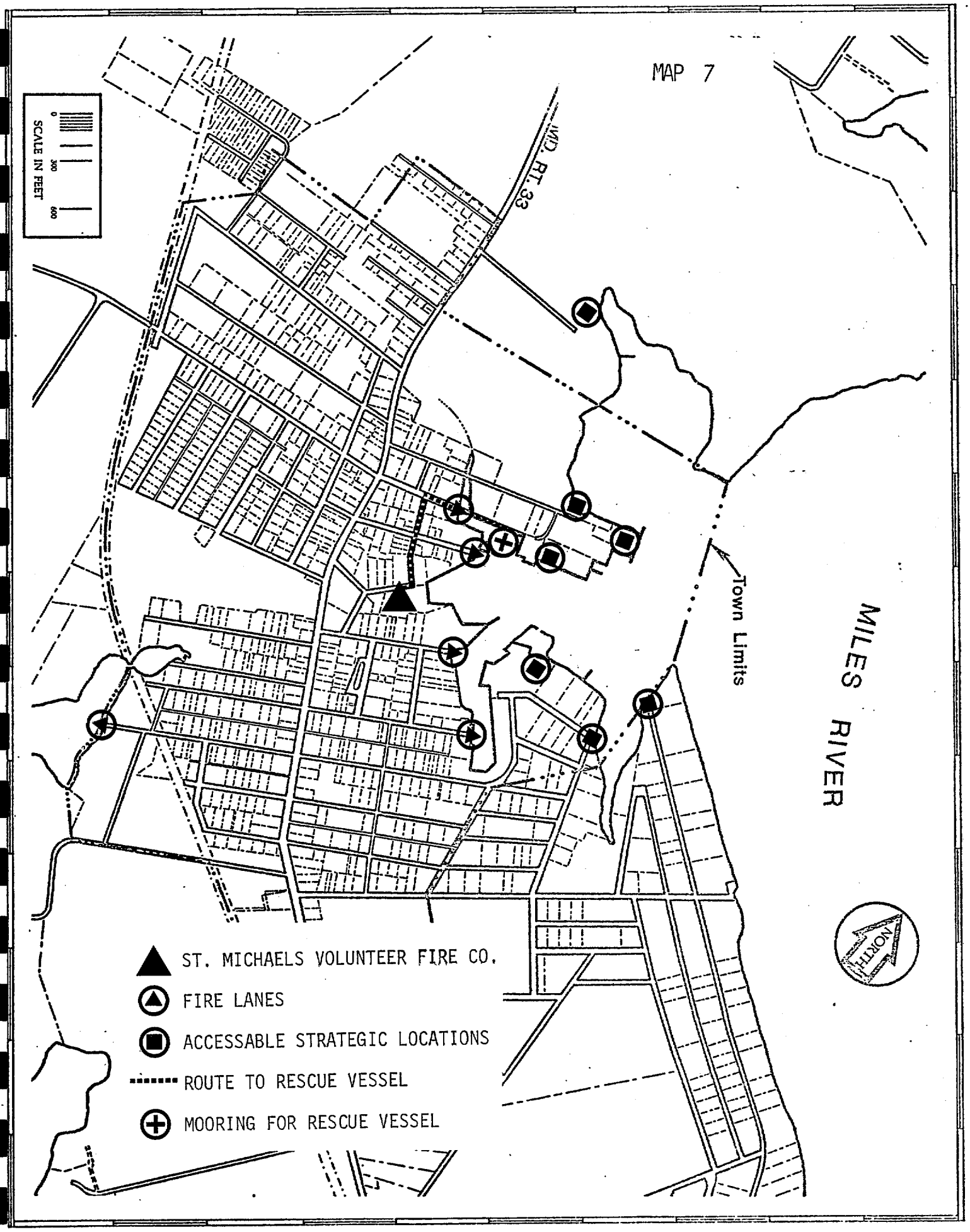
Sec. 35. Marine Fire and Rescue Force: The St. Michaels Fire Company shall have the authority to establish a Marine Fire and Rescue Force with all necessary powers to board vessels as required and to carry out their duties regarding any fire or rescue related activity and the owner of such vessel shall be liable for any costs incurred by the Commissioners of St. Michaels or the St. Michaels Fire Company in the carring out such duties.

FIRE AND SAFETY CONTINGENCY PLANNING

At present the contingency planning for harbor fire and safety lie solely with the St. Michaels Volunteer Fire Company, Inc. Because the Fire Company is engaged in an unending obligation to serve as primary fire and rescue service for St. Michaels, Church Neck, Rio Vista and Long Haul Creek area as well as supportive service to all areas from Wittman and Neavitt to the west and Deep Neck and Kirkham to the east, it will be necessary for the town of St. Michaels to assist when possible additional efforts to expand service over the harbor.

Establishment and maintenance of fire lanes at the end of streets that lead to the harbor will provide necessary access to much of the harbor. However, in order to have access to all portions of the town waters additional points of access will be needed. These areas are Parrott Point, North Harbor Road, St. Michaels, Harbor Marina, Navy Point, and Perry Cabin Farm (See Map. No. 7).

A necessary addition to a complete contingency plan for harbor fire and rescue will be a properly equipped vessel capable of carrying injured persons as well as towing a burning vessel away from other vessels. The Chesapeake Bay Maritime Museum has offered to donate the use of the "Marpilot" a diesel powered launch, to be berthed as marked on Map No. 7 . This berth would be easily accessable by a rescue crew at any time day or night. Maintaining the laucnh in a ready state would require identifying all items that may be required and purchasing the same. This is a project that can be done by the Board of Port Wardens and St. Michaels Fire Company once the launch is ready for service. Initial practice runs towing vessels out of the harbor or removing injured persons from anchored vessels and getting them ashore to a waiting ambulance safely may be necessary for needed confidence and effectiveness during actual emergency situations. This launch could also be used in other emergency situations such as large fuel or oil spills in or adjacent to the harbor.


MAP 7
SCALE IN FEET
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MD. RT. 33
Town Limits
MILES RIVER
NORTH
ST. MICHAELS VOLUNTEER FIRE CO.
FIRE LANES
ACCESSABLE STRATEGIC LOCATIONS
ROUTE TO RESCUE VESSEL
MOORING FOR RESCUE VESSEL

Management Considerations

Introduction

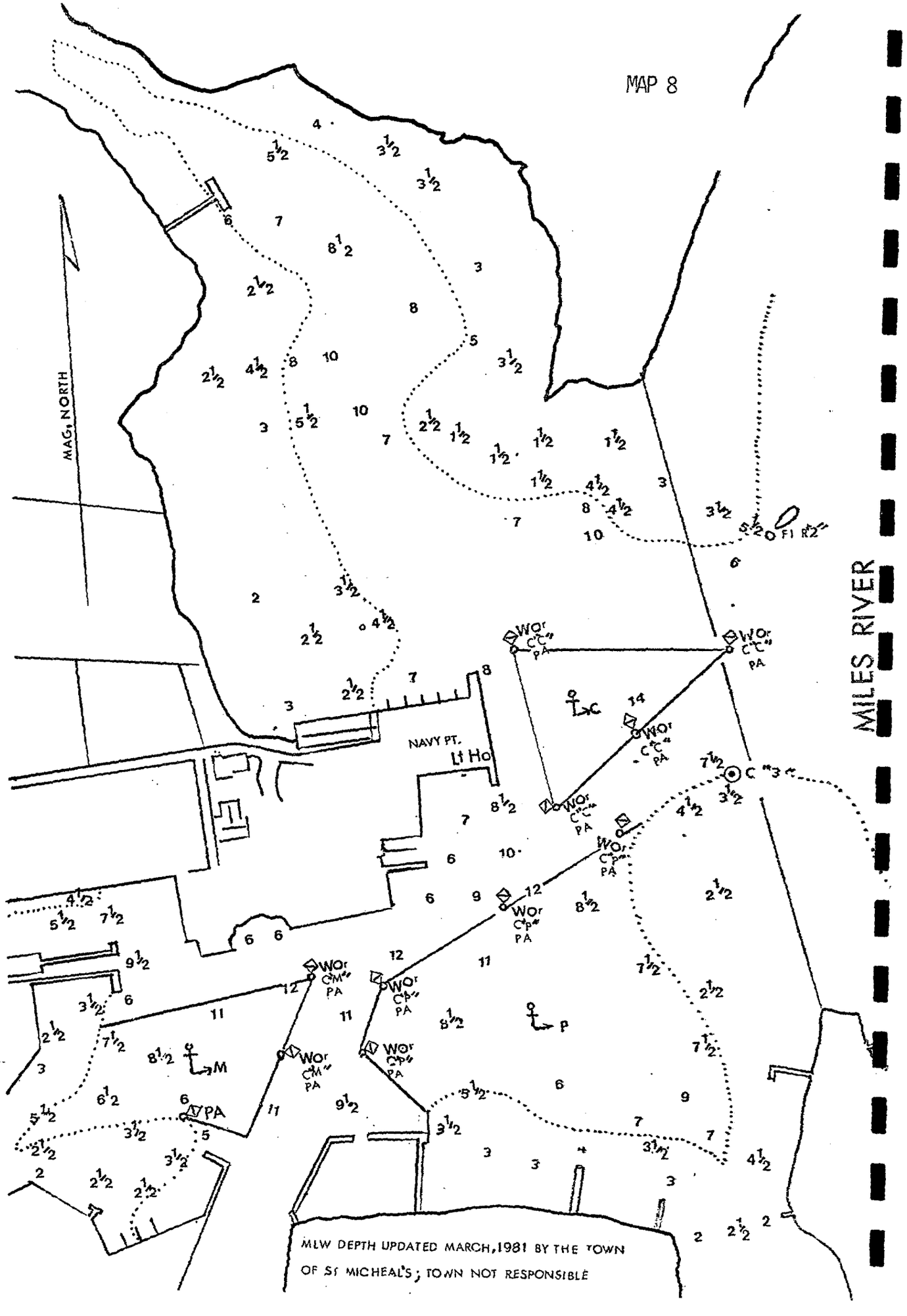
In addition to the Administrative Considerations outlined above, four major topics requiring management attention are discussed below. There are however, other needed improvements in management relating to the waters of St. Michaels, but they are not all fully addressed in this study due to lack of time. The topics chosen and given the highest priority by the Harbor Management Advisory Committee were either detailed in the Recommendations or in this section.

Channels and Anchorage Areas

Because St. Michaels harbor is used by boaters with differing objectives (commercial watermen, visiting recreational boaters, and homeport recreational boaters) conflicts develop regarding such matters as access to service docks and permanent moorings, movement through harbor areas, and open water anchorage requirements. Apparently, the single greatest period for congestion in the harbor is Friday, Saturday, andSunday, during the sailing season. The congestion is excessive during the seven or eight holiday weekends and regatta weekends. In the past no efforts have been made to establish and identify specific anchorage and channel areas. Consequently during certain peak use periods movement in the harbor area was accomplished by weaving around visiting yachts anchored in the protected water of the harbor.

Channels in the harbor must make access from the few extreme points of the harbor possible while using a minimal amount of area. These extreme points are the foot of Cherry Street and Chew Avenue at the end of South Cove. The channel boundaries as proposed would also delineate the channelward limits of the anchorage areas (See Map. No. 8).

The designated channel runs from the mouth of the harbor southwest, to the center of the harbor where the channel divides into two arms. One smaller arm leads to both the Cherry Street minicipal slips and adjacent properties and also to Higgins Yacht Yard. The other arm leads south to the Miles River Marina, St. Michaels Harbor Marina, and the many private and municipal boat slips located in South Cove. An additional narrow passageway is located off of Navy Point for movement between the central part of the harbor and Fogg Cove. Because Fogg Cove to the north is relatively unused and congestion is not a major problem in this area, no anchorage or channel designations were recommended there at this time.


MAP 8
MILES RIVER
MAG. NORTH
NAVY PT.
Lt Ho
FI R 2"
WOr C"C" PA
WOr C"M" PA
WOr C"P" PA
PA
M
P
C "3"
MLW DEPTH UPDATED MARCH, 1981 BY THE TOWN OF ST MICHEAL'S; TOWN NOT RESPONSIBLE

Because of shoaling much of the potential open water mooring areas are presently inaccessable due to insufficientwater depth. The existing available open water mooring in the harbor could be increased by approximately 50% if needed dredging in the central harbor area was accomplished, if Fogg Cove was properly dredged then readily accessible anchorage areas in the harbor could be doubled.

Due to the close proximity of St. Michaesl to Annapolis, Anne Arundel County, and Baltimore City it is likely that this harbor will continuallybe subjected to an ever increasing volume of visiting boaters which may in the future necessitate the dredging of these areas.

To date recent efforts to designate these proposed channels and anchorage areas have been met with only mixed success. Initial buoy marking was established as indicated on Map. No. 8. Within the central area of the harbor, confusion between channels and anchorage areas have led visiting yachtsmen to anchor within channel areas. The confusion is due to the fact that present buoys used are all similar, white and orange. Discussions of the Harbor Advisory Committee suggest that attempts will be made to use a "black can" to help alleviate this problem.

Eventually there may be sufficient need for supervision, and regulation of activities in the harbor to necessitate the hiring of a harbormaster. Initially this may be needed only during peak use periods such as summer weekends, in which case a part-time harbormaster may be sufficient. The expense of such an employee should be easily offset by potential revenue from commercial slip taxes levied by the town or rentals from municipal slips.

DREDGING

INTRODUCTION

Within the waters of St. Michael's there are various areas of shoaling. These shoals have resulted from several natural processes. The processes area, (1) movement of bottom sediments due to littoral drift (longshore currents) (2) the natural settling action of suspended sediments in quiet waters, and (3) storm drainage outfalls flushing sand and silt from the town streets into the town waters. Progressively these processes are robbing the town and boating public of desperately needed anchorage area in the harbor as well as access to channels for the orderly flow of waterborne traffic.

IDENTIFICATION AND DESCRIPTION OF POTENTIAL DREDGING LOCATIONS

In order to identify and prioritize locations within the harbor that will require dredging, a table is presented below. This table presents data on general shoal locations, their impact on potential open water anchorage, as well as channel and waterborne traffic requirements. Some shoal areas may impact only one of these functions while others may impact both. Consideration of such conditions was used to help in priortizing the proposed dredging projects.

FIGURE 7

EXISTING SHOAL AREAS

	A	B	C	D	E
	These areas presently pose a navigational hazzard	Dredging these areas could provide additional anchorage	Both A/B	(MLW) APPROX. AVERAGE DEPTH	Potential Additonal Anchorage Sites
1. PARROTT POINT (Portion in Town)			▲	2.5	23
2. NORTH HARBOR ROAD					
A		▲		3	15
B	▲			3	0
3. CHURCH COVE PARK			▲	2	19
4. SOUTH COVE CHANNEL	▲			5	0
5. FOGG COVE					
A (Portion in Town)	▲			2	0
B			▲	2	23
C		▲		2	38

The data presented in Table No. 7 was examined and the five potential dredging sites listed in order of importance below, respective of present and potential impacts. Those sites that presently pose restrictions both to navigation and anchorage were given higher priority while those sites that pose only one of these restrictions were given a lower priority. The listing is as follows:

1. Parrott Point
2. Fogg Cove
3. Church Cove Park
4. South Cove Channel
5. North Harbor Road

These potential project sites are delineated on Map No. 9. Even though the shoaling associated with Parrott Point and Fogg Cove restrict both open water anchorage and navigation these projects are not considered because presently the Parrott Point shoal provides a buffer against storm waves associated with the southerly and southwesterly winds. Additionally because of prevailing littoral currents along that stretch of beach new material apparently would be redeposited rapidly to replace any material removed. However, if a groyne were properly constructed in this area then dredging could potentially occur without subjecting the harbor to increased wave energy. The groyne if properly designed could also block the redepositing of new shoal material.

The Fogg Cove shoaling is not considered for dredging either because of the limited public waterfront at Fogg Cove and the large quantity of shoaling that would require removal.

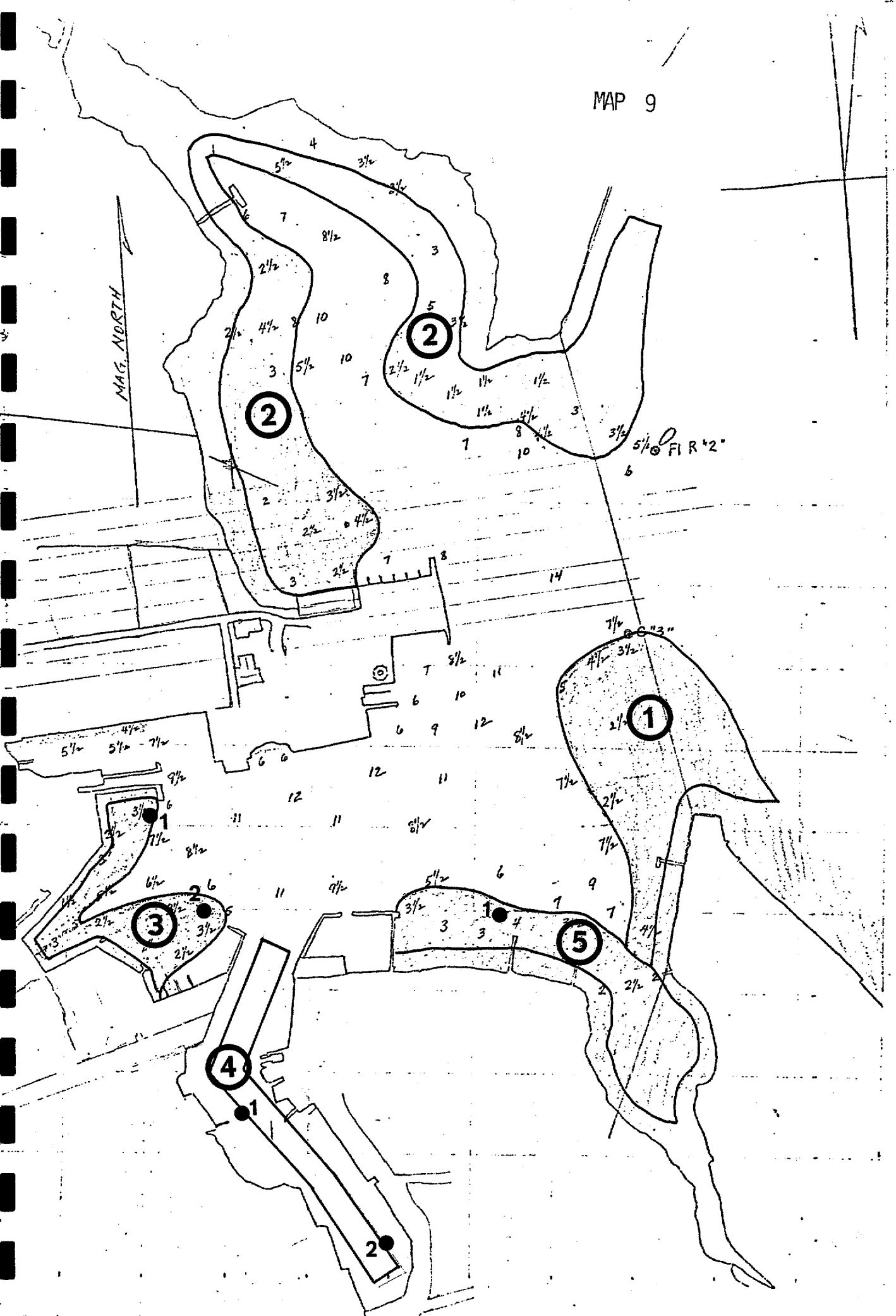
A rough estimation was made regarding the amount of dredge spoil requiring removal from each of the remaining sites. Approximated cubic yards of spoil material for the three potential dredging projects are as follows: SEE MAP NO. 9

FIGURE 8

POTENTIAL SITES	CUBIC YARDS OF SPOIL
CHURCH COVE PARK	6,500
SOUTH COVE CHANNEL	5,000
NORTH HARBOR ROAD	9,500
TOTAL	21,000

According to a survey report undertaken by the Baltimore District of the Army Corps of Engineers in 1950 (See Map # 9) test borings of shoal areas in the harbor identify the three above mentioned shoals as being composed the follwoing:

SHOAL AREA	BORING DEPTH	COMPOSITION
3. Church Cove Park	6 feet	Mud & Sand
Boring 1	1 to 3 feet	Mud & Sand
Boring 2	3 to 5 feet	Clay
4. South Cove Channel		
Boring 1	8 feet	Mud
Boring 2	13 feet	Mud & Sand
5. North Harbor Road		
Boring 1	6 feet	Scattered Rock and Sand


MAP 9
MAG. NORTH
FI R "2"
C "3"

Because a major proportion of the proposed spoil material would be characteristically mud and sand, mud and/or clay, all preplanning for spoil disposal will assume that the spoil material will be of a relatively heavy dense character.

SIZING OF DREDGED MATERIAL PLACEMENT (DMP) FACILITY CONTAINMENT AREA

The dredged material placement (DMP) facility as described in this chapter is basically a sedimentation basin consisting of a surface area surrounded by a confining structure. The settling basin is designed to remove the solid fraction of the dredge slurry that is pumped into the confining structure. As the solids settle out of the ageuous portion of the dredge slurry the water is drained off as an effluent. This effluent discharge is by law required to meet certain established state water quality standards.

The approach used in this chapter was taken from study recently conducted for the Maryland Coastal Zone Program, Tidewater Administration, Department of Natural Resources. The study entitled "Choptank River Dredged Material Placement Study" outlines methods to be used for design, construction, and costs of DMP facilities as well as the associated dredging projects.

In proposing a particular schedule for potential dredging and spoil disposal an estimation of the maximum amount of practical dredging was conceived. In identifying the maximum amount of dredging, the limiting factor was the fiscal restraints associated with work of this type. However, it should be noted that the efficiencies of operation in the larger sized projects with single dredge equipment mobilization and demobilization costs encourage one dredging event as opposed to several small operations. With this in mind a DMP facility was sized and designed for the potential

DMD Site H

Estimated Volume	21,000/CY			
Linelength	Max.	Min.	Diff.	Mean
	5,760	5,220	540	5,490
Dredging	21,000 CY at 3.65/CY			$76,650
MOB/DEMOB				$78,297
SUBTOTAL				$ 154,947
Contingencies (15%)				23,242
TOTAL				$ 178,189
	$ 8.49/CY			

* 1980 dollars

FIGURE 12

Costs Estimate for Proposed Dredging and Spoil Placement*

DMD Site D

Estimated volume	21,000 yd^3			
Linelength:	Max.	Min.	Diff.	Mean
	6,570	6,480	90	6,525

Dredging	21,000 CY at 3.65CY	$76,650
MOB/DEMOB		78,297
SUBTOTAL		$ 154,947
Contingencies (15%)		23,242
TOTAL		$ 178,189
	$ 8.49/CY	

DMD Site E

Estimated volume	21,000 CY			
Linelength	Max.	Min.	Diff.	Mean
	7,920	7,830	90	7,875

Dredging	21,000 CY at 4.58/CY	96,180
MOB/DEMOB		116,555
SUBTOTAL		$ 212,735
Contingencies (15%)		31,910
TOTAL		$ 244,645
	$ 11.65/CY	

Cost Estimates for Proposed Dredging

The costs associated with the actual dredging operation are fully dependent on the amount of spoil to be removed and the distance the material will be pumped before its final placement. Because of this the estimates for potential dredge costs have followed the establishment of potential DMP facility sites. Using the three sites previously identified as potential disposal sites estimates for the cost of the shoal dredging are presented in Table No. 12.

The differences between the maximum and minimum pipeline length was approximated and average pipeline length also approximated and then used to extimate the costs associated with actual dredging work as well as the mobilization and demobilization costs of dredging equipment. A 15% contingency figure is also factored in to cover unforeseen costs often associated with this type of project.

Estimated Total Cost for Dredging and Spoil Disposal

Estimated total costs are presented as a sum of the cost for land acquisition, site preparation and dredging costs. The land acquisition costs are estimated at $3,000/acre however, some acreage around St. Michaels would be well in excess of this figure. Actual acquisition of the land to be used would not necessarily be required. Leasing agreements can by used as an alternative to permanent DMP facility development.

The total cost figures are presented in Figure # 13. Land acquisition, DMP facility costs minus dewatering management and site reclamation, and dredging costs are subtotaled as a cheaper alternative to active dewatering management and site reclamation.* A total including dewatering management and site reclamation is given below the subtotal.

* Neglecting to use dewatering management will extend the time required for the dredge spoil to fully stabilize while failure to undertake proper site reclamation could in some cases generate drainage and sedimentation problems in adjacent lands.

Woodland Sites

Site Preparation		
Clearing	$ 3,690	
Grubbing	1,640	
Stripping	4,920	
Facility Construction		
Dike Construction	$ 28,138.5	
Dike Stabilization	4,529.2	
Outfall Pipe	2,000	
Outfall Weir	3,000	
Equipment MOB/DEMOB	4,000	
SUBTOTAL	$ 51,917.7	$ 2.47/CY
Facility Management		
Dewatering	$ 2,366	
Equipment MOB/DEMOB	$ 2,000	
Site Reclamation		
1° Grading	$ 10,850	
2° Grading	21,700	
Site Stabilization	2,050	
SUBTOTAL	$ 34,600	
TOTAL	$ 86,517.7	$ 4.12/CY

FIGURE 11

Cost Estimates for DMP Facility - Cropland

Site Preparation		
Stripping	$ 4,920	
Facility Construction		
Dike Construction	$ 28,138.5	
Dike Stabilization	3,684.2	
Outfall Pipe	2,000	
Outfall Weir	3,000	
Equipment MOB/DEMOB	4,000	
SUBTOTAL	$ 45,742.7	$ 2.18/CY
Facility Management		
Dewatering		
Perimeter Trenching	$ 2,366	
Equipment MOB/DEMOB	$ 2,000	
Site Reclamation		
Site Grading	$ 10,850	
1° Grading	21,700	
2° Grading	2,050	
Site Stabilization	$ 34,600	
SUBTOTAL	$ 80,432.7	$ 3.83/CY
TOTAL		

Because of the variability of costs associated with dredging operations and dredge disposal projects estimates for costs of dredging can only be approximated. However, the figures presented below are acceptable for necessary preplanning procedures.

The three sites identified as potential DMP facility sites are divided between wooded and cropland areas. Consequently the cost estimates are made for both conditions. The itemized costs are presented below in Table No. 11.

Cost Estimates for DMP Facility

A schedule for projected costs associated with DMP facility construction is presented. The items below may vary slightly according to site specific differences.

Projected DMP Facility Costs+ - Woodland and Cropland*

Site Preparation

Clearing	$900/ac
Grubbing	400/ac
Stripping	1,200/ac

Facility Construction

Dike Construction	$16.65/LF
Dike Stabilization	2.68/LF
Outfall Pipe	2,000
Outfall Weir	3,000
Equipment MOB/DEMOB	4,000

Facility Management

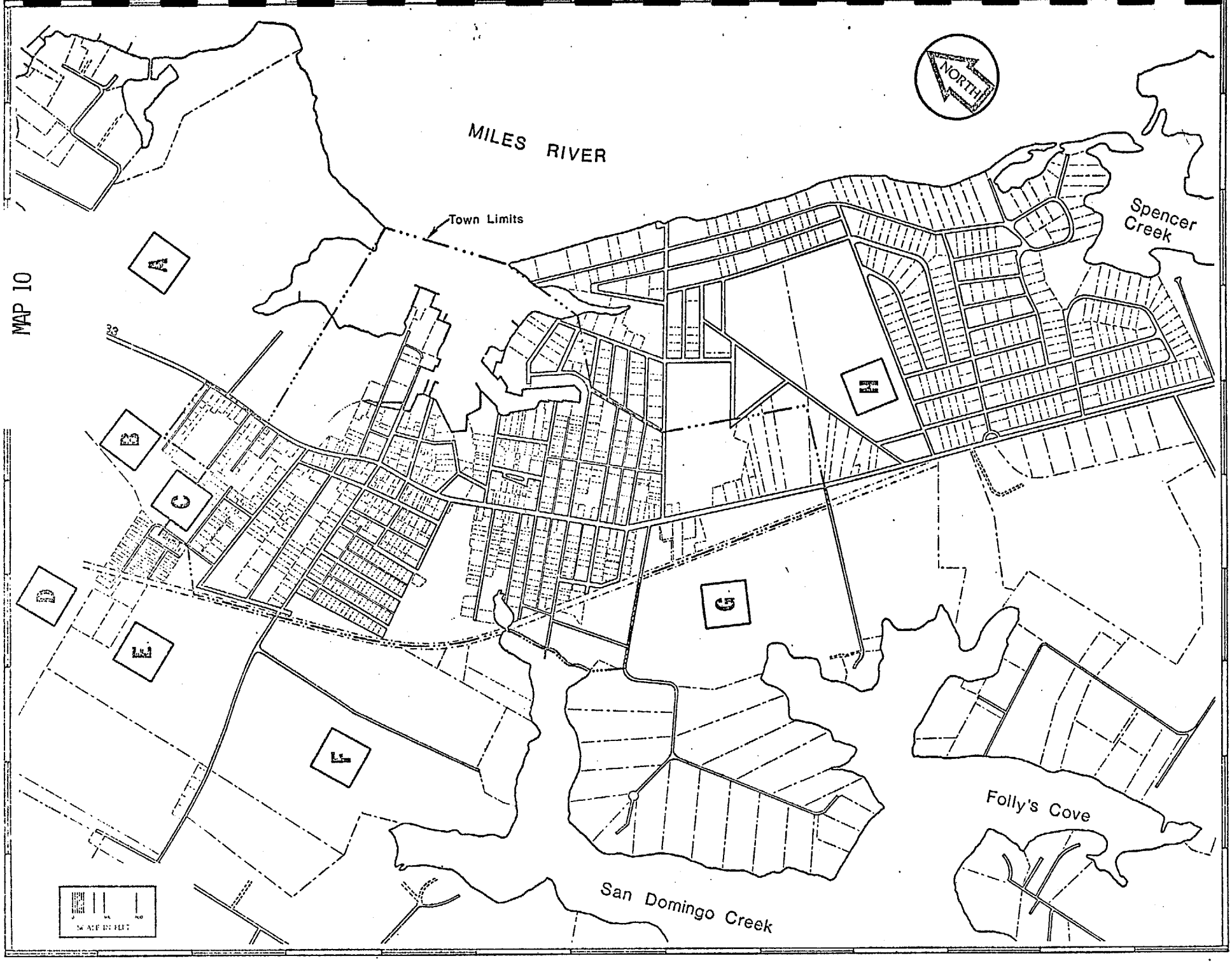
Dredge Material Dewatering	
Perimeter trenching	$1.40/LF
Equipment MOB/DEMOB	2,000

Site Reclamation

Site Grading	
Primary grading	$1.50/CY
Secondary grading	3.00/CY
Site Stabilization	5.00/AC

+ 1980 figures

*Site preparation costs for cropland will not include clearing and grubbing. Dike stabilization costs for cropland are $2.18/LF.


MAP 10
MILES RIVER
NORTH
Town Limits
Spencer Creek
A
B
C
D
E
F
G
H
Folly's Cove
San Domingo Creek

IDENTIFICATION AND DESCRIPTION OF POTENTIAL DMP FACILITY SITES

In attempting to located an appropriate area for a DMP facility a list of eight potential sites was made (See Map# 10). The sites were then evaluated and ranked by number according to eight individual parameters regarding suitability for DMP facility siting. The method and ranking systems for identifying suitability of potential sites is given below.

The criteria used for evaluation of the eight sites are based on parameters identified in the CHOPTANK RIVER DREDGED Material Placement Study mentioned above. The above referenced parameters were modified somewhat for use in a localized area. The eight individual parameters are listed below:

1. Present Land Use
2. Proposed Land Use
3. Adjacent Land Use
4. Soil Characteristics
5. Property Ownership
6. Assessibility by Pipe
7. Assessibility by Truck
8. Environmental Suitability

Each of the individuals categories were then given a series of possible answers and a ranking established for each answer (See Figure No. 9). The various sites were then ranked for each of the eight categories and the answers for each potential sites summed and then compared. The three highest ranking sites were then assumed to be the most suitable for potential DMP facility siting (See Figure No. 10). The three highest ranking sites were sites D,E, and H (See Map No. 10).

21,000 cubic yards of spoil that would be produced by dredging the above mentioned three shoal areas. If in practice the actual dredging of St. Michaels' Harbor incorporates less spoil material then here in proposal, the proposed DMP facility size can be reduced.

DMP FACILITY SIZING FORMULA

$$\text{(A)}\quad \text{Area Required for DMP Facility} = \frac{\left(\text{Bulking Factor of Spoil Material}\right)\left(\text{Cubic Yards of Spoil Material}\right)}{\left(\text{Effective Depth of Dike}\right)\left(\text{Volume of Facility in Acre/Feet}\right)}$$

$$\text{(a)}\quad \frac{(2.5)\ \ 21{,}000}{8\ \ X\ \ 1600} = 4.1$$

Once the required area of the DMP facility is calculated then the dewatered depth of the stabilized spoil can be estimated.

$$\text{(B)}\quad \text{Theoretical Depth of Spoil Material} = \frac{\left(\text{Cubic Yards of Spoil Material}\right)}{\left(\text{Area of DMP Facility}\right)\left(\text{Volume of Facility in Acre/Feet}\right)}$$

$$\text{(C)}\quad \text{Dewatered Depth of Spoil Material} = 1.4\left(\text{Theoretical Depth of Spoil Material}\right)$$

$$\text{TD} = \frac{21{,}000}{4.1\ \ 1600} = 3.2 \text{ Feet}$$

$$\text{DWD} = 1.4\ (3.2) = 4.5 \text{ Feet}$$

The dewatered depth of the dredge spoil material will be used later in the estimations of expected costs. Once the required area of the DMP facility is calculated then the dewatered depth of the stabilized spoil can be estimated.

FIGURE 13

Projected Total Costs for Complete Dredging Program *

Site D		
Land Acquisition	$ 12,000	
DMP Facility	45,743	
Dredging Costs	178,189	
SUBTOTAL	235,932	$ 11.24/CY
w/management & reclamation	34,600	
TOTAL	$270,532	$ 12.88/CY
Site E		
Land Acquisition	$ 12,000	
DMP Facility	51,918	
Dredging Costs	244,645	$ 14.69/CY
SUBTOTAL	$308,563	
w/management & reclamation	34,600	
TOTAL	$343,163	$ 16.34/CY
Site H		
Land Acquisition	$ 12,000	
DMP Facility	45,743	
Dredging Costs	178,189	
SUBTOTAL	$235,932	$ 11.24/CY
w/management & reclamation	34,600	
TOTAL	$270,532	$ 12.88/CY

*1980 dollars

Dredging Project Funding

Government funding assistance for dredging projects is limited at this time to federal money for Army Corps of Engineer projects and State money through the Tidewater Administration for public projects pertaining to public waterfront facilities. The funds are also limited to the actual dredging operation and disposal thereof. Money is not available for the purchasing of property to be used in the disposal of the spoil generated from such projects. However, in cases involving Federal projects the incorporated towns will be able to acquire technical assistance from the county government for additional preplanning and associated efforts in identification and acquisition of needed lands.

Any additional dredging to be undertaken beyond the funding guidelines mentioned above will most probably have to be borne by the town itself.

PARKING NEEDS

INTRODUCTION

Required improvements to existing harbor facility parking areas are detailed below. There are three primary parking congestion areas addressed. The sites and forces responsible at each site for parking problems are discussed in Section 5 of Chapter I entitled "Transportations". Site one is the Mulberry Street Wharf, Site 2 is the Town Slips at the foot of East Chestnut Street and Site 3 is the County Dock at the foot of West Chew Avenue (See Map # 11). Throughout this section there is reference made to resurfacing and paving certain areas. It should be noted however that whenever possible porous surfacing should be used. Care should be taken to provide a sufficiently strong base for traffic typical to each site while at the same time avoiding unnecessarily impervious material.

MULBERRY STREET WHARF

Presently there are a total of 14 designated spaces on the wharf and along Mulberry Street adjacient to the wharf (See Figure # 14) the placement of diagonal parking at the bulkhead produces congestion when the wharf area is being used for seafood buying.

Additional parking can be provided by better utilizing the area established as Mulberry Street right-of-way. Presently a portion of the right-of-way on both sides of the street is unused. Additional parking spaces could be provided easily by taking full advantage of the right-of-way to the north of Mulberry Street. Ten additional spaces can be added in this manner and in so doing the three diagonal spaces to the south of the wharf bulkhead can be removed to allow for more room at the wharf (See Figure # 15).

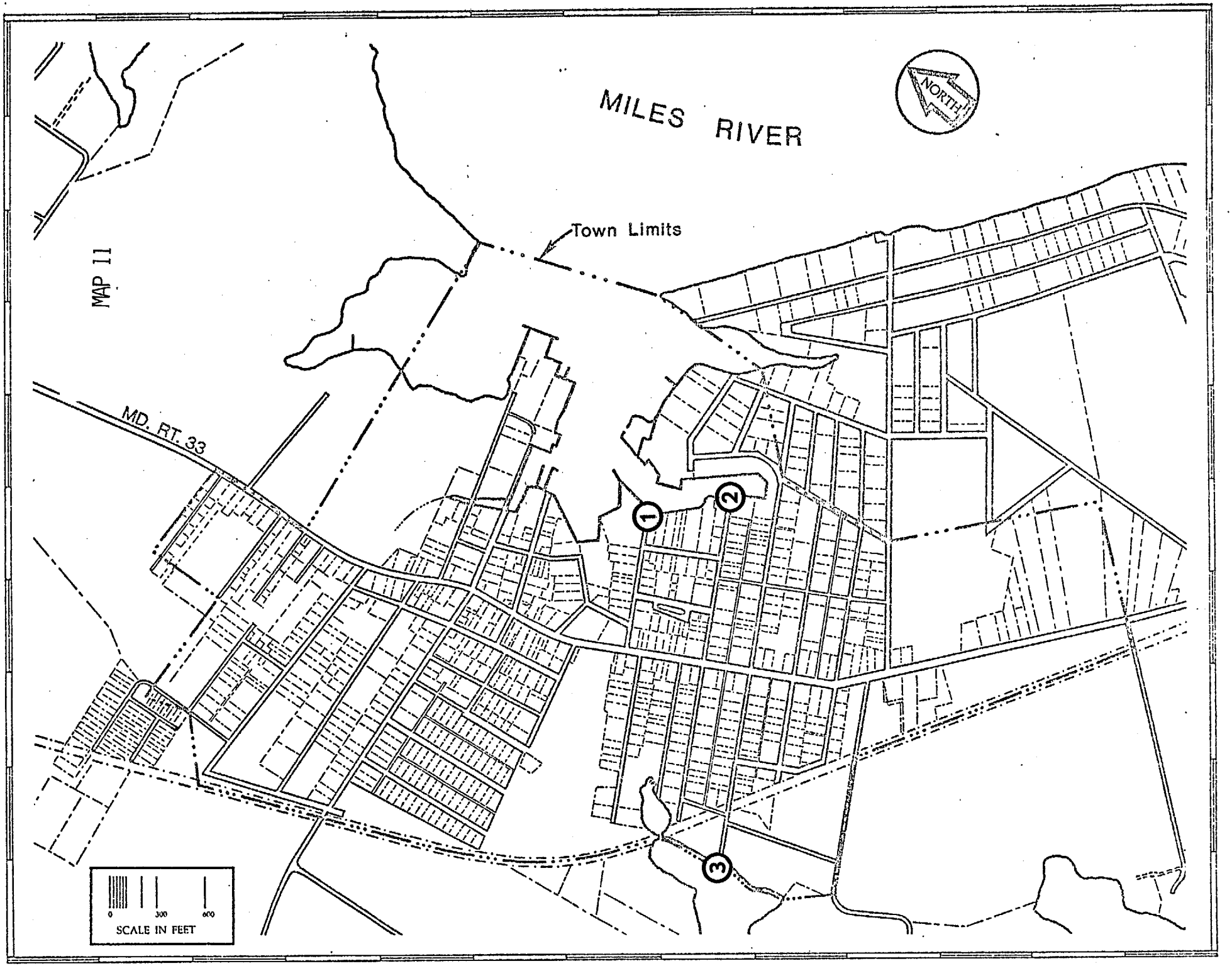
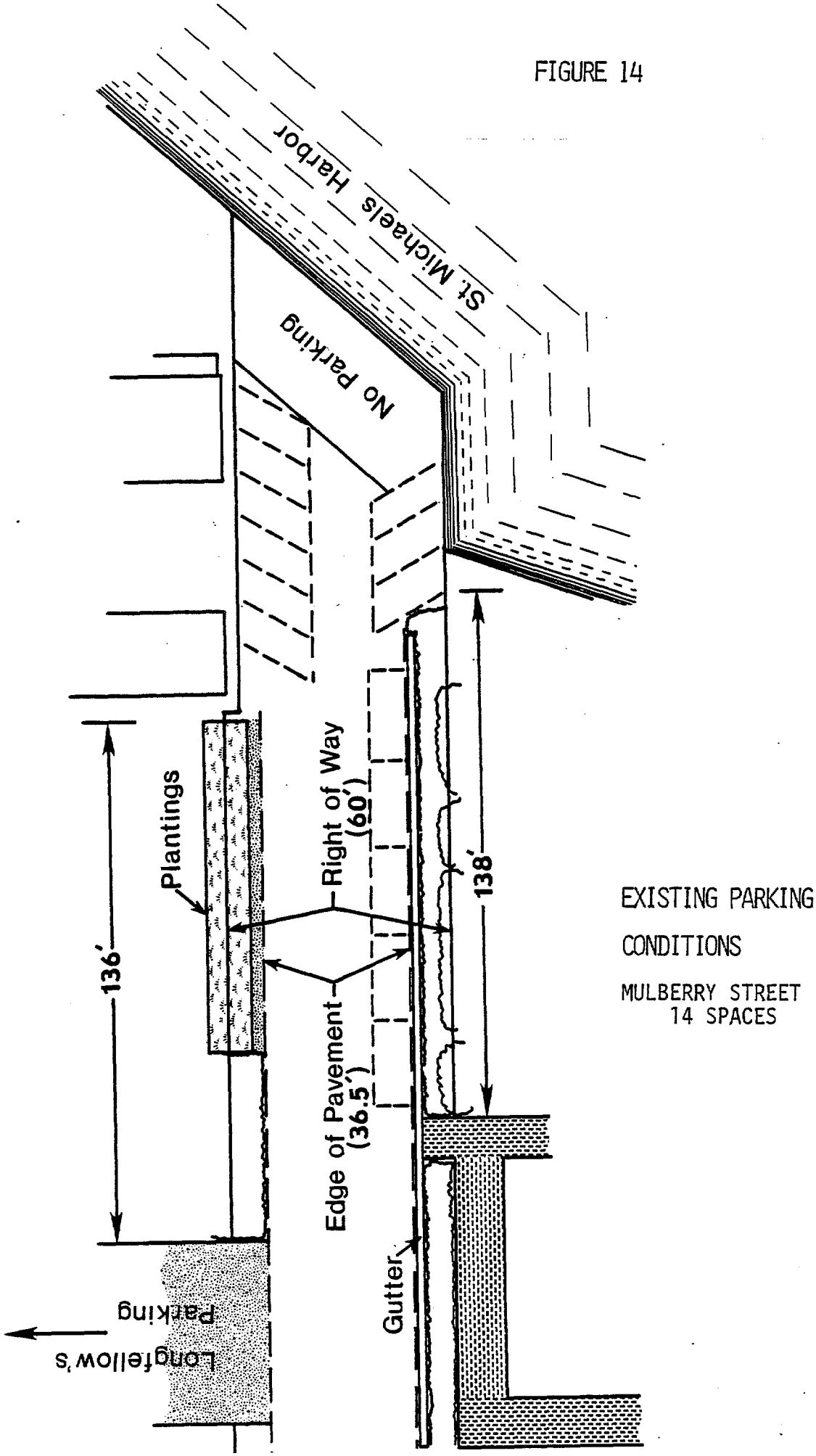

MILES RIVER
NORTH
Town Limits
MAP 11
MD. RT. 33
1
2
3
0
300
600
SCALE IN FEET

FIGURE 14



EXISTING PARKING CONDITIONS

MULBERRY STREET
14 SPACES

FIGURE 15

PROPOSED PARKING

MULBERRY STREET
21 SPACES

EAST CHESTNUT STREET

There is no designated parking at this site for the users of the Town Slips 48 to 52. Because these slips are used by watermen there are often more than one vehicle per slip left in this area. In order to provide additional parking capacity that is adequately marked the surfacing in the area will need to be extended somewhat. A configuration of designated parking is shown on the above mentioned figure. These designated spaces will require either macadom or a porous pavement surface in order to be properly marked. Presently this area holds about five vehicles without much congestion, with the configuration shown in Figure #16 this area could accomodate nine vehicles without congestion.

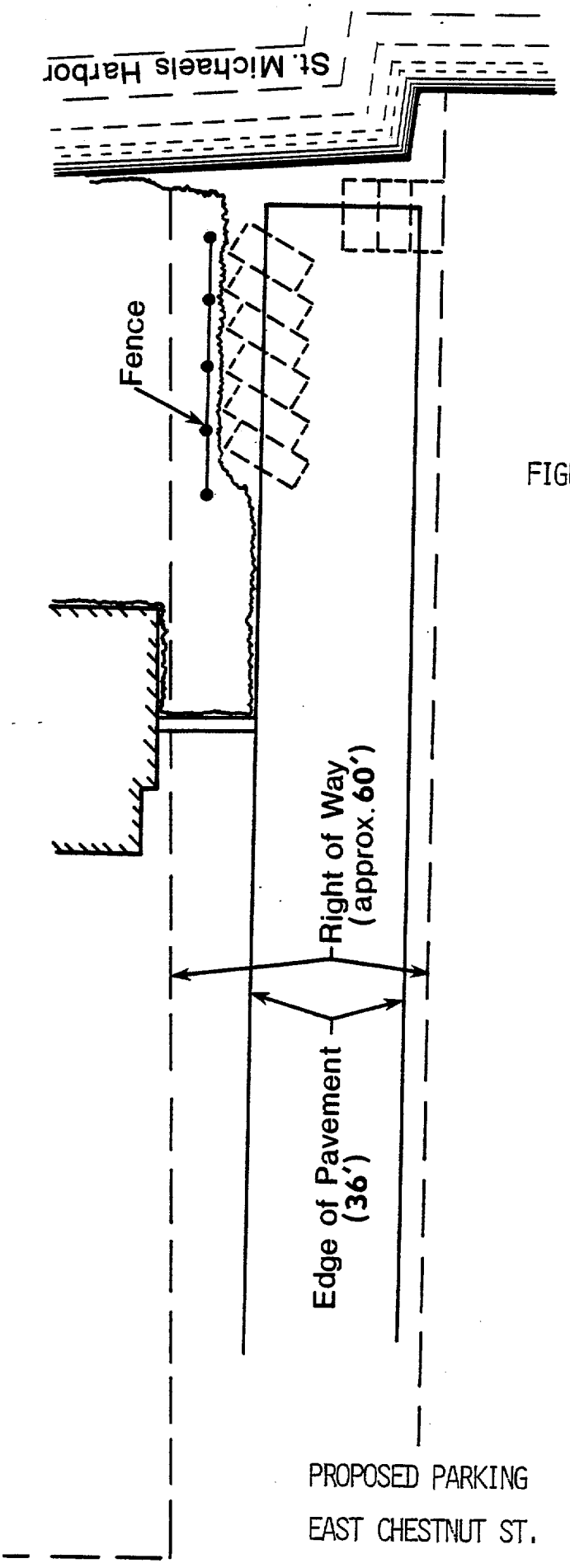


FIGURE 16

WEST CHEW AVENUE

Parking congestion in this area a result of the County Dock located at the foot of this street. The shoulders of the street are used for parking. Very little can be done to alleviate this problem except to either more fully use the areas presently available or to acquire additional parking space near the site.

Pursuing more efficient use of the site will be most cost effective and consequently this is the alternative taken here. The northern side of the street has curb and gutter and presently used to park a maximum of ten vehicles however, this requires having three driveways blocked by parked vehicles. By designating parking areas on this side of the street and leaving the driveways open seven spaces are provided. On the south side of this street there are approximately five or six spaces used for parallel parking. By clearing, grading and surfacing the entire shoulder up to the telephone pole an additional three to four spaces can be designated. By clearly marking the parking spaces more vehicles can be parked in the same area by avoiding wasted space.

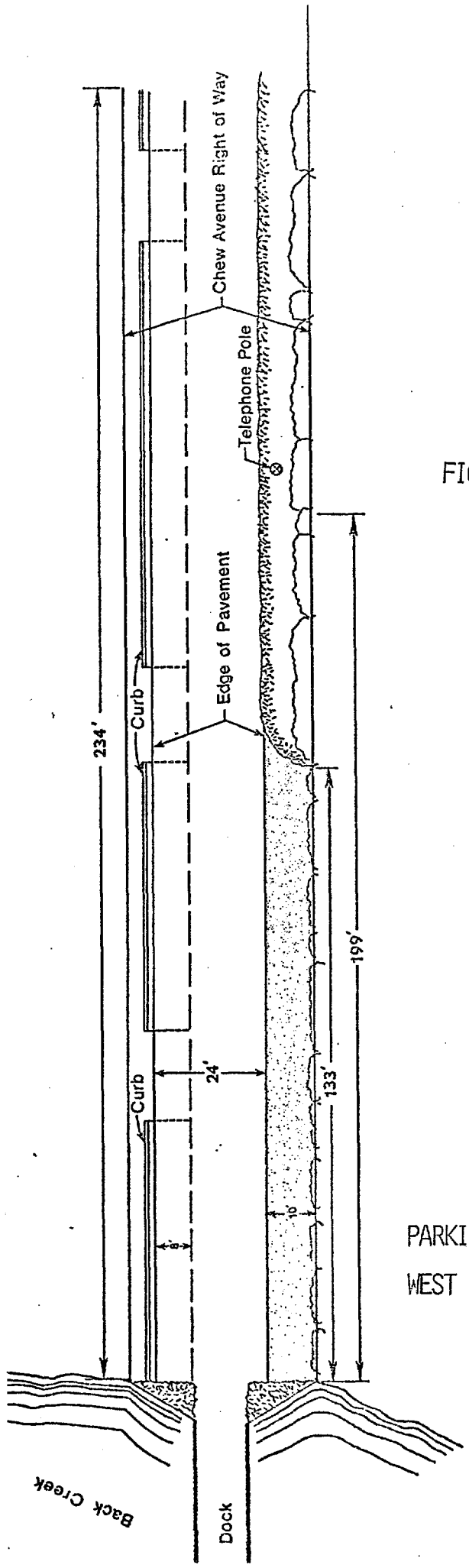


FIGURE 17

PARKING CONDITIONS
WEST CHEW AVENUE

Management of Public Owned Waterfront Structures

Introduction

In order to establish a management scheme for publicly owned waterfront structures in St. Michaels, an inventory and evaluation of existing structures was undertaken with the assistance of the Assistant County Engineer. The structural evaluations were conducted and the result categorized accordingly:

A. Bulkheading

B. Docks and Boatramps

C. Fingerpiers and Mooring Piles

Recommendations were then prepared for each structure regarding maintenance and eventual replacement. See Appendix # 2 .

Publicly owned Waterfront Structures (See Maps# 12 & 13)

A. Mill Street Bulkhead

B. Cherry Street Bulkhead

C. Carpenter St. Bulkhead

D. Church Cove Park Bulkhead

E. Mulberry Street Bulkhead

F. East Chestnut Street and Harrison Alley Bulkhead

G. East Chew Avenue Bulkhead

H. West Harbor Road Bulkhead (Sections 1,2 and 3

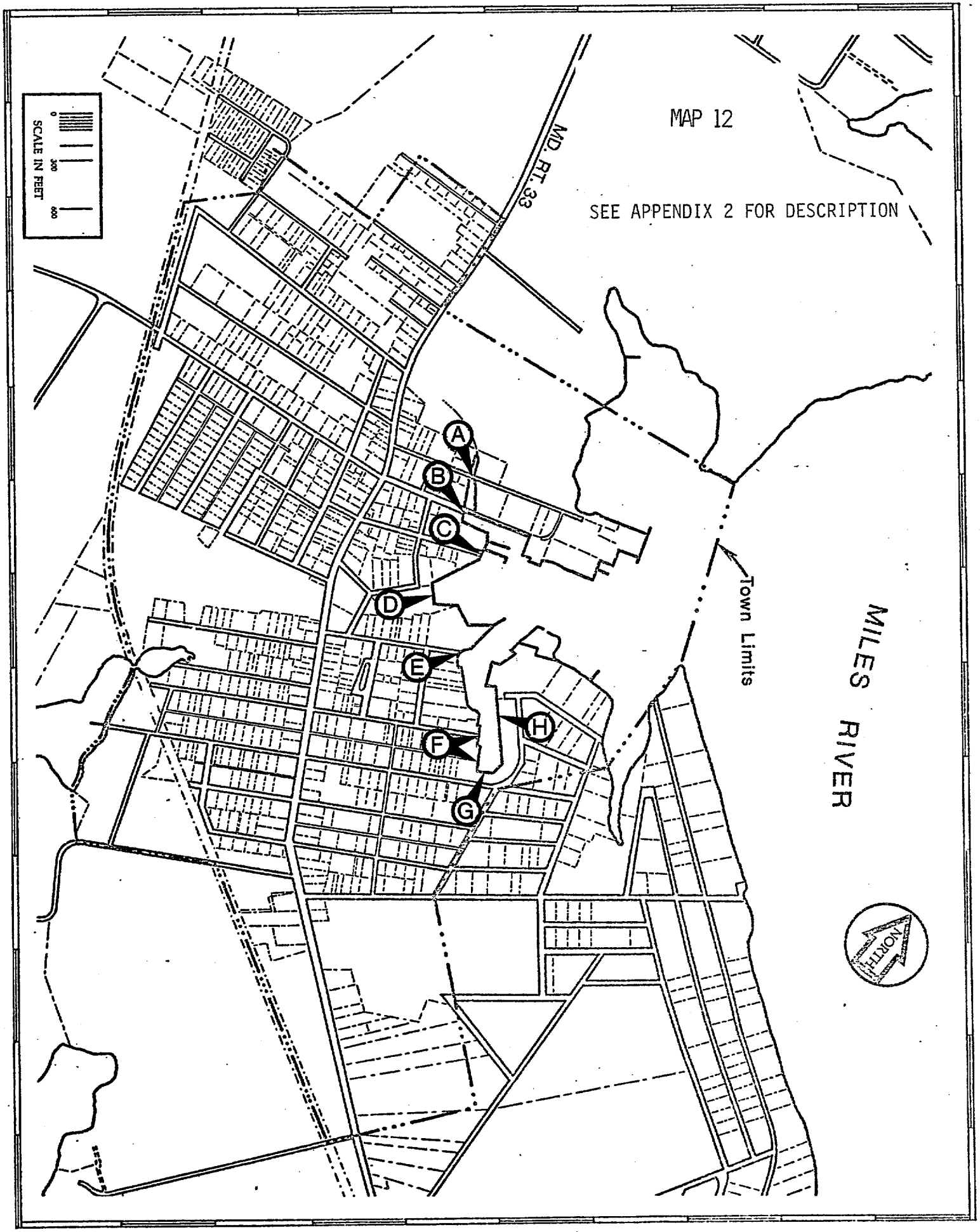
I. Cherry Street Foot Bridge

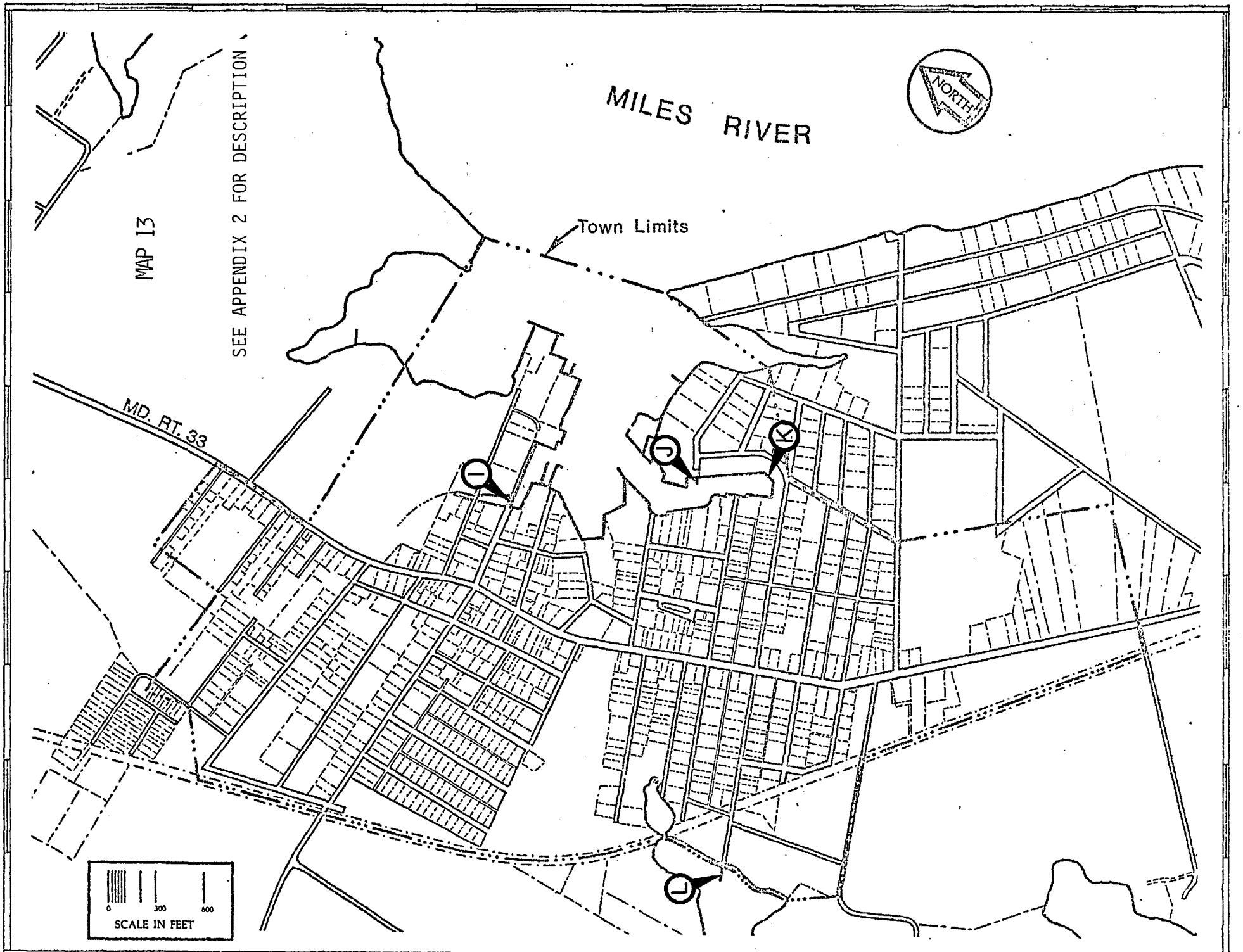
J. West Harbor Road Slip #2 Dock

K. East Chew Avenue Decking

L. West Chew Avenue Dock

ORIGINAL


MAP 12
SEE APPENDIX 2 FOR DESCRIPTION
MD. Rt. 33
SCALE IN FEET
0
300
600
A
B
C
D
E
F
G
H
Town Limits
MILES RIVER
NORTH


MILES RIVER
NORTH
Town Limits
MAP 13
SEE APPENDIX 2 FOR DESCRIPTION
MD. RT. 33
I
J
K
L
0
300
600
SCALE IN FEET

Waterfront Structures Maintenance Considerations

Introduction

During the last ten years the Maryland Department of Natural Resources has been very active in funding whenever possible the construction of municipal waterfront structures for the use of the general boating public. This has been a great benefit for small municipalities such as St. Michaels in helping them provide services that otherwise may have been impossible to afford. However, because the life expectancy of these structures is limited they will eventually need to be replaced. Furthermore, because much of this construction in St. Michaels has occured during a three to four year period, the replacement of these structures will probably also be required during a similar period.

This is not a surprising circumstance but because of national economic trends and the State's diminished ability to provide funding for such projects, municipalities may find themselves faced with skyrocketing replacement costs and only partial State funding.

An approach to dealing with this problem would be to develop a program of maintenance that would prolong the deterioration of the town owned bulkhead and docks. This type of maintenance would require an annual inspection of all structures as well as other preventive measures such as painting of untreated timber or placing armor stone at the foot of all bulkhead not used for berthing boats. By developing such a maintenance program replacement of much of the Town owned waterfront structures may be delayed many years. Without such a program the failure of one structure may be followed by others within a few short years.

Maintenance for Bulkheading

Because of the degree of intimate contact that a timber bulkhead has with corrosive and destructive forces such as, groundwater, seawater, fungi and wood booring organisms, it is essential that they are carefully maintained

in order to minimize these destructive forces.

A maintenance program for bulkheading must be primarily preventive in nature in order to be effective. The time and money spent during such activity will be easily recovered through the extended lifetime of the structure.

The backbone of a maintenance program will be a careful annual inspection. Items to be included in the inspection would be:

- condition of capboard
- presence of submining
- condition of backfill
- condition of major bulkhead members (wales, piles, sheathing)
- condition of hardware (exposed portion of tie rods, nuts and bolts)
- presence of piling caps
- condition of fender boards on piling if present

Additionally, each year the exposed portions of all hardware, especially the tie rod shanks, should be carefully coated with asphalt roofing cement.

By keeping a capboard on top of the bulkhead, rainwater and oversplashing sea water is kept away from the end grain of the sheathing. Submining is the loss of earth material behind a bulkhead, usually localized to a small area, which produces a pit which will collect rain water. Both submining and absence of a capboard will promote fungus rot often stealing years of life from the structure. Capboards should be C.C.C. treated 2x12's or 2x10's. Submining should be filled with a porous material such as crushed oyster shell or good grade of sand.

Backfill is necessary to avoid damage to the tie rods and for proper channeling of rain water away from the bulkhead. Fill material should also be of a porous earth material such as sand.

The sound condition of major bulkhead members is essential in maintaining the structural integrity, without which the structure may partially collapse causing many extra dollars in repairs.

One of the potential trouble spots on any bulkhead is the exposed portion of the tie rods. It is here that the metal of the tie rod is repeatedly wetted and dried and exposed to salt air. This is usually the point where the tie rod will rust and eventually break. This type of breakage can't be ignored and requires digging out of the backfill, and either a welding repair or complete replacement, both very expensive.

Pilings on the bulkhead require some type of weatherproof cap to avoid getting moisture into the exposed end grain of the piling. This type of exposure will cause rotting, but can be easily avoided by a plastic, aluminum, or resin cover. All types of coverings are easily destroyed and must be carefully maintained. Wooden fender boards are an inexpensive and easy method for protecting piling sides. They are not normally required unless the bulkhead is used as a commercial fishing or large boat servicing area.

Maintenance for Docks and Fingerpiers

With proper maintenance and attention a dock or fingerpier can last for many years. If the pilings are of sufficient size and are not subject to major ice damage then the periodic replacement of decking, stringers, cross sills and bracing will extend the life of such a structure until the pilings require replacement. Annual inspections of docks should include replacement of any failing members as well as painting or coating of any untreaded timber that has been used in their construction.

Maintenance of Pilings

Life expectancy for creosote pilings is difficult to predict. Proper maintenance of pilings will extend their life by slowing rot and fiber damage.

This can be accomplished by keeping a weatherproof cap on top of the piling and fender boards on the side when necessary. Pilings can also be pulled up from the bottom by the vertical movement of sheet ice. When this occures the piles should be immediately redriven to their proper depth.

Waterfront Structure Replacement Program

Introduction

Replacement of waterfront structures can be difficult if there has not been sufficent fiscal planning prior to the required construction. However, by programming needed expenditures accurately revenues can be set aside in light of present and projected needs. It is with this in mind that the following structure replacement program is suggested. However, it is important to note that the actual year of replacement for any given bulkhead or dock is difficult to estimate due to the various independent factors that will influence life expectancy. Because of the exorbitant cost of bulkhead construction this replacement program will concentrate primarily on bulkheading and less on docks, fingerpiers, and piles.

Replacement of Bulkhead

During the waterfront structure inventory conducted this summer an estimation of life expectancy was attempted using the Town files for information on construction methods and materials. These estimations are made with the understanding that these are only "best guesses" and are subject to variation.

FIGURE 18

	Year of Construction	Projected Lifetime	Year of Replacement	Present to 1986	1987 to 1992	1993 to 1998	1999 to 2004	2005 to 2010
Church Cove Park	1971	25	1996			▲		
Mill St.	1969	15	1984	▲				
Mulberry St.	1971	35	2006					▲
Chestnut St. Harrison Alley	Mid 70's	25	2000				▲	
Cherry St.	1973	25	1998			▲		
Carpenter St.	1971	25	1996					
Chew Ave.	1955	30	1985	▲				
West Harbor Rd.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Section 1.	1959	25	1984	▲				
- Section 2	1971	25	1995			▲		
- Section 3	1968	30	2001				▲	

Chart No. 18 shows the projected lifetime for Town owned bulkhead by bulkheading sections. The replacement dates are then listed in five year periods. The first five year period (present to 1986) has three bulkhead sections. Mill St. Chew Avenue and section 1 of West Harbor Rd. The Mill Street portion is failing due to underdesigning while the Chew Avenue and West Harbor Road sections are failing due to age.

The following five year period is without any projected replacement, however, the following five year period (1993 to 1998) marks the beginning of failure for the bulkhead constructed during the late 1960's and early 1970's. It is during this period that some of the greatest pressure will be exerted on the town for replacement costs.

FIGURE 19

	Length (feet)	Cost at $250/ft.	Present 1986 $*	1987 1992 $*	1993 1998 $*	1999 2004 $*	2005 2010 $*
Church Cove Park	220	55,000			55,000		
Mill St.	48	12,000	12,000				
Mulberry St.	118	29,500					29,500
Chestnut St.	95	23,750				23,750	
Cherry St.	72	18,000			18,000		
Carpenter St.	25	6,250			6,250		
Chew Ave.	108	27,000	27,000				
West Harbor Rd.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
- Section 1	220	55,000	55,000				
- Section 2	215	53,750			53,750		
- Section 3	216	54,000				54,000	
	1,337	334,250	94,000	-	133,000	77,750	29,500

*1980 dollars

Figure No. 19 estimates the MINIMUM costs to be expected for replacement of bulkhead. After discussions with representatives of the American Wood Preservers Institute, regional distributers of creosote timber, local contractors, and State specialists it was determined that no realistic projection of costs for bulkhead can be presented for more than a three to four month projection. This is due to the fact that creosote is a petrochemical and subject to national and international price flexations, additionally timber prices are also subject to significant and unpredictable price changes. Therefore a projection of price was prepared at the rate of $250/ft. This is the current price of commercial grade bulkhead and will probably be the cost of heavy grade residential bulkhead in the next one or two years. Using this rate of cost is only going to show the minimum expected cost, and for a period of more than five years the projected costs are not expected to be representative of actual cost. As the prevailing economic trends change, newer updated projections can be made to better reflect expected costs.

Replacement and Construction of Fingerpiers

An inventory of existing fingerpiers was conducted with the results presented Appendix No. 2. An outline of eventual fingerpier placement is also presented in order to better organize placement of fingerpiers so that all slips can eventually be served by fingerpiers.

APPENDIX 1A

Commissioners of St. Michaels
ST. MICHAELS, MARYLAND 21663

SETTLED 1670-80
INCORPORATED 1804

745-9933

October 14, 1980

Dear Town Resident:

As you may have noticed in the newspaper article recently, the town government has undertaken the task of developing a Harbor Management Plan. This project will offer you, a resident of this town, a chance to take a more active roll in how your town harbor is used.

In order for us to accomplish this task and at the same time hear your opinions regarding this important resource, we are asking you to take a few minutes to fill out this questionnaire. This will enable us to develop a Harbor Management Plan that will represent your concerns as a town resident.

If you have any questions concerning this project, please call me at 745-5204.

Thank you for your time and assistance with this effort.

Sincerely,

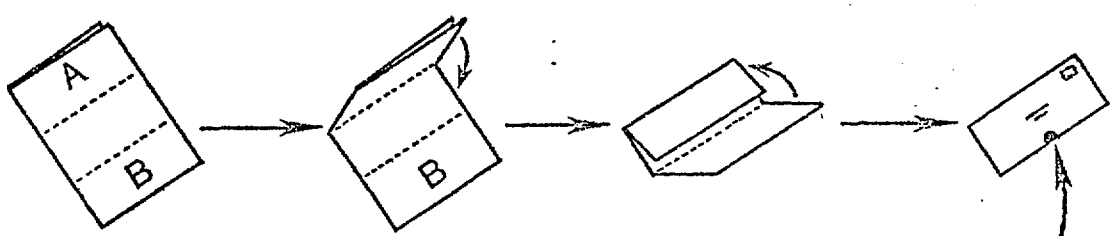
Chuck Kepner, Chairman
Harbor Advisory Committee

ATTENTION

TO RETURN THIS QUESTIONNAIRE

FIRST, FOLD TOP THIRD OF THE QUESTIONNAIRE (A) TOWARD CENTER.

SECOND, FOLD BOTTOM THIRD OF QUESTIONNAIRE (B) TOWARD TOP.



USE ORANGE STICKER TO SEAL QUESTIONNAIRE.

The following questions are about you personally and will help us to know about the concerns of the Town residents regarding their harbor.

1. Do you own a boat?

☐ Yes ☐ No

IF YES, ANSWER QUESTION 2. IF NO GO TO QUESTION 9.

2 How many boats do you own?

_____(number)

3 Where is/are your boat(s) kept?

☐ Trailered
☐ In the harbor
☐ Elsewhere - Specify _____

4 What type of dockage do you use?

☐ Town slips
☐ Public marina
☐ Private slip
Other - Specify _____

5 What type of boat do you own?

☐ Sailboat ☐ Powerboat

6 What size is your boat?

☐ 15 feet or less
☐ 16 feet to 25 feet
☐ 26 feet to 40 feet
☐ Over 40 feet

7 On an average, how many times a year do you use your boat?

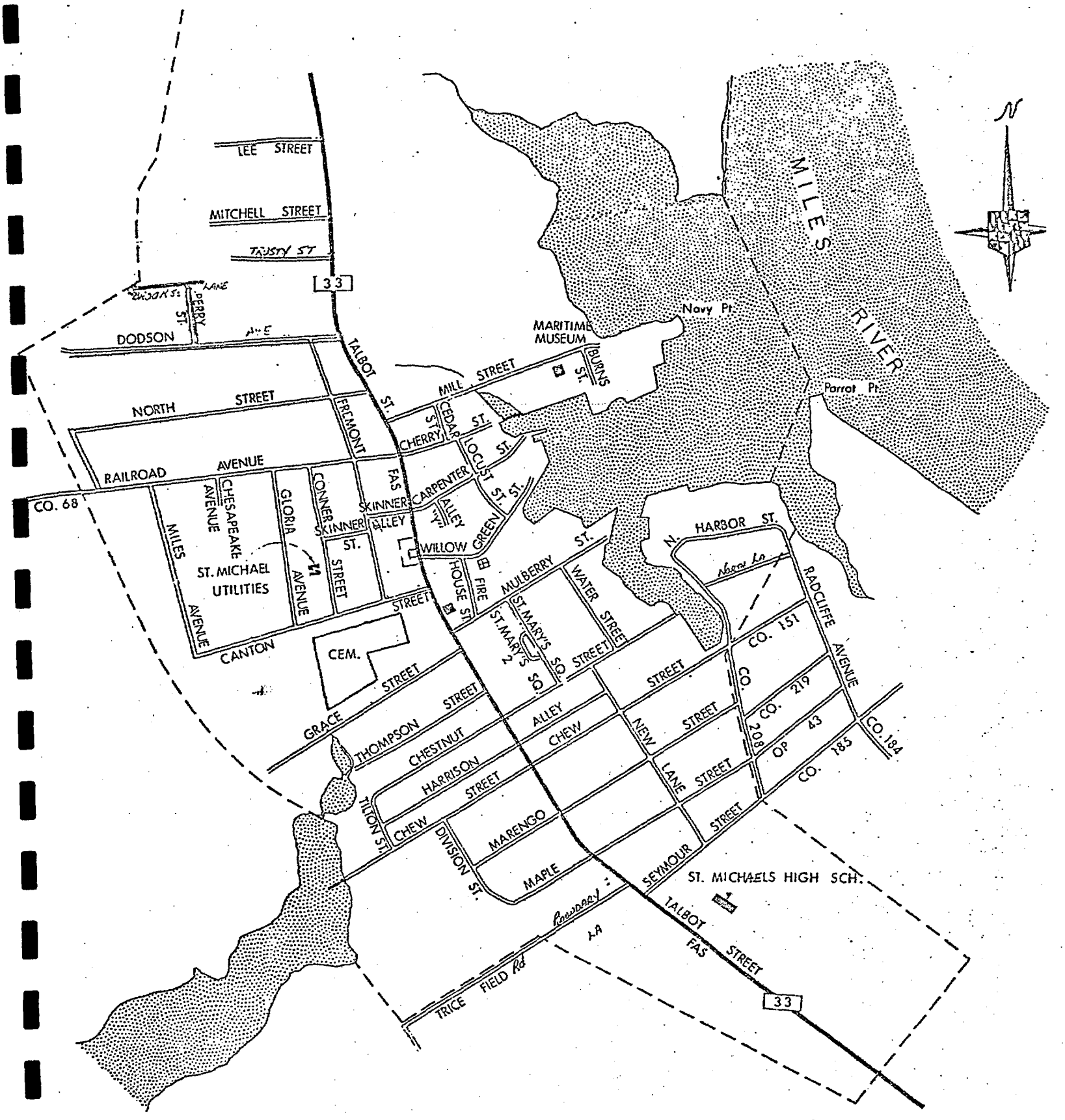
☐ 1-6 ☐ 6-12 ☐ 12-24 ☐ over 24

8 Using an "X", indicate approximate location of your dock site on the map.

9 If you live in St. Michaels where in town do you live? Using a circle "O" indicate the approximate location on the map.

10 In your opinion, what is the biggest problem in the town harbor?

_____



LEE STREET
MITCHELL STREET
TRUSTY ST
33
DODSON
PERRY ST.
TALBOT ST.
MILL STREET
MARITIME MUSEUM
BURNS ST.
Navy Pt.
MILES RIVER
Parrot Pt.
NORTH STREET
FREMONT
CHERRY ST.
CEDAR ST.
LOCUST ST.
RAILROAD AVENUE
CO. 68
CHESAPEAKE AVENUE
GLORIA AVENUE
CONNER STREET
SKINNER ST.
SKINNER ALLEY
CARPENTER ST.
ALLEY
GREEN ST.
WILLOW
MILES AVENUE
ST. MICHAEL UTILITIES
CANTON STREET
HOUSE ST.
FIRE
MULBERRY ST.
WATER STREET
N. HARBOR ST.
RADCLIFFE AVENUE
CO. 151
CEM.
ST. MARY'S SQ.
ST. MARY'S 2 SQ.
GRACE STREET
THOMPSON STREET
CHESTNUT
ALLEY
CHEW
NEW STREET
CO. 208
CO. 219
OP 43
CO. 185
CO. 184
HARRISON STREET
TILTON ST.
CHEW
DIVISION ST.
MARENGO
MAPLE
SEYMOUR STREET
ST. MICHAELS HIGH SCH.
TALBOT STREET
FAS
33
TRICE FIELD Rd

11 Which of these best fits the kind of work that the head of the household does?

- ☐ Retired
- ☐ Professional or executive (store-owner, doctor, teaching, etc.)
- ☐ Sales or clerical (salesperson, typist, etc.)
- ☐ Craftsman (carpenter, mechanic, plumber, etc.)
- ☐ Waterman
- ☐ Student, apprentice, trainee
- ☐ Laborer, semiskilled, etc.

12 Are you

☐ male? ☐ female?

13 What is your age?

- ☐ under 20 years
- ☐ 20-30 years
- ☐ 30-44 years
- ☐ 45-64 years.
- ☐ 65 or over

14 How many years have you lived in town?

_____ years
(number)

15 What was the last grade or year that you completed in school?

- ☐ 8th grade or less
- ☐ 9th grade to 11th grade
- ☐ graduated from high school
- ☐ 1-3 years of college
- ☐ college graduate or beyond

16 What is your employment status?

- ☐ employed full-time
- ☐ employed part-time
- ☐ unemployed, looking for work
- ☐ retired

17 Including yourself, how many persons live in your household?

_____(number of persons)

18 If you are living outside the town of St. Michaels, please write your name and address in the space below.

_____

_____

_____

IF YOU ARE A WATERMAN, PLEASE ANSWER BELOW.

11A How much of your personal income comes from commercial fishing?

- ☐ 0-25%
- ☐ 25-50%
- ☐ 50-75%
- ☐ 75-100%

11B What type of commercial fishing do you do?

- ☐ Crabbing
- ☐ Oystering
- ☐ Clamming
- ☐ Finfishing
- ☐ Charter Fishing
- Other - Specify

_____

_____

11C As a waterman how would you rank the harbor as a homeport for your operation?

- ☐ Excellent
- ☐ Good
- ☐ Average
- ☐ Poor
- ☐ Terrible

11D As a waterman what do you see as the three biggest problems with having your operation based in this harbor?

- ☐ biggest problem
- ☐ second biggest problem
- ☐ third biggest problem

1. Movement in harbor area.
2. Inadequate parking.
3. Lack of unloading space.
4. Insufficient mooring or sl locations.
5. Added costs involved with harbor use.
6. Other - specify

_____

_____

_____

HOW DO YOU FEEL ABOUT THESE QUESTIONS?

19 How adequate are parking areas, with respect to the docks and mooring spaces?

Very Adequate | Adequate | Inadequate | Very Inadequate

20 How adequate are mooring and docking facilities?

Very Adequate | Adequate | Inadequate | Very Inadequate

21 How adequate are services available to boaters?

Very Adequate | Adequate | Inadequate | Very Inadequate

22 How adequate is trash collection and removal?

Very Adequate | Adequate | Inadequate | Very Inadequate

23 How adequate is security, for the protection of boats and property?

Very Adequate | Adequate | Inadequate | Very Inadequate

24 Is control and regulation of traffic within the harbor a problem?

Serious Problem | Minor Problem | Slight Problem | No Problem

25 What are the five most important improvements that could be made in or around the harbor?

1 _____
2 _____
3 _____
4 _____
5 _____

26 Any additional comments?

_____
_____
_____
_____
_____
_____
_____

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1. Do you own a boat?

	Actual No.	Percentage
Yes	70	56.9%
No	53	43.1%

2. How many boats do you own?

1 Boat	52	75.4%
2 Boats	15	21.7%
3 Boats	1	1.5%
4 Boats	0	
5 Boats	1	1.5%

3. Where is/are your boat(s) kept?

Trailered	12	17.1%
In the Harbor	33	47.1%
Elsewhere	16	22.9%
Trailered & in the Harbor	7	10.0%
In the Harbor & Elsewhere	1	1.4%
Trailered & Elsewhere	1	1.4%

4. What type of dockage do you use?

Town Slips	16	23.5%
Public Marina	10	14.7%
Private Slip	41	60.3%
Other	1	1.5%

5. What type of boat do you own?

Sailboat	13	19.1%
Powerboat	49	72.1%
Both	6	8.8%

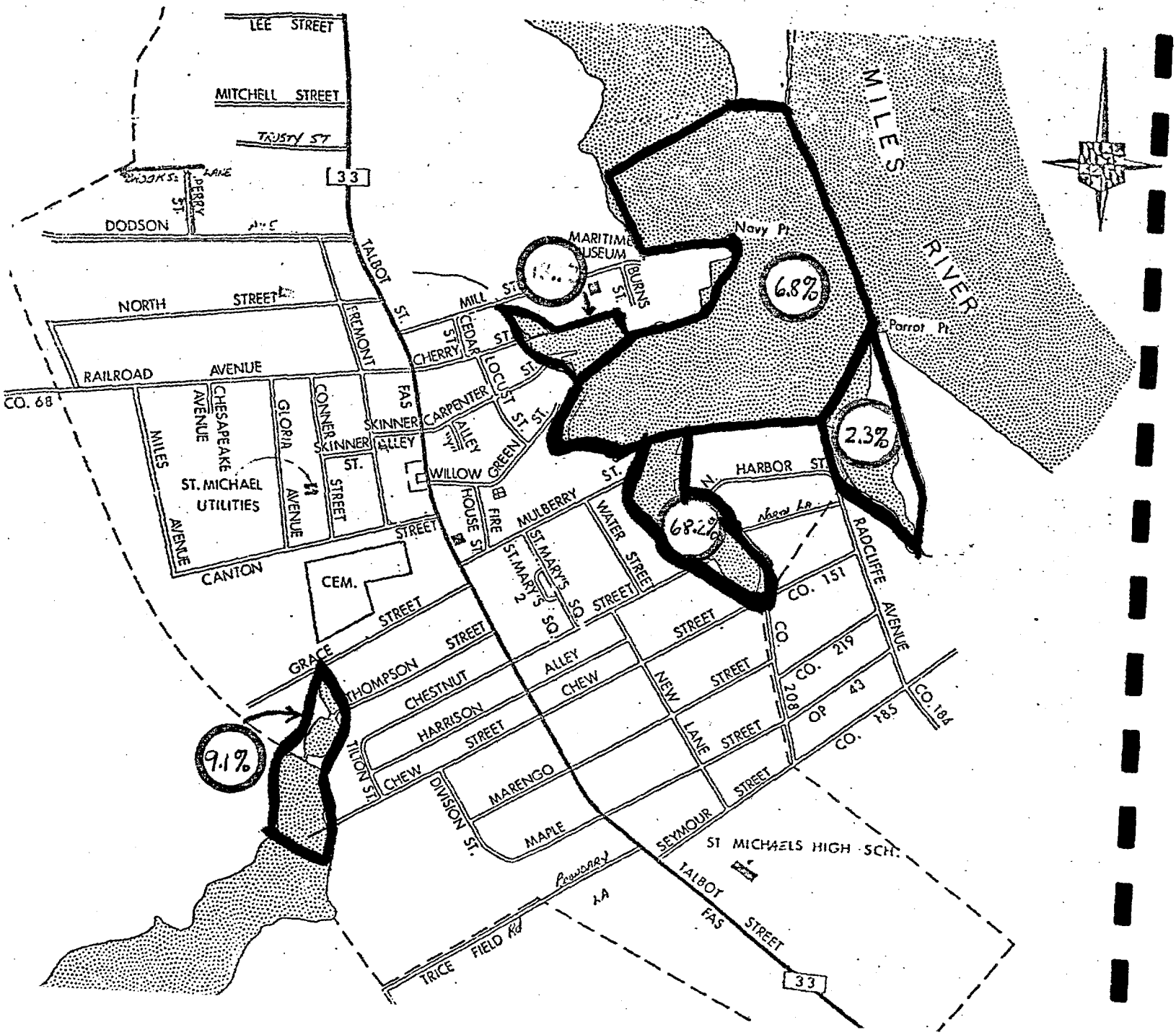
6. What size is your boat?

15 Feet or Less	13	18.6%
16 to 25 Feet	29	41.4%
26 to 40 Feet	26	37.1%
Over 40 Feet	2	2.9%

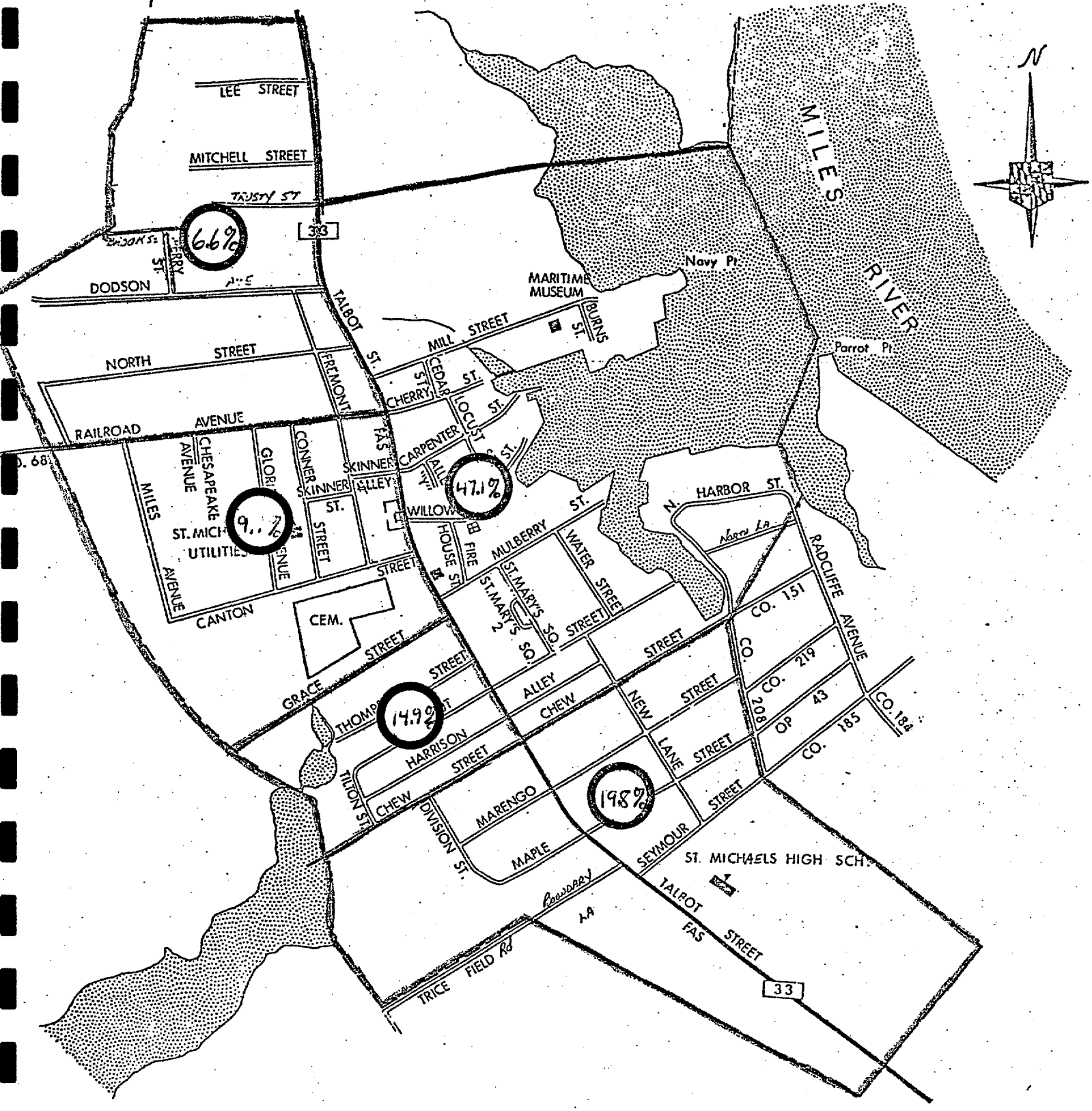
7. On an average, how many times a year do you use your boat?

1-6	2	3.0%
6-12	7	10.5%
12-24	10	14.9%
Over 24	48	71.6%

8. Using an "X", indicate approximate location of your dock site on the map.



9. If you live in St. Michaels, where in town do you live? Using a circle "O" indicate the approximate location on the map.



10. In your opinion, what is the biggest problem in the town harbor?

	Actual No.	Percentage
Congestion	45	41.3%
Pollution	11	10.1%
No Organized Mooring Pattern	6	5.5%
Need More Slips	18	16.5%
Need Dredging	4	3.7%
Better Channel Marking	4	3.7%
Another Buying Station for Watermen		
Need Better Parking Facilities Around Harbor	1	1.0%
No Problems in Harbor	1	1.0%
Don't Know of any Problems	6	5.5%
Watermen Need Private Mooring Area	2	1.8%
Miscellaneous	10	9.2%

11. Which of these best fits the kind of work that the head of the household does?

Retired	57	46.0%
Professional or Executive	27	21.8%
Sales or Clerical	8	6.5%
Craftsman	12	9.7%
Waterman	16	12.9%
Student, Apprentice	1	0.8%
Laborer, Semi-Skilled, etc.	1	0.8%

11A. How much of your personal income comes from commercial fishing?

	Actual No.	Percentage
0-25%	5	23.8%
25-50%	3	14.3%
50-75%	3	14.3%
75-100%	10	47.6%

11B. What type of commercial fishing do you do?

Crabbing	3	13.6%
Oystering	2	9.1%
Clamming		
Finfishing		
Charter Fishing		
Crabbing & Oystering	14	63.6%
Crabbing, Oystering & Clamming	1	4.6%
Oystering & Clamming	1	4.6%

11C. As a waterman how would you rank the harbor as a homeport for your operation?

Excellent	4	18.2%
Good	1	4.6%
Average	8	36.4%
Poor	6	27.3%
Terrible	1	4.6%

11D. As a waterman what do you see as the three biggest problems with having your operation based in this harbor?

	1st	2nd	3rd
Movement in Harbor	2 11.1%	3 18.8%	4 28.6%
Inadequate Parking	2 11.1%	2 12.5%	
Lack of Unloading Space	2 11.1%	6 37.5%	2 14.3%
Insufficient Mooring or Slip Locations	9 50.0%	2 12.5%	5 35.7%
Added Costs Involved with Harbor Use	2 11.1%	2 12.5%	2 14.3%
Other	1 5.6%	1 6.3%	1 7.1%

12. Are You

	Actual No.	Percentage
Male	97	77.6%
Female	28	22.4%

13. What is your age?

Under 20		
20-30	9	7.3%
30-44	20	16.1%
45-64	47	37.9%
65 or over	48	38.7

14. How many years have you lived in town?

0-5	41	33.6%
6-15	31	25.4%
16-25	12	9.8%
26-50	21	17.2%
Over 50	17	13.9%

15. What was the last grade or year that you completed in school?

8th Grade or Less	6	4.9%
9th to 11th	15	12.3%
Graduated from High School	34	27.9%
1-3 Years of College	18	14.8%
College Graduate or Beyond	49	40.2%

16. What is your employment status?

Employed Full-Time	49	40.2%
Employed Part-Time	17	13.9%
Unemployed	2	1.6%
Retired	54	44.3%

17. Including yourself, how many persons live in your household?

1	25	20.7%
2	59	48.8%
3 to 4	31	25.6%
5 to 6	6	5.0%
Over 6		

18. If you are living outside the town of St. Michaels, please write your name and address in the space below.

N/A

19. How adequate are parking areas, with respect to the docks and mooring spaces?

	Actual No.	Percentage
Very Adequate	9	9.1%
Adequate	45	45.5%
Inadequate	32	32.3%
Very Inadequate	13	13.1%

20. How adequate are mooring and docking facilities?

Very Adequate	4	4.3%
Adequate	30	32.3%
Inadequate	40	43.0%
Very Inadequate	19	20.4%

21. How adequate are services available to boaters?

Very Adequate	17	19.3%
Adequate	51	58.0%
Inadequate	15	17.0%
Very Inadequate	5	5.7%

22. How adequate is trash collection and removal?

Very Adequate	19	18.4%
Adequate	60	58.3%
Inadequate	17	16.5%
Very Inadequate	7	6.8%

23. How adequate is security, for the protection of boats and property?

	Actual No.	Percentage
Very Adequate	7	7.7%
Adequate	45	49.5%
Inadequate	26	28.6%
Very Inadequate	13	14.3%

24. Is control and regulation of traffic within the harbor a problem?

Serious Problem	41	43.6%
Minor Problem	27	28.7%
Slight Problem	13	13.8%
No Problem	11	11.7%

25. Where do you live?

In Town	120	96.8%
Out of Town but in the County	2	1.6%
Elsewhere	2	1.6%

DATA BY BOAT OWNERSHIP

DATA BY BOAT OWNERSHIP

	Boat Owners Number	%	Non-Boat Owners Number	%
1. In your opinion, what is the biggest problem in the town harbor?				
Congestion	23	35.9%	22	51.2%
Pollution	3	4.7%	8	18.6%
No Organized Mooring Pattern	6	9.4%	-	-
Need More Slips	12	18.7%	6	13.9%
Need Dredging	4	6.2%	-	-
Better Channel Marking	2	3.1%	1	2.3%
Another Buying Station for Watermen	-	-	-	-
Need Better Parking Facilities Around Harbor	-	-	-	-
No Problems in Harbor	1	1.6%	-	-
Don't Know of any Problems	4	6.2%	2	4.6%
Watermen Need Private Mooring	2	3.1%	-	-
Miscellaneous	7	10.9%	3	7.0%
Marina Expansion	-	-	-	-
2. How adequate are parking areas, with respect to the docks and mooring spaces?				
Very Adequate	8	12.5%	1	3.0%
Adequate	33	51.6%	12	36.4%
Inadequate	17	26.6	13	39.4%
Very Inadequate	6	9.4%	7	21.2%
3. How adequate are mooring and docking facilities?				
Very Adequate	3	4.7%	1	3.6%
Adequate	20	31.3%	9	32.1%
Inadequate	28	43.8%	12	42.9%
Very Inadequate	13	20.3%	6	21.4%
4. How adequate are services available to boaters?				
Very Adequate	14	23.7%	3	10.7%
Adequate	35	59.3%	15	53.6%
Inadequate	9	15.3%	6	21.4%
Very Inadequate	1	1.7%	4	14.3%

	Boat Owners Number	%	Non-Boat Owners Number	%
5. How adequate is trash collection and removal?				
Very Adequate	11	17.5%	6	15.8%
Adequate	36	57.1%	24	63.2%
Inadequate	11	17.5%	6	15.8%
Very Inadequate	5	7.9%	2	5.3%
6. How adequate is security, for the protection of boats and property?				
Very Adequate	4	6.5%	3	10.7%
Adequate	33	53.2%	12	42.9%
Inadequate	15	24.2%	10	35.7%
Very Inadequate	10	16.1%	3	10.7%
7. Is control and regulation of traffic within the harbor a problem?				
Serious Problem	29	45.3%	12	41.4%
Minor Problem	18	28.1%	8	27.6%
Slight Problem	8	12.5%	5	17.2%
No Problem	9	14.1%	2	6.9%

DATA BY TYPE OF BOAT OWNED

DATA BY TYPE OF BOAT OWNED

	Sailboat		Powerboat		Both	
What size is/are your boat(s)? (Feet)						
15 or Less	3	23.1	10	20.4	-	-
16 to 24	1	7.7	22	44.9	5	83.3
25 to 40	9	69.2	15	30.6	1	16.7
Over 40	-	-	2	4.1	-	-
How many times a year do you use it?						
1 - 6	-	-	1	2.1	-	-
6 - 12	4	33.3	7	14.9	-	-
12 - 24	8	66.7	6	12.8	-	-
Over 24	-	-	33	70.2	6	100.0
What is the biggest problem?						
1 Congestion	5	41.7	14	31.8	3	50.0
2 Pollution	-	-	2	4.5	-	-
3 No Organized Mooring	1	8.3	5	11.4	-	-
4 Need More Slips	1	8.3	11	25.0	-	-
5 Need Dredging	2	16.7	1	2.3	1	16.7
6 Better Channel Marking	1	8.3	1	2.3	-	-
9 No Problem	-	-	1	2.3	-	-
10 Don't Know	1	8.3	3	6.8	-	-
11 Mooring Area for Watermen	-	-	2	4.5	-	-
12 Miscellaneous	1	8.3	4	9.1	2	33.3
13 Expansion of Marinas	-	-	-	-	-	-
Is traffic regulation a problem?						
Serious Problem	5	41.7	21	46.7	1	20.0
Minor Problem	6	50.0	11	24.4	1	20.0
Slight Problem	1	8.3	5	11.1	2	40.0
No Problem	-	-	8	17.8	1	20.0

DATA BY TYPE OF DOCKAGE

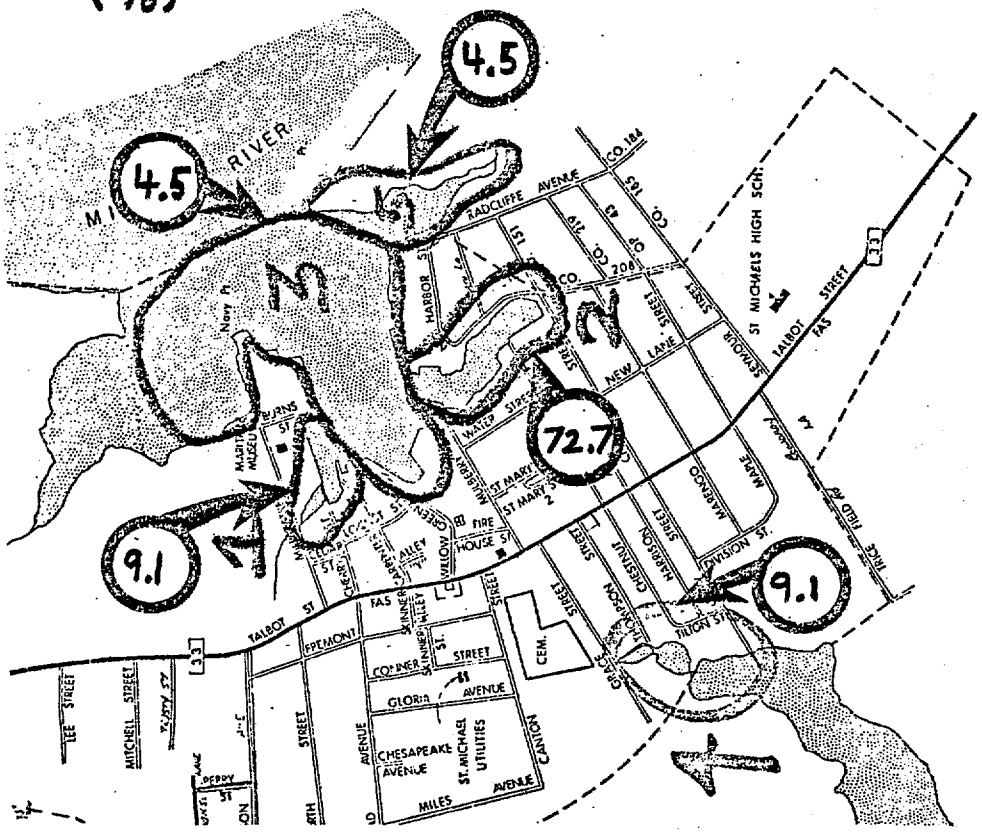
DATA BY TYPE OF DOCKAGE

	Town Slip Renter		Private Slip	
	Number	%	Number	%
What type of boat do you own?				
Sailboat	1	6.3%	10	25.6%
Powerboat	15	93.7%	25	64.1%
Both	-	-	4	10.3%
What size is your boat?				
15 Feet or Less	2	12.5%	10	24.4%
16 to 25 Feet	4	25.0%	17	41.5%
26 to 40 Feet	9	56.2%	14	34.1%
Over 40 Feet	1	6.3%	-	-
On an average, how many times a year do you use your boat?				
1 - 6 Times a Year	-	-	2	5.1%
6 - 12 Times a Year	1	6.2%	2	12.8%
12 - 24 Times a Year	1	6.2%	5	15.4%
Over 24 Times a Year	14	87.5%	26	66.7%

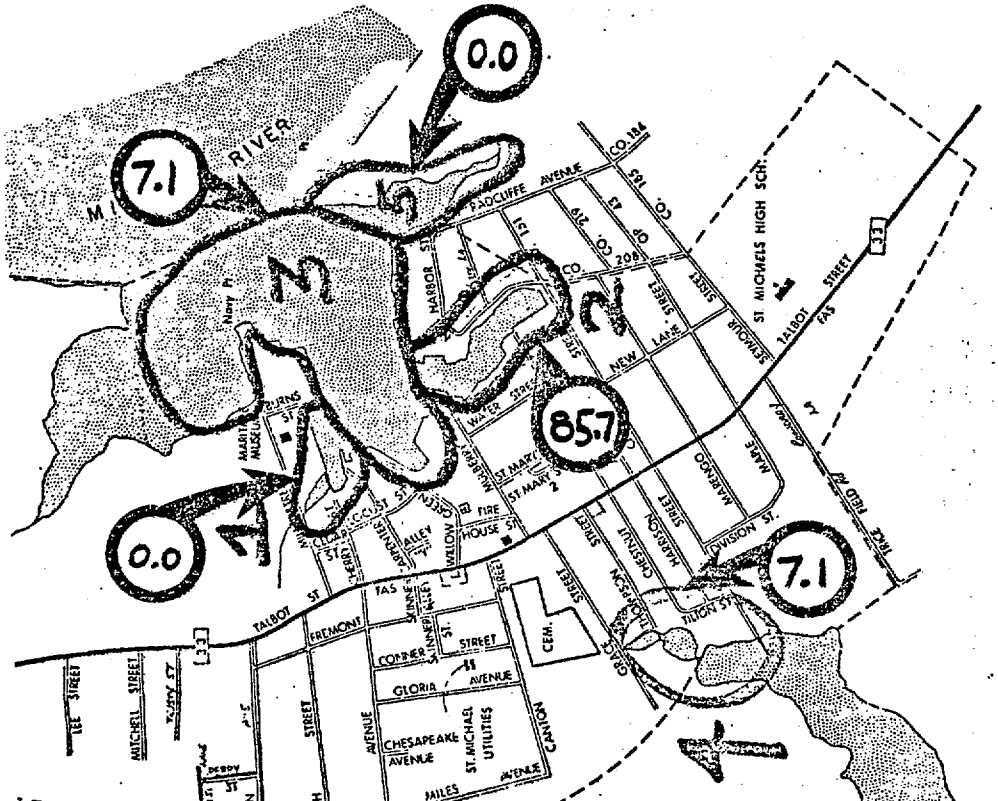
	Town Slip Renter Number	%	Private Slip Number	%
In your opinion, what is the biggest problem in the town harbor?				
Congestion	4	26.7%	15	40.5%
Pollution	1	6.7%	2	5.4%
No Organized Mooring Pattern	1	6.7%	3	8.1%
Need More Slips	3	20.0%	6	16.2%
Need Dredging	1	6.7%	2	5.4%
Better Channel Marking	-	-	1	2.7%
Another Buying Station for Watermen	-	-	-	-
Need Better Parking Facilities Around Harbor	-	-	-	-
No Problem in Harbor	-	-	1	2.7%
Don't Know of Any Problems	1	6.7%	3	8.1%
Watermen Need Private Mooring Area	2	13.3%	-	-
Miscellaneous	2	13.3%	4	10.8%
Expansion of Marinas	-	-	-	-
How adequate are parking areas, with respect to the docks and mooring spaces?				
Very Adequate	2	13.3%	5	13.5%
Adequate	8	53.3%	19	51.3%
Inadequate	4	26.7%	9	24.3%
Very Inadequate	1	6.7%	4	10.8%
How adequate are mooring and docking facilities?				
Very Adequate	-	-	2	5.4%
Adequate	5	31.3%	11	29.7%
Inadequate	8	50.0%	15	40.5%
Very Inadequate	3	18.7%	9	24.3%
How adequate are services available to boaters?				
Very Adequate	5	33.3%	9	26.5%
Adequate	6	40.0%	21	61.8%
Inadequate	4	26.7%	3	8.8%
Very Inadequate	-	-	1	2.9%

	Town Slip Renter		Private Slip	
	Number	%	Number	%
How adequate is trash collection and removal?				
Very Adequate	1	6.3%	9	24.3%
Adequate	12	75.0%	17	45.9%
Inadequate	2	12.5%	7	18.9%
Very Inadequate	1	6.2%	4	10.8%
How adequate is security, for the protection of boats and property?				
Very Adequate	2	12.5%	2	5.6%
Adequate	5	31.3%	22	61.1%
Inadequate	5	31.3%	8	22.2%
Very Inadequate	4	25.0%	4	11.1%
Is control and regulation of traffic within the harbor a problem?				
Serious Problem	6	37.5%	20	55.6%
Minor Problem	4	25.0%	12	33.3%
Slight Problem	3	18.7%	1	2.8%
No Problem	3	18.7%	3	8.3%

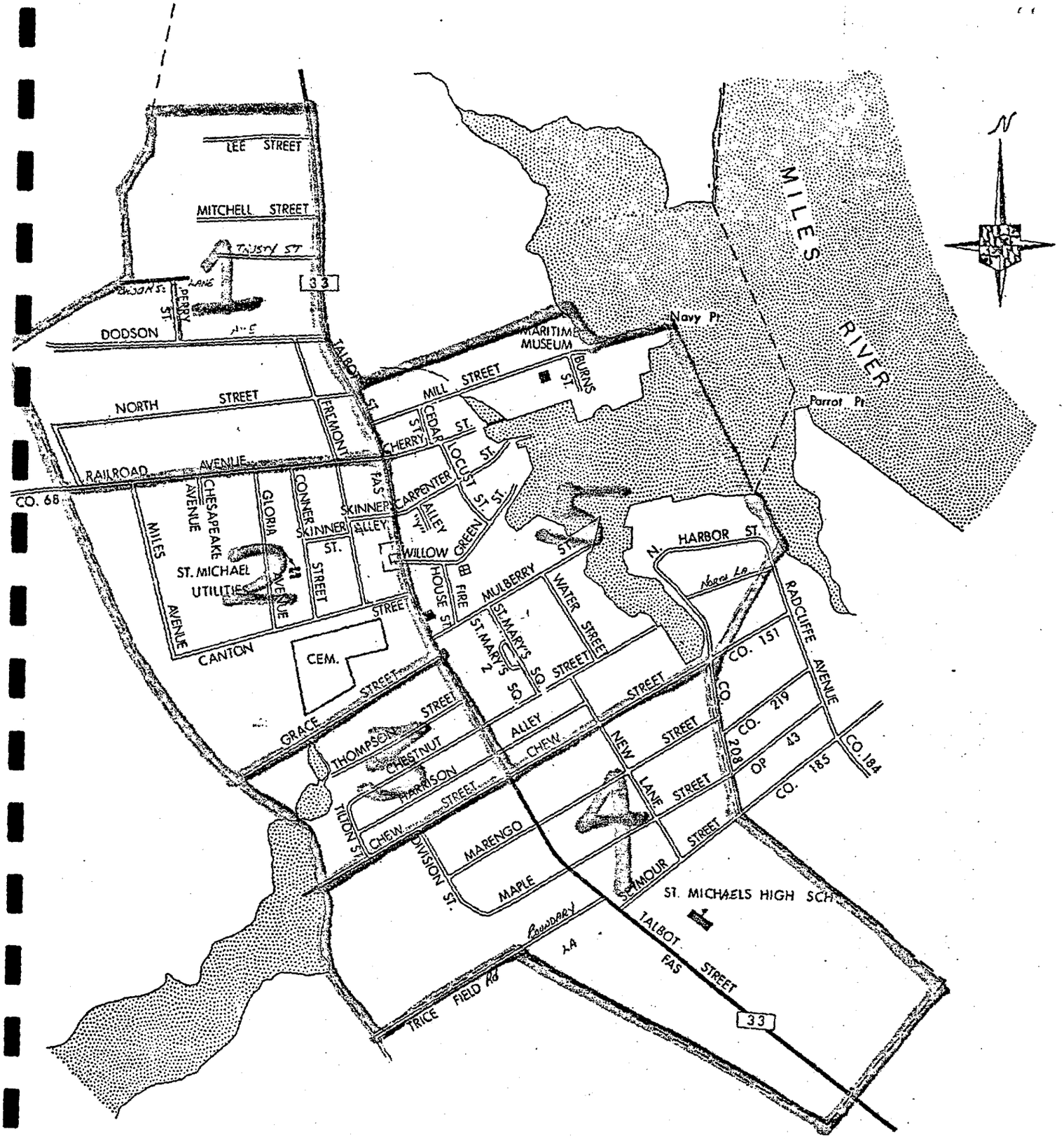
If you have a private slip, using an "X", indicate approximate location of your dock site on the map. (%)



If you have a town slip, using an "X", indicate approximate location of your dock site on the map. (%)



DATA BY BOAT OWNERSHIP AND HOUSE LOCATION


LEE STREET
MITCHELL STREET
TRUSTY ST
33
PERRY ST.
DODSON
NORTH STREET
RAILROAD AVENUE
CO. 68
TALBOT ST.
FREMONT
MILL STREET
MARITIME MUSEUM
BURNS ST.
Navy Pt.
MILES RIVER
Parrot Pt.
CHERRY ST.
CEDAR ST.
LOCUST ST.
CARPENTER
ALLEY
GREEN ST.
WILLOW
SKINNER ST.
SKINNER ALLEY
CONNER
GLORIA AVENUE
CHESAPEAKE AVENUE
MILES AVENUE
ST. MICHAEL UTILITIES
STREET
CANTON
CEM.
HOUSE ST.
FIRE
MULBERRY ST.
WATER STREET
ST. MARY'S SQ.
ST. MARY'S SQ.
N. HARBOR ST.
RADCLIFFE AVENUE
CO. 151
CO. 219
CO. 208
OP 43
CO. 185
CO. 184
GRACE STREET
THOMPSON STREET
CHESTNUT
HARRISON
CHEW STREET
ALLEY
NEW LANE STREET
TILTON ST.
DIVISION ST.
MARENGO
MAPLE
SEYMOUR STREET
ST. MICHAELS HIGH SCH
TALBOT STREET
FAS
33
TRICE FIELD Rd
BOUNDARY LA
N

SECTORS

BOAT OWNERS BY HOUSE LOCATION

	SECTORS (SEE ATTACHED MAP) 1		2		3		4		5	
In your opinion, what is the biggest problem in the town harbor?										
Congestion	1	25.0	1	14.3	3	42.9	5	38.5	11	40.7
Pollution	-	-	1	14.3	-	-	1	7.7	1	3.
No Organized Mooring Pattern	-	-	-	-	1	14.3	2	15.4	3	11.
Need More Slips	2	50.0	1	14.3	-	-	3	23.1	5	18.5
Need Dredging	1	25.0	-	-	1	14.3	-	-	2	7.4
Better Channel Marking	-	-	-	-	-	-	-	-	2	7.
Another Buying Station for Watermen	-	-	-	-	-	-	-	-	-	-
Need Better Parking Facilities Around Harbor	-	-	-	-	-	-	-	-	-	-
No Problem in Harbor	-	-	-	-	1	14.3	-	-	-	-
Don't Know of any Problems	-	-	-	-	1	14.3	2	15.4	-	-
Watermen Need Private Mooring Area	-	-	2	28.6	-	-	-	-	-	-
Miscellaneous	-	-	2	28.6	-	-	-	-	3	11.
Expansion of Marinas	-	-	-	-	-	-	-	-	-	-
How adequate are parking areas, with respect to the docks and mooring spaces?										
Very Adequate	-	-	-	-	-	-	3	23.0	4	15.4
Adequate	2	66.7	7	77.8	5	62.5	5	38.5	12	46.1
Inadequate	1	33.3	-	-	3	37.5	5	38.5	8	30.
Very Inadequate	-	-	2	22.2	-	-	-	-	2	7.
How adequate are mooring and docking facilities?										
Very Adequate	-	-	-	-	-	-	-	-	3	11.
Adequate	1	25.0	3	33.3	2	25.0	4	30.8	7	26.9
Inadequate	1	25.0	3	33.3	4	50.0	5	38.4	14	53.8
Very Inadequate	2	50.0	3	33.3	2	25.0	4	30.8	2	7.
How adequate are services available to boaters?										
Very Adequate	1	25.0	2	25.0	1	14.3	3	25.0	5	20.
Adequate	2	50.0	4	50.0	5	71.4	6	50.0	17	70.
Inadequate	1	25.0	2	25.0	1	14.3	2	16.7	2	8.3
Very Inadequate	-	-	-	-	-	-	1	8.3	-	-

BOAT OWNERS PER HOUSE LOCATION

	SECTORS (SEE ATTACHED MAP)									
	1		2		3		4		5	
How adequate is trash collection and removal?										
Very Adequate	1	25.0	1	11.1	1	14.3	5	38.5	3	12.0
Adequate	3	75.0	6	66.7	3	42.9	7	53.8	15	60.0
Inadequate	-	-	2	22.2	1	14.3	1	7.7	4	16.0
Very Inadequate	-	-	-	-	2	28.6	-	-	3	12.0
How adequate is security, for the protection of boats and property?										
Very Adequate	-	-	-	-	1	14.3	3	23.1	-	-
Adequate	1	25.0	4	50.0	2	28.6	8	61.5	16	61.5
Inadequate	1	25.0	2	25.0	2	28.6	-	-	9	34.6
Very Inadequate	2	50.0	2	25.0	2	28.6	2	15.4	1	3.8
Is control and regulation of traffic within the harbor a problem?										
Serious Problem	2	50.0	2	25.0	5	71.4	8	61.5	10	37.0
Minor Problem	1	25.0	2	25.0	2	28.6	3	23.1	9	33.3
Slight Problem	1	25.0	2	25.0	-	-	-	-	4	14.8
No Problem	-	-	2	25.0	-	-	2	15.4	4	14.8

NON-BOAT OWNERS BY HOUSE LOCATION

	SECTORS (SEE ATTACHED MAP)									
	1		2		3		4		5	
In your opinion, what is the biggest problem in the town harbor?										
Congestion	1	33.3	2	66.7	3	50.0	3	37.5	13	59.1
Pollution	-	-	-	-	2	33.3	-	-	5	22.
No Organized Mooring Pattern	-	-	-	-	-	-	-	-	-	-
Need More Slips	1	33.3	1	33.3	1	16.7	1	12.5	2	9.1
Need Dredging	-	-	-	-	-	-	-	-	-	-
Better Channel Marking	-	-	-	-	-	-	1	12.5	-	-
Another Buying Station for Watermen	-	-	-	-	-	-	-	-	-	-
Need Better Parking Facilities Around Harbor	-	-	-	-	-	-	-	-	-	-
No Problem in Harbor	-	-	-	-	-	-	-	-	-	-
Don't Know of any Problems	1	33.3	-	-	-	-	1	12.5	-	-
Watermen Need Private Mooring Area	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	1	12.5	2	9.
Expansion of Marinas	-	-	-	-	-	-	-	-	-	-
How adequate are parking areas, with respect to the docks and mooring spaces?										
Very Adequate	-	-	-	-	-	-	-	-	1	5.0
Adequate	2	100.0	-	-	1	25.0	2	66.7	7	35.0
Inadequate	-	-	2	66.7	2	50.0	1	33.3	7	35.
Very Inadequate	-	-	1	33.3	1	25.0	-	-	5	25.0
How adequate are mooring and docking facilities?										
Very Adequate	-	-	-	-	-	-	-	-	1	5.9
Adequate	1	50.0	-	-	1	33.3	2	66.7	5	29.4
Inadequate	1	50.0	1	50.0	1	33.3	1	33.3	7	41.2
Very Inadequate	-	-	1	50.0	1	33.3	-	-	4	23.5
How adequate are services available to boaters?										
Very Adequate	1	50.0	-	-	-	-	-	-	2	13.3
Adequate	1	50.0	1	33.3	2	50.0	2	66.7	9	60.0
Inadequate	-	-	1	33.3	1	25.0	1	33.3	2	13.3
Very Inadequate	-	-	1	33.3	1	25.0	-	-	2	13.3

NON-BOAT OWNERS BY HOUSE LOCATION

	SECTORS (SEE ATTACHED MAP) 1		2		3		4		5	
How adequate is trash collection and removal?										
Very Adequate	2	50.0	-	-	1	16.7	-	-	3	13.0
Adequate	1	25.0	2	66.7	4	66.6	2	100.0	15	65.2
Inadequate	1	25.0	-	-	1	16.7	-	-	4	17.4
Very Inadequate	-	-	1	33.3	-	-	-	-	1	4.3
How adequate is security, for the protection of boats and property?										
Very Adequate	1	100.0	-	-	-	-	-	-	2	11.1
Adequate	-	-	1	50.0	3	75.0	2	66.7	6	33.3
Inadequate	-	-	-	-	-	-	1	33.3	9	50.0
Very Inadequate	-	-	1	50.0	1	25.0	-	-	1	5.6
Is control and regulation of traffic within the harbor a problem?										
Serious Problem	-	-	1	50.0	-	-	1	50.0	9	50.0
Minor Problem	1	50.0	-	-	2	75.0	1	50.0	4	22.2
Slight Problem	1	50.0	1	50.0	-	-	-	-	3	16.7
No Problem	-	-	-	-	1	25.0	-	-	1	5.6

APPENDIX 1B

1. Name of Company: _____

   Address: Street _____

2. Year of founding _____

3. How would you characterize the market for your company's services?

   _____Predominantly local

   _____Predominantly Statewide

   _____Predominantly regional (Mid-Atlantic/East Coast)

4. Has the geographical market for your company's major products changed significantly during the last ten years?

   _____Yes

   _____No

   If "Yes", briefly explain how.

5. During the last 10 years has there been a shift in the clientele served by this operation?

   _____Yes _____No

6. How would you characterize your potential for company expansion on this site now?

Landward	Over the Water
_____Substantial	_____Substantial
_____Modest	_____Modest
_____None	_____None

7. Is there anything about your present site which is a problem to you?

   _____Yes

   _____No

   If "Yes", please explain:

8. During the last ten years, have you expanded your operation?

Landward _____Yes _____No

Over the Water _____Yes _____No

If "Yes", please briefly explain in what ways and when this occurred:

9. Do you feel a need for further expansion in the near future?

_____Yes _____No.

10. During the last ten years, have you required dredging for your operation?

_____Yes _____No

If "Yes", please explain where and when:

11. Do you feel a need for further dredging on your site in the near future? (in the next 10 years).

_____Yes _____No

12. How many people are employed by your operation?

Permanent	Seasonal
_____Part-time	_____Part-time
_____Full-time	_____Full-time

13. How has the labor climate changed in the last ten years?

a. Worker turnover:	b. Skilled labor availability:	c. Quality of labor Performance
_____Higher now	_____Better now	_____Better now
_____About the same	_____About the same	_____About the same
_____Lower now	_____Tighter now	_____Poorer now

14. What effect, if any, have changes in the labor climate had upon your operation?

_____

_____

15. What in your estimation are the most critical manpower/labor needs which the local Government should address?

_____

_____

16. What in your estimation is the best and most viable approach which should be taken by local Government to assist your operation?

_____

_____

17. How many slips do you presently have?_____

18. What services do you provide?

Gas Dock _____
Ice _____
Slips _____
  Water _____
  Electric _____
Pump Out _____
Dry Storage _____
Restaurant _____
Ships Store _____

APPENDIX 2

BULKHEAD EVALUATION

A

MILL STREET

A. SITE DESCRIPTION

48 feet of cantilevered bulkhead

B. STRUCTURE USES

Used only for bank support.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheating	7 feet
b. Pilings	10 feet*
c. Deadmen	N/A
d. Tie rods	N/A
CAP BOARD	Yes
BATTEN BOARD	No

SIZE OF:

a. Walers	6x6 inches
b. Pilings	6x6 inches

DISTANCE BETWEEN:

a. Pilings	7 feet
b. Deadmen	N/A

*4 feet in ground, 6 feet above ground, 3 feet above bulkhead.

D. STRUCTURAL EVALUATION

This structure is failing due to a gradual slumping forward from the top of bulkhead.

E. REQUIRED MAINTENANCE

Submining requiring fill.

F. YEAR OF CONSTRUCTION

1969

G. ESTIMATED TOTAL LIFETIME

15 years

B

CHERRY STREET

A. SITE DESCRIPTION

Approximately 72 feet of timber bulkhead at foot of Cherry Street.

B. STRUCTURE USES

Town footbridge attaches to bulkhead, bulkhead also used for town slips.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	12 feet
b. Pilings	14 feet
c. Deadmen	12 feet
d. Tie rods	20 feet
CAP BOARD	No
batten board	Yes

SIZE OF:

a. Walers	6x6 inches
b. Pilings	12 inches

DISTANCE BETWEEN:

a. Pilings	7 feet
b. Deadmen	7 feet

D. STRUCTURAL EVALUATION

This bulkhead is in good condition.

E. REQUIRED MAINTENANCE

Bulkhead has been well maintained but should receive capboard as soon as possible.

F. YEAR OF CONSTRUCTION

1973

G. ESTIMATED TOTAL LIFETIME

25 years.

C

CARPENTER STREET

A. SITE DESCRIPTION

25 feet of timber bulkhead at end of Carpenter Street.

B. STRUCTURE USES

Used only for bank support.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	Unknown
b. Pilings	Unknown
c. Deadmen	Unknown
d. Tie rods	12 feet
CAP BOARD	Yes
BATTEN BOARD	Yes

SIZE OF:

a. Walers	6x6 inches
b. Pilings	6x8 inches

DISTANCE BETWEEN:

a. Pilings	8 feet
b. Deadmen	8 feet

D. STRUCTURAL EVALUATION

This structure is in good condition.

E. REQUIRED MAINTENANCE

Tie rods are exposed and are being damaged by truck tires. This area should be backfilled and graded immediately.

F. YEAR OF CONSTRUCTION

1971

G. ESTIMATED TOTAL LIFETIME

25 years

D

CHURCH COVE PARK

A. SITE DESCRIPTION

Approximately 220 feet of timber bulkhead fronted by grass park. Apparently the 220 feet of bulkhead was completed in two or three phases.

B. STRUCTURE USES

This park is presently used as an active/passive area (picnicing & sightseeing).

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	10 feet
b. Pilings	12 feet
c. Deadmen	Unknown
d. Tie rods	20 feet
CAP BOARD	Yes
BATTEN BOARD	Yes

SIZE OF:

a. Walers	6x6 inches
b. Pilings	6x8 inches

DISTANCE BETWEEN:

a. Pilings	7 feet
b. Deadmen	10 1/2 feet

D. STRUCTURAL EVALUATION

The general condition of this structure is sound.

E. REQUIRED MAINTENANCE

There is some submining behind the bulkhead which will require fill.

F. YEAR OF CONSTRUCTION

1971

G. ESTIMATED TOTAL LIFETIME

25 years.

E

MULBERRY STREET

A. SITE DESCRIPTION

There is approximately 118 feet of timber bulkhead fronted by a macadam parking lot.

B. STRUCTURE USES

This bulkhead is used as a location for commercial seafood buying station as well as a municipal dock for recreational boaters.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	16 feet
b. Pilings	Unknown
c. Deadmen	Unknown
d. Tie rods	Unknown
CAP BOARD	Yes
BATTEN BOARD	Yes

SIZE OF:

a. Walers	6x8 inches
b. Pilings	12 inches

DISTANCE BETWEEN:

a. Pilings	7 feet
b. Deadmen	10 1/2 feet

D. STRUCTURAL EVALUATION

This structure has been well maintained and is in excellent condition.

E. REQUIRED MAINTENANCE

Continue to keep pavement near structure solid and free from holes.

F. YEAR OF CONSTRUCTION

1971.

G. ESTIMATED TOTAL LIFETIME

35

F

CHESTNUT STREET AND HARRISON ALLEY

A. SITE DESCRIPTION

Approximately 95 feet of timber bulkhead located at the end of both Chestnut Street and Harrison Alley.

B. STRUCTURE USES

This bulkhead has attached fingerpiers for town slips used by both recreational boaters and commercial fishermen.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	Unknown
b. Pilings	Unknown
c. Deadmen	Unknown
d. Tie rods	Unknown
CAP BOARD	No
BATTEN BOARD	Yes

SIZE OF:

a. Walers	6x6 inches
b. Pilings	9 inches

DISTANCE BETWEEN:

a. Pilings	8 feet
b. Deadmen	8 feet

D. STRUCTURAL EVALUATION

This bulkhead is in good condition.

E. REQUIRED MAINTENANCE

Replacement of capboard as soon as possible.
Severe submining will require filling.
Fingerpier replacement and repair.

F. YEAR OF CONSTRUCTION

Mid 70's

G. ESTIMATED TOTAL LIFETIME

25 years

G

EAST CHEW AVENUE

A. SITE DESCRIPTION

This is a 108 foot timber bulkhead, with a macadam parking area adjacent to it.

B. STRUCTURE USES

The bulkhead is normally not used, however it does have work boats tied up alongside occasionally.

C. CONSTRUCTION MATERIALS

LENGTH OF:		SIZE OF:	
a. Sheathing	10 feet	a. Walers	6x6 inches
b. Pilings	16 feet	b. Pilings	9 inches
c. Deadmen	5 feet		
d. Tie rods	14 feet	DISTANCE BETWEEN:	
		a. Pilings	8 feet
CAP BOARD	No	b. Deadmen	8 feet
BATTEN BOARD	No		

D. STRUCTURAL EVALUATION

Sheathing	Satisfactory
Pilings	Many of the original pilings are broken and rotten.
Walers	One waler at the west end of bulkhead is broken.

E. REQUIRED MAINTENANCE

This structure is in poor shape. It was repaired in 1969 and will require additional attention immediately. There is extensive sub-mining and pilings needing caps.

F. YEAR OF CONSTRUCTION

1955

G. ESTIMATED TOTAL LIFETIME

30

H

WEST HARBOR ROAD
SECTION ONE

A. SITE DESCRIPTION

Approximately 220 feet of timber bulkhead which is adjacent to a macadam parking area running from East Chew Avenue toward the north.

B. STRUCTURE USES

This bulkhead has attached fingerpiers for town slips used by both recreational boaters and commercial fishermen.

C. CONSTRUCTION MATERIALS

LENGTH OF:		SIZE OF:	
a. Sheathing	Unknown	a. Walers	6x6 inches
b. Pilings	Unknown	b. Pilings	9 inches
c. Deadmen	Unknown		
d. Tie rods	Unknown	DISTANCE BETWEEN:	
		a. Pilings	7 feet
CAP BOARD	Yes	b. Deadmen	14 feet
BATTEN BOARD	No		

D. STRUCTURAL EVALUATION

Broken tie rod at slip number 26 should be repaired immediately. This structure is reasonably sound but needs maintenance work to avoid future problems.

E. REQUIRED MAINTENANCE

Tie Rod Repair
Capboard replacement.
Finger pier replacement and repair

F. YEAR OF CONSTRUCTION

1959

G. ESTIMATED TOTAL LIFETIME

25 years.

H

WEST HARBOR ROAD
-SECTION TWO

A. SITE DESCRIPTION

Approximately 215 feet of timber bulkhead which is adjacent to a macadam parking area.

B. STRUCTURE USES

This bulkhead has attached fingerpiers for town slips used by both recreational boaters and commercial fishermen.

C. CONSTRUCTION MATERIALS

LENGTH OF:		SIZE OF:	
a. Sheathing	Unknown	a. Walers	6x6 inches
b. Pilings	Unknown	b. Pilings	9 inches
c. Deadmen	Unknown		
d. Tie rods	Unknown	DISTANCE BETWEEN:	
		a. Pilings	7 feet
CAP BOARD	No	b. Deadmen	14 feet
BATTEN BOARD	Yes		

D. STRUCTURAL EVALUATION

Tie rods Timbers are in good condition, however the tie rods have failed to hold back the bulkhead face sufficiently. The bulkhead is slumping forward between the tie rods.

E. REQUIRED MAINTENANCE

Capboard replacement.
Fingerpier replacement and repair.
Severe submining.

F. YEAR OF CONSTRUCTION

1971

G. ESTIMATED TOTAL LIFETIME

25 years

H

WEST HARBOR ROAD
-SECTION THREE

A. SITE DESCRIPTION

Approximately 216 feet of timber bulkhead which is adjacent to a macadam parking area lying near the St. Michaels Harbor Marina.

B. STRUCTURE USES

This bulkhead has attached fingerpiers for town slips used by both recreational boaters and commercial fishermen.

C. CONSTRUCTION MATERIALS

LENGTH OF:

a. Sheathing	12 feet
b. Pilings	20 feet
c. Deadmen	12 feet
d. Tie rods	20 feet
CAP BOARD	Yes
BATTEN BOARD	Yes

SIZE OF:

a. Walers	6x6 inches
b. Pilings	10 inches

DISTANCE BETWEEN:

a. Pilings	7 feet
b. Deadmen	10 1/2 feet

D. STRUCTURAL EVALUATION

This structure is in good condition and has been well maintained.

E. REQUIRED MAINTENANCE

One of the walers near the northern end of the bulkhead has been broken and may require attention.

F. YEAR OF CONSTRUCTION

1968

G. ESTIMATED TOTAL LIFETIME

30 years

DOCK EVALUATION

A. SITE DESCRIPTION

Dock located at slip number 2.

B. STRUCTURE USES

Used by number 2 slip renter.

C. CONSTRUCTION MATERIALS

LENGTH OF:		SIZE OF:		DISTANCE BETWEEN:	
a. Pilings	Unknown	a. Pilings	12	a. Pilings	
b. Dock	60' ±0'	b. Stringers	N/A	b. Stringers	N/A
		c. Cross Sill	Mixed 2x12 &1x12	c. Bracing	N/A
		d. Bracing	N/A		
DECKING STYLE		e. Decking	2x12	DESIGN OF DOCK:	
				a. Dock	linear

Perpendicular to bulkhead

D. STRUCTURAL EVALUATION

Pilings	Excellent
Stringers	N/A
Cross Sill	Undersized, Unsafe
Bracing	N/A
Decking	Undersized, Weak

E. REQUIRED MAINTENANCE

Remove present deck and rebuild structure with stringers, cross sills and bracing.

F. YEAR OF CONSTRUCTION

Unknown

J

A. SITE DESCRIPTION

Cherry St. foot bridge and municipal slips.

B. STRUCTURE USES

Tourist foot traffic and catwalk with fingerpiers for slips renters.

C. CONSTRUCTION MATERIALS

LENGTH OF:
- **a. Pilings** Unknown
- **b. Dock** 103 feet

SIZE OF:
- **a. Pilings** 10"
- **b. Stringers** 3x6
- **c. Cross Sill** 6x6
- **d. Bracing** N/A
- **e. Decking** 2x100 CCC

DISTANCE BETWEEN:
- **a. Pilings** 8'
- **b. Stringers** -3'
- **c. Bracing** N/A

DECKING STYLE

Parallel to bulkhead

DESIGN OF DOCK:

a. Dock - Linear

D. STRUCTURAL EVALUATION

Good condition

E. REQUIRED MAINTENANCE

Decking replacement in 3-5 years.

F. YEAR OF CONSTRUCTION

Footbridge 1973
Fingerpiers 1973

A. SITE DESCRIPTION

Chew Ave. Decking

B. STRUCTURE USES

Loading and Unloading area for boaters.

C. CONSTRUCTION MATERIALS

LENGTH OF:
a. **Pilings** -20'
b. **Dock** -9'

SIZE OF:
a. **Pilings** -10"
b. **Stringers** -3x8
c. **Cross Sill** -3x8
d. **Bracing** N/A
e. **Decking** -2x12 CCC

DISTANCE BETWEEN:
a. **Pilings** N/A
b. **Stringers** -3'
c. **Bracing** -12'

DECKING STYLE
Perpendicular

DESIGN OF DOCK:
a. Dock Triangular Deck

D. STRUCTURAL EVALUATION

New Construction
Excellent Condition

E. REQUIRED MAINTENANCE

None presently

F. YEAR OF CONSTRUCTION

June, 1979

L

A. SITE DESCRIPTION

Back Creek Dock

B. STRUCTURE USES

Municipal Dock mainly used commercially by local watermen.

C. CONSTRUCTION MATERIALS

LENGTH OF:
a. Pilings Unknown
b. Dock 120 feet

SIZE OF:
a. Pilings -10"
b. Stringers -5x10
c. Cross Sill -8x8
d. Bracing N/A
e. Decking -3x10

DISTANCE BETWEEN:
a. Pilings -12'
b. Stringers -20"
c. Bracing N/A

DESIGN OF DOCK:
a. Dock T-Head

DECKING STYLE

Perpendicular to bulkhead

D. STRUCTURAL EVALUATION

Pilings - Good condition, a few have no cap and associated rot.
Stringers - Some serious deterioration near end of dock.
Cross Sill - Good condition
Bracing - N/A
Decking - Some members have serious deterioration.
Bulkhead - Some deterioration in sheathing.

E. REQUIRED MAINTENANCE

Pilings - Fill holes on top of pilings with concrete and cap.
Stringer - Replace weakened members.
Decking - Replace weakened members.
Bulkhead - Repair failing portions of bulkhead.

F. YEAR OF CONSTRUCTION

1946 Main Dock built.
1974 T-Head added on.

FINGERPIER EVALUATION

WEST HARBOR ROAD

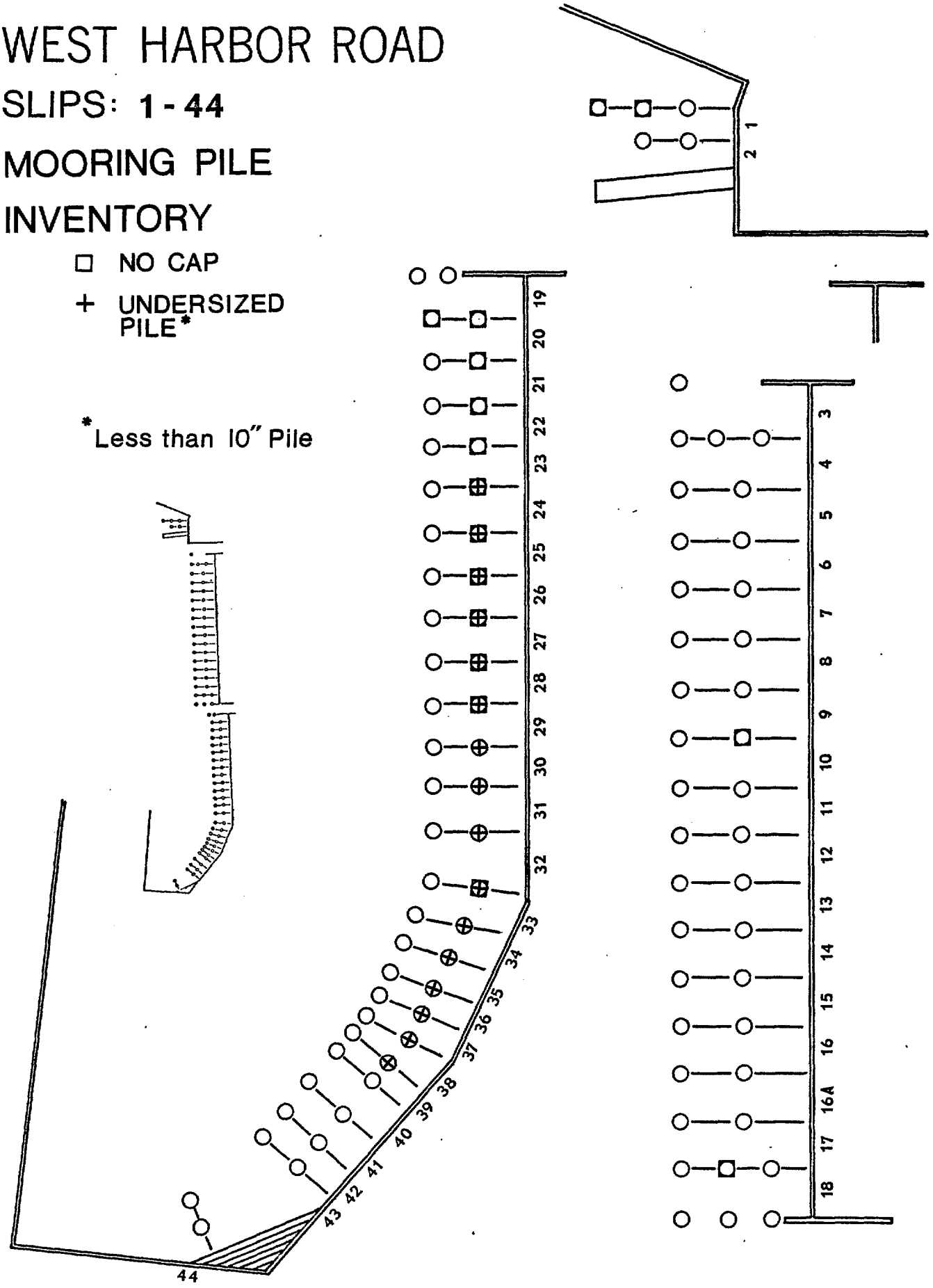
SLIPS: 1 - 44

MOORING PILE INVENTORY

□ NO CAP

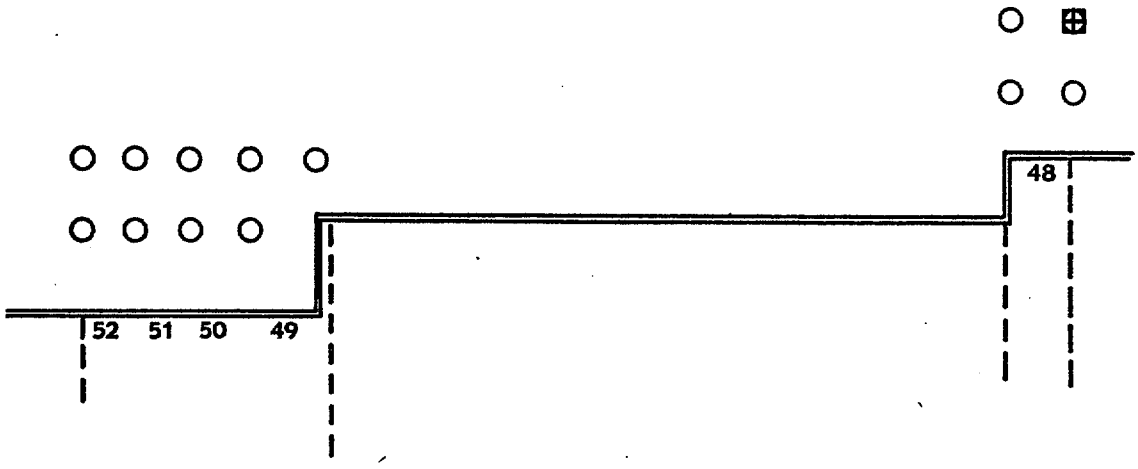
\+ UNDERSIZED PILE*

*Less than 10" Pile



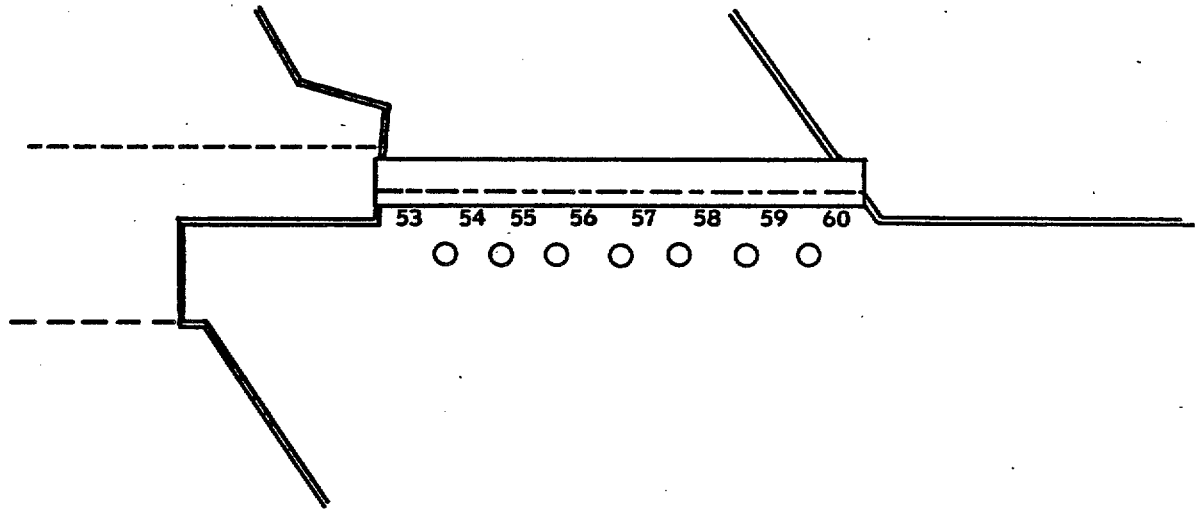
EAST CHESTNUT & HARRISON ALLEY

SLIPS: **48 - 52**



CHERRY STREET

SLIPS: **53 - 60**



WEST HARBOR ROAD

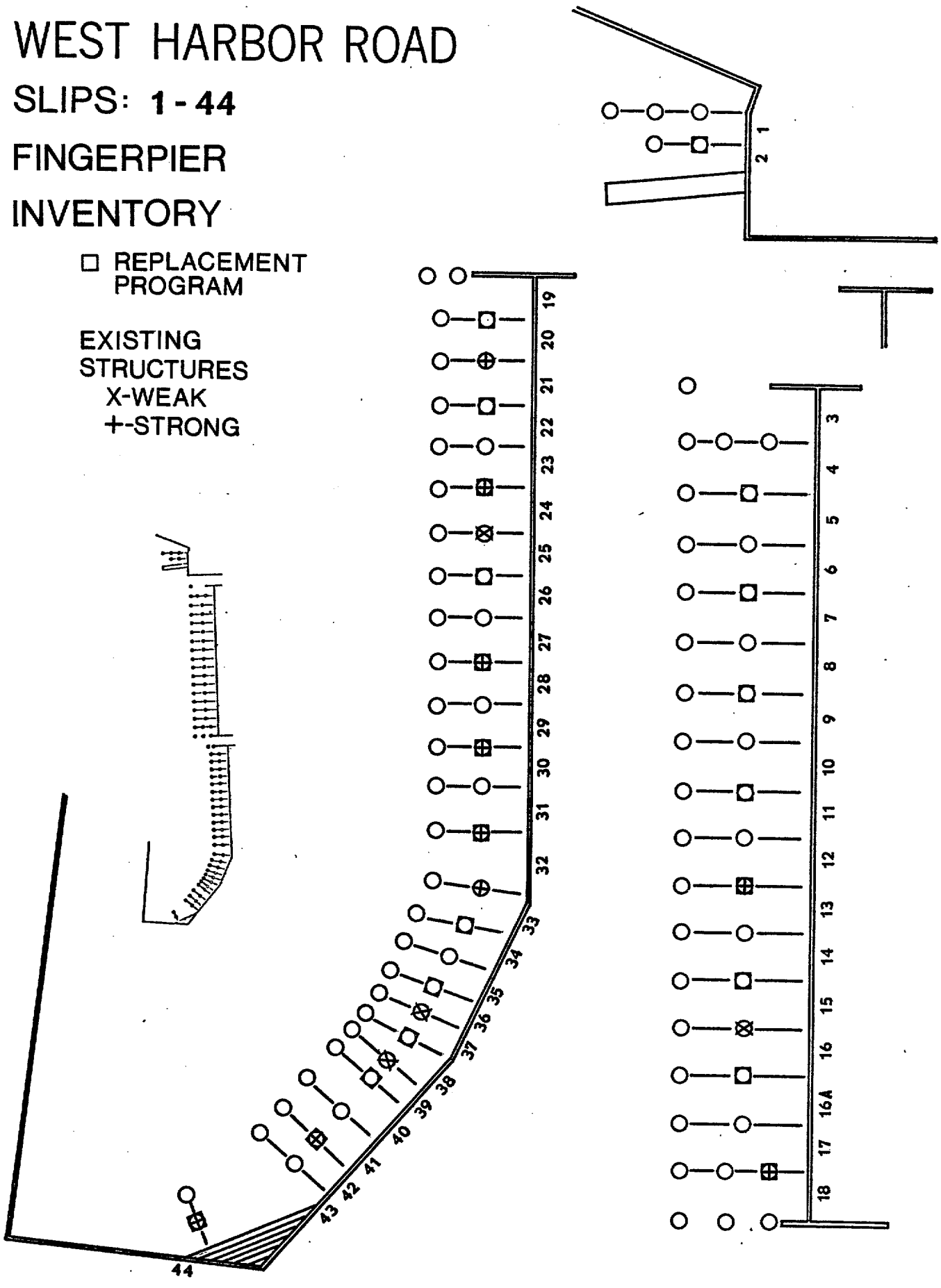
SLIPS: 1 - 44

FINGERPIER

INVENTORY

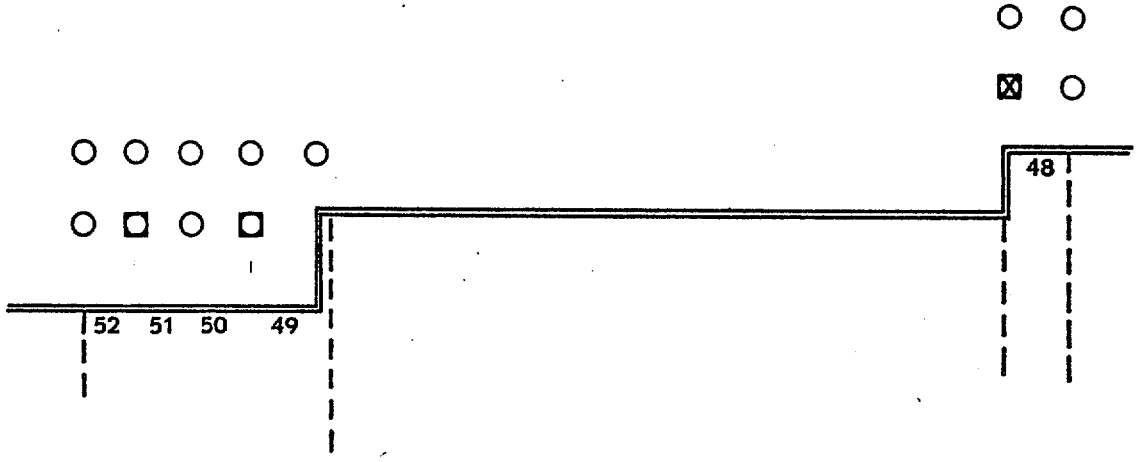
□ REPLACEMENT PROGRAM

EXISTING STRUCTURES
X-WEAK
+-STRONG



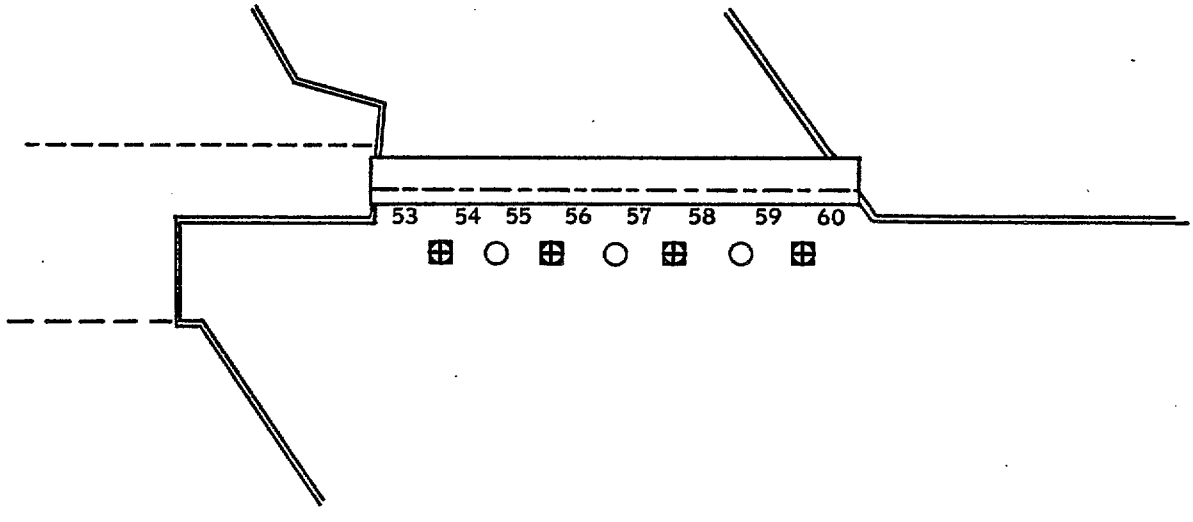
EAST CHESTNUT & HARRISON ALLEY

SLIPS: **48 - 52**



CHERRY STREET

SLIPS: **53 - 60**



Waterfront Structures - Minimum Specifications

Introduction

Establishing minimum design standards for waterfront structures can prevent inadequate construction and premature failure of town owned structures. The criteria presented below are intended to provide guidelines for construction and are not meant to be used as an actual design.

Minimum Specifications for Bulkheading

Material Dimensions

Wales	6x8 Inches
Sheathing	2x10 or 2x12 Inches
Piles	12" Butt Measurement
Tie Rods	3/4" Diameter
Capboard	2x10 or 2x12 CCC treated

Structural Guidelines

Typical Bulkhead, Elevation and Plan View

Typical Bulkhead, Sectional View

Typical Bulkhead, Pile Layout

Typical Bulkhead, Flankwall Elevation

Typical Bulkhead, Connection to Existing Bulkhead

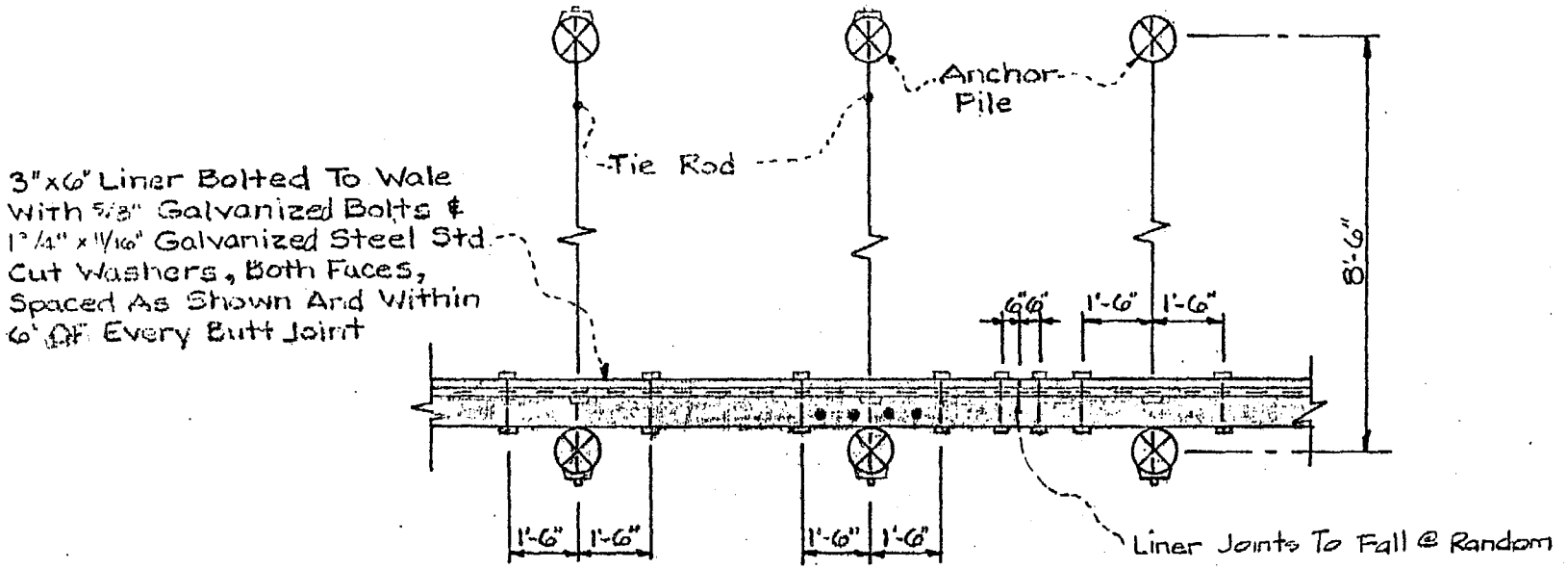
Butt Block, Detail

Outfall Pipe Sleeve, Detail

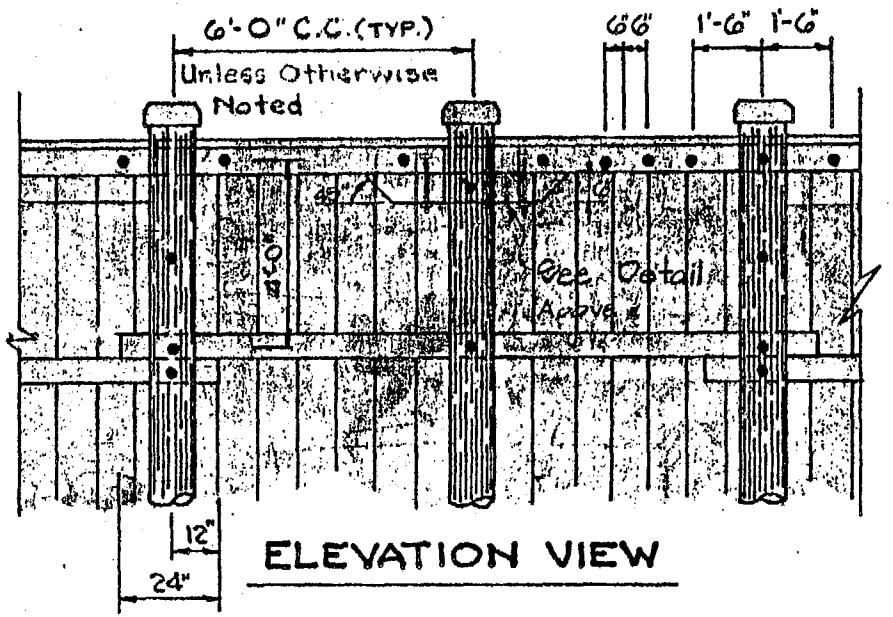
Cantilevered Bulkhead, Sectional View

Cantilevered Bulkhead, Elevation View

Cantilevered Bulkhead, Wale Details

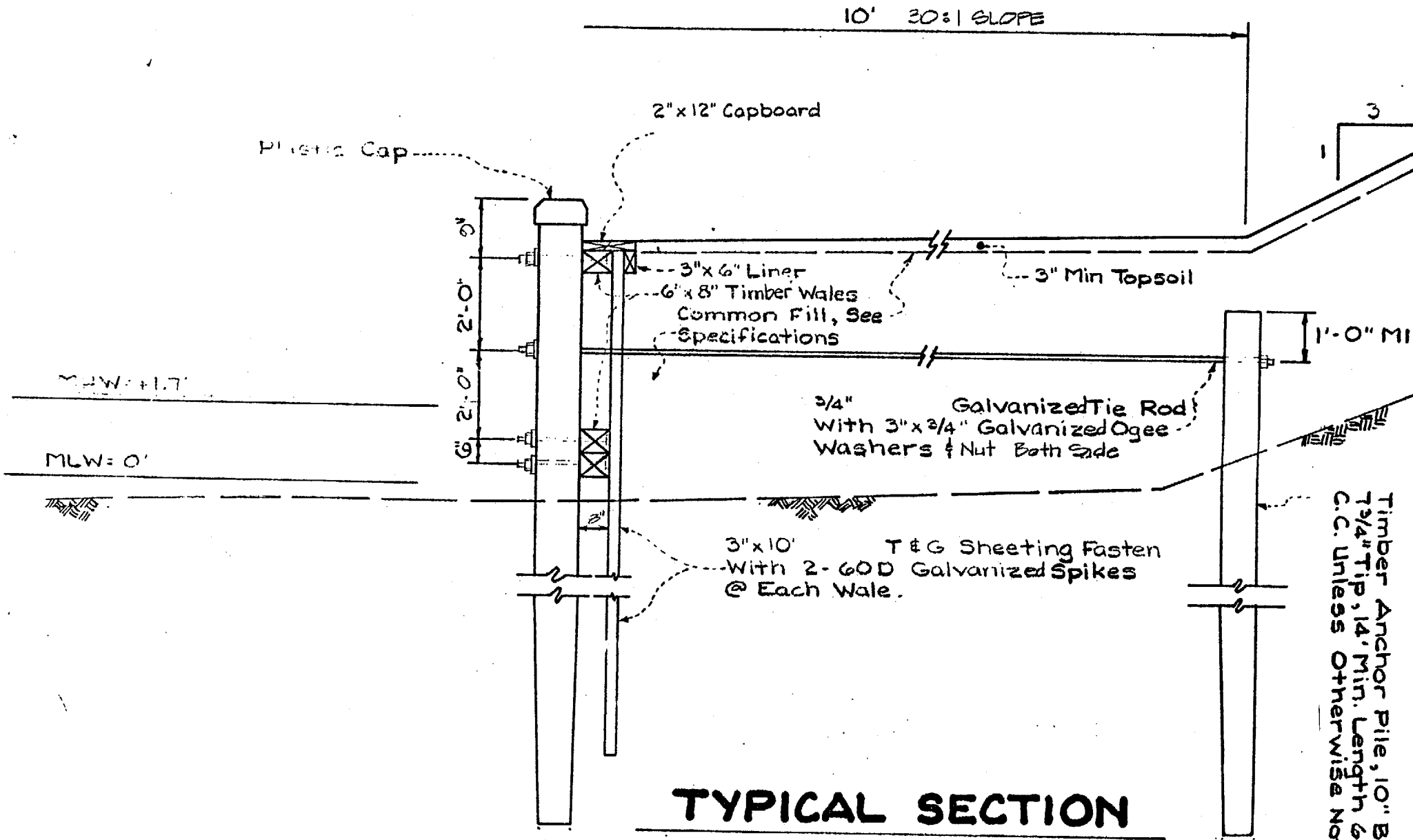


PLAN VIEW



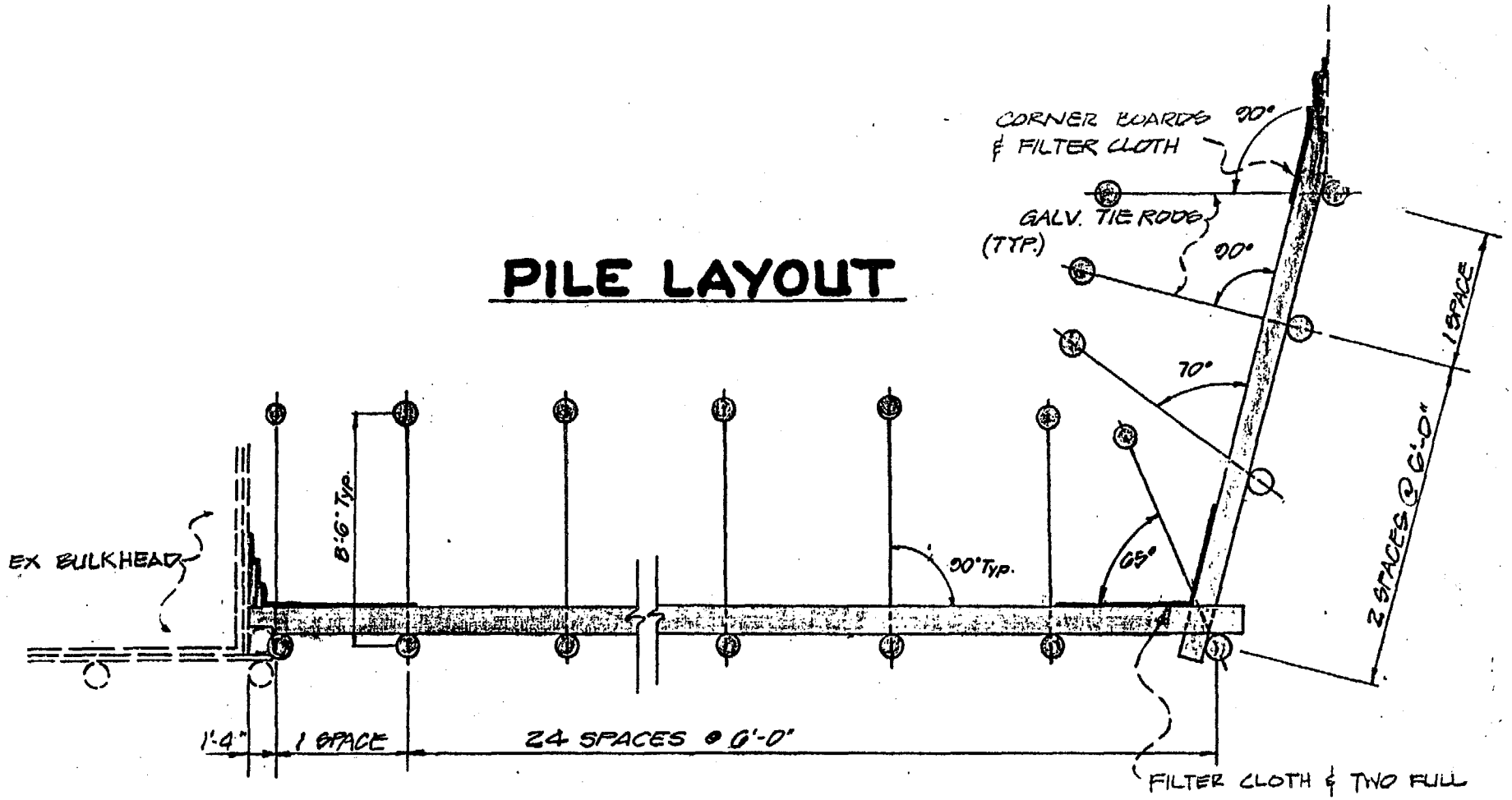
ELEVATION VIEW

NOTE:
Stagger Joints Upper & Lower Wales
Splices To Fall @ Piles Only.

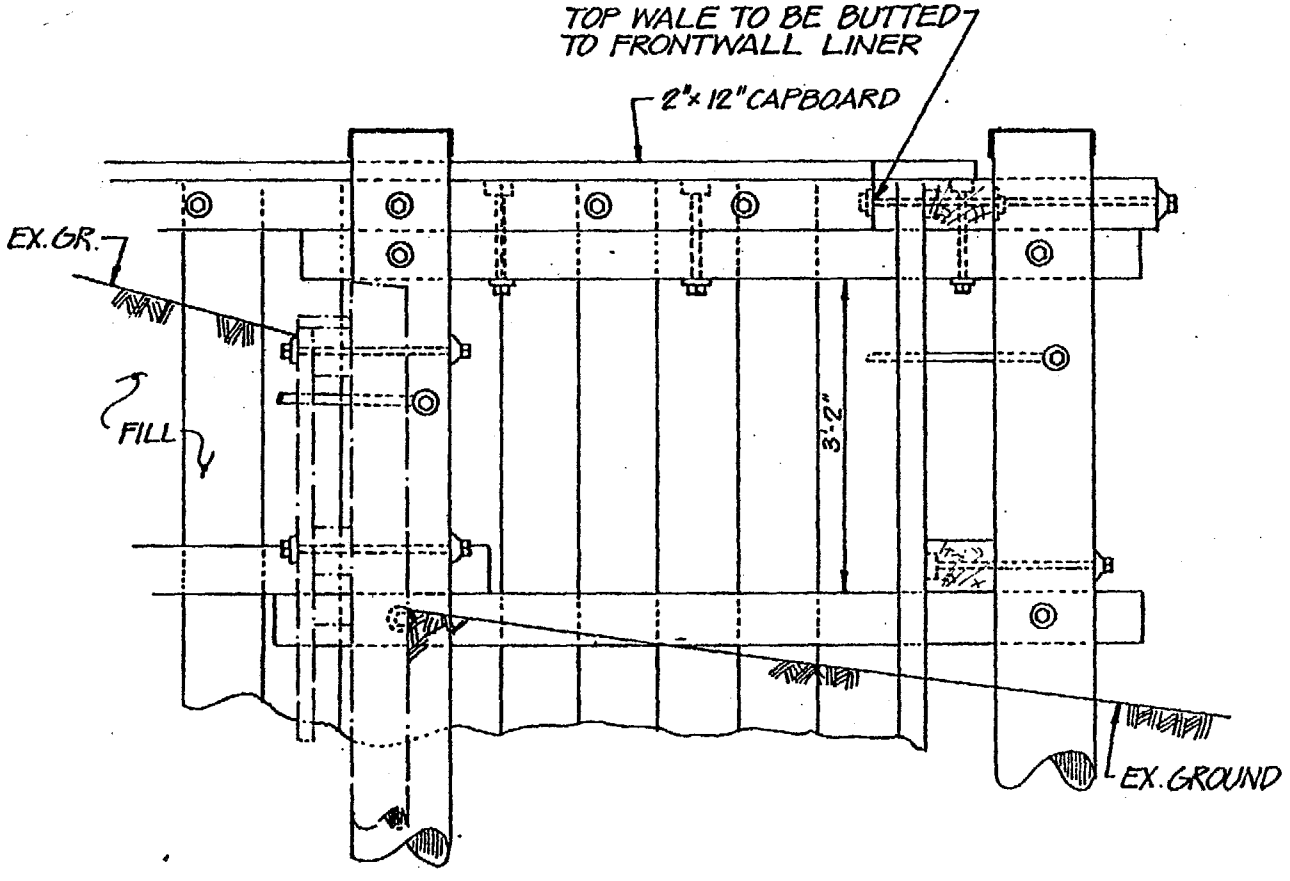


TYPICAL SECTION

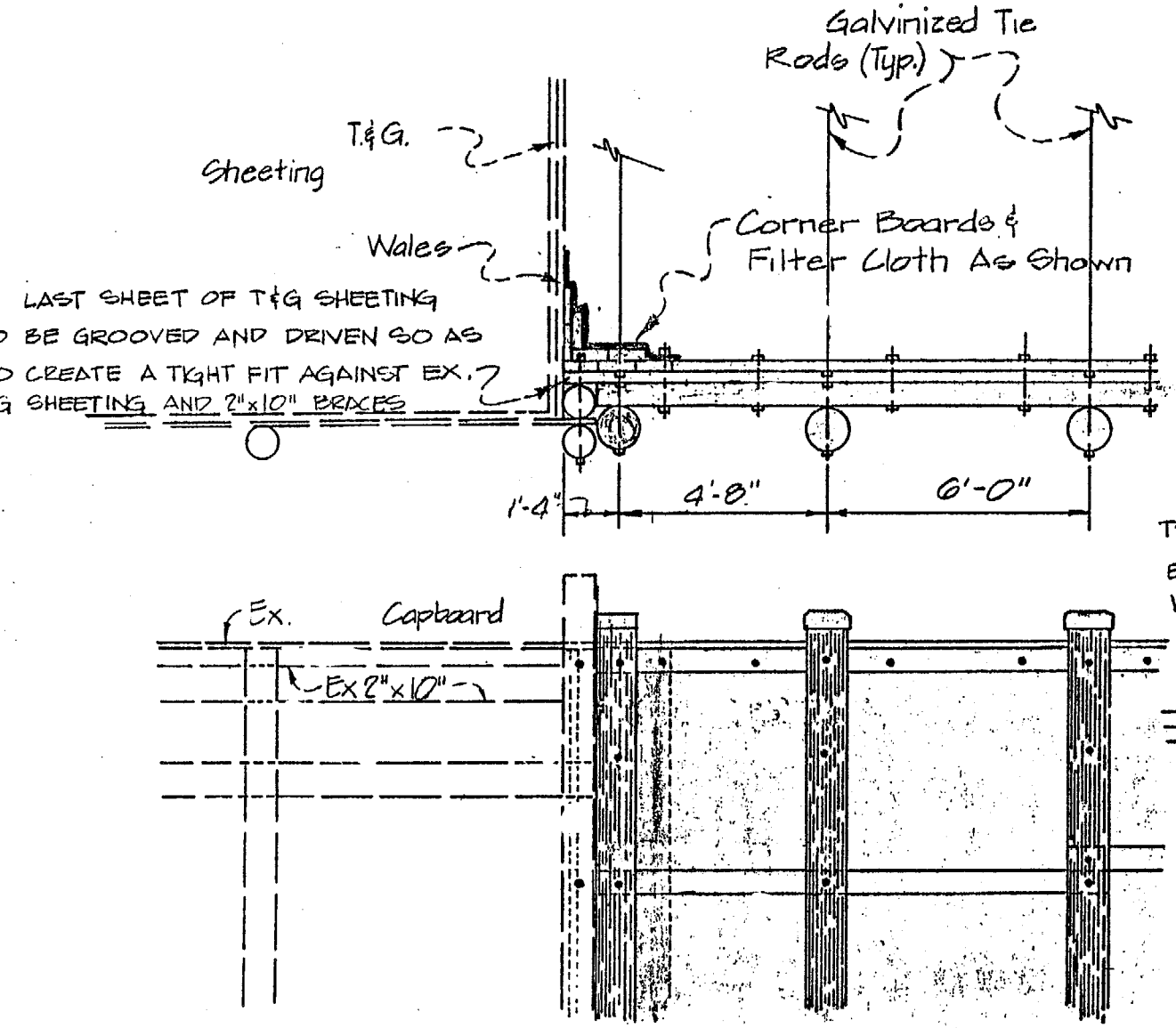
PILE LAYOUT



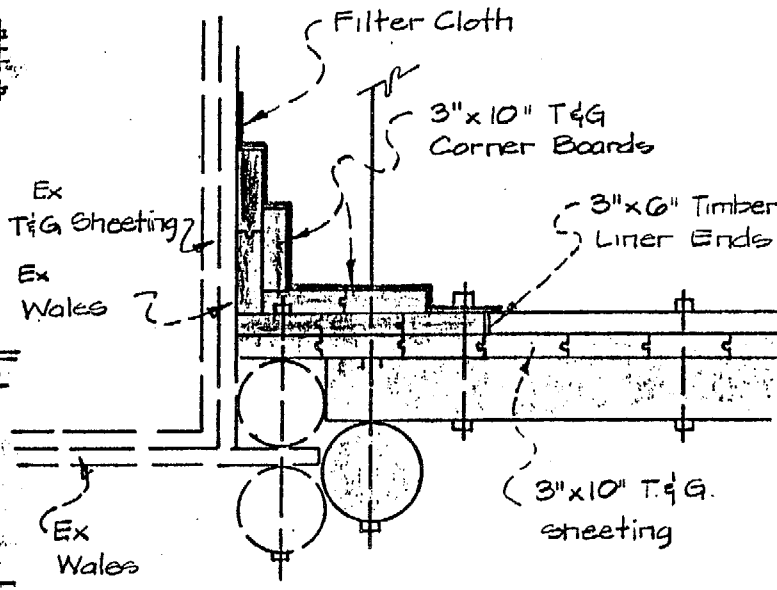
FILTER CLOTH & TWO FULL LENGTH CORNER BOARDS; BOARDS SHALL BE FROM 3"x10" STOCK, TRIMMED FOR TIGHT FIT (TYP. ALL CORNERS & BENDS)



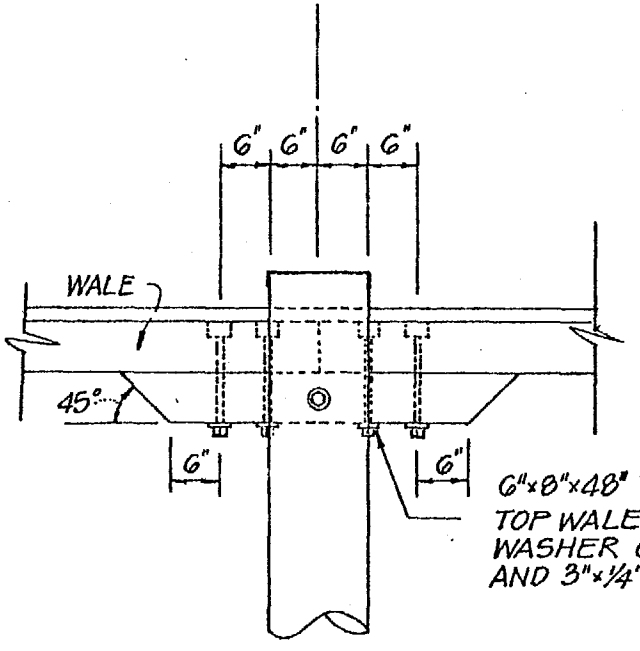
FLANKWALL ELEVATION



CONNECTION OF EXISTING BULKHEAD

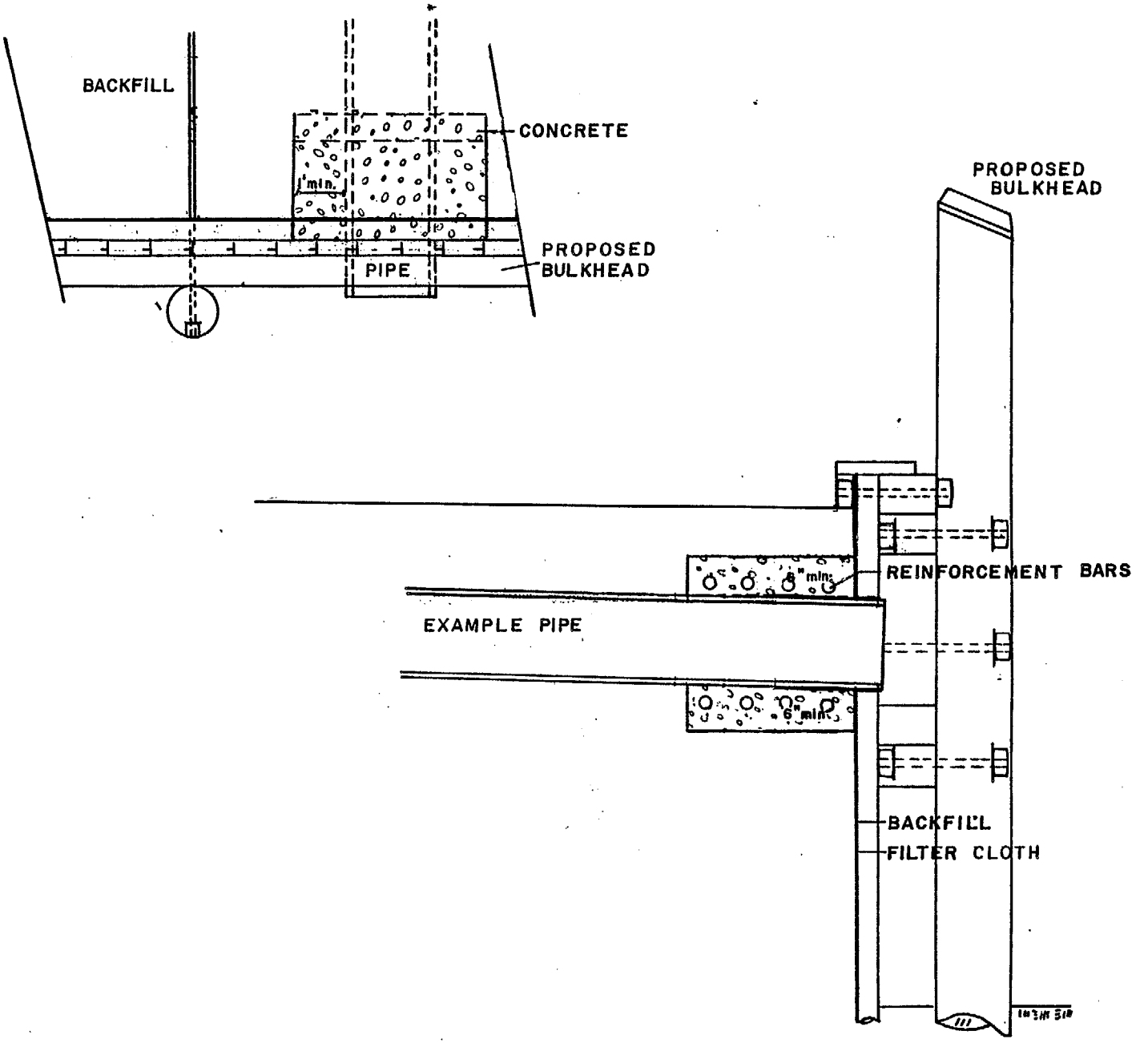


DETAIL AT END OF BULKHEAD

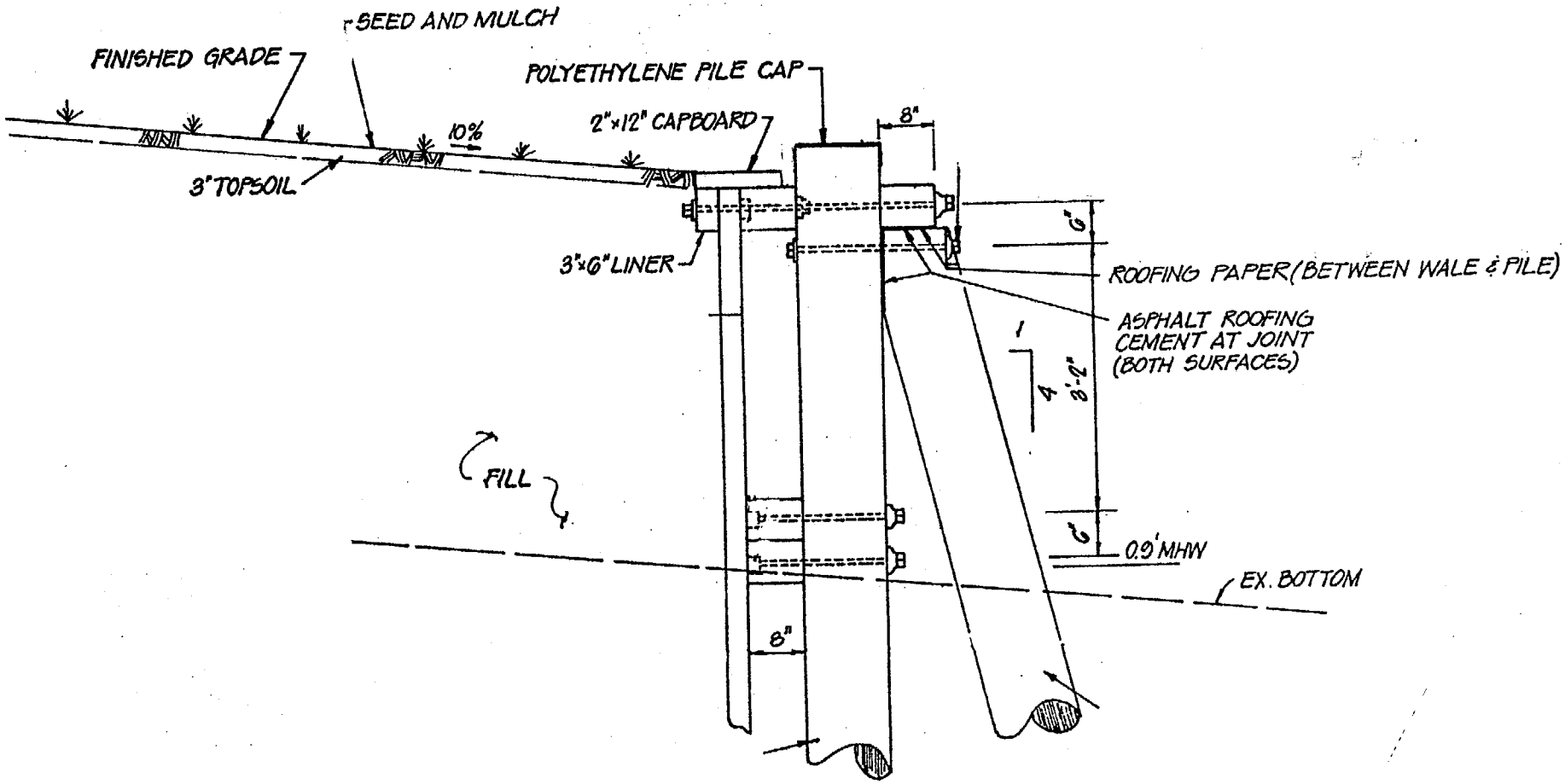


6"x8"x48" TIMBER BUTT BLOCK BOLTED TO TOP WALE W/ 3/4" BOLTS AND 3"x1/4" NYDD WASHER COUNTERSUNK IN WALE AND NUT AND 3"x1/4" NYDD WASHER ON BOTTOM.

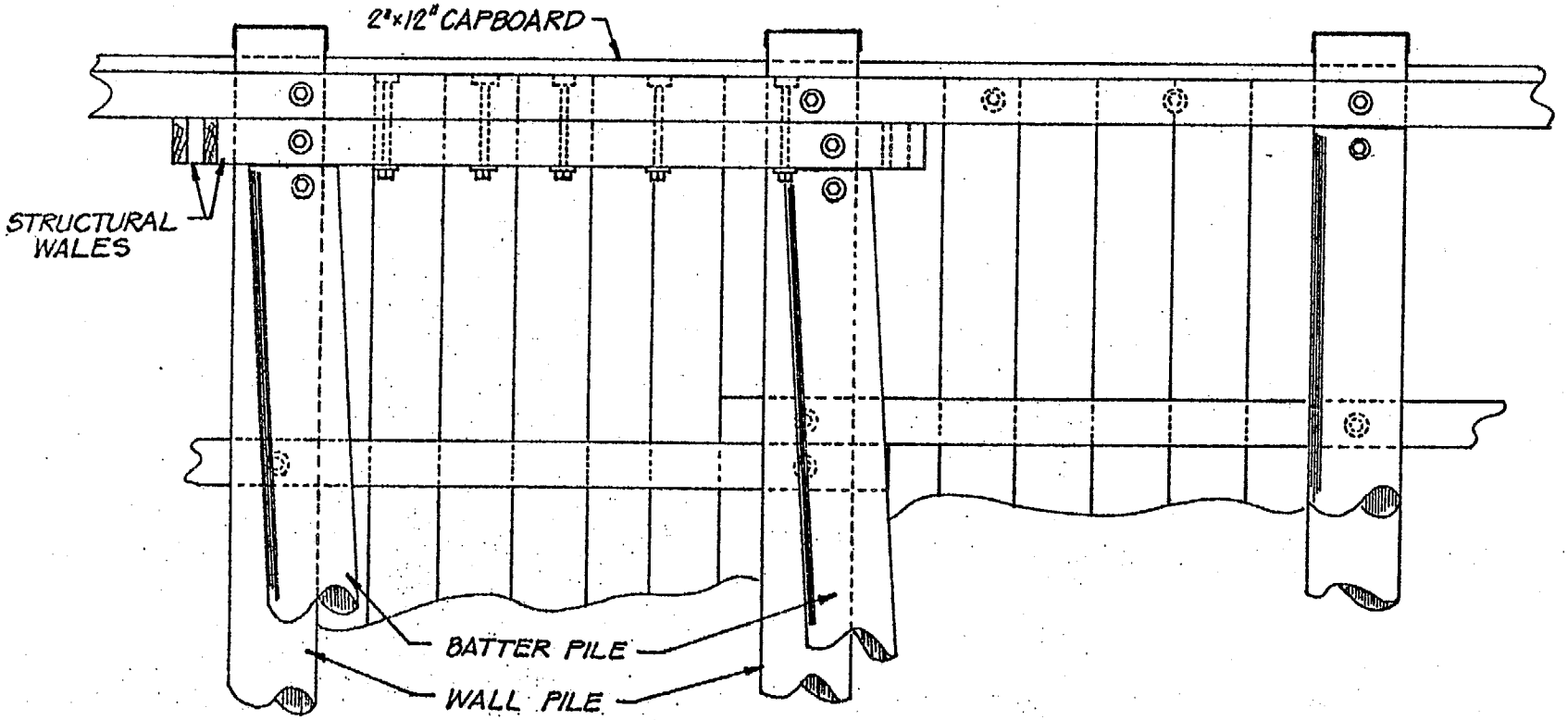
BUTT BLOCK DETAIL



OUTFALL PIPE SLEEVE

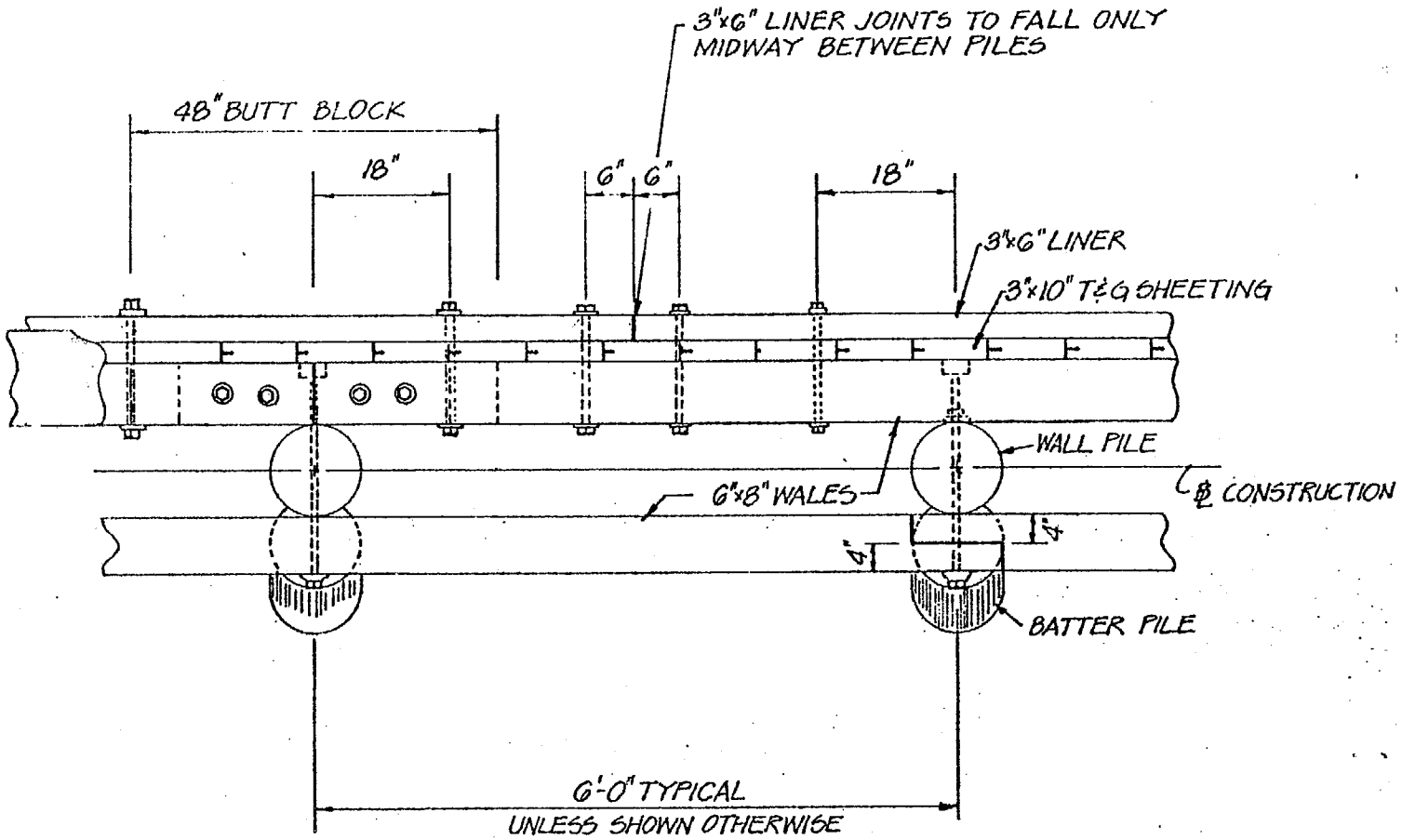


TYPICAL SECTION



ELEVATION

FRONTWALL BEND DETAIL



TYPICAL WALE DETAILS